

A new species of *Politolana* (Flabellifera: Cirolanidae) from the south Brazilian shelf

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ABSTRACT

A new species of cirolanid isopod has been collected on the inner Brazilian continental shelf, from sandy bottoms at depths of 15 m to 48 m. *P. tricarinata* n.sp. occurs sympatrically with *P. eximia*, the only other *Politolana* species recorded from the south Atlantic. This new species is herein described and figures of all appendages are provided. *P. tricarinata* can be distinguished from other species of *Politolana* by the presence of three transverse cuticular ridges, or carinae, on the dorsal surface of the cephalon. Along with this autapomorphy, a combination of characters unique to *P. tricarinata* is provided in the species diagnosis. A key separating the two known Brazilian species of *Politolana* is included.

1 INTRODUCTION

A broad oceanographic investigation was carried out during 1985-1987 on the south Brazilian continental shelf and slope offshore of Ubatuba, Brazil (Pires 1992). Benthic samples were obtained with grabs and dredges at depths from 10 m to 600 m. The examination of these samples has revealed a new species of cirolanid isopod belonging to the genus *Politolana*. The majority of *Politolana* species are known from the north Atlantic and Gulf of Mexico, and until now only a single species, *P. eximia* (Hansen 1890), had been recorded from South American waters. Both *P. eximia* and the new species were collected in the Ubatuba area, often times in the same sample, indicating that they occur sympatrically in this region. Sympatry is not unusual within *Politolana*; in the northwestern Atlantic several species in this genus occur sympatrically. *P. tricarinata* n.sp. is thus far known only from the Ubatuba region on the inner continental shelf at depths of less than 50 m, while *P. eximia* has been collected at much greater depths of up to 380 m, and is known from the waters of southern Brazil to northern Argentina (about 22°S to 35°S). In light of the sympatric distribution of these congeneric species, and their potential ecological importance as benthic scavengers and as prey of epibenthic fish, a clear understanding of their taxonomy and distribution is necessary.

A detailed taxonomic, phylogenetic, and biogeographic monograph of *Politolana* is in

preparation (Riseman & Brusca). In the present paper, we describe the new Brazilian species, *Politolana tricarinata*, and present a key to the two species of *Politolana* found in this region. Because a genus diagnosis is not given here, but will follow in the *Politolana* monograph, the species description is somewhat lengthy, including characters of both specific and generic importance. However, the species diagnosis includes characters solely of specific importance which, in combination, distinguish *P. tricarinata* from all other species of *Politolana*. A redescription of *P. eximia* will follow in the monograph as well.

The terms used to describe appendage orientation in the description follow Brusca et al. (1995). To avoid confusion, setal terminology has been kept as simple as possible, naming the setae by a combination of terms describing length, robustness, complexity, and acuteness, for example: 'long slender plumose seta' or 'short acute robust seta.' In addition, unusual setae are figured in detail separately.

2 KEY TO BRAZILIAN SPECIES OF *POLITOLANA*

Uropod exopod short and broad, about 2.3 times longer than wide, not reaching level of endopodal notch; antenna reaching middle of first pereionite; cephalon with transverse cuticular ridge between frontal ridge and interocular furrow *P. tricarinata* n.sp.

Uropod exopod long and narrow, about 5.3 times longer than wide, reaching beyond distal margin of endopod and pleotelson; antenna reaching second pereionite; cephalon without transverse cuticular ridge between frontal ridge and interocular furrow *P. eximia*

3 TAXONOMIC TREATMENT

Order Isopoda Latreille, 1817

Suborder Flabellifera Sars, 1882

Family Cirolanidae Dana, 1853

Politolana Bruce, 1981

Synonymy: Bruce, 1981:958-959, figs. 1j, 1k, 2g, 2h, 3g, 3h, 4d, 5g, 5h; 1986:10; 1991:270; 1996:161-165, figs. 10-12; Kensley & Schotte, 1989:140-143, figs. 63-64; Wetzer et al., 1987:1-11.

Type species: *Aega polita* Stimpson, 1853 (by designation; Bruce 1981).

Species Included:

P. concharum (Stimpson, 1853)

P. microphthalma (Hoek, 1882)

P. crosnieri Bruce, 1996

P. obtusispina (Kensley, 1975)

P. dasyprion Bruce, 1991

P. polita (Stimpson, 1853)

P. eximia (Hansen, 1890)

P. tricarinata n.sp.

P. impressa (Harger, 1883)

P. wickstenae Wetzer et al., 1987

Politolana tricarinata n.sp.: Figures 1-7.

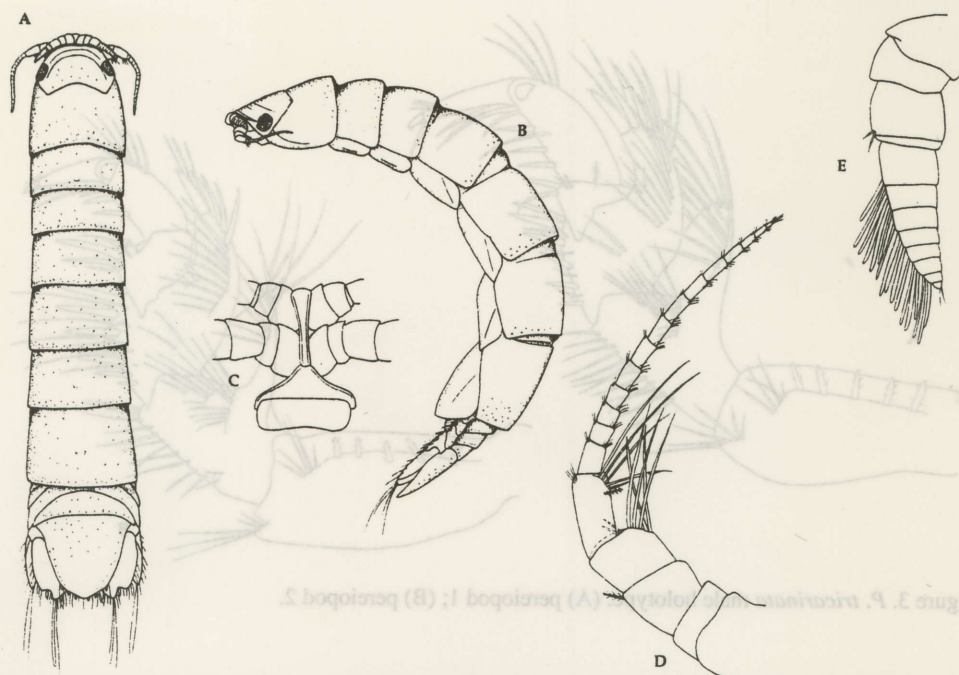


Figure 1. *P. tricarinata* female: (A) dorsal aspect. *P. tricarinata* male holotype: (B) lateral aspect; (C) frontal lamina; (D) antennae 2; (E) antennae 1.



Figure 2. *P. tricarinata* male holotype: (A) right mandible; (B) right maxilliped; (C) maxillule; (D) maxilla.



Figure 3. *P. tricarinata* male holotype: (A) pereiopod 1; (B) pereiopod 2.

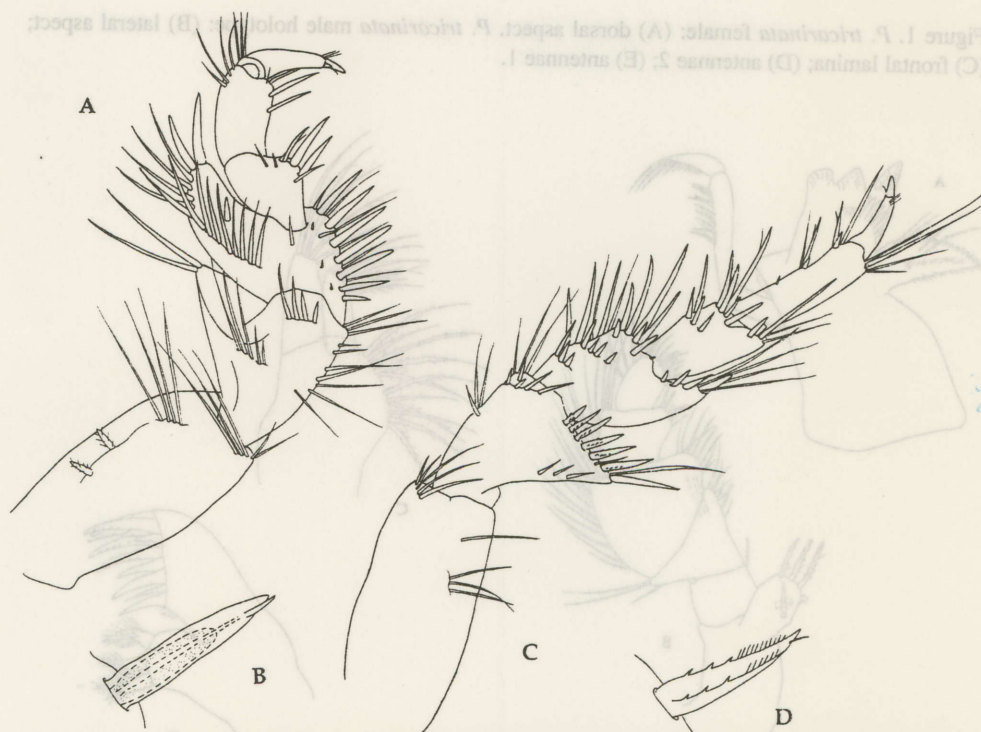


Figure 4. *P. tricarinata* male holotype: (A) pereiopod 3; (B) detail of robust setae on inferior margin of merus, Pereiopods 1-3; (C) pereiopod 4; (D) detail of robust studded-serrate setae on ischium superior margin, pereiopods 4-7.



Figure 5. *P. tricarinata* male holotype: (A) pereopod 5; (B) pereopod 6.

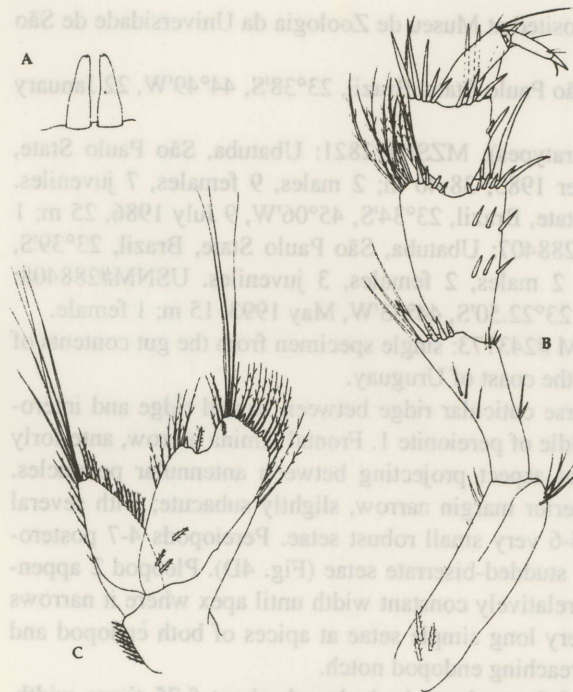


Figure 6. *P. tricarinata* male holotype: (A) penes; (B) pereopod 7; (C) uropod.

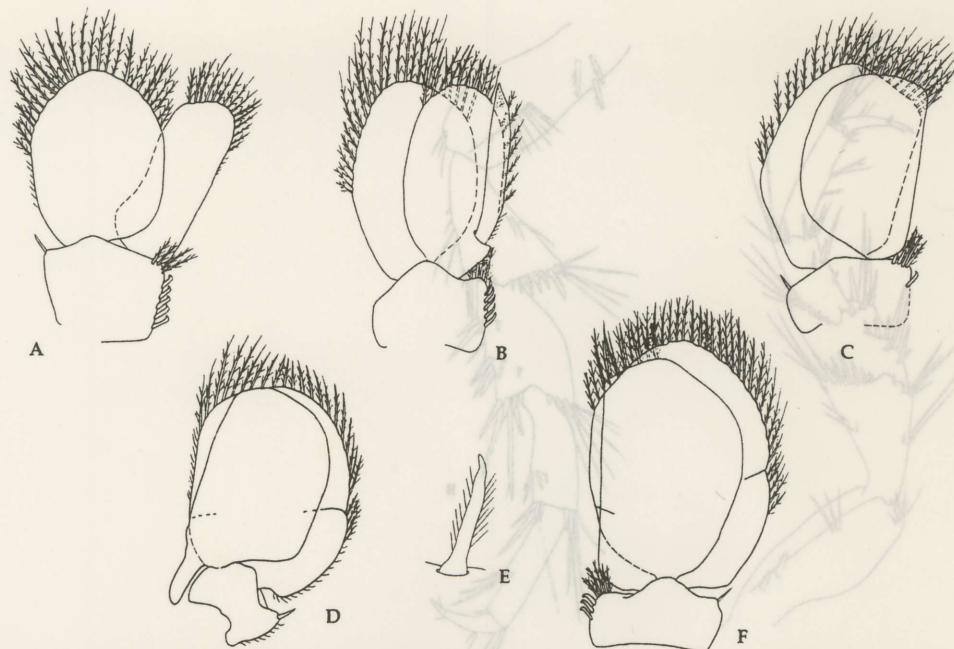


Figure 7. *P. tricarinata* male holotype: (A-C) pleopods 1-3 respectively; (D) pleopod 5; (E) detail of plumose coupling hook. *P. tricarinata* female: (F) pleopod 4.

Type material: Male holotype, deposited at Museu de Zoologia da Universidade de São Paulo (MZSP) cat. no. 12820.

Type locality: Ubatuba, northern São Paulo State, Brazil, 23°38'S, 44°49'W, 22 January 1986, 48 m.

Additional material examined (paratypes): MZSP#12821: Ubatuba, São Paulo State, Brazil, 23°50'S, 45°10'W, 27 October 1985, 38-40 m; 2 males, 9 females, 7 juveniles. MZSP#12822: Ubatuba, São Paulo State, Brazil, 23°34'S, 45°06'W, 9 July 1986, 25 m; 1 male, 1 female, 1 juvenile. USNM#288407: Ubatuba, São Paulo State, Brazil, 23°39'S, 44°53'W, 20 April 1986, 45-48 m; 2 males, 2 females, 3 juveniles. USNM#288408: Ubatumirim, São Paulo State, Brazil, 23°22.50'S, 44°53'W, May 1993, 15 m; 1 female.

Nontype material examined: USNM #243773: single specimen from the gut contents of a dolphin, *Pontoporia blainvillei*, off the coast of Uruguay.

Diagnosis: Cephalon with transverse cuticular ridge between frontal ridge and interocular furrow. Antennae extend to middle of pereionite 1. Frontal lamina narrow, anteriorly expanded, spatulate; visible in dorsal aspect projecting between antennular peduncles. Pereionite 7 longest. Pleotelson posterior margin narrow, slightly subacute; with several plumose marginal setae (pms) and 4-6 very small robust setae. Pereiopods 4-7 posterodistal margin of ischium with robust studded-biserrate setae (Fig. 4D). Pleopod 2 appendix masculina broad and straight, of relatively constant width until apex where it narrows to a point. Uropod with cluster of very long simple setae at apices of both endopod and exopod; exopod shorter than, or just reaching endopod notch.

Description of Holotype: Male, 10.5 mm long; body length about 5.75 times width.

Pereionial segments loosely articulated; body long, cylindrical, with lateral margins subparallel in dorsal aspect, slightly constricted in region of pereionites 4 and 5.

Cephalon: About 1.5 times wider than long, laterally enclosed by pereionite 1; anterior margin convex, medially flattened, with minute rostral point; cuticle of frontal margin raised into thickened frontal ridge, the lateral margins of which extend over and divide the eyes; interocular furrow complete and evenly convex; additional transverse cuticular ridge present between frontal ridge and the interocular furrow. Eyes subquadrate, darkly pigmented, with about 6 rows of 6-8 ommatidia, with small notch of missing ommatidia where divided by frontal ridge; cuticular ommatidial facets weakly developed. Frontal lamina narrow, length about 4 times greatest width; anteriorly expanded and spatulate, with raised ridge along margin; visible in dorsal aspect projecting between antennular peduncles; posterior margin abutting clypeus, not projecting. Clypeus not projecting; subtriangular, width greater than length; lateral margins with raised ridge, curved around lateral margins of labrum. Labrum wider than long, posterior margin slightly concave.

Antennules: Short, reaching posterior margins of eyes. Peduncle of 3 articles, plus minute 4th article; articles 1 and 2 short, subequal in length, article 3 longest; peduncle article 2 posterior distal angle with 2-3 short circumplumose setae. Flagellum length subequal to peduncle length, of 8 articles, each with 5-6 aesthetascs; first flagellar article length subequal to width; subsequent flagellar articles shorter, width twice length.

Antennae: Reaching middle of pereionite 1; peduncle of 5 articles, articles 1 and 2 shortest, wider than long; articles 3 and 4 subequal in length and subquadrate, or with length only slightly less than width; article 5 longest, approximately 2 times longer than wide and width about half the basal width of article 4; posterior distal margin of peduncle articles 4 and 5 with row of approximately 5-10 long stiff simple setae. Flagellum of 15 articles, proximally subquadrate, lengthening distally; each article with clusters of short fine setae on distal angles.

Mandible: Incisor tridentate; left mandible incisor teeth less robust than on right mandible. Molar process and setal row well developed; setal row with about 7 long robust setae; molar process with short widely spaced spines along entire anterior margin, submarginal row of slender lightly plumose setae on dorsal surface; molar process covered with short fine setae. Palp 3-articulate; article 2 longest, with dense row of short simple setae; article 3 shortest, narrowing distally, with simple and slender biserrate marginal setae.

Maxillule: Lateral lobe with fine bifid setae along medial margin; gnathal surface with approximately 11 large, heavily sclerotized, robust setae, several anterior ones with notched surfaces. Medial lobe with three giant circumplumose setae and a smaller robust plumose seta between the two proximal-most giant setae.

Maxilla: Lateral lobe with simple and lightly plumose slender setae; middle and lateral lobes free and articulating, with long simple and lightly plumose setae.

Maxilliped: Endite with distal cluster of approximately 3 long robust circumplumose setae; right endite with 2 coupling hooks and 3 cuticular bumps on the medial margin (possibly newly forming coupling hooks), left endite with 1 coupling hook. Palp of 5 articles; lateral margins with simple setae, medial margins of distal articles with serrate setae in addition to simple setae; articles 4 and 5 with distomedial angle weakly produced.

Pereion: Cuticle highly polished, without spines, tubercles or setae, but with scattered chromatophores on pereion and pleon, concentrated posteriorly and laterally. Pereionites 1-6 with dorsal medial round depression housing two minute pores; pores present, but without depression on pereionite 7; medially, pereionites 2 and 3 shortest, 4 and 5 sube-

qual and longer than 1, 7 longest. Pereionite 1 only slightly narrowed anteriorly, anterolateral margins straight, forming blunt angles reaching or partially covering eyes; with impression along lateral margin. Coxae narrow, not forming sternal plates; coxae 2 and 3 with impression parallel to lateral margin, posterior margins rounded; coxae 4-6 with oblique impression, posterior margins progressively more oblique; coxae 7 large, triangular, with oblique impression and blunt posterior angle; postero-ventral angle of pereionite 7 extended slightly beyond posterior margin of coxae. Penes long, not fused basally; slightly flattened and tapering.

Pereiopods 1-3: Ambulatory, robust and highly setose as figured. Basis superior submarginal setal row short, with less than 10 long simple setae. Ischium of pereiopods 1 and 2 with three oblique rows of long simple setae on posterior face; ischium of pereiopod 3 with two oblique rows; superior distal angle produced into a large scoop-shaped lobe. Merus with superior distal angle produced into broad recurved lobe extending beyond base of propodus, with 1-2 robust apical setae; inferior margin of merus and carpus with long acute robust setae and long simple setae; posterior face of merus with small cluster of short setae near superior join of carpus. Pereiopods 1-3 shortening posteriorly, with ischial and meral lobes slightly less produced. Pereiopod 1 carpus triangular; carpus of pereiopods 2 and 3 subquadrate. Pereiopod 1 propodus with simple seta inserted on mid-anterior face; propodus with row of simple setae on distal half of superior margin. Dactyl length subequal to, or only slightly less than propodal length; with small, blunt secondary ungui.

Pereiopods 4-6: Longer, more slender, and less setose than pereiopods 1-3; flattened on the anterior-posterior plane. Ischium superior margin with sparse long simple setae; posterior distal margin with studded-biserrate setae. Merus and carpus with short robust setae arranged in rows perpendicular to and extending around inferior margin onto posterior face. Carpus longer than wide. Propodus superior margin bare.

Pereiopod 7: Longer than pereiopod 6. Ischium width less than merus width; merus superior distal angle bearing long slender plumose setae, long slender distally serrate setae, and short robust acute setae. Carpus distal margin expanded, about 3 times as wide as proximal propodal width, slightly longer than wide. Propodus length subequal to carpus length, shorter than in preceding pereiopods.

Pleon: Of 5 free segments (plus pleotelson), first two or three loosely overlapped by pereionite 7; pleon more dorso-ventrally compressed than pereion; cuticle slightly less polished than pereion cuticle. Pleonites 1-4 with epimeres that are produced posteriorly and flared laterally; epimeres 2-4 with dense fringe of plumose setae on lateral margin; pleonite ventral flanges produced and visible, not hidden by dorsal epimeres; ventral flanges with ventral posterior angle rounded.

Pleopods: Rami with pms as figured. Peduncle of pleopods 1-4 with slender plumose coupling hooks and cluster of short plumose setae on distomedial angle. Pleopod 1 peduncle subquadrate, slightly wider than long, with five coupling hooks; endopod narrow, about one-half exopod width; exopod large and circular. Pleopod 2 peduncle with five coupling hooks; endopod slightly more narrow than exopod; appendix masculana arising sub-basally on endopod, broad and straight, of relatively constant width, narrowing abruptly to a point, apex cuticle slightly more sclerotized; reaching the distal margin of exopod. Pleopods 3 and 4 with peduncle wider than long, exopod larger than endopod; pleopod 4 exopod with incomplete transverse suture. Pleopod 5 peduncle reduced, without coupling hooks; endopod with large proximomedial lobe, incomplete transverse suture, without pms.

Uropod: Peduncle medial margin produced distally to level of endopodal notch, distally acute, with 3 long plumose setae at apex; peduncle lateral margin with row of plumose setae, curving ventrally onto distal margin. Endopod distally truncate, distal margin with pms and 4 short robust setae of relatively equal size; apex with cluster of long simple setae, much longer than other marginal setae; with deep notch in distolateral margin bearing a short palmate seta inside, and a short robust seta lateral to the notch. Exopod shorter than endopod, not reaching the endopod notch, flat, with lateral margins convex, peltate; with pms on lateral and medial margins; distal medial margin with 2 small robust setae; apex with a small robust seta and cluster of very long simple setae.

Pleotelson: Dorsal surface flat, without setae, tubercles, pits or ridges; posterior margin narrow, slightly subacute; with pms and 6 very small robust setae.

Variation: Males and females are similar, although the two males examined have the pereional segments more loosely articulated. Length/width ratio of body (both sexes) varies from 4.5 to 5.75. Antennule flagellar articles, including the first, appear wider in females; flagellar article counts range from 8 to 12. Antenna flagellum of 9-11 articles. Maxilliped endites with 1-2 coupling hooks; additional cuticular bumps on endite present in 2 males, not present in the females examined. Uropod endopod distal margin with 4-7 robust setae. Pleotelson distal margin with 4-6 small robust setae.

Etymology: The trivial name *tricarinata* is a Latin derived word referring to the three transverse carinae, or ridges on the cephalon.

Remarks: While a generic revision is forthcoming, this species can be confidently placed in *Politolana* by the combination of diagnostic characters provided by Bruce (1981), Wetzer et al. (1987), and Kensley & Schotte (1989). However, the proportions of the antennal peduncle articles of *P. tricarinata* differ from the proportions given in the above diagnoses. Characters of particular utility for placing this species within *Politolana* are: a long, polished, unornamented body form; narrow frontal lamina; uropod endopod with disto-medial emargination (although the degree of emargination may vary with age); pereiopods 1-3 with the superior distal angles of the ischium and merus produced.

P. tricarinata can be distinguished from all other species of *Politolana* by the combination of characters provided in the diagnosis. The third carina, or transverse cuticular ridge on the cephalon is an autapomorphy of this species. Among the species of *Politolana*, *P. tricarinata* is also unique in having studded-biserrate setae on the postero-distal margin of the ischium on the fourth pereiopod. These setae occur on pereiopods 5-7 of several other species, but are absent on the fourth pereiopod. *P. tricarinata* can be easily distinguished from the only other South American *Politolana* species, *P. eximia*, by its short, broad, uropod exopods (about 2.3 times longer than wide) and short antennae reaching the middle of the first pereionite. *P. tricarinata* is quite similar to *P. wickstenae* in body form, being long and narrow with loosely articulated pereionites. However, the absence of eyes, the longer antennae, and the slender appendix masculina in the latter clearly distinguishes these two species.

In addition to the holotype and paratypes, a specimen (USNM 243773) from the gut contents of a dolphin (*Pontoporia blainvillei*) was also examined. The dolphin was collected off the coast of Uruguay, though this locality could be a significant distance from where the isopod was ingested. This specimen agrees with the species diagnosis with the exception of the transverse ridge on the cephalon between the frontal margin and the interocular furrow, which it apparently lacks. However, the absence of this ridge could be

due to the partially digested condition of the specimen. Because of the above uncertainties, this specimen should not be considered a part of the type series.

Distribution: *P. tricarinata* is known from the type locality and from the São Sebastião coast, south of Ubatuba. Specimens were collected only on the inner shelf, from 15 m to 48 m depth, on sandy bottoms where medium and fine grains predominate, in water temperatures of 16°-22°C. These isopods were present in relatively low numbers, generally from 1 to 5 individuals per 0.1 square meter, in approximately 25% (34 of 138) of the van Veen grab and rectangular dredge samples collected in this region.

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