

A new species of amphipod from the Brazilian coast, with redescription of *Hyale spinidactyla* Chevreux, 1925 (Crustacea, Amphipoda, Hyalidae)

Cristiana S. SEREJO

Museu Nacional/UFRJ
Departamento de Invertebrados
20940 040 Rio de Janeiro (Brazil)
csserejo@acd.ufrj.br

Serejo C. S. 2001. — A new species of amphipod from the Brazilian coast, with redescription of *Hyale spinidactyla* Chevreux, 1925 (Crustacea, Amphipoda, Hyalidae). *Zoosystema* 23 (3): 479-492.

ABSTRACT

Samples collected in the intertidal zone of the Brazilian coast, mainly on algae, provided material for the description of *Hyale youngi* n. sp. The new species is characterized by the presence of a large setae on dactylus of pereopods 3-7; the propodus posterior margin of pereopods 6-7 lacking setae; the two well-developed disto-lateral spines on peduncle of uropod 1; and four marginal spines on the peduncle of uropod 2. The syntype series of *Hyale spinidactyla* Chevreux, 1925 was examined and redescribed for comparison to *H. youngi* n. sp., and a lectotype designated. *Hyale youngi* n. sp. is part of the *Hyale spinidactyla* complex, which also includes *H. ramalhoi* Reid, 1939, *H. spinidactyla* Chevreux, 1925, and *H. spinidactyloides* Schellenberg, 1939. This complex is known only to the Atlantic Ocean and is characterized by the presence of a stout striate setae on the dactylus of pereopods 3-7. A key to the Brazilian species of *Hyale* is presented.

KEY WORDS

Crustacea,
Amphipoda,
Hyalidae,
Hyale,
Brazil,
new species.

RÉSUMÉ

Une nouvelle espèce des côtes brésiliennes, avec redescription de *Hyale spinidactyla* Chevreux, 1925 (Crustacea, Amphipoda, Hyalidae).

Des exemplaires récoltés à Rio de Janeiro, Brésil, principalement sur des algues, ont fourni le matériel pour la description de *Hyale youngi* n. sp. L'espèce est reconnaissable par sa grosse soie sur le dactyle des péréopodes 3-7, la marge postérieure du propode des péréopodes 6-7 sans soie, les deux épines disto-latérales bien développées sur le pédoncule de l'uropode 1 et la présence de quatre épines sur le pédoncule de l'uropode 2. La série de syntypes de *Hyale spinidactyla* Chevreux, 1925 a été examinée et revue, et un lectotype a été désigné. *Hyale youngi* n. sp. fait partie du complexe *Hyale spinidactyla*, qui comprend également *H. ramalhoi* Reid, 1939, *H. spinidactyla* Chevreux, 1925 et *H. spinidactyloides* Schellenberg, 1939. L'ensemble de ces espèces vit dans l'océan Atlantique et se caractérise par la présence d'une grosse soie striée sur les dactyles des péréopodes 3-7. Une clé pour les espèces brésiliennes de *Hyale* est présentée.

MOTS CLÉS

Crustacea,
Amphipoda,
Hyalidae,
Hyale,
Brésil,
nouvelle espèce.

INTRODUCTION

The genus *Hyale* Rathke, 1837 comprises about 80 species, and is predominantly associated with algae and mussel beds of the intertidal zone. The Brazilian hyalids was treated recently by Serejo (1999) who recorded four species of *Hyale*: *Hyale macrodactyla* Stebbing, 1899; *H. media* (Dana, 1853); *H. nigra* (Haswell, 1879); *H. wakabarae* Serejo, 1999; and one species of *Parhyale*: *Parhyale hawaiiensis* (Dana, 1853). As an extension of this work, a new species of *Hyale*, *H. youngi* n. sp., is described. The new species was collected among the algae *Ulva* sp., on the intertidal zone. *Hyale* has a worldwide distribution in the shallow water of tropical and temperate oceans. A recent study on the phylogeny of the Talitroidea (Serejo in prep.) showed that *Hyale* is a polyphyletic group, as suggested before by Bousfield (pers. comm.). A revision of *Hyale* is needed, including the complexes already described (Barnard 1969; Serejo 1999).

Hyale spinidactyla is redescribed herein based on the syntype series, elucidating several undescribed characters of this species. Besides *H. youngi* n. sp., other three species of *Hyale* have the characteristic stout seta on the dactylus of pereopods 3-7 as:

H. spinidactyla, *H. spinidactyloides*, and *H. ramalhoi*. Morphological comparisons within this complex are provided. The types of *H. spinidactyloides* and *H. ramalhoi* should be reexamined for better understanding of this group, as was done with *H. spinidactyla*. Type material is lodged in the collections of the Museu Nacional, Rio de Janeiro (MNRJ), Muséum national d'Histoire naturelle, Paris (MNHN), and the National Museum of Natural History, Smithsonian Institution (USNM).

SYSTEMATICS

Family HYALIDAE Bulycheva, 1957

Genus *Hyale* Rathke, 1837

Hyale spinidactyla Chevreux, 1925

(Figs 1; 2)

Hyale spinidactyla Chevreux, 1925: 366, figs 13; 14 (part, not fig. 15 = *Hyale* sp.). — Reid 1951: 245, fig. 39. — Arresti 1996: 81, figs 2-8.

MATERIAL EXAMINED. — **Canary Islands.** Stn 290, lectotype ♂ 6.4 mm (MNHN-Am 5106); paralectotype, 1 ♂ and 1 ♀ (pieces apart) (MNHN-Am 5122).

Dakar. *Hyale* sp., 1 ♂ (pieces apart) (MNHN-Am 5107).

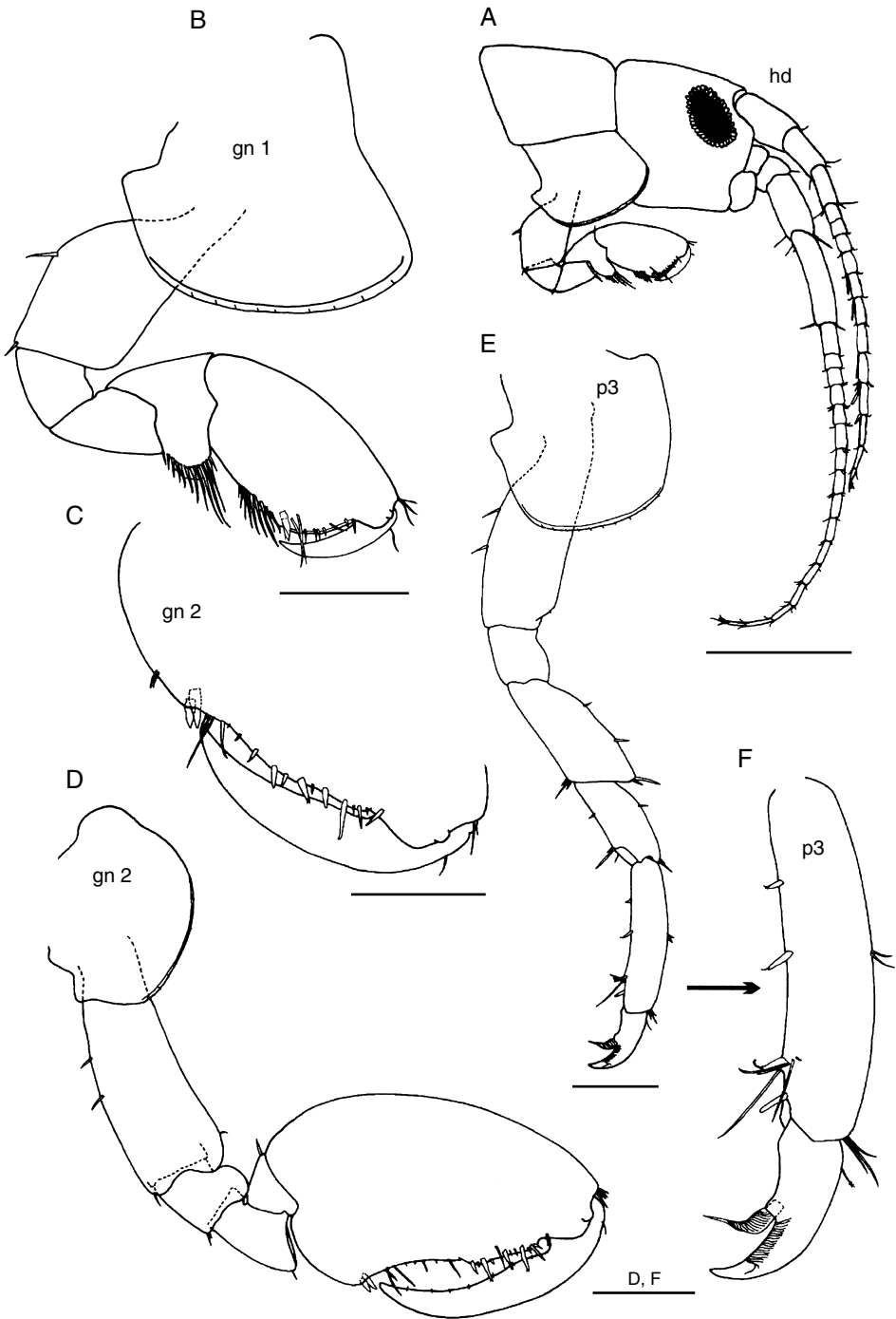


FIG. 1. — *Hyale spinidactyla* Chevreux, 1925; **A-C**, lectotype ♂ 6.4 mm, Canary Islands (MNHN-Am 5106); **D**, paralectotype ♂ (MNHN-Am 5122) entire gnathopod 2. Abbreviations: **gn**, gnathopod; **hd**, head; **p**, pereopod. Scale bars: A, 0.5 mm; B, C, E, 0.2 mm; D, 0.3 mm; F, 0.1 mm.

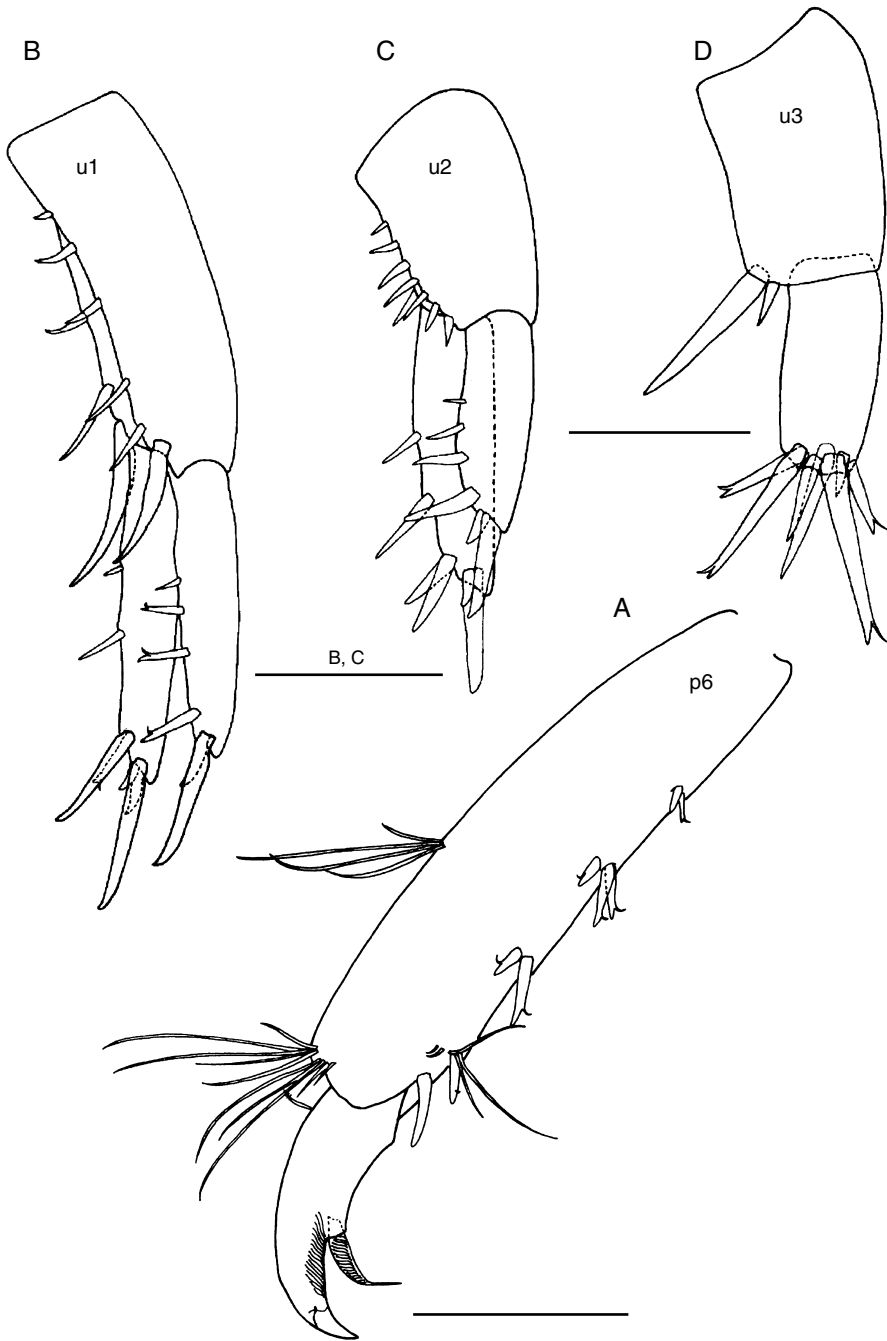


FIG. 2. — *Hyale spinidactyla* Chevreux, 1925; **A-D**, lectotype ♂ 6.4 mm, Canary Islands (MNHN-Am 5106). Abbreviations: **p**, pereopod; **u**, uropod. Scale bars: A-C, 0.2 mm; D, 0.1 mm.

DISTRIBUTION. — Type locality: Canary Islands (Chevreux 1925). Other localities: Rio do Ouro, São Tomé Island (Pirlot 1939); Cape Verde (Ruffo 1950); Fayal, Azores (Reid 1951); coast of the Basque Country, northern Spain (Arresti 1996).

DIAGNOSIS. — Eyes large, oval. Gnathopod 2 palm with small concavity and distal process, covered with few spines and setae. Pereopods 6-7, propodus posterior margin with group of setae. Pereopods 3-7 dactylus smooth on inner margin, sub-terminal seta very stout and striate, resembling bifid dactylus. Peduncle of uropod 1 with two well-developed disto-lateral spines. Peduncle of uropod 2 with row of seven to eight spines on lateral margin. Ramus of uropod 3 with seven to eight distal spines, no marginal spines.

REDESCRIPTION

Lectotype, male (6.4 mm)

Antenna 1 about one quarter of body length, flagellum with 12 articles. Antenna 2 about one third of body length, flagellum with 16-17 articles. Eyes large, oval (Fig. 1A). Epistome triangular. Upper lip rounded with row of distal setae. Right mandible with group of setae above molar; spine row with two spines. Spine row of left mandible with three spines, and indistinct group of setae above molar. Maxilla 1 with nine dentate spines on outer lobe, palp slightly constricted medially, reaching base of spines of outer margin. Lower lip and maxilla 2 as in *H. youngi* n. sp. Maxilliped, outer distal angle of inner and outer lobe, and palp articles 1-2 with 1/1/1-2/2 small spines, respectively; palp robust; inner margin of dactylus slightly concave, with setae not overlapping nail.

Gnathopod 1 (Fig. 1B), basis robust, posterior margin of propodus with medial group of setae; palm slightly oblique, defined by two spines; dactylus fitting palm. Gnathopod 2 (Fig. 1C, D), basis and ischium lobate; propodus with defined posterior margin, palm with a small concavity and a distal process, with few spines and setae, dactylus fitting palm. Coxae 1-4 with posterior processes slightly produced. Propodus of pereopods 3 and 4 with four spines sub-equal in length, third spine surrounded by long setae (Fig. 1E, F). Pereopods 5-7, basis expanded; propodus with three groups of spines followed by one spine surrounded by setae and a distal spine

larger than the others, near dactylus articulation (Fig. 2A). Pereopod 5, propodus posterior margin with one to two medial setae. Pereopods 6-7, propodus posterior margin with a group of setae medially. Dactylus of pereopods 3-7 with inner margin smooth; sub-terminal setae very stout and striate, resembling bifid dactylus (Fig. 2A).

Epimera 2-3 with postero-ventral margin slightly sinuous. Uropod 1 (Fig. 2B), peduncle with five spines on outer margin, two spines on inner margin, and two well-developed disto-lateral spines, rami slightly shorter than peduncle, with two to three marginal spines. Uropod 2 (Fig. 2C), peduncle with seven to eight spines on outer margin and one spine on inner margin; rami with two to four marginal spines and two apical spines. Uropod 3 (Fig. 2D), peduncle with two distal spines, one spine less than half length of other, ramus with seven to eight distal spines. Telson lobes triangular and separated from base, as in *H. youngi* n. sp.

Female

Gnathopod 2 carpus well-developed, palm oblique with several long setae, defined by two large spines. Oostegites 2-5 as *H. youngi* n. sp. Second oostegite triangular, third and fourth oostegites rectangular, and fifth oostegite sub-triangular and smaller than other ones.

REMARKS

Chevreux (1925) provided only a brief description and poorly detailed illustration of *H. spinidactyla*. Some important characters were examined in the syntypes, which were not indicated by Chevreux' (1925) description. These were: the oval eyes; the coxae 1-4 bearing a posterior process; the peduncle of uropod 1 with marginal spines and two well-developed disto-lateral spines; the peduncle of uropod 2 with a row of seven to eight spines on the outer margin and one spine on the inner margin; and the ramus of uropod 3 with seven to eight distal spines.

The specimen observed by Chevreux (1925: 368, fig. 15) with designation of station from Dakar are definitely not *H. spinidactyla*. Chevreux (1925) suggested that this specimen might be an

adult form of *H. spinidactyla*, although it had a different ornamentation on the male gnathopod 2 palm. Moreover, this specimen lacked the row of seven to eight spines on the peduncle of uropod 2 and the characteristic stout striate seta on the dactylus of pereopods 3-7.

Arresti (1996) cited some distinctions between Chevreux' (1925) description and his specimens from the Basque Country coast, Spain. Most divergences actually resulted from the brief and incomplete description of Chevreux (1925). Only two characters still differ from the type material: the propodus of gnathopod 2, which lacks a defined posterior margin, and the palm extends over the entire propodus and the presence of an anterior acute process on coxa 7. The different structure of gnathopod 2 illustrated by Arresti (1996: fig. 8e) for his *H. spinidactyla*, probably resulted from the larger size of his specimens (adult 8.3 mm). In the juvenile form (7.8 mm) (Arresti 1996: fig. 8d), the gnathopod 2 is similar to the lectotype observed here (6.4 mm), suggesting that Chevreux (1925) had only juvenile forms. This type of dimorphism between the juvenile and adult male gnathopod 2 is common, and was observed also in *H. youngi* n. sp. and *H. macrodactyla* (Serejo 1999).

Some differences indicated as diagnostic for *H. spinidactyloides* (Schellenberg 1939: figs 17-20) were found to be present also in *H. spinidactyla*. For instance, as coxae 1-4 have posterior processes, and peduncle of uropod 1 has two disto-lateral spines. The former species still differs from *H. spinidactyla* in the smaller antenna 1, about one fifth of the body length, and the straight palm of gnathopod 2.

Hyale spinidactyla is here included in the *H. spinidactyla* complex, which encompasses *H. spinidactyloides* Schellenberg, 1939, *H. ramalhoi* Reid, 1939, and *H. youngi* n. sp. This complex is characterized by a stout striate seta on the dactylus of pereopods 3-7, which is unique within *Hyale*. The large eyes and the two disto-lateral spines on peduncle of uropod 1 could also characterized this complex, however, these features were not described in the succinct description of *H. ramalhoi*.

Hyale youngi n. sp.

(Figs 3-7)

TYPE MATERIAL. — Holotype ♂ 7.5 mm, Praia Rasa, Búzios, Rio de Janeiro (RJ), Brazil, intertidal, on *Ulva* sp., VIII.1996, coll. R. Donato (MNRJ 13475). Paratypes: same locality, 9 ♂♂, 13 ♀♀, and 14 juveniles (MNRJ 13476).

ETYMOLOGY. — Named in honor of my husband, Paulo S. Young, who works with barnacles and always encourages me in this wonderful profession.

OTHER MATERIAL EXAMINED. — **Praia Rasa.** Búzios, Rio de Janeiro (RJ), Brazil, 1 ♂ and 1 ♀ (USNM 306873). Same locality, 1 ♂ and 1 ♀ (MNHN-Am 5123).

Praia das Conchas. Cabo Frio, RJ, Brazil, 2 ♂♂, 13 ♀♀, and 3 juveniles (MNRJ 10448).

Ogiva. Cabo Frio, RJ, Brazil, 1 ♂ and 1 ♀ (MNRJ 10449).

Enseada da Ferradura. Búzios, RJ, Brazil, 2 ♂♂, 4 ♀♀ and 1 juvenile (MNRJ 14003).

Central channel of Ilha Grande Island. Angra dos Reis, RJ, Brazil, 3 ♂♂, 8 ♀♀, and 2 juveniles, on the bivalve *Isognomon* sp. (MNRJ 14870).

Praia do Poço. Itanhaém, São Paulo, Brazil, 7 ♂♂ and 4 ♀♀ on *Ceramiales* sp. (MNRJ 14871).

Morro de São Paulo, Bahia, Brazil, 1 ♀, on algae (MNRJ 13474).

DISTRIBUTION. — Brazil, States of Bahia, Rio de Janeiro, and São Paulo.

DIAGNOSIS. — Eyes large, oval. Antenna 2 reaching about one quarter of body length. Adult male gnathopod 2 palm straight, parallel to anterior margin, with few spines and setae and medially rugose; posterior margin of propodus inconspicuous. Pereopods 3-7, dactylus castellate, sub-terminal seta very stout and striate. Peduncle of uropod 1 with two well-developed disto-lateral spines. Uropod 3 with one marginal and six distal spines.

DESCRIPTION

Holotype, male (7.5 mm)

Antenna 1 reaching about one fifth of body length, flagellum with 9-11 articles. Antenna 2 reaching about one quarter of body length, flagellum with 12-13 articles. Eyes large and oval (Fig. 3A). Epistome triangular. Upper lip rounded with row of distal setae. Mandibles (Fig. 3B, C) with a group of setae above the molar; spine row of right mandible with two spines. Left mandible, spine row with three spines; lacinia mobilis with eight to nine teeth. Outer lobe of lower lip apically setose (Fig. 3D).

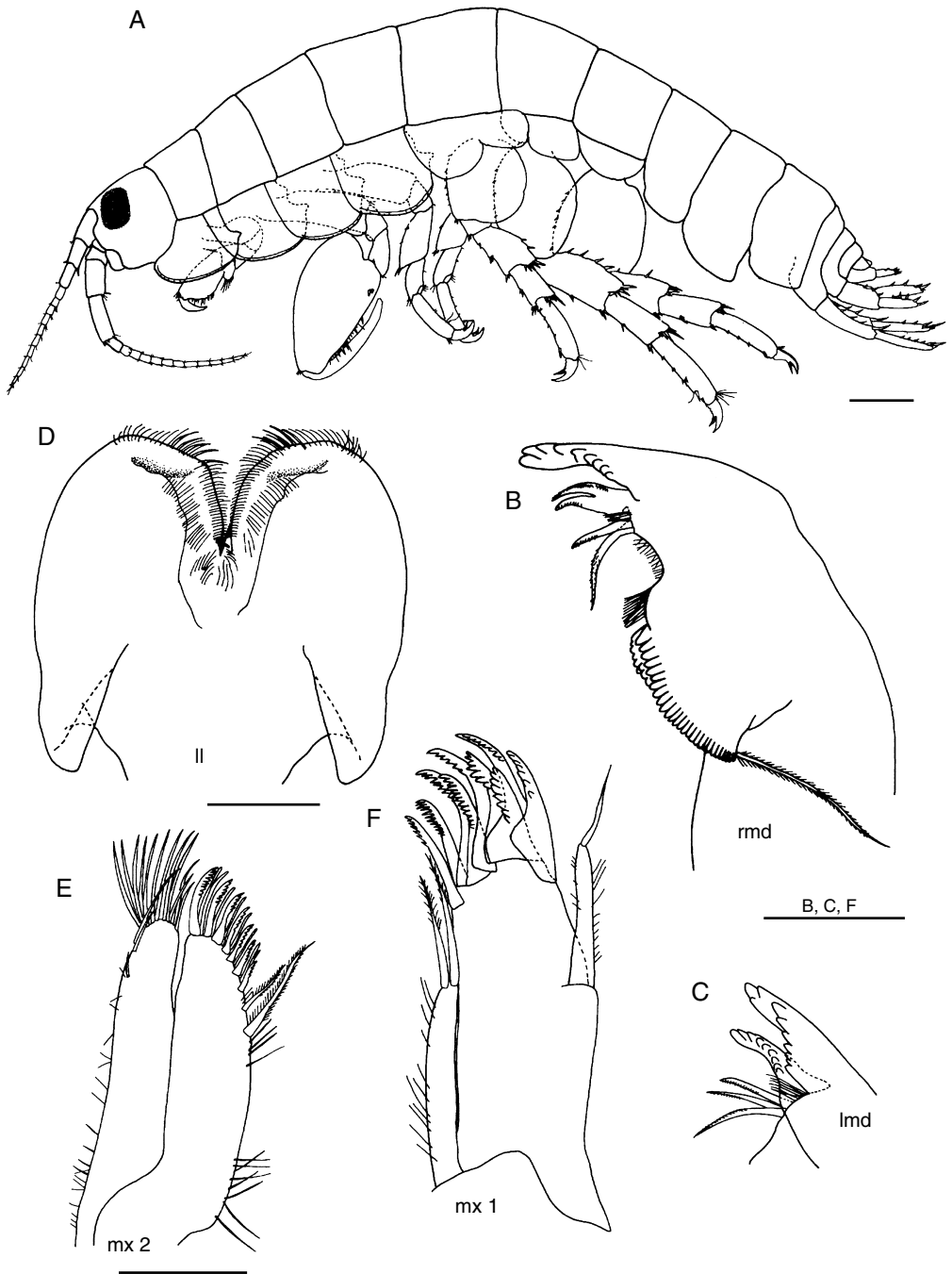


FIG. 3. — *Hyale youngi* n. sp.; **A-F**, holotype ♂ 7.5 mm, Praia Rasa, Búzios, RJ, Brazil (MNRJ 13475). Abbreviations: **II**, lower lip; **rmd**, right mandible; **lmd**, left mandible; **mx**, maxilla. Scale bars: A, 0.5 mm; B-F, 0.1 mm.

Inner lobe of maxilla 2, with seven dentate spines, several simple setae, and two plumose setae, one of these considerably longer than others (Fig. 3E). Maxilla 1 (Fig. 3F) with nine dentate spines on outer lobe. Maxilliped (Fig. 4A), outer distal angle of inner and outer lobe, and palp articles 1-2 with 1/1/2/2 small spines, respectively; palp robust; dactylus inner margin straight, setae not overlapping nail.

Gnathopod 1 (Fig. 4B), basis robust, posterior margin of propodus with medial group of setae; palm slightly oblique, defined by stout spine; dactylus fitting palm. Gnathopod 2 (Fig. 4C, D), basis and ischium lobate; palm straight, parallel to the anterior margin, with few spines and setae, proximally with concavity to fit dactylus, bordered by two spines (these spines visible only from inner side); inner side of palm rugose. Coxae 1-4 with posterior processes acutely produced. Propodus of pereopods 3 and 4 with three spines about the same size, second spine surrounded by long setae (Fig. 4E, F). Pereopods 5-7 (Fig. 5A-C), basis expanded; propodus with three groups of spines followed by one large spine surrounded by setae and one tiny spine near dactylus articulation, posterior margin lacking setae. Inner margin of dactylus of pereopods 3-7 castellate, sub-terminal setae very stout and striate, resembling bifid dactylus (Figs 4F; 5A-D).

Epimera 2-3 (Fig. 5E) with postero-ventral margin slightly sinuous. Uropod 1 (Fig. 5F), peduncle with four large spines on outer margin, one spine on inner margin and two well-developed disto-lateral spines; rami as long as peduncle, with two to three marginal spines and several distal spines. Uropod 2 (Fig. 5G), peduncle with four spines on outer margin and one spine on inner margin; rami with three marginal and three apical spines. Uropod 3 (Fig. 6A), peduncle with two distal spines, one spine slightly shorter than the other; ramus with one marginal and six distal spines. Telson (Fig. 6B) deeply cleft, each lobe bearing one pair of sub-apical setae and a pair of marginal setae.

Female (6.2 mm)

Gnathopod 1 (Fig. 6C), palm oblique with several long setae, defined by two large spines. Gnathopod 2 (Fig. 6D, E) slightly larger than gnathopod 1, carpus well-developed, palm as in gnathopod 1. Oostegites 2-5 (Fig. 7A-D) with short curl-tip setae. Second oostegite triangular, third and fourth rectangular, and fifth sub-triangular and smaller than others.

Variations

The palm of gnathopod 2 in juvenile males varies according to the stage of development. In the specimen 5.1 mm long, the palm is oblique, with the carpal lobe well-developed (Fig. 7E). In larger specimens (6.0 mm), the carpal lobe disappears completely, but the palm is still oblique (Fig. 7F). In adults, the palm is large, and extends over the entire propodus, with the defining spines in a more proximal position (Fig. 4D). The uropod 3 (Fig. 7G) also varies in juvenile forms. It has only one distal peduncular spine, and the ramus bears only distal spines. A disjunct spine was observed on the ramus of juvenile forms, but it seems not to be homologous to that in the adult, considering the different position of these spines.

REMARKS

Hyale youngi n. sp. is also a member of the *H. spinidactyla* complex as discussed above, but can be distinguished from the other species complex as shown in Table 1.

The *H. spinidactyla* complex is confined to the Atlantic Ocean (Fig. 8), indicating a recent evolution of these species. *Hyale spinidactyla* was first recorded from the Canary Islands and then from other regions of the northeastern Atlantic. Later, *H. spinidactyloides* was described from near the mouth of Congo river (Landana and Malembe) (Schellenberg 1939) and recently to the Ascension Island (Biernbaum 1996). *H. ramalhoi* was recorded only from the Madeira Island (Reid 1939). Unfortunately, the types of *H. spinidactyloides* and *H. ramalhoi* were not available, and the descriptions and illustrations are incomplete, limiting the comparative analysis. Detailed examination of the

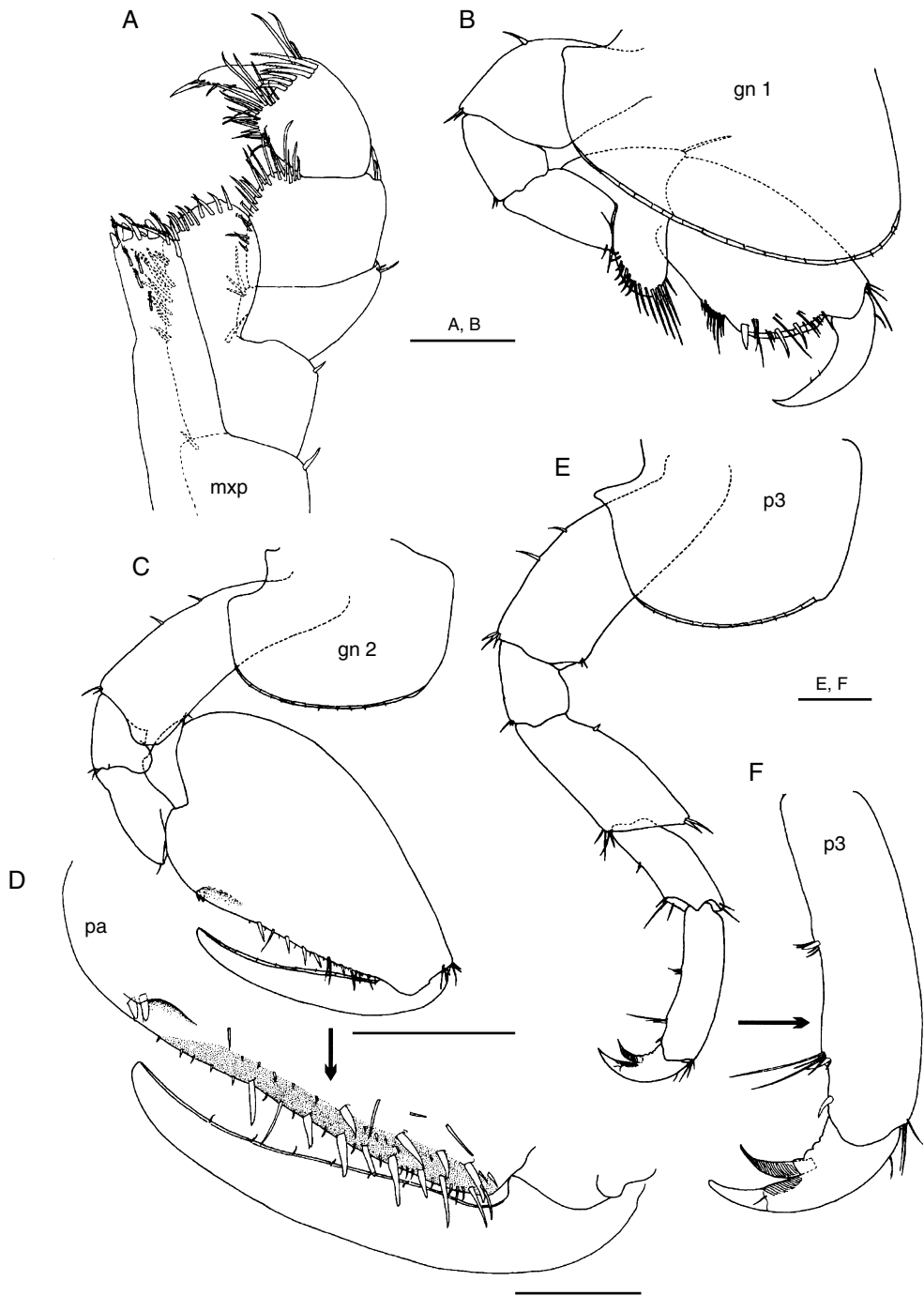


FIG. 4. — *Hyale youngi* n. sp.; A-F, holotype ♂ 7.5 mm, Praia Rasa, Búzios, RJ (MNRJ 13475). Abbreviations: **gn**, gnathopod; **mxp**, maxilliped; **p**, pereopod, **pa**, palm. Scale bars: A, F, 0.1 mm; B, D, E, 0.2 mm; C, 0.5 mm.

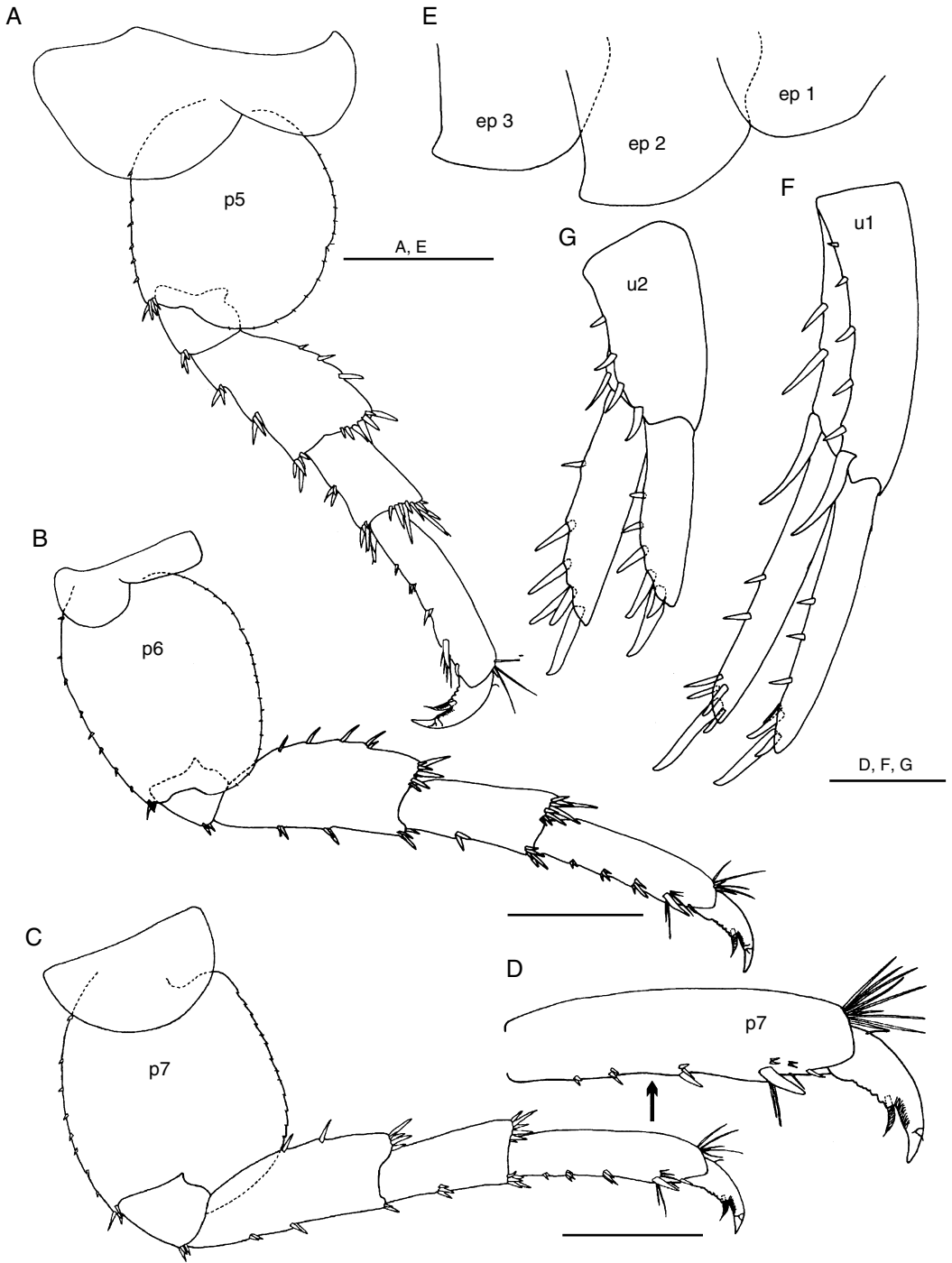


FIG. 5. — *Hyale youngi* n. sp.; **A-G**, holotype ♂ 7.5 mm, Praia Rasa, Búzios, RJ (MNRJ 13475). Abbreviations: **ep**, epimera; **p**, pereopod; **u**, uropod. Scale bars: A, B, 0.5 mm; C, 0.25 mm, D-G, 0.2 mm.

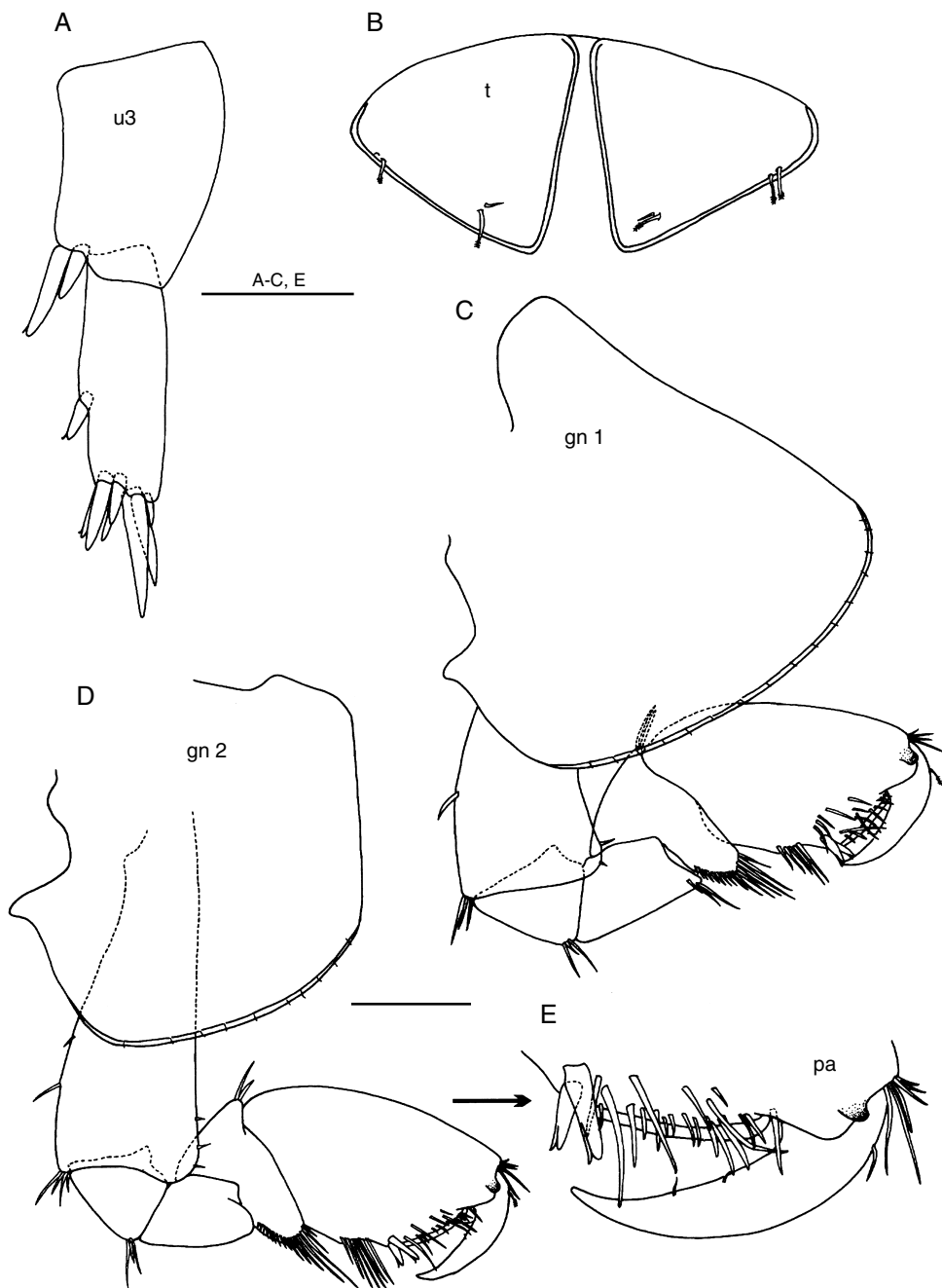


FIG. 6. — *Hyale youngi* n. sp.; **A, B**, holotype ♂ 7.5 mm, Praia Rasa, Búzios, RJ (MNRJ 13475); **C-E**, ♀ 6.2 mm, Praia Rasa, Búzios, RJ, gnathopods 1-2 (MNRJ 13476). Abbreviations: **gn**, gnathopod; **pa**, palm; **t**, telson; **u**, uropod. Scale bars: A-C, E, 0.1 mm; D, 0.2 mm.

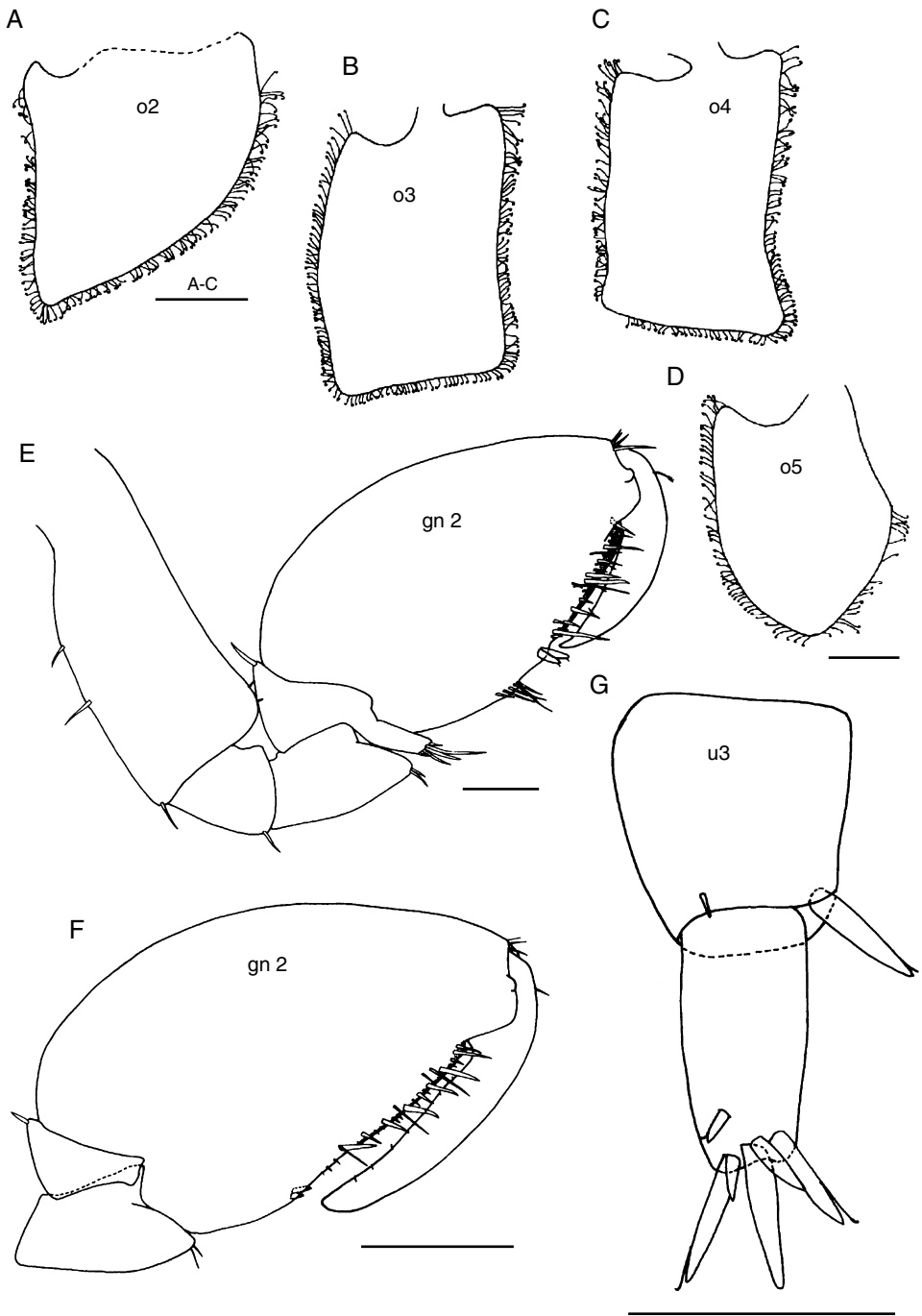


FIG. 7. — *Hyale youngi* n. sp.; **A-D**, ♀ 6.2 mm, Praia Rasa, Búzios, RJ, (MNRJ 13476); **E-G**, juveniles, Praia Rasa, Búzios, RJ (MNRJ 13476); **E**, ♂ 5.1 mm; **F**, ♂ 6.0 mm; **G**, 4.7 mm. Abbreviations: **gn**, gnathopod; **o**, oostegite; **u**, uropod. Scale bars: A-D, 0.25 mm; E, G, 0.1 mm; F, 0.3 mm.

types would clarify the diagnostic characters and the validity of these species, as was done with *H. spinidactyla*.

Hyale youngi n. sp. was observed on sheltered rocky shores of estuarine areas. In same samples it occurred together with *Parhyale hawaiiensis*.

KEY TO THE BRAZILIAN *HYALE* SPECIES

- 1a. Peduncle of uropod 1 lacking disto-lateral spines *H. wakabarae* Serejo, 1999
 1b. Peduncle of uropod 1 with one or two disto-lateral spines 2
 2a. Seta on dactylus of pereopods 3-7 very stout, large and striate, reaching about one third of dactylus length; peduncle of uropod 1 with two disto-lateral spines (Figs 4F; 5F) *H. youngi* n. sp.
 2b. Seta on dactylus of pereopods 3-7 slender, short and not striate, reaching about one fifth of dactylus length; peduncle of uropod 1 with one disto-lateral spine 3
 3a. Antenna 2 reaching about half of body length; adult male gnathopod 2 propodus posterior margin inconspicuous; palm parallel to the anterior margin, with several distally constricted plumose setae *H. macrodactyla* Stebbing, 1899
 3b. Antenna 2 reaching about one third of body length; male and female gnathopod 2 propodus posterior margin distinct; palm oblique, with simple setae 4
 4a. Spine formula of propodus of pereopods 5-7 with three single spines increasing in length distally and two striate distal spines sub-equal in length; outer ramus of uropod 1-2 with marginal spines *H. niger* (Haswell, 1879)
 4b. Spine formula of propodus of pereopods 5-7 with two groups of smooth spines, a strong sub-medial striate spine and a simple distal spine; outer ramus of uropod 1-2 lacking marginal spines *H. media* (Dana, 1853)

TABLE 1. — Morphological differences between the species of the *Hyale spinidactyla* complex.

	<i>H. youngi</i> n. sp.	<i>H. spinidactyla</i>	<i>H. spinidactyloides</i>	<i>H. ramalhoi</i>
Ratio antenna 1: antenna 2	A1 reaching article 8 of A2	A1 reaching article 8 of A2	A1 reaching article 4 of A2	A1 reaching article 10 of A2
Flagellum of antennae 2	12-13 articles	16-17 articles	?	20 articles
Palm of gnathopod 2 (adult)	straight	slightly concave with a distal process	Straight	strongly concave with a distal process
Two distal spines on propodus of pereopods 5-7	distal spine smaller, about half the size of the proximal spine	distal spine a little longer than the proximal spine	?	?
Peduncle of uropod 2	outer margin with four spines	outer margin with a row of seven to eight spines	?	?
Medial posterior margin of propodus of pereopods 6-7	lacking setae	with group of setae	lacking setae	with group of setae
Spines on ramus of uropod 3	with one marginal spine and six apical spines	without marginal spines and seven to eight apical spines	?	?
Male body length	7.5 mm	6.4 mm (lectotype); 8.3 mm (Arresti 1996)	5.5 mm (Schellenberg 1939)	6.0 mm (Reid 1939)

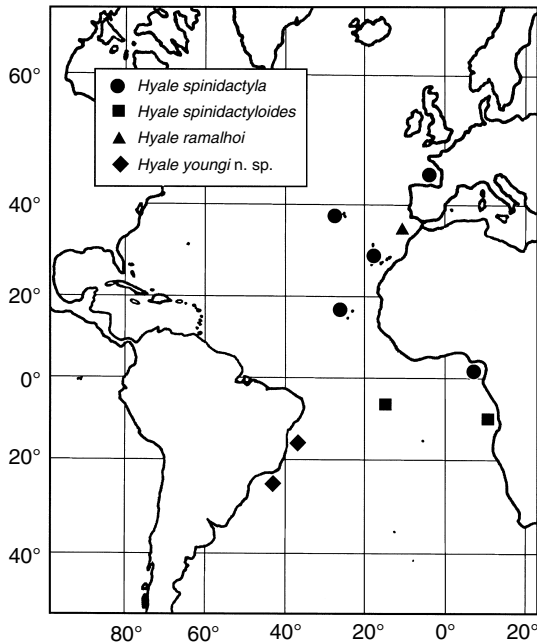


FIG. 8. — Geographical distribution of the *Hyale spinidactyla* complex.

Acknowledgements

I would like to thank Carlos Eduardo F. da Rocha (Universidade de São Paulo/USP), who is guiding me in this project. Danielle Defaye (Muséum national d'Histoire naturelle, Paris) for the loan of the syntype series of *Hyale spinidactyla*. Paulo S. Young (Museu Nacional/UFRJ) and Janet Reid (Smithsonian Institution) for revising the manuscript, and Marcia Couri for translating the abstract. This work is supported by a Ph.D. grant no. 97/07234-2 given from FAPESP (Fundação de Amparo à pesquisa do Estado de São Paulo). I also thank FUJB (Fundação Universitária José Bonifácio) and FAPERJ (Fundação de

Amparo à Pesquisa do Estado do Rio de Janeiro) for financial support.

REFERENCES

- ARRESTI A. 1996. — Descripción del anfípodo marino *Hyale spinidactyla* Chevreux, 1926 (Crustacea, Amphipoda, Gammaridea) en el País Vasco. *Miscellània Zoologica* 19 (2): 79-91.
- BARNARD J. L. 1969. — Gammaridean Amphipoda of the Rocky Intertidal of California: Montrey Bay to La Jolla. *United States National Museum Bulletin* 258: 1-230.
- BIERNBAUM C. K. 1996. — Biogeography of coastal and anchialine amphipods of Ascension Island, South Atlantic Ocean. *Journal of Natural History* 30: 1597-1615.
- CHEVREUX E. 1925. — Voyage de la goélette *Melita* aux Canaries et au Sénégal 1889-1890. *Bulletin de la Société zoologique de France* 50: 365-393.
- PIRLOT J. M. 1939. — Résultats scientifiques des croisières du Navire-École belge *Mercator*. 2 (III): Amphipoda. *Mémoires du Muséum royal d'Histoire naturelle de Belgique* série 2, 15: 47-80.
- REID D. M. 1939. — *Hyale ramalhoi* sp. n. (Crustacea, Amphipoda). *Annals and Magazine of Natural History* series 11, 3: 29-32.
- REID D. M. 1951. — Report on the Amphipoda (Gammaridea and Caprellidea) of the coast of tropical West Africa. *Atlantide Report* 2: 189-291.
- RUFFO S. 1950. — Studi sui crostacei anfipodi. XXII: Anfipodi del Venezuela raccolti dal dott. G. Marcuzzi. *Memorie del Museo Civico di Storia Naturale*, Verona 2: 49-65.
- SHELLENBERG A. 1939. — Amphipoden des Kongo-Mündungsgebietes. *Revue de Zoologie et de Botanique africaines* 32 (1): 122-138.
- SEREJO C. S. 1999. — Taxonomy and distribution of the family Hyalidae (Amphipoda, Talitroidea) on the Brazilian coast, in SCHRAM F. R. & VAUPEL KLEIN J. C. VON (eds), *The Crustaceans and the Biodiversity Crisis. Proceedings of the Fourth International Crustacean Congress, Amsterdam, The Netherlands, July 20-24, 1998*. Vol. I. Brill, Leiden: 591-616.

Submitted on 10 February 2000;
accepted on 2 January 2001.