



A NEW SPECIES OF *MONOLIROPUS* MAYER, 1903
(AMPHIPODA, CAPRELLIDEA) FROM GUANABARA BAY, RJ, BRAZIL¹

(With 4 figures)

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ABSTRACT: *Monoliropus enodis* sp.nov. is described based on specimens collected from Guanabara Bay, Brazil. It can be distinguished from the other species of the genus mainly by the totally smooth body and a distal pointed process on article 3 of maxilliped palp. This new species represents a new record of this genus for the Atlantic Ocean. A key and geographic distribution of *Monoliropus* species are provided.

Key words: *Monoliropus*, new species, Brazil, Protellidae.

RESUMO: Nova espécie de *Monoliropus* Mayer, 1903 (Amphipoda, Protellidae) da Baía de Guanabara, RJ, Brasil. *Monoliropus enodis* sp.nov. é descrita com base em espécimes proveniente da Baía de Guanabara, Brasil. Diferenciada das outras espécies do gênero principalmente por apresentar o corpo totalmente liso e um processo distal no artigo 3 do palpo do maxilípede. Esta nova espécie representa um novo registro desse gênero para o oceano Atlântico. Uma chave de identificação e a distribuição geográfica das espécies de *Monoliropus* são apresentadas.

Palavras-chave: *Monoliropus*, espécie nova, Brasil, Protellidae.

INTRODUCTION

The genus *Monoliropus* Mayer, 1903 comprises three species: *M. agilis* Mayer, 1903, *M. falcimanus* Mayer, 1904, and *M. tener* Arimoto, 1968. The distribution of *Monoliropus*, based mainly on records of original descriptions, were restricted to the Indo-Pacific (MAYER, 1903; 1904; ARIMOTO; 1968; 1976). *Monoliropus* was described initially as a monotypic genus within Caprellidae (MAYER, 1903). LAUBITZ (1993) revised the Caprellidea classification, dividing this taxon in eight families; *Monoliropus* was allocated within the Protellidae.

Fourteen species of caprellids distributed in six genera within five families are known from the Brazilian fauna: Caprellidae (*Caprella*, six spp.), Caprellinoididae (*Falotritella*, one sp.), Pariambidae (*Hemiaegina*, one sp.; *Paracaprella*, three spp.), Phtisicidae (*Phtisica*, two spp.), and Protellidae (*Orthoprotella*, one sp.) (SEREJO, 1997; 1998; WAKABARA & SEREJO, 1998). The new species represents a new record of this genus not only from the Brazilian coast but also from the Atlantic Ocean. Although caprellids are

commonly found clinging on different biological substrates, the new species was collected from a sand bottom of a shelter beach in Guanabara Bay. The geographic distribution and a key for the *Monoliropus* species are given.

SYSTEMATICS

Family Protellidae McCain, 1970

Diagnosis – Antenna 2 with flagellum 2-articulate, spines at distal portion. Mandible with incisor 5-toothed; left lacinia 5-toothed, right lacinia complexly toothed or serrate; setal row with 2 setae on right mandible and 3 setae on left mandible; molar and molar flake present; palp 3-articulate, usually with 1+x+y+1 apical setae. Maxilla 1 with 7 dentate spiniform setae on outer lobe; palp with few spines. Maxilliped outer plate larger than inner; inner plate apex with plumose setae and 1(?) spine. Lower lip with inner lobes conspicuous. Gnathopod 1 propodus triangular, setose, dactyl margin scalloped; palm defined by single spine, serrate. Pereopods 3-4 greatly reduced; pereopod 5 usually normal but small; pereopods 6-7 may have spines on

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propodus. Abdomen unsegmented; appendages present; genital papillae well developed (emended from LAUBITZ, 1993).

Genus *Monoliropus* Mayer, 1903

Diagnosis – Flagellum of antenna 2, 2-articulate. Pereopods 3 and 4, 1-articulate. Pereopod 5, 6-articulate. Male abdomen with a pair of appendages bi-articulate and a pair of lobes; female with a pair of lobes (from ARIMOTO, 1976).

Type species – *Monoliropus agilis* Mayer, 1903 (by monotypy).

Monoliropus enodis sp. nov.
(Figs.1-3)

Material examined – Praia da Urca, Guanabara Bay,

RIO DE JANEIRO, BRAZIL, holotype, 1♂, 5.6mm, P.Paiva and M.C.Rayol colls., 05/XII/2001, from a sandy bottom (5-7m), MNRJ 16695. Paratypes, same locality, 36♂ and 30♀, MNRJ 16696.

Etymology – the name of the species refers to the smooth body (from the Latin *enodis*, without knots, smooth).

Diagnosis – Body smooth. Article 3 of maxilliped palp with distinct process. Male gnathopod 2 palm straight, with two processes, one medial and conical, and other distal and obtuse.

Description – Holotype: ♂, 5.6mm. Body (Fig.1A) long and smooth. Head without dorsal projections; eyes round. Pereonite 2 slightly shorter than pereonite 3 and 5. Pereonites 6 and 7 not fused. Antenna 1 (Fig.1A) about 1/3 of body

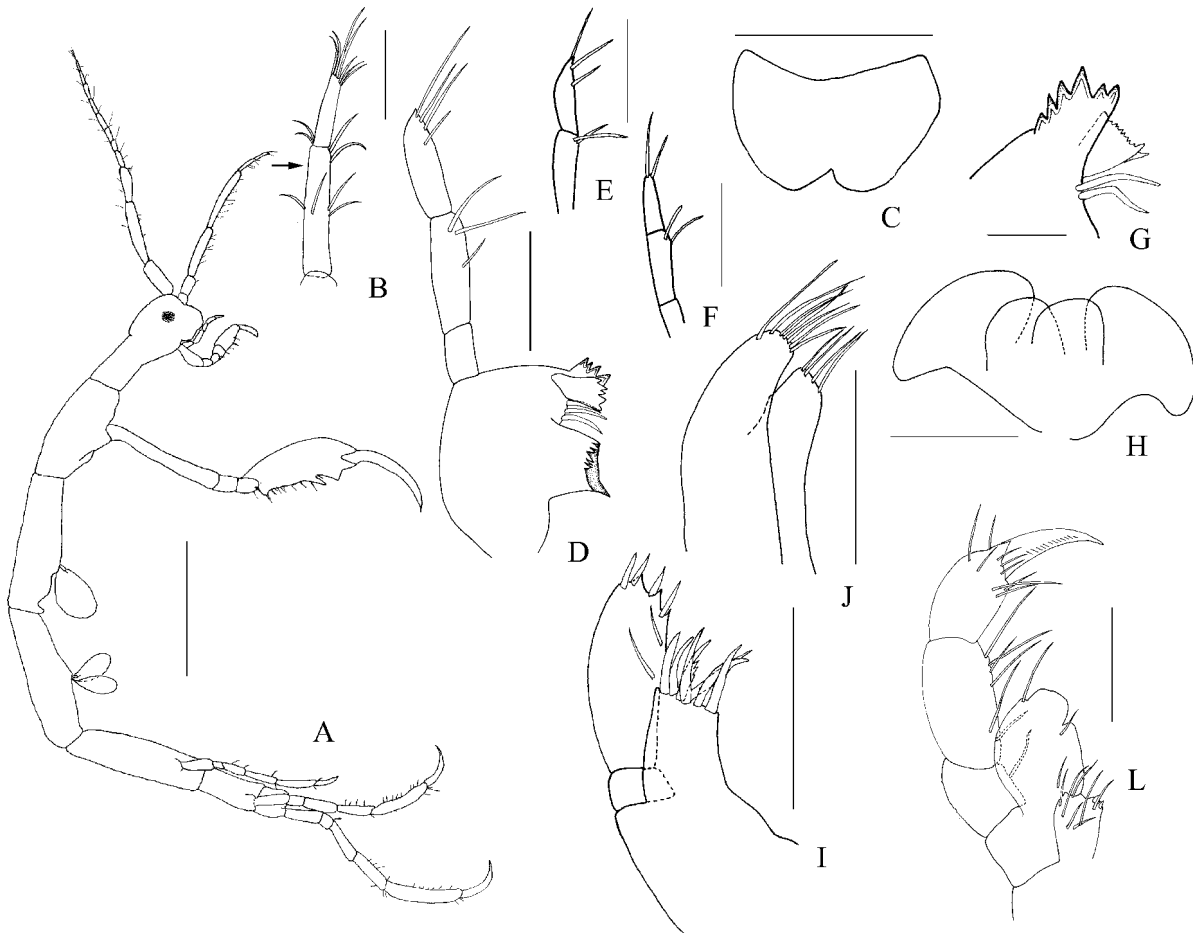


Fig.1- *Monoliropus enodis* sp.nov. Holotype, ♂, 5.6mm, MNRJ 16695 – (A) habitus; (B) flagellum of antenna 2; (D) left mandible; (G) right mandible. Paratypes, MNRJ 16696 – ♂, 4.4mm: (C) lower lip, (H) upper lip; ♀, 4.5mm: (E) distal segment of mandibular palp; ♀, 5.1mm: (F) distal segment of mandibular palp; ♂, 5.8mm: (I) maxilla 1, (J) maxilla 2, (L) maxilliped. Scale bars: A=1mm; B-D, G-L=0.1mm; E-F=0.2mm.

length; peduncle article 2 longer than articles 1 and 3; flagellum with 8 articles. Antenna 2 (Fig. 1A-B) about 2/3 of antenna 1; peduncle article 5 slender and longer than others; flagellum with 2 articles. Mandibles (Fig. 1D-G), molar triturative; palp 3-articulate, setal formula of terminal article 1-x-1 (for adults); left mandible (Fig. 1D), lacinia mobilis 5-toothed; spine row with 3 spines; right mandible (Fig. 1G), lacinia mobilis serrate, spine row with 2 spines. Maxilla 1 (Fig. 1I) without inner lobe; outer lobe rectangular, with 7 dentate spines on apical margin; palp 2-articulate; distal article with 4 apical spines and 2 facial setae. Maxilla 2 (Fig. 1J), inner lobe smaller than outer lobe, with 4 apical setae; outer lobe with 7 apical setae. Maxilliped (Fig. 1L), inner lobe about 1/3 length of outer lobe, distal margin weakly dentate with 2

robust spines; inner margin of outer lobe with a medio distal notch; palp article 3 with a distal pointed process apically.

Gnathopod 1 (Fig. 2A), palm crenulated, with a row of submarginal setae; dactylus dentate on inner margin. Gnathopod 2 (Fig. 2B) slender, palm setose, with a proximal spine, and two processes, one medial conical, and other distal and obtuse; dactylus smooth, not fitting palm. Gills (Fig. 2C) elliptical, present on pereonites 3-4. Pereopods 3 and 4 (Fig. 2C) reduced and 1-articulate. Pereopods 5-7 (Fig. 2D-F), 6-articulate. Pereopod 5, propodus lacking locking spine; pereopods 6-7, propodus with an acute and weakly dentate proximal locking spine. Abdomen (Fig. 3A), with one pair of appendages bi-articulate, with marginal setae and a pair of lobes.

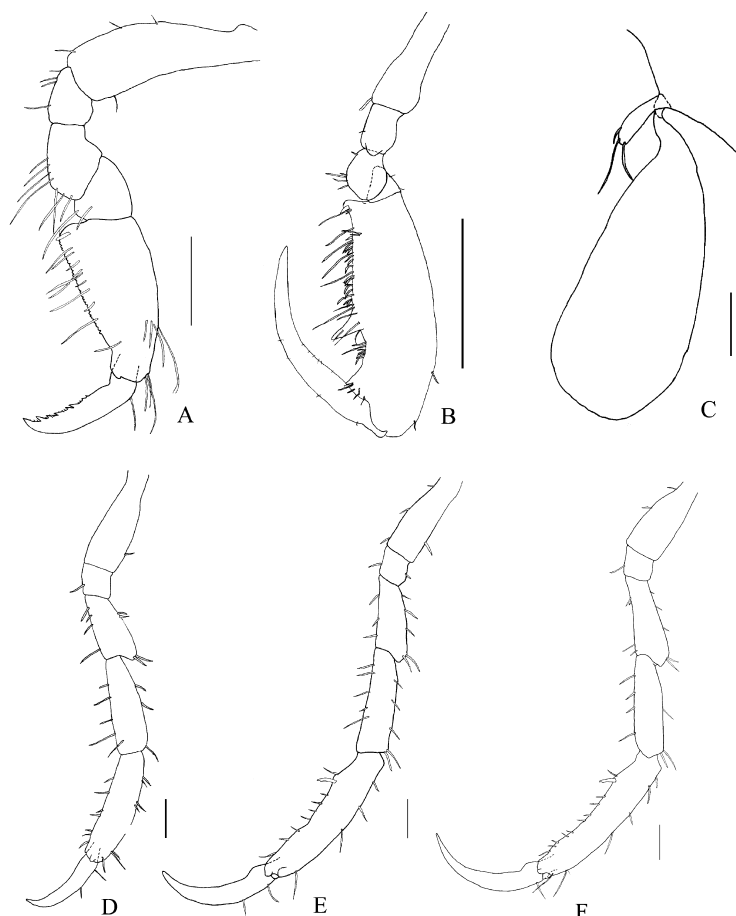


Fig. 2- *Monoliropus enodis* sp. nov. Holotype, ♂, 5.6mm, MNRJ 16695 – (A) gnathopod 1; (B) gnathopod 2; (C) pereopod 4 and branchiae; (D-F) pereopods 5-7. Scale bars: A, C-F=0.1mm; B=0.3mm.

♀, 4.7mm. Gnathopod 2 (Fig.3B), propodus wider and shorter than that of male, with medial and distal processes not so developed. Abdomen (Fig.3C) lacking appendages, with a pair of lobes.

Variation – The setal formula of terminal segment of mandibular palp varies in some specimens, being 1-2-1 in the male holotype; 1-1-1 in the female with 4.5mm or 1-1 in the female with 5.1mm (Fig.1E-F).

Ecology – *Monoliropus enodis* sp.nov. was found on sandy bottom from 5-7m depth. This species was collected throughout the year from June, 1997 to June, 1998 at Guanabara Bay, together with *Phtisica marina* Slabber, 1769, and other gammaridean species.

Remarks – *Monoliropus enodis* sp.nov. resembles *M. agilis* in the general aspect of the male gnathopod 2. However, the new species can be distinguished from

the later and the other species of the genus mainly by its totally smooth body. The other 3 species of the genus present dorsal and/or lateral tubercles or ridges on the body. The presence of a process on article 3 of maxilliped palp also differs *M. enodis* sp.nov. from *M. agilis* and *M. tener*, which lack this process (Tab.1). The setal formula on the terminal article of mandibular palp was initially proposed as a generic character by MAYER (1903). Later, ARIMOTO (1976) recognized that this character varied within the genus and even between different growth stages of *Monoliropus tener*. Different setal formula was also found in the different stages of *M. enodis* sp.nov., indicating the weakness of this character. Authors should be aware of this setal formula variation, presenting always the size of the observed specimens, so it can be known if the specimens are juveniles or adults.

TABLE 1

Differential characters of the species of *Monoliropus*

Character	<i>M. agilis</i> Mayer, 1903	<i>M. falcimanus</i> Mayer, 1904	<i>M. tener</i> Arimoto, 1968	<i>Monoliropus enodis</i> sp.nov.
Body ornamentation	Dorsally smooth; pereonites 2-4 on males and 2-3 on females with antero-lateral tubercles	Dorsally smooth, but pereonite 2 in males may bear a pair of very small tubercles anteriorly Pereonites 2-4 with 1 antero-lateral tubercle, which extends to a well developed ridge	Pereonite 2 with 3 pairs of dorsal tubercles and 1 or 2 lateral tubercles on male Pereonite 2 of female apparently smooth (ARIMOTO, 1968: 60, fig.1b)	Pereonite 2-7 dorsally and laterally smooth
Article 3 of maxilliped palp	lacking process	with antero-distal process	lacking process	with process
Setal formula on article 3 of mandibular palp	1-1-1	1-3-2 or 1-3-1	1-4-1	1-2-1 (with variation)
Adult male gnathopod 2	Propodus oval, palm straight	Propodus oval, palm strongly concave; juvenile males with palm straight	Propodus oval, palm slightly concave	Propodus oval, palm straight
Palm of male gnathopod 2	with process	with process	lacking process	with processes
Body Length	♂ : 4.0mm ♀ : 7.0mm	♂ : 8.5mm ♀ : 4.0mm	♂ : 13.0mm ♀ : 8mm	♂ : 5.6mm ♀ : 4.7mm

KEY TO *MONOLIROPUS* SPECIES

- 1a. Male and female pereonites 2-7 dorsally and laterally smooth *M. enodis* sp.nov.
 1b. Male and female pereonites 2-3 or 2-4 with dorsal and/or lateral tubercles 2
- 2a. Article 3 of maxilliped palp with process; adult male gnathopod 2 with palm strongly concave (juvenile males with palm straight) *M. falcimanus*
 2b. Article 3 of maxilliped palp lacking process; adult male gnathopod 2 with palm slightly concave or straight 3
- 3a. Palm of male gnathopod 2 slightly concave, lacking proximal process; pereonite 2 with 3 pairs of dorsal tubercles and 1 or 2 lateral tubercles; female pereonites 2-3 smooth *M. tener*
 3b. Palm of male gnathopod 2 straight, with proximal process; pereonites 2-4 with antero-lateral tubercles; female pereonites 2-3 with antero-lateral tubercles *M. agilis*

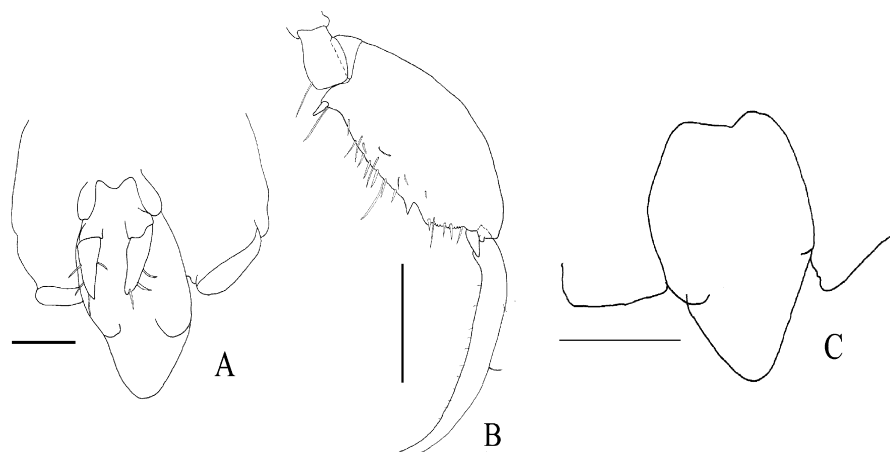


Fig.3- *Monoliropus enodis* sp.nov. Holotype, ♂, 5.6mm, MNRJ 16695 – (A) abdomen. Paratype, MNRJ 16696 – ♀, 4.7mm: (B) gnathopod 2, (C) abdomen. Scale bars: A-C=0.1mm; B=0.3mm.

Aspects of *Monoliropus* distribution (Fig.4)

Monoliropus was known only from the Indo-Pacific Ocean with records mainly from the type locality of the species. *Monoliropus falcimanus* was described from Sri Lanka, Indian Ocean (MAYER, 1904) and posteriorly collected from the South Arabian coast (BARNARD, 1937). *Monoliropus agilis* occurs between Koh Mesan and Cape Liant, Thailand (type locality) and in southeastern Australia (MAYER, 1903; McCAIN & STEINBERG, 1970). *Monoliropus tener* is recorded only from Tateyama Bay, Japan. With the finding of *M. enodis* sp.nov., the genus has its geographic distribution extended to the southwestern

Atlantic. The punctual distribution of the genus probably reflects the scarce number of studies within this group. More studies on caprellid systematics are required to a better understanding of the biogeographic patterns of this group around the world.

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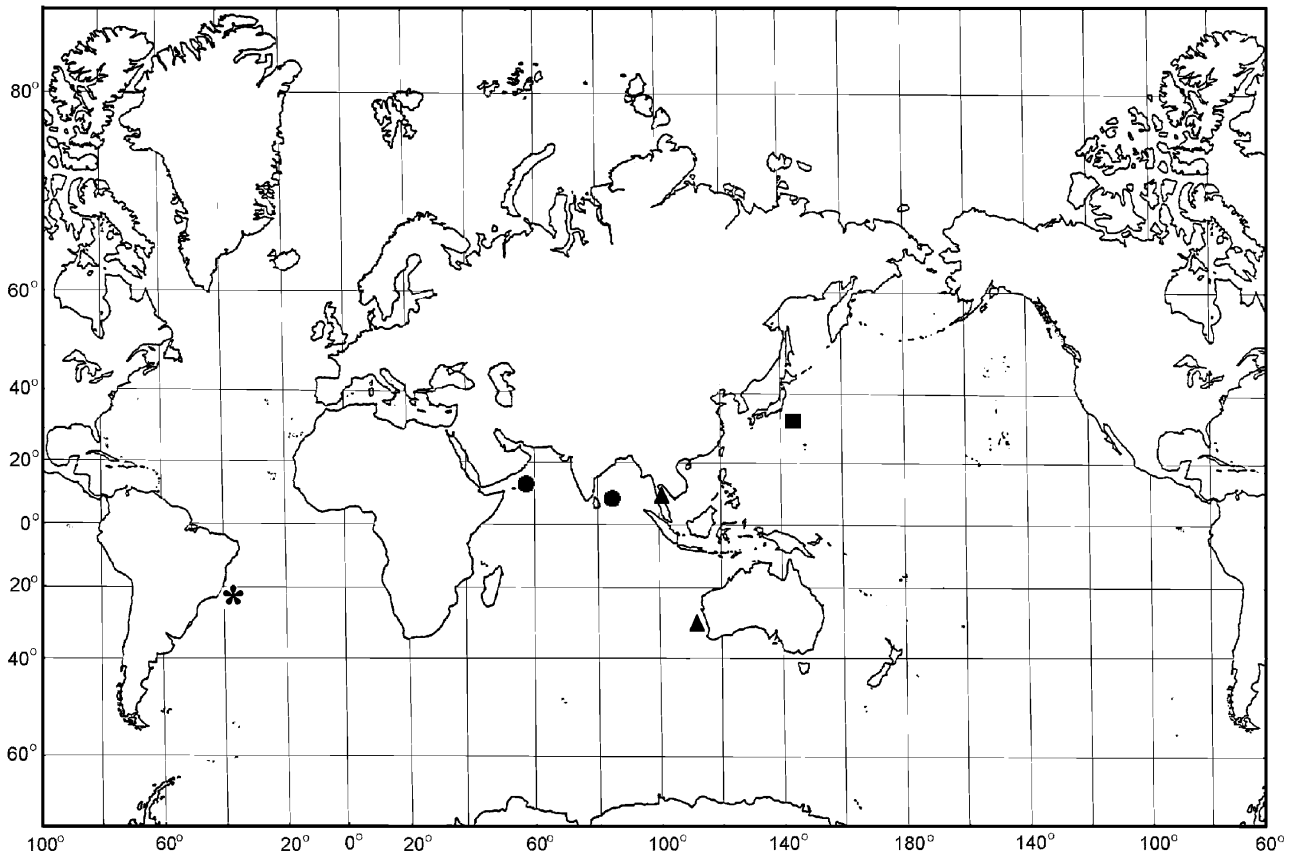


Fig.4- Geographic distribution of the species of *Monoliropus* – (▲) *M. agilis* Mayer, 1903; (●) *M. falcimanus* Mayer, 1904; (■), *M. tener* Arimoto, 1968; and (*), *M. enodis* sp.nov.

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