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***Thalassostygius exiguus* n. g., n. sp., a new marine interstitial melitid
(Crustacea, Amphipoda) from Curaçao and Klein Bonaire (Netherlands
Antilles)**

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Abstract

Thalassostygius exiguus n. g., n. sp. is described from the marine interstitial of permanently immersed sediments off the coasts of Curaçao and Klein Bonaire. The best matching phenetic similarity is met in *Dumosus atari* Thomas & Barnard, 1985, from Belize.

Résumé

On décrit *Thalassostygius exiguus* n. g., n. sp. de l'interstitiel marin de sédiments immergés de façon permanente au large des côtes de Curaçao et de Klein Bonaire. Du point de vue de la similarité phénétique la forme la plus proche connue serait *Dumosus atari* Thomas & Barnard, 1985, de Belize.

Introduction

Thalassostygius exiguus n. g., n. sp. is found in what seems to be a very rich spot (due to extensive sampling?) for various amphipod species: the interstitial of Piscadera bay, Curaçao. Later it was also found in coral sand in shallow water off the coast of Klein Bonaire during the 1988 Caribbean expedition of the Dutch research vessel "Plancius" to several Venezuelan Islands and the Netherlands Antilles.

T. exiguus shares most characters with *Dumosus* Thomas & Barnard, 1985, a monotypic genus with

probably also a cryptic habitat. However, both genera differ strongly in the form of the second gnathopod and the third uropod. This last feature points in the direction of *Elasmopus*, whereas *Dumosus* is believed to have affinities with *Maera* (Thomas & Barnard, 1985).

Descriptive part

***Thalassostygius* n. g.**

Diagnosis. — Melitidae. Small body size, maximum length 1.7 mm. Cephalic lobes with notch. Antennae of medium length, accessory flagellum 2-articulate. Gnathopods small, equal in male and female. Pereopods 5–7 short, with large bases. Uropod 3 and telson small, with tiny armature.

Type-species. — *Thalassostygius exiguus* n. sp., by monotypy.

Etymology. — The genus name *Thalassostygius* refers to a marine infaunal mode of living. The epitheton *exiguus* stands for "minute".

***Thalassostygius exiguus* n. sp.**

Material examined. — Curaçao: 1 ♀ holotype, 1 ♂ allotype, 16 paratypes (both sexes), Amsterdam Expeditions to the West In-

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dian Islands Sta. 84-135, Piscadera Bay, at Hilton-buoy (12°07'42"N 68°58'20"W), depth 6.5 m. Animals caught in sand*. May 31, 1984, leg. J.H. Stock & J.J. Vermeulen (Zoologisch Museum Amsterdam, Amph. 108.597).

Sta. B1-2, Same locality, 2 paratypes, Bou-Rouch pump, depth 5 m. Jan. 1, 1988, leg. L. v.d. Bosch & T. v.d. Brink (ZMA Amph. 108.598)

Sta. B1-7, Same locality, 2 paratypes, Bou-Rouch pump, depth 5 m. Jan. 12, 1988, leg. L. v.d. Bosch & T. v.d. Brink (ZMA Amph. 108.599)

Sta. B1-8, Same locality, 4 paratypes, Bou-Rouch pump, depth 20 m. March 3, 1988, leg. L. v.d. Bosch & T. v.d. Brink (ZMA Amph. 108.600)

Sta. B1 mp 3, Same locality, 8 paratypes, Bou-Rouch pump, depth 2 m. April 9, 1988, leg. L. v.d. Bosch & T. v.d. Brink (ZMA Amph. 108.601)

Sta 88-225, Klein Bonaire, northern beach (12°09'49"N, 67°17'38"W) 2 m. below sea level in coral sand, in washing of sand. March 19, 1988, leg. R. Vonk (ZMA Amph. coll. no. 108.602), 1 paratype (damaged).

Description. - Body laterally compressed, unpigmented. Eyes reduced, with few ommatidia, in anterior position. Pleon segments smooth.

Coxall plates 1-3 (Figs. 1a, 2a, b, d) longer than wide, distal margin with 3 small setules; plate 4 (fig. 2c) slightly excavate; plates 5-6 (Fig. 1a) shallow, anterolobate; plate 7 (Fig. 1a) non-lobate.

Epimeral plates (Fig. 1a) without setules; plates 1 and 2 with shallow anterodistal excavation, posterodistally acute; plate 3 with subacute posterodistal corner.

Antennae (Fig. 1f, e). Antenna 1 (Fig. 1f) of medium length, with 3 aesthetascs, flagellum moderately setose, 6- to 7-articulate; accessory flagellum 2-articulate. Antenna 2 (Fig. 1e) shorter than A1, flagellum 4-articulate, gland cone present.

Mandibular body (Fig. 3c, f, g) with distinct molar, no molar seta; palp 3-articulate, articles 1 and 2 unarmed, article 3 with 2 terminal setae; lacinia mobilis and 3-4 rakers present on both sides but more produced on left side; incisors toothed; Upper lip entire, margin rounded; lower lip with inner lobes (Fig. 3h).

Maxilla 1 (Fig. 3e) inner plate with 1 apical seta, outer plate with 6 spines; palps symmetrical,

2-articulate with 4-5 terminal spines.

Maxilla 2 (Fig. 3d) with terminal setae only.

Maxilliped (Fig. 3a) inner plate short with about 6 setae; outer plate with 2 apical spines and several setae; palp poorly setose.

Gnathopod 1 (Fig. 2b) similar in male and female; basis elongate; ischium, merus, carpus and propodus distally slightly serrate; propodus rectangular, with two spines on posterior margin; palm with straight angle and 5 spines, 1 long, 4 short; 1 spine on palmar margin halfway between dactylus and palmar corner.

Gnathopod 2 (Fig. 2a) also without sexual dimorphism; basis elongate; ischium, merus, carpus and propodus distally slightly serrate; carpus as long as propodus; propodus with 3 spines on posterior margin; 5 palmar angle spines, 1 long, 4 short; 1 spine on palmar margin halfway between dactylus and palmar corner.

Pereopods 3-4 (Fig. 2c, d) slender, with few spines; pereopods 5-7 (Fig. 1c, d, b) short; basis large, posteroventrally lobate, posterior margin smooth with few spinules.

Pleopods (Fig. 2i, j) rather well developed, rami 4-articulate; peduncle with small lobe on latero-distal margin with 2 lateral spines in female but 1 in male; 2 retinacula present.

Uropod 1 (Fig. 1a, 2e) with basofacial spine; strong apical spines implanted in partly hollow tip; interramal spine present.

Uropod 2 (Fig. 2f) with interramal spine; strong apical spines on both rami.

Uropod 3 (Fig. 2h) short; outer ramus 1-articulate, slightly longer than inner, both having 2 apical spines.

Telson (Fig. 2g) short, deeply cleft, apices with few tiny spinules and a subapical lateral setule set.

Genital papillae (Fig. 3b) of male midventrally on pereon segment 7.

Coxal gills (Fig. 2a, c, d) present on coxae 2-6; indistinctly stalked.

Oostegites (Fig. 2a, d) present on coxae 2-5; linear, with 2-4 apicomarginal spines.

Distinctive features. - *Thalassostygius exiguus* n. g., n. sp. differs from *Dumosus atari* in the following respects: Gnathopod 2 much smaller; epimeral

* The interstitial water was pumped up with a motorpump placed in a boat. A Bou-Rouch pipe was driven in the seabottom and connected to the pump with a hose.

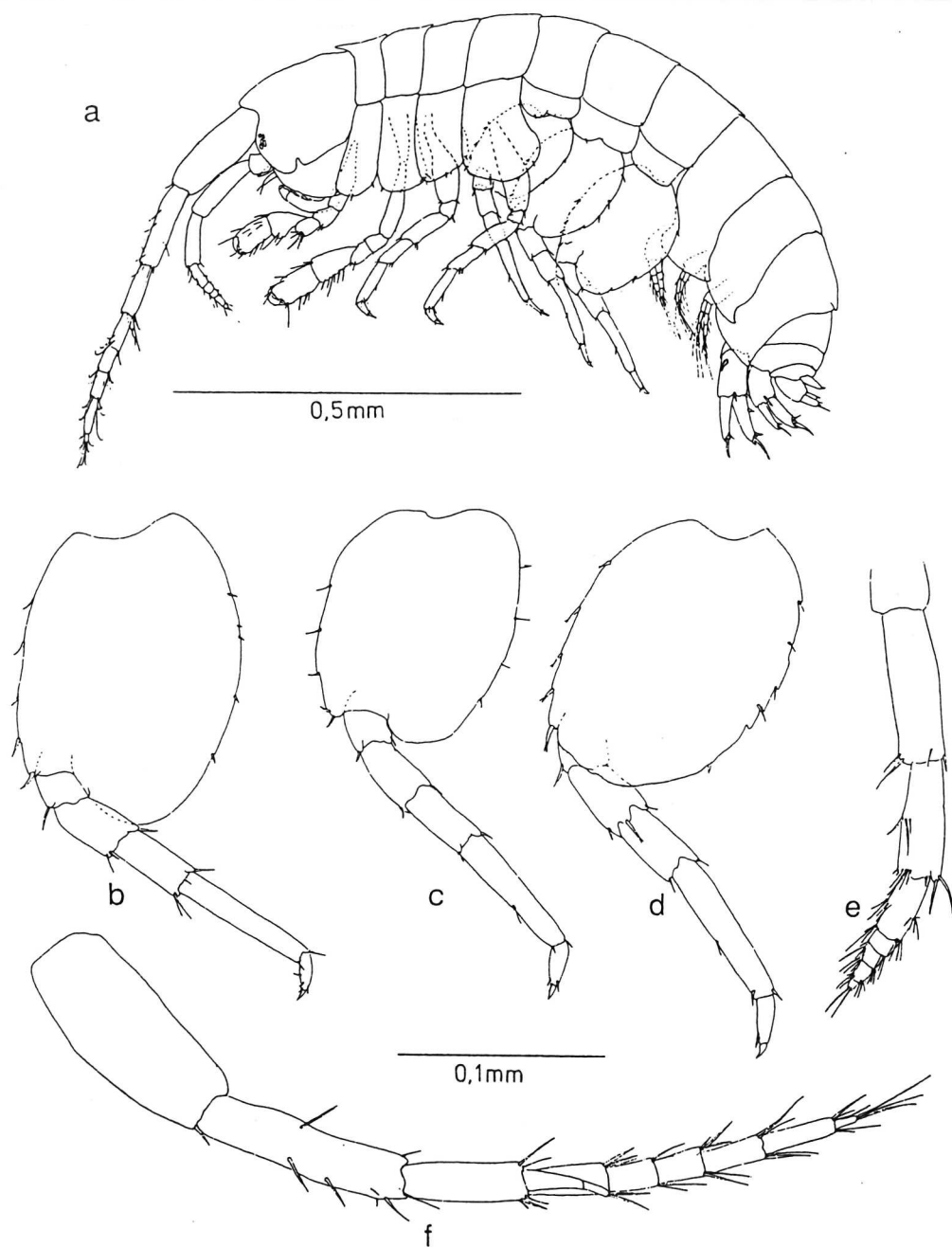


Fig. 1. *Thalassostygius exiguus* n. g., n. sp.: a, ♀ paratype 1.2 mm, b–e, ♀ holotype 1.7 mm, f, ♂ paratype 1.1 mm; b, seventh pereopod; c, fifth pereopod; d, sixth pereopod; e, second antenna; f, first antenna.

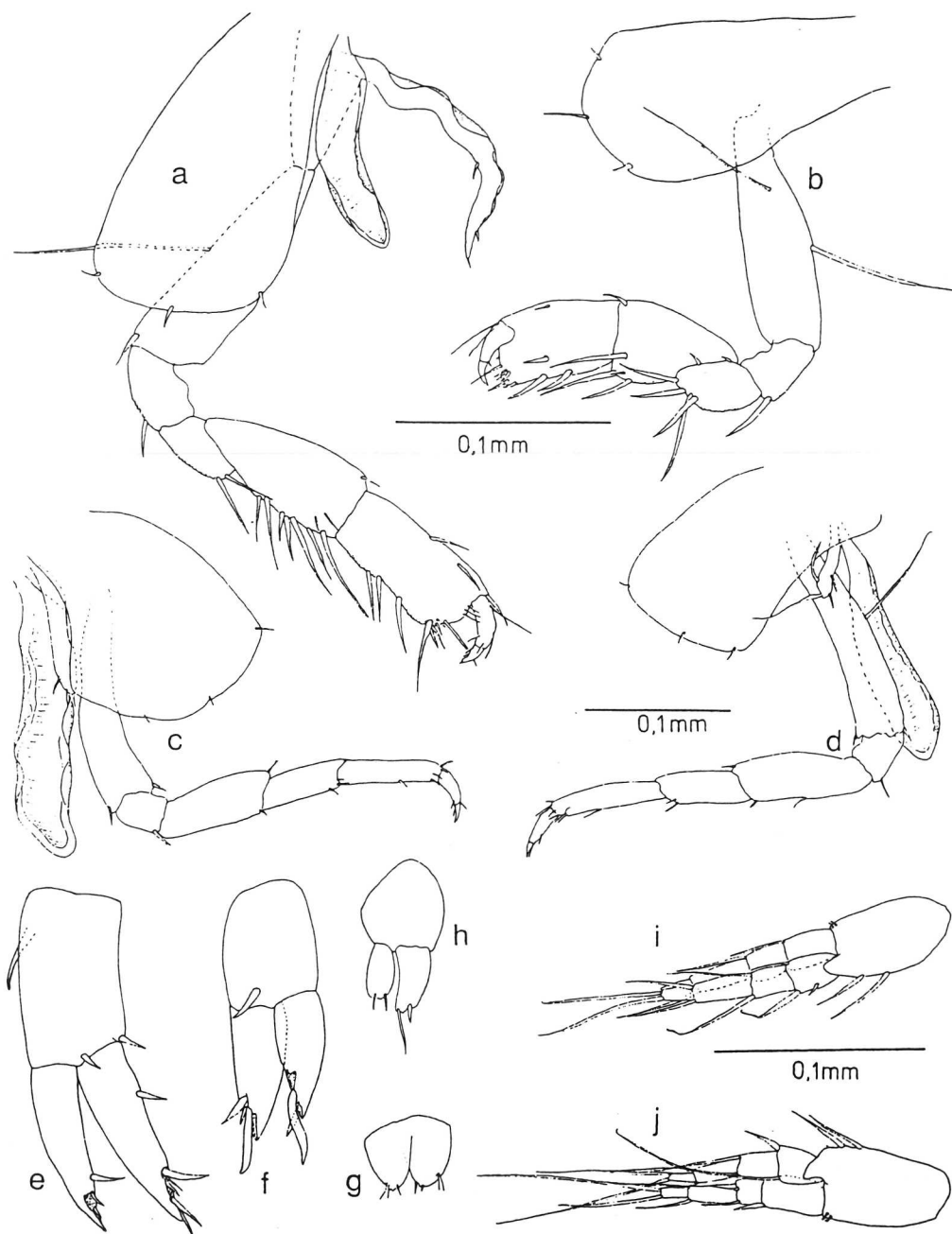


Fig. 2. *Thalassostygius exiguus* n. g., n. sp: a–h, ♀ holotype, i–j, ♀ paratype 1.2 mm; a, second gnathopod; b, first gnathopod; c, fourth pereopod; d, third pereopod; e, first uropod; f, second uropod; g, telson; h, third uropod; i, first pleopod; j, second pleopod.

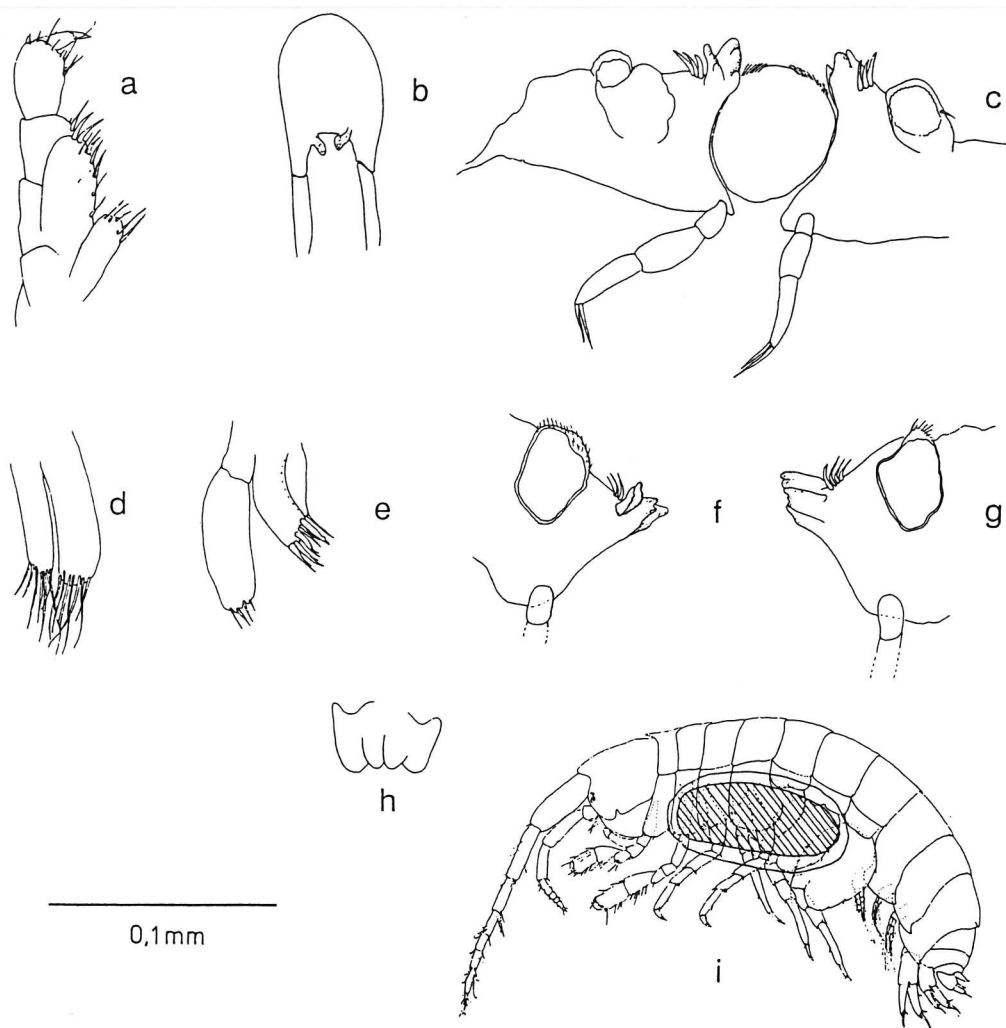


Fig. 3. *Thalassostygius exiguus* n. g., n. sp: a, ♂ paratype 1.0 mm, b, ♂ paratype 1.1 mm, c, ♀ holotype, f, ♂ paratype 1.1 mm; a, maxilliped; b, genital papillae, freehand sketch; c, mandibular body; d, second maxilla; e, first maxilla; f, right incissor and molar; g, left ditto; h, lower lip; i, sketch of ovigerous female, carrying one single egg.

plate 3 not posteroventrally serrate; uropod 3 rami not lanceolate or pointed; telson without strong spines or bifid apex; basis of pereopods 6–7 without serrate posterior margin; maxilla 1 inner lobe with 1 apical seta against 2, outer lobe with 6 spines against 7 and accessory flagellum with 2 against 3 articles in *D. atari*.

Accompanying fauna. – The amphipods *Psammomelita uncinata* Vonk, 1988, *Idunella sketi* Karaman, 1980, some specimens of the suborder Ingolfiellidea and some unidentified benthic amphipods. Other relevant groups of marine organisms present, were: *Amphioxus* and Microparasellidae (Isopoda).

Remarks. - *Elasmopus* is a circumtropical genus with members living in the infralittoral zone among algae, on sandy and muddy bottoms and on coral rubble. Like some other widely distributed genera as *Melita*, *Eriopisa* and *Nuuanu*, now *Elasmopus* also seems to represent a lineage with, up to now, one "satellite" (*Thalassostygius exiguus*) inhabiting the marine interstitial.

However, the relation of the new genus with *Elasmopus* is only very superficial. The shape of the gnathopods, the large coxal plates, the chaetotaxy of the mouthparts and the spatulate dispariramous third uropod of *Thalassostygius* bear faint resemblances to *Elasmopus molokai* Barnard, 1970, from Hawaii.

The problem often encountered when searching for affinities is that the stygo habitat, and in this case the marine interstitial, requires certain adaptive modifications which are of general occurrence through many distantly related groups and are therefore of no phylogenetic significance (Notenboom, 1988).

One can recognize, roughly, two amphipod forms (the suborder Ingolfiellidea excluded) inhabiting the interstices of permanently immersed sediments along marine coasts:

1) The Hadzioid/Melitoid group (Melitidae sensu Bousfield, 1973; emend. Stock, 1986), the Bogidiellid group (Coineau & Stock, 1986) and one member of Aoridae (l'Hardy & Truchot, 1964), all with relatively slender bodies and long appendages (i.e. *Psammogammarus*, *Saliweckelia*, *Eriopisella*, *Actogidiella*, etc.),

and

2) The Nuuanuid-Liljeborgiid-Salentinellid form with relatively small and compressed bodies and short appendages.

The current state of affairs is that the second group of coastal interstitial dwellers does not seem to have used the marine interstitial as an "entrance habitat" toward inland groundwaters. Examples are *Nuuanu curvata* Vonk, 1988 and *Idunella sketi* Karaman, 1980. An exception to this "rule" is formed by *Salentinella angelieri* Ruffo & Delamare Deboutteville, 1952, which is found in stygal habitats in coastal regions with raised chlorinity as well

as in freshwater conditions more inland (Platvoet, 1987).

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