

New records of interstitial Anthuridea including *Curassanthura*, from the Western Atlantic (Crustacea: Isopoda)

Brian Kensley

Department of Invertebrate Zoology, Smithsonian Institution, Washington, D.C. 20560, U.S.A.

Keywords: Interstitial Isopoda, Anthuridea, *Curassanthura*, Western Atlantic

Abstract

The male and ovigerous female of *Curassanthura halma* are recorded for the first time, from Curaçao. *Curassanthura bermudensis* is recorded for the second time, from Walsingham Cave, Bermuda. The fourth species of the genus, *Curassanthura jamaicensis* n. sp., is described from an anchialine sinkhole on Jamaica.

Résumé

Le mâle et la femelle ovigère de *Curassanthura halma* sont signalés pour la première fois à Curaçao. *Curassanthura bermudensis* est signalée pour la seconde fois à Walsingham Cave, Bermuda. Une quatrième espèce de ce genre, *Curassanthura jamaicensis*, est décrite de la Jamaïque.

I. Introduction

The paranthurid genus *Curassanthura*, represented to date by three species, has an intriguing distribution in anchialine and interstitial habitats on both sides of the North Atlantic. It has been suggested (Wägele, 1985) that the genus is a Tethyan relict, and that its present-day distribution is the result primarily of continental drift. The material reported here, from Curaçao, Jamaica, and Bermuda, adds information on the morphology of the male and ovigerous female of the type species *C. halma*, while the addition of a new species provides further evidence for the Tethyan origin.

II. Systematics

Family Paranthuridae

Curassanthura bermudensis Wägele & Brandt, 1985

Curassanthura bermudensis Wägele & Brandt, 1985: 326, figs. 2–4; Kensley & Schotte, 1989: 67, figs. 30 G, H.

Material. – USNM 243572, 1 non-ovig. ♀ 3.0 mm, Walsingham Sink Cave, Bermuda, coll. T. Iliffe, 24 Jul 1979.

Remarks. – This species was previously known from a single non-ovigerous female from Church Cave, Bermuda. Walsingham Sink Cave is in the same general vicinity as the type locality.

Curassanthura halma Kensley, 1981

(Fig. 1)

Curassanthura halma Kensley, 1981: 131, fig. 1; Wägele, 1982: 49, figs. 1–3; Wägele 1985: 263; Wägele & Brandt, 1985: 324, fig. 1; Kensley & Schotte, 1989: 68, figs. 30 D–F.

Material. – Curaçao, Boca Tabla, in coarse sand, intertidal, sediment depth 40 cm, coll. J.H. Stock & J.J. Vermeulen, May 1984: Sta. 84–27, 1 non-ovig. ♀; Sta. 84–37, 1 non-ovig. ♀.

Curaçao, Boca Santa Marta, coll. J.H. Stock & J.J. Vermeulen, May 1984: Sta. 84–74 (in subtidal coral rubble, water depth 10–60 cm, 1 juv.; Sta.

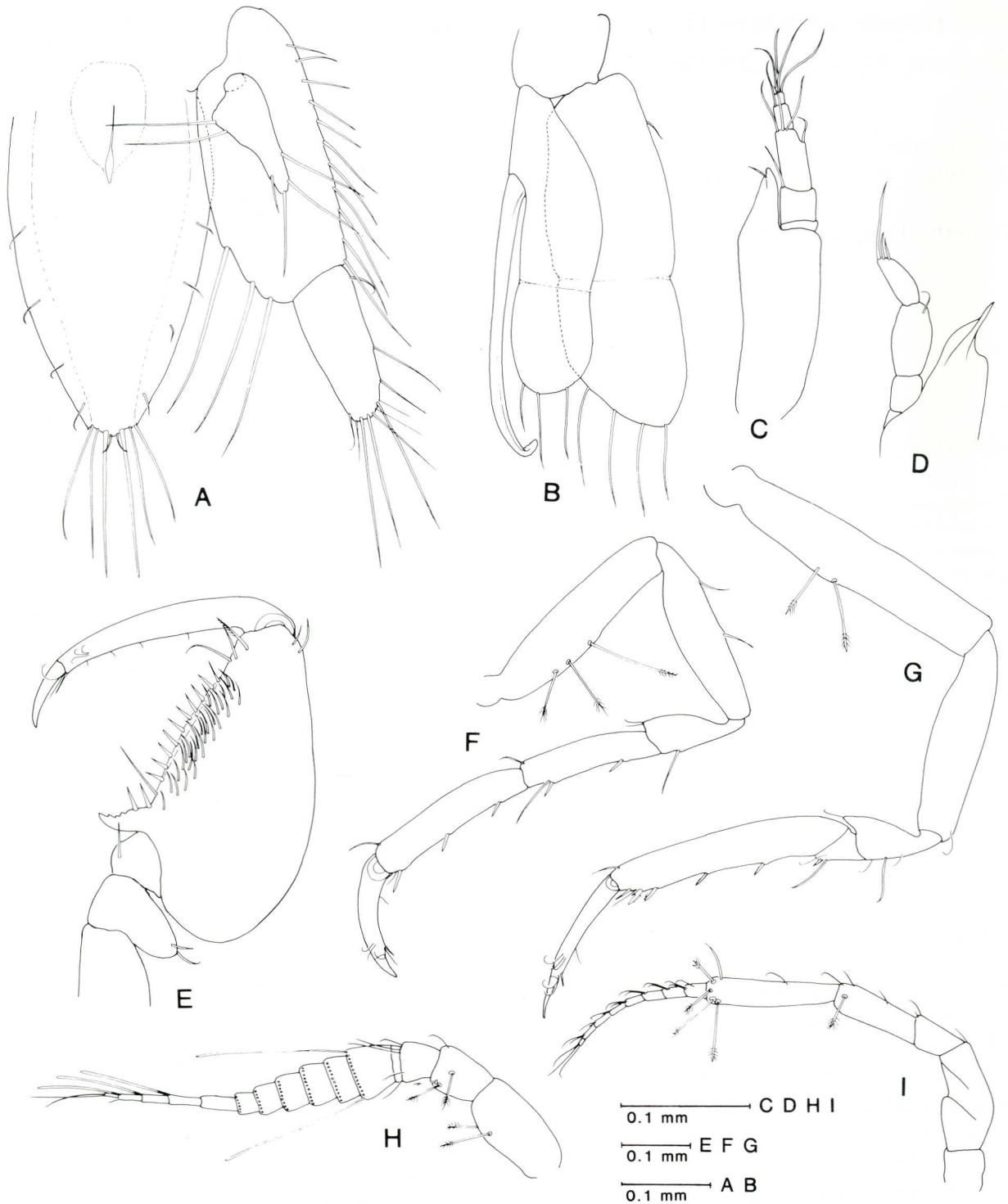


Fig. 1. *Curassanthura halma*, Kensley, male. A – telson and right uropod; B – pleopod 2; C – maxilliped; D – mandible; E – pereopod 1; F – pereopod 6; G – pereopod 2; H – antennule; I – antenna.

84–75 (Inner Bay, sediment depth 60 cm, above tide line), 5 non-ovig. ♀, 5 juv.; Sta. 84–76 (Inner Bay, water depth 25 cm, sediment depth 40 cm, fine coral debris), 4 non-ovig. ♀; Sta. 84–82 (Inner Bay, ca. 8 m inland, in coral rubble), 3 non-ovig. ♀, 2 juv.; Sta. 84–86A, 84–86B, 84–86C (Inner Bay, above water line, in coral rubble, sediment depth 70 cm), 1 ovig. ♀ (4.9 mm), 4 non-ovig. ♀, 10 juv.; Sta. 84–87 (Inner Bay, in coral rock crevices), 3 non-ovig. ♀, 5 juv.

Curaçao, Kennedy Boulevard, coral debris in front of Trade Centre (= 500 m east of Caribbean Marine Biological Institute), coll. J.H. Stock & J.J. Vermeulen, May 1984: Sta. 84–126 (2 m below low tide line, sediment depth 50 cm), 1 ♂ (3.2 mm), 1 juv.; Sta. 84–127 (1 m above low tide line, sediment depth 50 cm), 2 ♂ (3.1 mm, 4.2 mm), 2 non-ovig. ♀ (3.3, 3.9 mm), 2 juv.; Sta. 84–132, 1 ♂, 1 non-ovig. ♀ 3.5 mm, fragm.).

Curaçao, Piscadera Bay, near pier of Caribbean Marine Biological Institute, low tide, coral debris, sediment depth 40 cm, Sta. 84–154, 1 juv.

Curaçao, Awa di Oostpunt lagoon, seaward side, coll. L. van den Bosch and T.H.C. van den Brink, April–May 1988: Sta. 2, 1 non-ovig. ♀, 1 juv., 1 m depth, 0–25 cm sediment depth; Sta. 4, 1 ♂, 0 m, 75–100 cm; Sta. 5, 1 non-ovig. ♀, 5 m, 25–50 cm; Sta. 8, 1 non-ovig. ♀, 10 m, 0–25 cm; Sta. 10, 1 juv., 10 m, 50–75 cm; Sta. 11, 2 non-ovig. ♀, 10 m, 0–25 cm.

Curaçao, west of mouth of Piscadera Bay, coll. L. van den Bosch and T.H.C. van den Brink, March 1988: Sta. 13, 1 non-ovig. ♀, 30 m depth, 25–50 cm sediment depth.

Description. – Male: Cephalon with tiny pigmented eyespots at base of anterolateral lobes. Antennular flagellum of 12 articles, distal band of aesthetascs on articles 2–7, single aesthetascs on articles 9–11. Pereopod 1, propodal palm with 12 short simple (i.e. non-pectinate as in ♀) spines on margin, band of numerous short submarginal spines on mesial surface. Pereopod 2, propodus with 5 spines on posterior margin, 3 distal spines fairly closely spaced. Pleopod 2, exopodite with transverse suture, somewhat longer than endopodite; latter with transverse suture, copulatory stylet articulating on mesial margin in proximal half,

reaching well beyond apex of endopodite, distally recurved laterad. Uropods and telson as in female.

Ovigerous female: Cephalon with 4 tiny eyespots at base of anterolateral lobe. Oostegites on pereonites 3–5.

Remarks. – These are the first records of the male and ovigerous female of this species. The presence of eyes in almost all specimens contradicts earlier descriptions of the species as being blind.

Previous records of *C. halma* were from rubble 1.5 to 3.0 m above the tide line in Curaçao, as well as from the landward side of a bar of rock and coral rubble on Bonaire; salinities ranged from 18–33 p.p.t., depth in the sediment up to 50 cm. The present material extends our knowledge of the species' habitat, with occurrences in fully marine sediments to a depth of 100 cm, in water depths ranging from the intertidal to 30 m. This tolerance of a range of salinities may indicate a stage in the invasion of freshwater habitats by marine species.

Three species of anthurids, *Apanthura cracenta* Kensley, 1984, *Mesanthura fasciata* Kensley, 1982, *Pendanthura tanaiformis* Menzies & Glynn, 1968, and one hyssurid *Horoloanthura irpex* Menzies & Frankenberg, 1966, were collected from several stations along with *C. halma*. While the anthurids are all fairly widespread in the Caribbean, this is the first record for them from Curaçao. The record of *H. irpex*, previously known from the east coast of the United States and the Gulf of Mexico, is the first for the Caribbean.

Curassanthura jamaicensis n. sp.

(Fig. 2)

Material. – USNM 243573, Holotype non-ovig. ♀ tl 3.6 mm; Paratypes, 1 non-ovig. ♀ tl 3.6 mm, 1 non-ovig. ♀ (pleon missing), sta 90–015, 1.5 m deep sinkhole near Jacksons Bay, Clarendon Parish, Jamaica, about 100 m inland, 14 ppt., coll. T. Iliffe and S. Sarbu, 19 Jun 1990.

Description. – Cephalon with rostrum reaching as far forward as anterolateral lobes. All three specimens with tiny anterolateral pigmented eyes. Telson tapering, lateral margins slightly convex, posterior margin rounded, with 4 pairs of apical setae.

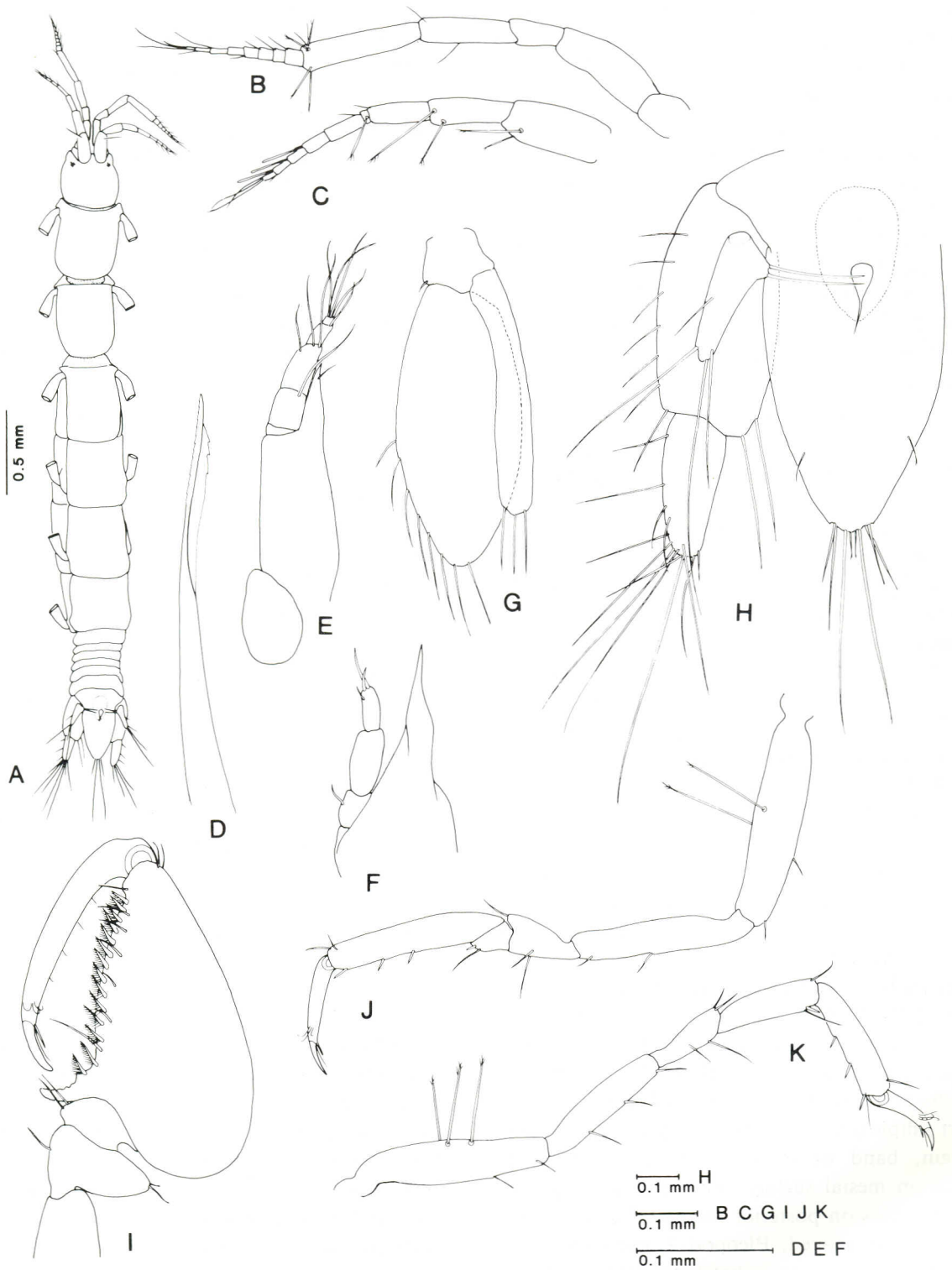


Fig. 2. *Curassanthura jamaicensis*, n. sp. A – holotype in dorsal view; B – antenna; C – antennule; D – maxilla; E – maxilliped; F – mandible; G – pleopod 1; H – telson and left pleopod; I – pereopod 1; J – pereopod 2; K – pereopod 6.

Table 1. Comparison of 5 characters in 4 species of *Curassanthura*.

	<i>C. bermudensis</i>	<i>C. canariensis</i>	<i>C. halma</i>	<i>C. jamaicensis</i>
Maxilliped, endite reaching palp article	proximal article 3	proximal article 3	proximal article 3	distal article 3
Pereopod 1, propodal spines	10–11	20	8–9	14
Pleopod 1, exopodite setae	6–7	10	4	8
Pleopod 1, exopodite/endopodite width	2.0–2.2	5	3	3.5
Uropodal exopodite proximomesial lobe	absent	present	present	present

Antennule with flagellum of 6 articles, single aesthetasc on articles 3–5. Antennal peduncle with articles 4 and 5 relatively elongate, 5 subequal to article 2 in length; flagellum of 8 setose articles. Mandibular palp with article 3 bearing 2 terminal setae, single subterminal seta. Maxillipedal palp of 5 articles, article 1 short; endite reaching to distal half of article 3. Pereopod 1, propodus with proximal digitiform palmar lobe, palm margin bearing 14 pectinate spines. Pereopod 2, carpus bearing short posterodistal spine, free anterior margin very short; propodus with 3 short spines on posterior margin. Pereopod 6, carpus with posterior margin only slightly shorter than anterior, with short posterodistal spine; propodus with 3 short spines on posterior margin. Pleopod 1, exopodite operculiform, with 8 plumose setae on distolateral margin, about 3.5 times width of endopodite; latter four-fifths length of exopodite, with 3 distal plumose setae. Uropodal protopodite with 2 elongate mesiodistal setae; exopodite articulating dorsally on protopodite, proximomesial lobe bearing 2 elongate mesially directed setae, distal two-thirds slender, with 3 elongate subterminal setae; endopodite reaching slightly beyond telsonic apex, about 2.5 times longer than basal width, distally rounded, with numerous distal setae.

Remarks. – The genus *Curassanthura*, first described from Curaçao (*C. halma* Kensley, 1981), is now known from three additional localities: *C. canariensis* Wägele, 1985, from Lanzarote in the

Canary Islands, *C. bermudensis* Wägele and Brandt, 1985, from Bermuda, and *C. jamaicensis* n. sp., from Jamaica. In addition, the unidentified paranthurid from Cuba mentioned and illustrated in Coineau & Botosaneanu (1973, p. 217, photo 13) is also probably a species of *Curassanthura*. In spite of this broad geographical range, the described species are all remarkably similar, even to the number of setae on particular appendages such as the uropodal exopodite, or the number of articles in the antennular and antennal flagella. Table 1, using characters only of the non-ovigerous female (the ovigerous female and male are known only for *C. halma*) attempts to distinguish the four species. While *C. halma* was initially described as blind, tiny eyes are found to be present in the male as well as ovigerous and non-ovigerous females. Eyes are also present in the Jamaica species, but were not seen in *C. bermudensis* or *C. canariensis*.

Two characters, viz. the number of spines on the palmar margin of the propodus of pereopod 1, and the number of plumose setae on the distolateral margin of the opercular exopod of pleopod 1, seem to support the hypothesis of a Tethyan origin for the genus. If reduction in the number of spines and setae is indeed an indication of the direction of evolution within the genus, then *C. canariensis* with 20 palmar spines and 10 plumose setae is clearly more primitive than *C. jamaicensis* (14 spines, 8 setae) and *C. bermudensis* (10–11 spines, 6–7 setae). *C. halma*, with 8–9 spines and 4 setae is, by this ad-

mittedly questionable reasoning, the most advanced (or the most recently evolved) species.

Acknowledgements

My sincere thanks are due to Dr. L. Botosaneanu, Zoologisch Museum, Amsterdam, for making the collections from Curaçao (assembled by J.H. Stock, J.J. Vermeulen, L. van den Bosch and T.H.C. van den Brink) available for study, and for donating material to the Smithsonian collection. I also thank Dr. Tom Iliffe, Texas A&M University, for the material collected from Bermuda and Jamaica. Collection of the Jamaican material was supported by an Explorers Club grant to T. Iliffe and S. Sarbu; the latter was also supported by a grant from the Department of Biological Sciences of the University of Cincinnati. I am grateful to Dr. Thomas E. Bowman, Smithsonian Institution, for a critical reading of the first draft of this paper.

References

- Coineau, N. & L. Botosaneanu, 1973. Isopodes interstitiels de Cuba. *In*: Résultats des expéditions biospéologiques Cubano-Roumaines à Cuba, I: 191–220. Editura Academiei, București.
- Kensley, B., 1981. *Curassanthura halma*, a new genus and species of interstitial isopod from Curaçao, West Indies (Crustacea: Isopoda: Paranthuridae). *Bijdr. Dierk.*, 51(1): 131–134.
- Kensley, B., 1982. Anthuridea (Crustacea: Isopoda) of Carrie Bow Cay, Belize. *In*: The Atlantic Barrier Reef Ecosystem at Carrie Bow Cay, Belize, I: Structure and Communities. K. Rützler & I.G. Macintyre, eds., *Smiths. Contrib. mar. Sci.*, 12: 321–353.
- Kensley, B., 1984. The Atlantic Barrier Reef Ecosystem at Carrie Bow Cay, Belize, III: New marine Isopoda. *Smiths. Contrib. mar. Sci.*, 24: 1–81.
- Kensley, B. & M. Schotte, 1989. Guide to the marine isopod crustaceans of the Caribbean. 308 pp. Smithsonian Institution Press, Washington, D.C. and London.
- Menzies, R.J. & D. Frankenberg, 1966. Handbook on the common marine isopod Crustacea of Georgia. 93 pp. University of Georgia Press, Athens, Georgia.
- Menzies, R.J. & P.W. Glynn, 1968. The common marine isopod Crustacea of Puerto Rico. *Stud. Fauna Curaçao*, 27(104): 1–133.
- Wägele, J.W., 1982. The hypogean Paranthuridae Cruregens Chilton and *Curassanthura* Kensley (Crustacea, Isopoda), with remarks on their morphology and adaptations. *Bijdr. Dierk.*, 52(1): 49–59.
- Wägele, J.W., 1985. On the tethyan origin of the stygobiont Anthuridea *Curassanthura* and *Cyathura* (*Stygocyathura*), with description of *Curassanthura canariensis* n. sp. from Lanzarote (Crustacea, Isopoda). *Stygologia*, 1(3): 258–269.
- Wägele, J.W. & A. Brandt, 1985. New West Atlantic localities for the stygobiont paranthurid *Curassanthura* (Crustacea, Isopoda, Anthuridea) with description of *C. bermudensis* n. sp. *Bijdr. Dierk.*, 55(2): 324–330.

Received: 28 February 1992