

*JANAIRA GRACILIS*, A NEW GENUS AND SPECIES OF JANIRID ISOPOD  
FROM BRAZIL <sup>1)</sup>

BY

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INTRODUCTION

A program is being conducted to study the behavior and life cycle of the common isopod species occurring on shallow sublittoral seaweeds found along the coast of State of São Paulo, Brazil (Moreira, 1973a, b). Among various species of algae, the brown *Sargassum cymosum* C. Agarth is one of the most widespread, reaching dense growths in some protected places (Joly, 1965).

The most important, isopod species found very numerous and all year round in this marine alga is a new genus and species of asellote isopod, whose description is given in the present paper. It is assigned to the family Janiridae sensu Wolff (1962).

*Janaira* gen. n.

**Diagnosis.** — Body without lateral projections. Head lacking a long rostrum. Eyes dorsal. Coxal plates visible in dorsal view on pereonites I-VII. Pleon composed of 1 free pleonite and a broad pleotelson. Antenna 1 with a 4-articulate peduncle, flagellum many-jointed. Antenna 2, peduncle 6-articulate, a squama on article 3, and a long, multi-articulated flagellum. Mandible with expanded, denticulate incisor process, setal row, and a well developed, subcylindrical molar process ending in truncate grinding apex; left mandible, in addition, with lacinia mobilis; mandibular palp 3-articulate, 2nd article with 4 serrate setae distally. Maxillipedal palp with 5 articles, first 3 articles expanded and broader than endite. Pereopod I not strongly prehensile, in both sexes when extended (dactylus stretched out) about as long as half the body, carpus devoid of distomarginal, dentiform projections, both carpus and propodus stouter in male than in female. Pereopod I ending in 2 claws, pereopods II to VII in 3 claws. Male pleopod 1, lateral margins of the terminal portion widely rounded, apex narrow, pointed and converging mid-distally, distal margin oblique, slightly convex, devoid of lobes, and bordered by short setae. Pleopod 3, endopod rectangular and with 3 distal, plumose setae, exopod narrow, elongate and with 1 apical simple seta, both rami uni-articulate. Pleopod 4, endopod large and broad, exopod much smaller, narrow

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and acutely pointed, both rami uni-articulate. Pleopod 5 expanded, uniramous. Uropods biramous, terminal, the two rami of unequal length.

Type species. — *Janaira gracilis* sp. n.

Etymology. — The generic name is derived from *Janira*, the name of the family genus type. *Janaira* is feminine.

Remarks. — *Janaira* gen. n. is characterized by a unique combination of features. The most important and useful diagnostic characteristics distinguishing the present new genus are: presence of visible coxal plates on pereonites I to VII, pereopod I shorter than body when extended, carpus of male pereopod I devoid of distal, dentiform projections, number of claws on pereopods I to VII, setal armament of the 2nd article of the mandibular palp, and markedly the morphology and structure of the pleopods.

Miller (1967) and especially in great detail Wolff (1962), thoroughly discussed the diagnostic characteristics of the family Janiridae and the relationships and features of the numerous genera assigned to the family. The provided diagnosis of *Janaira* gen. n. shows clearly that the genus fits nicely in the family Janiridae as defined by Wolff (1962).

Among the genera referred to the Janiridae (Wolff, 1962; Miller, 1967), only three seem more closely related to *Janaira* gen. n., viz., *Janira* Leach, 1814, *Bagatus* Nobili, 1906 and *Ianiropsis* G. O. Sars, 1899. The new genus appears more similar to *Bagatus* than to *Janira* or *Ianiropsis*.

It resembles *Bagatus* (in that genus the available figures and information about the number of claws and presence or absence of coxal plates are confusing) in the structure of the maxillipeds, overall shape of the male pleopod 1, particularly in the shape of its last portion, and both shape and structure of pleopods 3, 4 and 5 (Monod, 1933, 1961; Miller, 1941; Nordenstam, 1946; Amar, 1950). *Janaira* gen. n. differs strikingly from *Bagatus* chiefly in the number of pleonal segments (only one in *Bagatus*), and in the development of both carpus and propodus/dactylus of male pereopod I (in *Bagatus* they are highly dimorphic, the male carpus being strongly dilated and armed with pronounced dentiform, distal processes, while the propodus is stout and elongate, and the dactylus reduced and tipped with a few setae or with long, curved claws).

*Janaira* gen. n. resembles both *Janira* and *Ianiropsis* in the following main features: general shape of body, coxal plates visible in dorsal view on pereonites I to VII, number of segments composing the pleon, and pereopod I not displaying striking sexual dimorphism. It differs from *Janira* (Barnard, 1914; Holthuis, 1956; Wolff, 1962) by the maxillipedal palp having articles 2 and 3 more expanded than the endite, by having pereopod I with 2 and pereopods II to VII with 3 claws, and particularly by both the morphology of the apex of the male pleopod 1 (in *Janira* it is not expanded laterally, but shows, in a variable degree of development, 2 or 3 thick lobes directed posteriorly), and finally the shape and development of the exopod of pleopod 4 (in *Janira* it is usually large and expanded, and not narrow and acutely pointed as in *Janaira* gen. n.).

*Janaira* is similar to *Ianiropsis*, in addition to the features pointed out above, by the number of claws on the pereopods, and by pleopod 4 being composed of a small, pointed exopod. It is distinguished from *Ianiropsis* by the different setal armament of the article 2 of the mandibular palp, by having pereopod I much shorter than the body (in *Ianiropsis* as long as body), by the exopod of pleopod 3 being uni-articulate (in *Ianiropsis* it is 2-articulate, with the last article usually prominent), and by the markedly different shape of the terminal portion of the male pleopod 1, which in *Ianiropsis* is pronouncedly expanded laterally, narrowing to a pointed, usually minutely cleft apex, gently or abruptly directed posteriorly (Menzies, 1952; Kussakin, 1962).

### *Janaira gracilis* sp. n. (figs. 1-19)

Types. — Holotype, adult male, 2.6 mm long. Allotype, adult female, 2.3 mm in length. Paratypes, 8 adults males, from 2.3 to 2.8 mm long, and 8 adult females, from 2.0 to 2.5 mm long (3 males and 3 females of these paratypes deposited in the Zoological Museum, University of Copenhagen, Denmark). Type locality: Praia do Lamberto, Enseada do Flamengo, Ubatuba, São Paulo, Brazil; January 1972; shallow sublittoral, 0.5-1 meter depth, in large growth of *Sargassum cymosum* alongside the pier of the Base Norte, Instituto Oceanográfico, Universidade de São Paulo.

Further material. — Beside the selected types, more than 500 specimens in different growth stages were examined from the type locality.

Etymology. — The specific name is derived from the Latin word *gracilis*, and refers to the general aspect of the animal: thin and delicate.

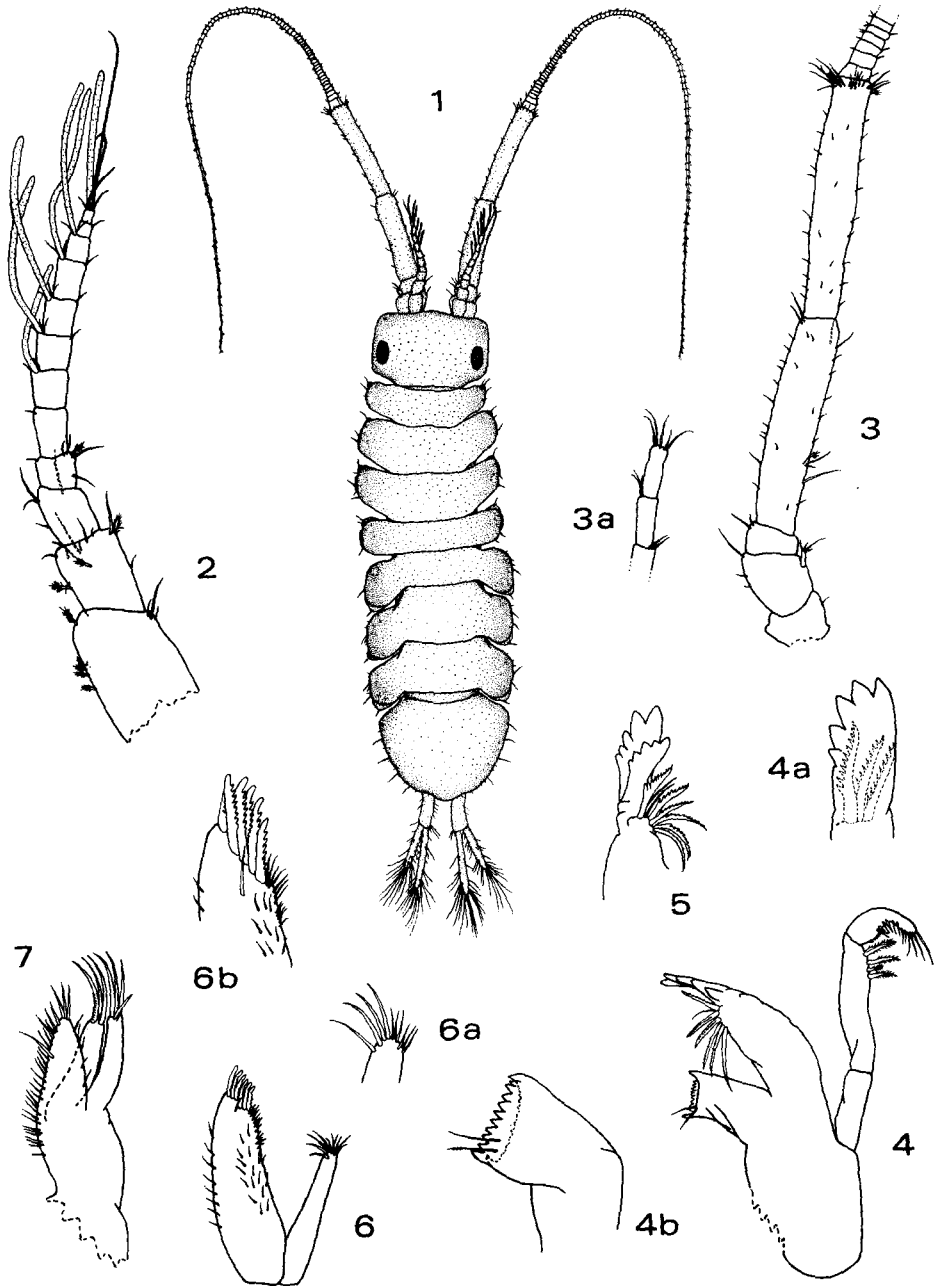
Description. — Holotype adult male (fig. 1). Body flattened, elongate, smooth, slightly calcified. Color whitish-yellow, sometimes of a vivid uniform orange; eyes reddish.

Head broader than long, frontal margin slightly convex at middle, anterolateral angles rounded, lateral margins straight and parallel; eyes oval, slightly prominent, submarginal.

Pereonite I with coxal plates placed at the anterolateral angles, those on pereonites II to IV laterally and anterolaterally, and those on pereonites V to VII at the posterolateral angles. Pereonite IV the narrowest, almost straight; pereonites I to III and V to VII, respectively, projecting anteriorly and posteriorly at the sides. Few scattered setae present on the lateral margins and on the coxal plates.

Pleon, first pleonite short, free. Pleotelson smooth, devoid of hooks, spines or acute angles, lateral margins widely convex and converging posteriorly, apically with a median, broad, rounded prominent convexity; anterolateral margins almost straight and converging midanteriorly, a distinct rounded angle between anterolateral and lateral margins. About 4 elongate setae at each lateral margin, and between them few scattered short setae.

Antenna 1 (fig. 2). Peduncle, article 1 the largest, with 3 broom setae on inner margin, 1 broom seta on inner distal angle and 3 setae on outer distal one. Article 2 with 3 broom setae, of which 1 placed on outer distal angle together with 2 small and 1 elongate seta; end margin with 1 elongate seta and few shorter ones placed submarginally. Article 3 about 1.3 times as long as second, and with a few simple



Figs. 1-7. *Janaira gracilis* sp. n., holotype adult male, 2.6 mm long. 1, body, dorsal; 2, antenna 1, right; 3, 3a, antenna 2, right, and apex of flagellum; 4, 4a-b, right mandible, incisor, and molar process; 5, left mandible, distal, showing lacinia mobilis and setal-row; 6, 6a-b, maxilla 1, right, apex of both inner and outer lobes; 7, maxilla 2, right.

setae on inner margin and 1 distally on the ventral side. Article 4 much shorter than 3rd, with 1 broom seta and few simple ones on outer distal angle. Flagellum composed of 8 articles; flagellar articles 2 to 6 and 8 bearing each 1 elongate aesthete on inner distal angle, that on last article terminal; article 7 devoid of aesthetes; last article bearing, additionally to the aesthete, one long simple seta and few shorter ones; last 2 flagellar articles of about the same length, and together slightly longer than the antepenultimate.

Antenna 2 (fig. 3). Very slender, length exceeding body length when stretched (fig. 1). Peduncle with both inner and outer margins, specially those of articles 5 and 6, bordered by delicate setae. Peduncle article 3 with a distinct squama near outer distal angle. Article 4 naked at the outer margin, with simple setae on inner distal angle. Article 5 about 0.9 times longer than article 6, and bearing 1 broom seta at the proximal third of inner margin. Article 6, margin bordered by many sub-distal simple setae and 2 or 3 broom setae. Flagellum extremely elongate, and composed of about 100 articles decreasing evenly in width distally; short, simple setae on inner and outer distal angles of flagellar articles; last 2 articles narrow, elongate, and of about the same length, the terminal 3 times longer than wide, ending abruptly in some simple setae (fig. 3a).

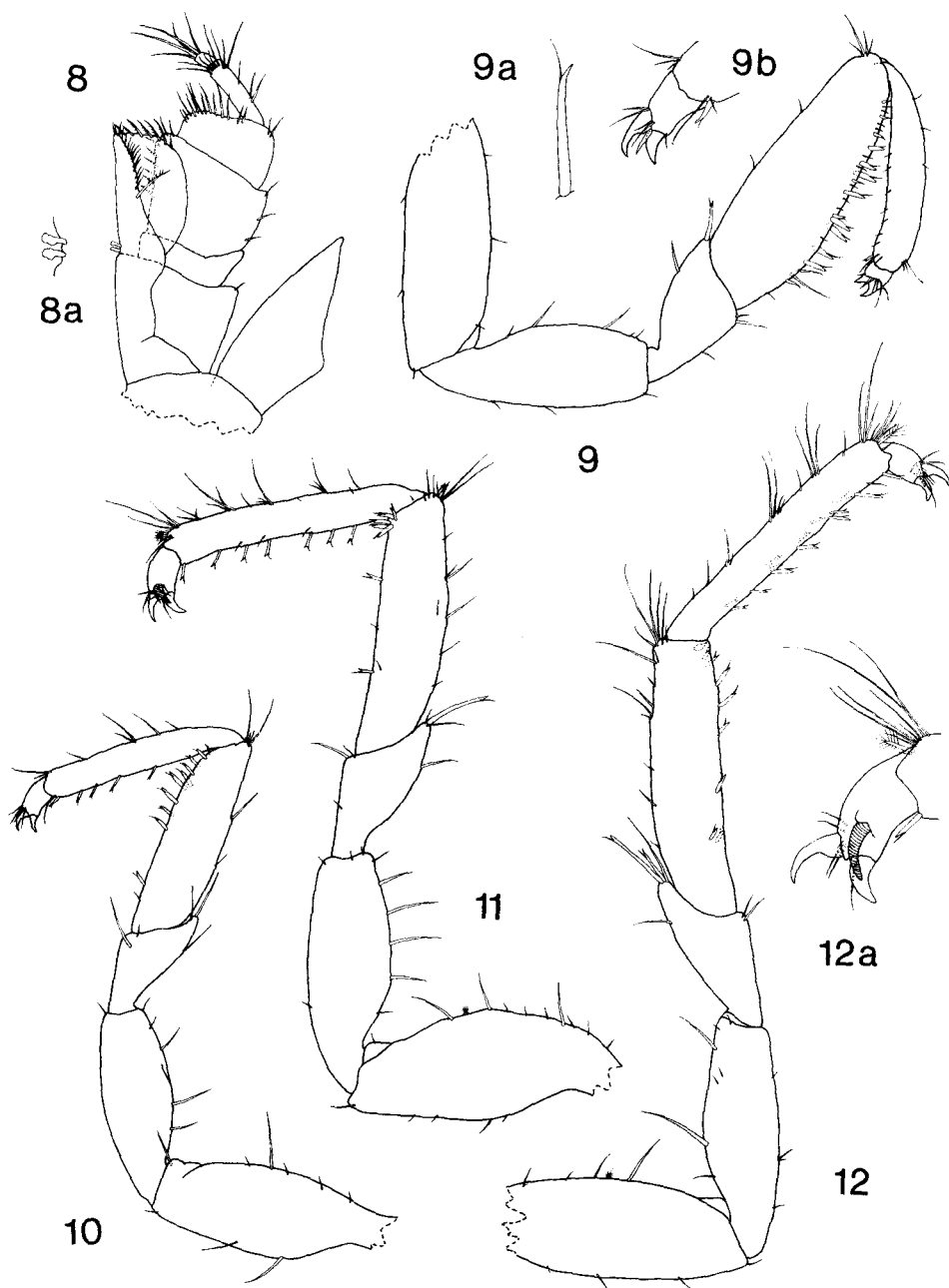
Right mandible (fig. 4). Incisive part with 5 well developed, distinct, broad teeth (fig. 4a). Lacinia mobilis absent. Setal-row with about 7 setae, of which 6 stout and serrated, and 1 bare and delicate. Molar process prominent, strong, grinding apex with many denticles and 2 elongate setae (fig. 4b). Palp of 3 articles, the 2nd of which is the longest; distal third of inner margin of 2nd article with 3 longer and 1 smaller, bipectinate, stout setae; last article broader proximally, at the medial part bearing short, fine setae, distally with elongate setae.

Left mandible (fig. 5). Morphologically similar to the right mandible. However, a well developed lacinia mobilis is present (fig. 5), with the distal margin denticulated, composed of 5 teeth. Setal row with 1 or 2 delicate bare setae and 6 serrated setae, of which those placed close to the lacinia mobilis are enlarged and more developed. Both molar process and incisor part similar in shape to those of right mandible.

Maxilla 1 (fig. 6). Inner lobe shorter and much narrower than outer lobe, apex with about 6 short and 4 larger setae (fig. 6a). Outer lobe with about 8 strongly denticulate apical spines (fig. 6b), a longitudinal row of setae along middle of outer margin, last two thirds of inner margin with short setae.

Maxilla 2 (fig. 7). Outer lobes with 3 (innermost lobe) and 4 (outermost lobe) setae. Inner lobe with a narrow, rounded-pointed apex, outer margin with scattered short setae, inner margin with many short and few elongate setae.

Maxilliped (fig. 8). Protopodite medially shorter than length of first 2 articles of palp together. Endite with 2 coupling hooks (fig. 8a). Epipod elongate, devoid of setae, not reaching distally level of rear margin of article 2 of palp, outer margin with a prominent, rounded angle, inner margin widely rounded. First 3 articles of palp subequal in width; articles 4 and 5 much narrower than



Figs. 8-12. *Janaira gracilis* sp. n. 8-9, 11-12, holotype adult male, 2.6 mm long; 10, paratype ovigerous female, 2.5 mm long. 8, 8a, maxilliped, right, and coupling hooks; 9, 9a-b, pereopod I, right, modified seta from ventral margin of carpus, and dactylus; 10, pereopod I, right; 11, pereopod II, right; 12, 12a, pereopod VII, right, and dactylus.

the preceding ones, and with elongate setae; article 5 bearing at the apex additionally to the simple setae, 2 stout, naked, elongate, slightly recurved setae.

Pereopod I (fig. 9) sub-chelate. Basis and ischium with few scattered short setae on both dorsal and ventral margins. Merus short, upper margin with 1 simple seta, and 1 elongate modified seta (fig. 9a) on protruding dorsodistal angle, 2 simple setae on ventrodistal angle. Carpus elongate, robust; upper rear angle with few setae; ventral margin bearing along length stout modified setae (fig. 9a), some of them paired, short stout setae and 1 elongate simple seta. Propodus slightly widened distally, upper and lower margins with short setae, those on the ventral margin regularly placed in a longitudinal row, lower distal angle with simple setae and 1 modified seta. Dactylus (fig. 9b) short, ending into 2 incurved claws and some setae, of which 1 is stouter, medially placed.

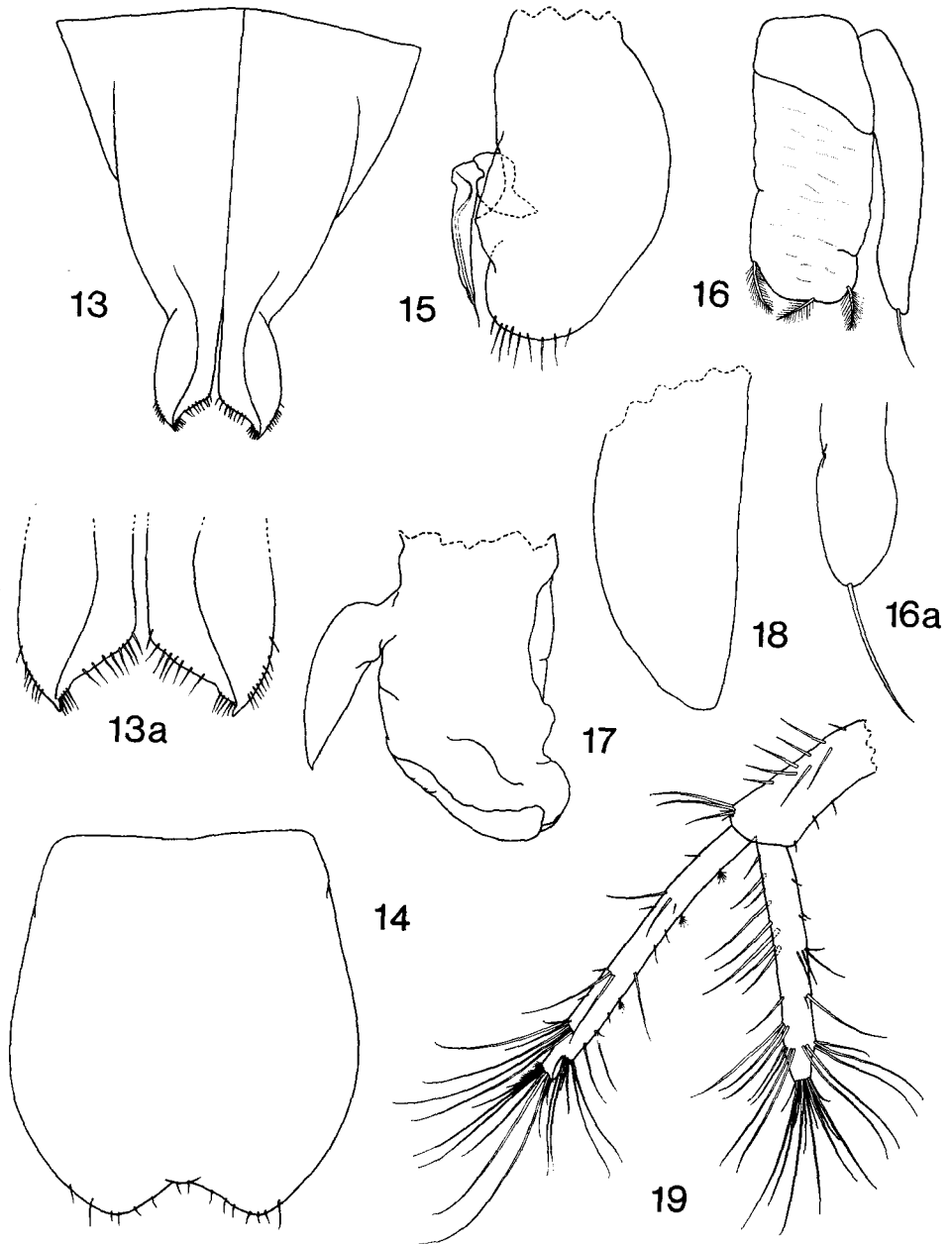
Pereopod II (fig. 11). Morphologically similar to pereopods III to VII, with all of them showing a dactylus ending in 3 stout claws and some simple setae. Both short and elongate setae on dorsal margin of basis and ischium. Merus with 2 setae and 1 elongate modified seta (fig. 9a) on protruding dorsodistal angle. Carpus with modified setae on ventral margin and ventrodistal angle, simple setae on upper margin and ventrodistal angle, which, in addition, bears 1 broom seta. Propodus narrower than carpus and of about the same length; upper margin with transverse rows of setae, ventral margin with 7 modified setae along its length, dorsodistal angle with 1 or 2 broom setae. Dactylus short, curved ventrally.

Pereopod VII (fig. 12). Basis and ischium both with few elongate setae along dorsal margin; ventral margin with few short setae. Protruding dorsodistal angle of merus with 2 elongate modified setae and 1 simple seta; lower rear angle with 2 short setae. Carpus elongate and stouter than propodus; dorsal margin and dorsodistal angle of carpus and propodus with both short and slender simple setae, of which many placed in transverse rows; additionally, upper distal angle of propodus with 1 broom seta; ventral margin of carpus and propodus with many modified setae along length. Dactylus short, curved, with the accessory claw distinctly striated (fig. 12a).

Pleopod 1 (fig. 13) broadest at base, grossly triangular until about three-fourths total length of limb, where it narrows, expanding afterwards. Outer lateral margins of the distal fourth of the pleopod curved, distally with about 7 to 9 short simple setae not placed close to apex. Distal portion not strikingly expanded laterally at apex, which is narrow, acute, deprived of setae, and abruptly directed posteriorly. Distal margin with a small, slightly rounded prominence close to the apex bearing 5 short setae, afterwards almost straight with about 8 short setae placed along length of margin (fig. 13a).

Pleopod 2 (fig. 15) devoid of setae, except at the widely rounded distal margin, which bears about 9 simple setae. Copulatory organ short, slightly curved inwards, tapering towards distal end.

Pleopod 3 (fig. 16). Exopod narrower at the distal portion, apex rounded (fig. 16a). Endopod broad, with the outer distal angle widely rounded.



Figs. 13-19. *Janaira gracilis* sp. n. 13, 15-19, holotype adult male, 2.6 mm long; 14, paratype ovigerous female, 2.5 mm long. 13, 13a, pleopods 1, and their apical portion; 14, operculum; 15, pleopod 2, left; 16, 16a, pleopod 3, left, and apex of its exopod; 17, pleopod 4, right; 18, pleopod 5, right; 19, uropod, right.



Pleopods 4 (fig. 17) and 5 (fig. 18) both devoid of setae. Pleopod 4, exopod outer margin broadly rounded, inner margin nearly straight. Pleopod 5 longer than pleopod 4, outer margin widely convex, inner straight, apex broad, pointedly rounded.

Uropods (fig. 19). Peduncle shorter than both exo- and endopod, about 1.9 times shorter than endopod; inner margin bordered by elongate setae, outer by a few short setae; inner distal angle with about 3 elongate and 2 short setae. Exopod narrow, about 1.3 times as long as endopod; elongate setae along inner margin, some of these placed in transverse rows, especially in the distal portion, which narrows slightly distally, apex ending in a tuft of long and short setae. Endopod narrower than exopod; inner margin of endopod less setose and bearing shorter setae than that of exopod; outer margin of endopod with sparse short setae and 3 transverse rows of elongate setae, those making up the distal row longer and more numerous; endopod apex ending in both elongate and short setae, 2 of which are of the broom type.

Adult female allotype. — The major differences from adult male are the following.

Body. Similar in shape and in color pattern to that of the male, but slightly smaller (males, 2.1 to 2.8 mm long; females, 1.9 to 2.4 mm).

Antenna 1. Flagellum composed of 6 articles.

Pereopod I (fig. 10). Like that of male, but with carpus distinctly less robust and with ventral margin less setose, bearing modified setae (fig. 9a). An additional distinction is found in the setal pattern of both the dorsal and ventral margins of the propodus, in the female the latter bears almost exclusively modified setae, which are absent in the male, except for a single one on the ventro-distal angle.

Pereopods II-VII. Setal armament composed of a smaller number of setae.

Operculum (= pleopod 2) (fig. 14) enlarged, slightly longer than wide, wider at its posterior half, lateral margins devoid of setae and broadly convex distally. End margin with a pronounced median concavity, strongly bilobed, lobes bordered by short setae; medial portion of concavity with a slightly rounded prominence bearing 2 setae.

Secondary sexual dimorphism is found mainly in pereopod I: that of the male being stouter and somewhat differently ornamented than that of the female.

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## RÉSUMÉ

Dans ce travail sont décrits un nouveau genre et une nouvelle espèce d'Isopode Asellote, *Janaira gracilis* gen. n. et sp. n., provenant de la zone littorale de la région centre-sud du Brésil.

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