

DISTRIBUTION AND MORPHOLOGY OF THE GIANT ISOPODS
Bathynomus giganteus AND *Bathynomus miyarei* (FLABELLIFERA,
 CIROLANIDAE) OFF SOUTHERN BRAZIL

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The distribution and morphology of the giant isopods *Bathynomus giganteus* and *B. miyarei* were investigated, based on analysis of 284 specimens (144 and 140, respectively), collected between May 1994 and December 1996, all on the continental slope off southern Brazil (250-700 m). Distinctive characters and the body length-weight relationship for both species are shown.

A distribuição e morfologia dos isópodos-gigantes *Bathynomus giganteus* e *B. miyarei* foram pesquisados com base na análise de 284 espécimes (144 e 140, respectivamente), coletados entre maio de 1994 e dezembro de 1996, todos sobre o talude continental do sul do Brasil (250-700 m). Caracteres distintivos e a relação peso-comprimento de ambas espécies são apresentadas.

Bathynomus giganteus A. Milne Edwards, 1879 is the largest isopod known to date (approximately 40 cm in length), which inhabits the deep-sea waters, mainly on muddy bottoms at depths between 310 and 2140 m. The species has been widely reported (Milne Edwards, 1879a, 1879b; Agassiz, 1888; Wood-Mason & Alcock, 1891; Bouvier, 1901a, 1901b; Hansen, 1903; Boone, 1927; Schmitt, 1930, 1931; Nierstrasz, 1931; Bullis & Thompson, 1965; Lemos de Castro, 1978; Takeda, 1983; Briones-Fourzán & Lozano-Alvarez, 1991; Soong, 1992; Vieira, 1997) and is found in three regions: (1) western Atlantic Ocean, from the Gulf of Mexico and Caribbean Sea down to southern Brazil; (2) northwestern Indian Ocean, southeast coast of Arabia, Laccadive Sea and Bay of Bengal; and (3) northwestern Pacific Ocean, off Taiwan (Holthuis & Mikulka, 1972; Lemos de Castro, 1978; Soong, 1992; Vieira, 1997).

Bathynomus miyarei Lemos de Castro, 1978, smaller than *B. giganteus* (approximately 28 cm in length), is the only other species also found in the western Atlantic, and it has been reported off northeastern and southern Brazil. This species is only known through material used in the original description: holotype and two paratypes, 195-280 mm BL, off the north coast of the Rio Grande do Sul State, southern Brazil, 280 m depth; two specimens, 210-265 mm BL, from the coast of Acaraú, off Ceará State, northeastern Brazil, 80 m depth; and one specimen, 170 mm BL, collected off Natal, Rio Grande do Norte State, northeastern Brazil, 22 m depth (Lemos de Castro, 1978).

During research and fishing cruises off southern Brazil, both species were trapped on the continental slope, at depths between 250 and 700 m. The collection of hundreds of specimens enabled us to analyze the distributional and morphological aspects of these remarkable species.

MATERIAL AND METHODS

Specimens of *B. giganteus* and *B. miyarei* were collected from various sampling localities on the continental slope off southern Brazil (Tab. 1, Fig. 1), during research cruises of the RV "Diadorim" and mainly, during the experimental fishing of the deep-sea crab *Chaceon ramosae*, on board of the FV "Iporanga".

The methods were very similar with those described by Briones-Fourzán & Lozano-Alvarez (1991). Specimens were obtained by means of circular traps (RV "Diadorim") and rectangular traps (FV "Iporanga"), both with an entrance in one side and no escape vents. Traps were baited with fishes and squids. The isopods were cooled on board and later thawed for analysis. The specimens were weighed (Wt) in grams, using digital scales, and measured with an ichthyometer from the tip of the head to the end of the median spine in the telson (body length, BL). All the material was preserved in 70% alcohol and deposited in the Museu Oceanográfico do Vale do Itajaí - MOVI (Itajaí, Brazil). Species were identified according to Lemos de Castro (1978) and Soong (1992).

Table 1. Collection data of *B. giganteus* and *B. miyarei* trapped off southern Brazil.

Station	Date	Position	Depth (m)	<i>B. giganteus</i>	MOVI coll. number	<i>B. miyarei</i>	MOVI coll. number
1	14 May 1994	30°23'S, 48°12'W	250	1	02741		
2	19 Nov 1994	30°15'S, 47°55'W	400	1	02742		
3	04 Apr 1995	26°10'88"S, 45°42'90"W	600-700	56	04665-04720	3	04721-04723
4	17-22 Apr 1995	29°15'42" - 30°06'44"S, 47°48'65" - 47°54'15"W	425-630	28	04732-04759	128	04760-04887
5	10 Dec 1996	28°34'01"S, 47°01'32"W	490	3	06012-06014	3	06015-06017
6	11 Dec 1996	28°26'04"S, 46°56'50"W	530	57	05950-06006	5	06007-06011

RESULTS AND DISCUSSION

A total of 284 isopods were collected, 144 of which were *B. giganteus* and 140 *B. miyarei*. They were collected on the continental slope off southern Brazil at six sampling stations (Tab. 1, Fig. 1). At four stations (3, 4, 5, and 6) both species were collected together, showing a sympatric distribution in that region.

Bathynomus giganteus was collected at depths from 250-700 m, enlarging the known vertical distribution range. *Bathynomus miyarei* was found at depths from 425-700 m, but has also been reported off southern Brazil at 280 m (Lemos de Castro, 1978). The finding of one specimen at 22 m and other two at 80 m depth off northeastern Brazil is apparently unusual.

Of 144 specimens of *B. giganteus*, 31.9% were males and 68.1% females (sex ratio 0.47:1), and of 140 specimens of *B. miyarei*, 57.1% were males and 42.9% females (sex ratio 1.33:1). A length-frequency for males and females of both species are given in the Figure 2.

A body length-weight relationship using data from 103 specimens of *B. giganteus* and 140 specimens of *B. miyarei* was obtained (Fig. 3). The largest specimen

of *B. giganteus* obtained in this study was a male 421 mm BL, the largest isopod recorded in the literature. It is comparable with the 365 mm BL specimen from the Yucatan Peninsula (Briones-Fourzán & Lozano-Alvarez, 1991) and specimens of 225-375 mm BL reported by Chamberlain *et al.* (1986). The largest specimen of *B. miyarei* was a male 279 mm BL, which falls within the range reported in the original description, 170-280 mm BL (Lemos de Castro, 1978).

Despite the difference in the maximum body length between the two species (Fig. 4), they are very similar in their external morphology. However, *B. giganteus* can be distinguished from *B. miyarei* mainly by the number of spines on the posterior margin of the telson (10-15, average 12.1 vs. 8-11, average 9.3) and by the shape of the distal margin of the exopod, which is longer than the proximal margin in *B. miyarei* (Fig. 5). Sexual dimorphism was not observed in the number of spines on the telson (Tab. 2). In the original description of *B. miyarei* one body segment has been omitted (Lemos de Castro, 1978: 38, fig. 1).

A teratogenic specimen of *B. miyarei*, male, 135 mm BL, 85 g (MOVI 04866), has an additional atrophied right uropod over the telson (Fig. 6).

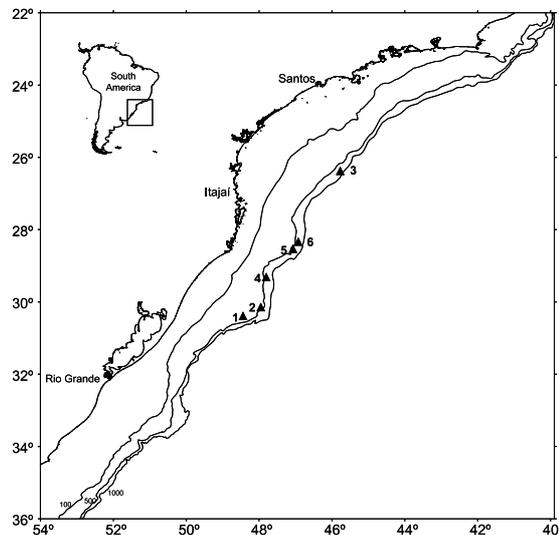


Figure 1. Localities where specimens of *Bathynomus giganteus* (all stations) and *B. miyarei* (stations 3, 4, 5, and 6) were collected.

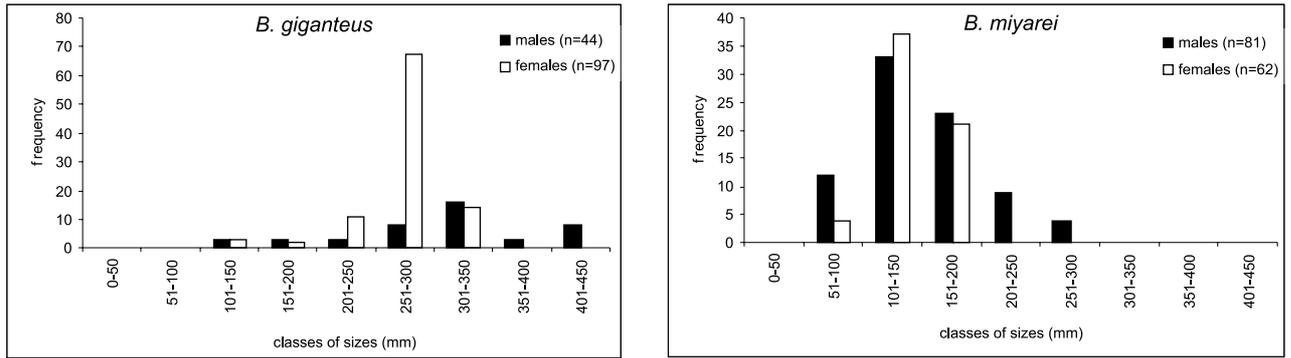


Figure 2. Frequency distribution of size by sex of *Bathynomus giganteus* and *B. miyarei*.

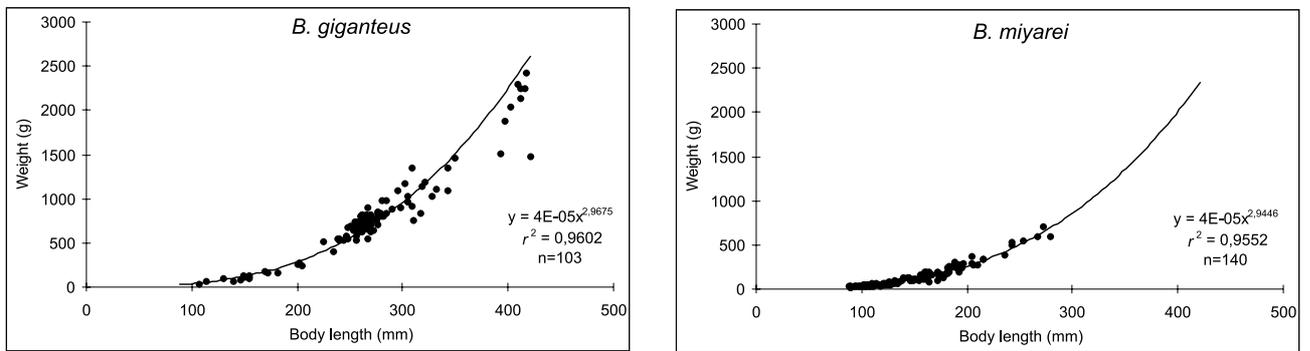


Figure 3. Body length-weight relationship for *B. giganteus* and *B. miyarei* from off southern Brazil.

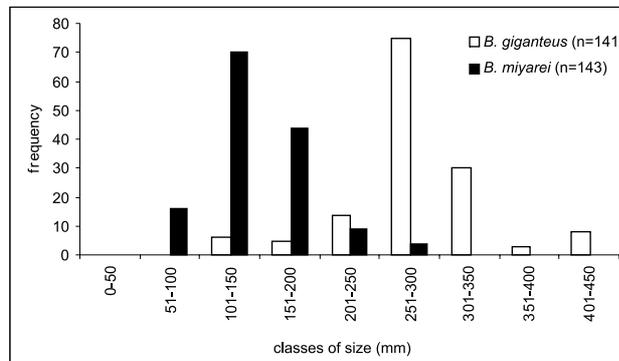


Figure 4. Frequency distribution of size by species of *Bathynomus giganteus* and *B. miyarei*.

Table 2. Number of spines on the telson of males and females of *B. giganteus* and *B. miyarei*.

Species	Sex	8	9	10	11	12	13	14	15	n	x	σ
<i>B. giganteus</i>	male				20	3	16	1	1	41	12.0	1.1
	female			1	33	16	42	1	2	95	12.2	1.0
<i>B. miyarei</i>	male	3	58	8	8	1				78	9.3	0.8
	female	1	45	7	4					57	9.3	0.6

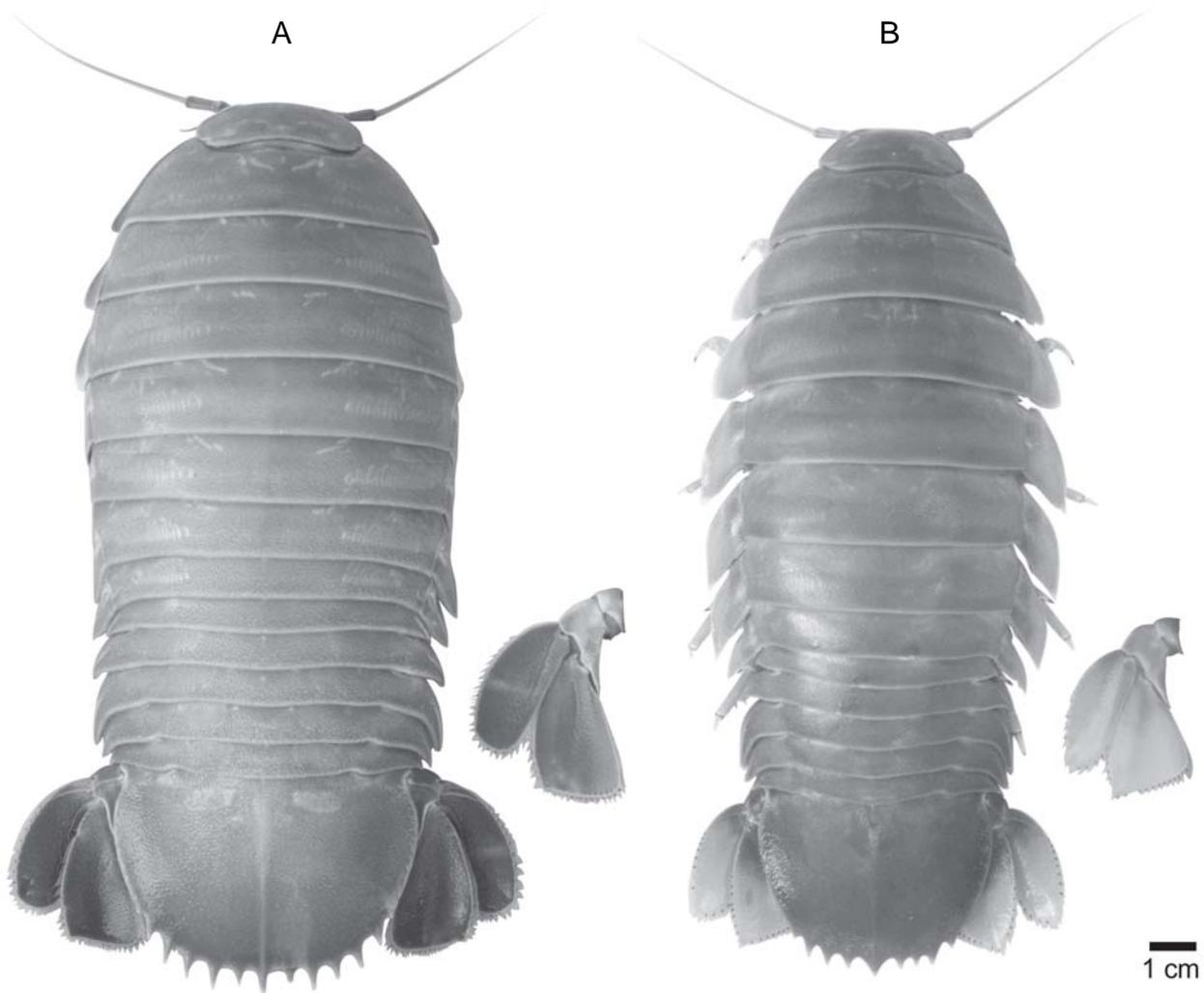


Figure 5. Dorsal view of (A) *Bathynomus giganteus* and (B) *B. miyarei* with ventral view of their respective uropods.

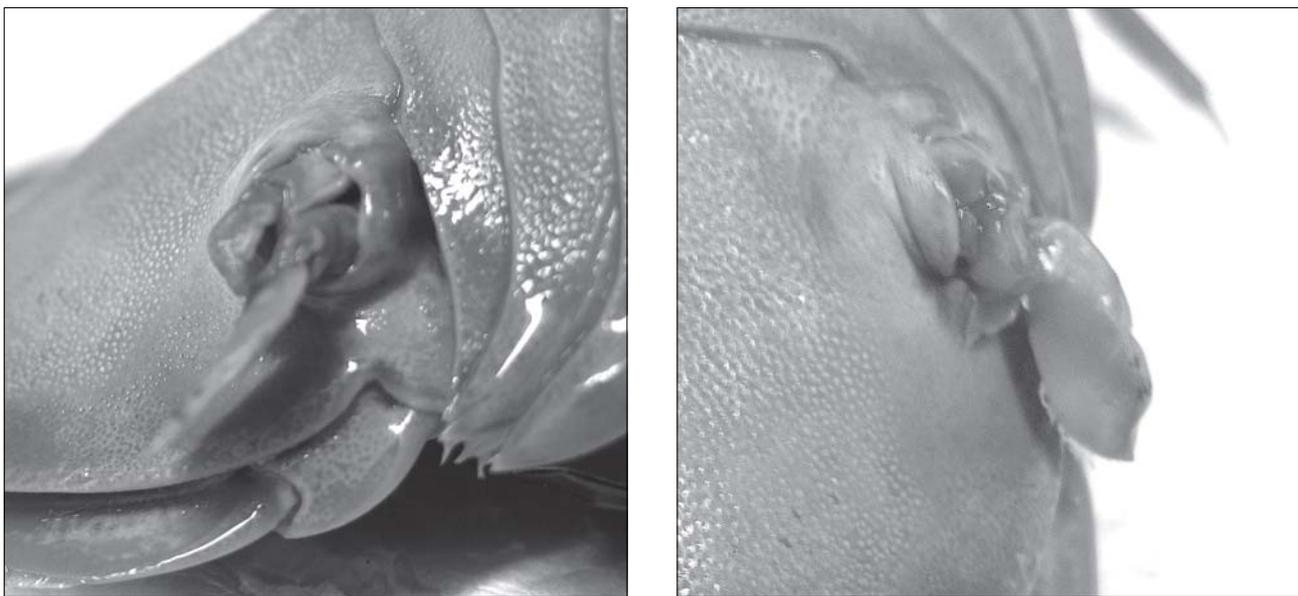


Figure 6. Teratogenic specimen of *B. miyarei*, male, 135 mm BL, 85 g (MOVI04866), with an additional atrophied right uropod over the telson.

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