

NEW CYCLOPOIDS (COPEPODA) FROM ANCHIALINE CAVES IN BERMUDA

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A new species of *Speleoithona* and two new species of *Halicyclops* are described from plankton samples taken in anchialine caves in Bermuda. *Halicyclops ytororoma*, previously known from interstitial intertidal waters along the coast of the State of São Paulo, Brazil, is also found in these troglobiont samples. *Speleoithona* is redefined to contain the new species from Bermuda.

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INTRODUCTION

Collections from anchialine caves on Bermuda revealed the existence of three species of *Halicyclops* (Cyclopidae) and one species of *Speleoithona* (Speleoithonidae).

Halicyclops is a cosmopolitan genus found mainly in coastal brackish waters such as estuaries, lagoons, ponds, marshes, wells, interstitial water in sandy beaches, and caves. Of the 17 species and subspecies listed by HERBST (1986) as inhabitants of subterranean waters, only *H. thermophilus* KIEFER, 1929, *H. troglodytes* KIEFER, 1954 and *H. ryukyensis* Ito, 1962 have also been recorded from caves. However, none of them are troglobiontic, they occur in surface habitats as well.

Speleoithona was recently described by ROCHA & ILIFFE (1991) from anchialine caves on Eleuthera and San Salvador Islands in the Bahamas. Speleoithonids are minute diaphanous cyclopids close related to the oithonids. They are troglobiontic and planktonic in the cave waters.

HABITAT AND REPORTED COPEPODS

The Bermuda Islands consist of Pleistocene age, eolian limestone islands that are situated on top of a volcanic sea mount of Cretaceous mid-ocean origin. Bermuda is located approximately 1000 km off the east coast of the United States at 32° N, 64° W in the Sargasso Sea. The shallow-water platform surrounding the islands has the northernmost coral reefs in the Atlantic.

Numerous limestone caves are present on the islands of Bermuda. Many of these inland caves continue down to sea level, anchialine pools. Surface

salinities in the cave pools average about 20-25 ‰, but reach fully marine levels at depths of 2-4 m. Far-reaching submerged cave passages extend from the pools, interconnecting caves previously thought to be unrelated.

Walsingham and Deep Blue Caves (1 and 3 in Fig. 1) are segments of a much more extensive cave system interconnected by underwater passages. This Walsingham Cave System is characterized by large, mostly underwater breakdown chambers, some of which reach the surface forming shaded surface pools at the base of rocky cliffs (e.g. Walsingham and Deep Blue Caves). Bee Pit (2 in Fig. 1) is probably connected hydrologically to this System as it lies in the same collapse depression as Deep Blue. While the entrance pools at Walsingham and Deep

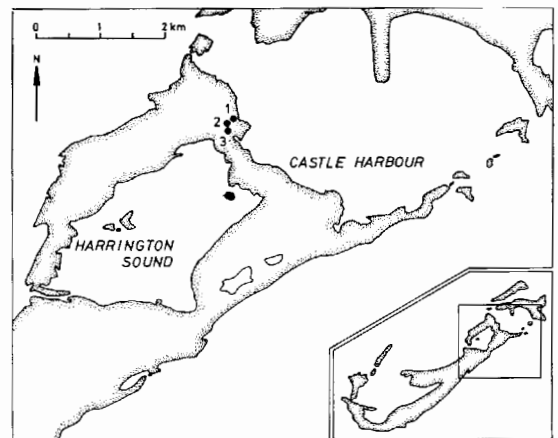


Fig. 1. Map of Bermuda showing the location of caves mentioned in this paper. 1. Walsingham Cave. 2. Bee Pit. 3. Deep Blue Cave. 4. Green Bay Cave.

Blue are open, at least on one side, to daylight, the pool at Bee Pit receives only dim, indirect light. Surface salinities in October 1981 at Walsingham, Deep Blue and Bee Pit Caves were 17.8, 27.2, and 21.8 ‰, respectively.

The Green Bay Cave System (4 in Fig. 1), at 2.2 km in length, is the largest in Bermuda. Only two entrances to this wholly underwater cave are known. A submerged entrance at the end of Green Bay is joined to Cliff Pool, an island sinkhole entrance about 150 m away, by the Connection Passage. This passage alternates between low, narrow sections with moderate to strong water currents and broad, silt-floored chambers at 12 to 17 m depths.

A rich and diverse endemic troglobiont fauna inhabits Bermuda's anchialine caves (SKET & ILIFFE 1980; ILIFFE & al. 1983). Notable among the Copepoda are the following:

Calanoida

- Ridgewayia marki* ESTERLY, 1911
- Miostephos leamingtonensis* YEATMAN, 1980
- Erebionectes nesioticus* FOSSHAGEN, 1985
- Paracyclops naessi* FOSSHAGEN, 1985

Cyclopoida

- Neocyclops stocki* PESCE, 1985

Misophrioida

- Speleophria bivexilla* BOXSHALL & ILIFFE, 1986
- S. scottodicarloi* BOXSHALL & ILIFFE, 1990

Platycopoida

- Antriscopia prehensilis* FOSSHAGEN, 1985
- Nanocopia minuta* FOSSHAGEN, 1988

MATERIAL AND METHODS

Specimens were collected with a fine mesh (about 100 μ m) net while wading, swimming or SCUBA diving in the cave pools. All cave diving met standards set by the U.S. National Speleological Society Cave Diving Section. Sorted material was preserved in 10 % formalin solution.

Whole specimens were examined in temporary lactic acid mounts. Fragments of cover glass were used to give support to the cover glass of the preparation. By moving the cover glass slowly and carefully by hand, the whole animal or a particular appendage was placed in different positions, making possible the observation of morphological details.

Dissected and whole specimens were examined for variation in the characters described as well as for preparing and checking the drawings, all of which were made using an oil immersion lens.

Specimens were deposited in the National Museum of Natural History, Smithsonian Institution, Washington (USNM), and in the Museu de Zoologia da Universidade de São Paulo (MZUSP).

The figures were prepared using a camera lucida on a Leitz Laborlux D phase-contrast microscope.

The terminology used in the descriptive text follows HUYS & BOXSHALL (1991).

TAXONOMY

Family Speleoithonidae ROCHA & ILIFFE, 1991

Speleoithona bermudensis sp. n.

(Figs 2–17)

Material examined. Bermuda, Walsingham Cave, Hamilton Parish: 7 females, 3 males, 2 copepodids collected with fine mesh dip net from the water column of entrance pool open to daylight at 0–4 m depths, 4 October 1982; Bee Pit Cave, Hamilton Parish: 14 females, 3 males, 3 copepodids collected with fine mesh dip net from water column and submerged soil slope in dimly illuminated main pool at 0–1 m depths, 23 January 1984, all T. M. Iliffe col. Female holotype (257015), 11 paratypes, including 7 females, 1 male and all copepodids from Bee Pit Cave (257025), and all specimens from Walsingham Cave (257014) in USNM. Lot of 7 female and 1 male paratypes from Bee Pit Cave in MZUSP (11379).

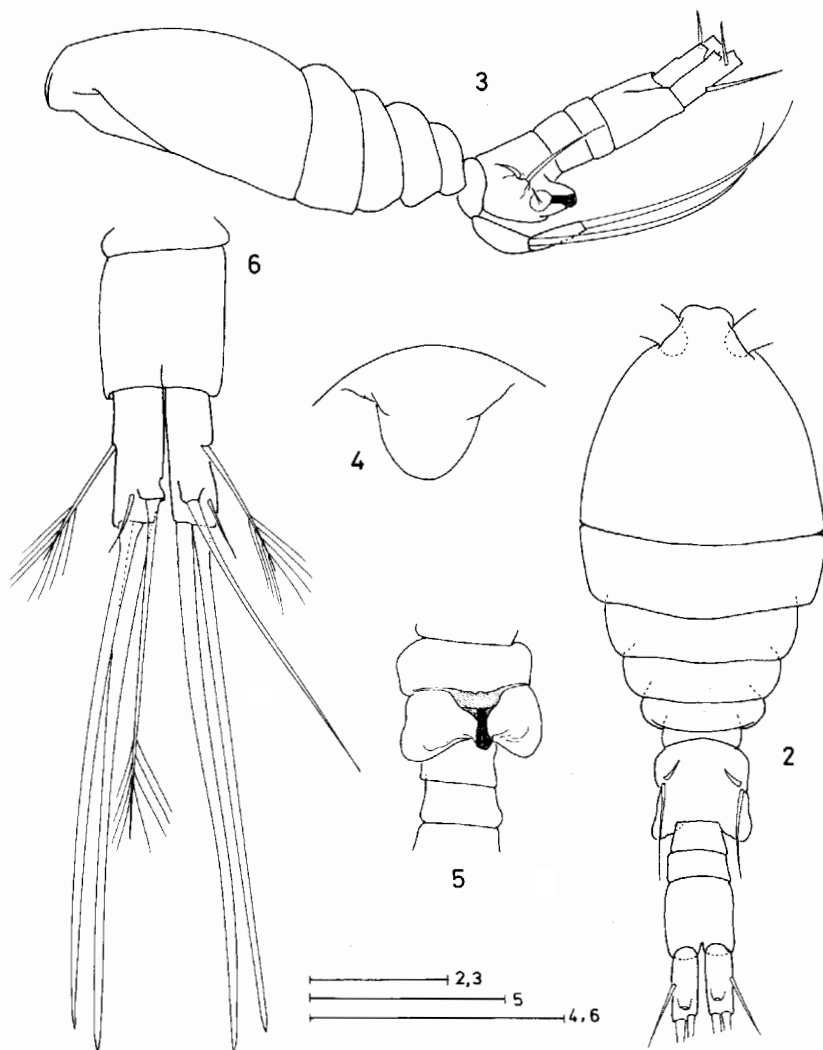
Female. Body length 260–290 μ m (n = 8). Prosome : urosome ratio = 1.36–1.54 : 1 (n = 8). Body weak and diaphanous, making it difficult to distinguish clearly articulations of body somites or appendage segments. Forehead (Fig. 2) enlarged and notched medially in dorsal view. Rostrum (Fig. 3) angular in lateral and blunt in frontal view (Fig. 4). First pediger free (Figs 2, 3). Posterior margins of all body somites smooth.

Genital double somite swollen ventrally (Fig. 3) and expanded backwards at posterior corners (Fig. 5) making it quadrate in both dorsal and ventral views. Genital system as in Fig. 5. Copulatory pore placed medially at posterior margin of somite. Copulatory duct straight and heavily sclerotized. Seminal receptacle small and connected to dorsolaterally located genital antra by tiny ducts turned anteriorly. Anal somite (Fig. 6) as long as two preceding somites together.

Caudal ramus (Fig. 6) as long as anal somite and about 3 times longer than wide. Lateral seta inserted about halfway along outer margin and overpassing end of ramus. Two apical setae about equal in length, 4.2 times longer than ramus, smooth and bluntly pointed. Dorsal seta about 2.5 times length of caudal ramus and shorter than apical setae. Outer subterminal seta inserted midway between 2 apical setae and dorsal seta.

Antenna (Fig. 7) 3-segmented. First segment formed by fusing of basis and endopod 1, and with 2 inner setae; outer surface with group of setules distally in some specimens, and smooth in others (Fig. 8). Endopod segment 2 bearing 2 marginal and 3 distal inner setae. Endopod segment 3 with 7 apical setae.

Mandibular palp (Fig. 9) biramous. Basis wider than long, smooth. Both rami 2-segmented; endo-



Figs 2-6. *Speleoithona bermudensis* sp. n., female. 2. Habitus, dorsal. 3. Habitus, lateral. 4. Rostrum, frontal. 5. Genital double somite and urosomite 3, ventral. 6. Anal somite and caudal rami, dorsal. Scale bars = 50 μ m.

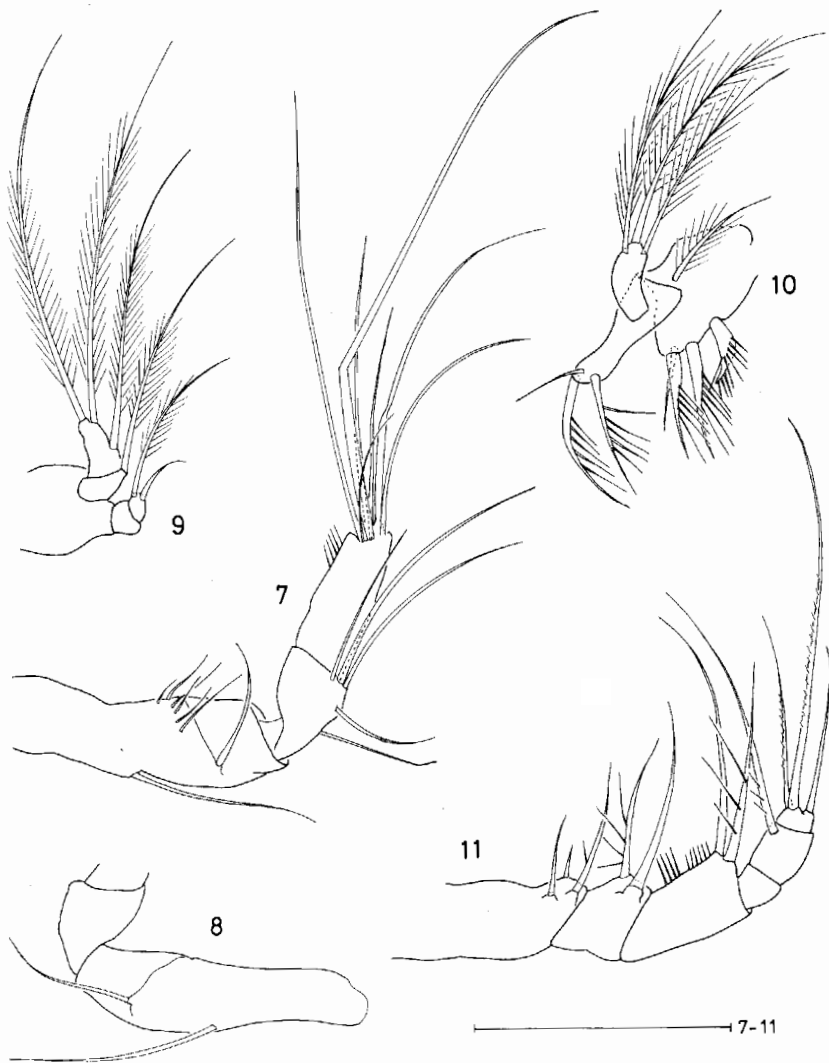
pod segment 1 swollen, unarmed; endopod segment 2 with 2 apical setae. Proximal segment of exopod with 1 seta; terminal segment bearing 3 setae.

Maxillule (Fig. 10) with 3 spines and 1 seta on praecoxal arthrite. Seta of coxal epipodite present. Basis with 2 setulose setae and fine, short, smooth seta. Exopod 1-segmented, with 3 setae. Endopod and coxal endite absent.

Maxilliped (Fig. 11) of 6 segments (endopod represented by 3 distalmost segments) and with setal formula of 3.2.2.0.1.3.

Legs 1-4 (Figs 12-15) with rami 3-segmented; armature formula as follows (Roman numerals indicating spines, Arabic numerals representing setae):

	coxa basis		endopod			exopod		
			1	2	3	1	2	3
Leg 1	0-1	1-I	0-1;0-1;1,2,2	I-0;I-1;III,2,3				
Leg 2	0-0	1-0	0-0;0-0;1,2,2	I-0;I-0;III,2,4				
Leg 3	0-0	1-0	0-0;0-0;1,2,2	I-0;I-0;II,2,4				
Leg 4	0-0	1-0	0-0;0-2;1,2,2	I-0;I-0;II,2,4				

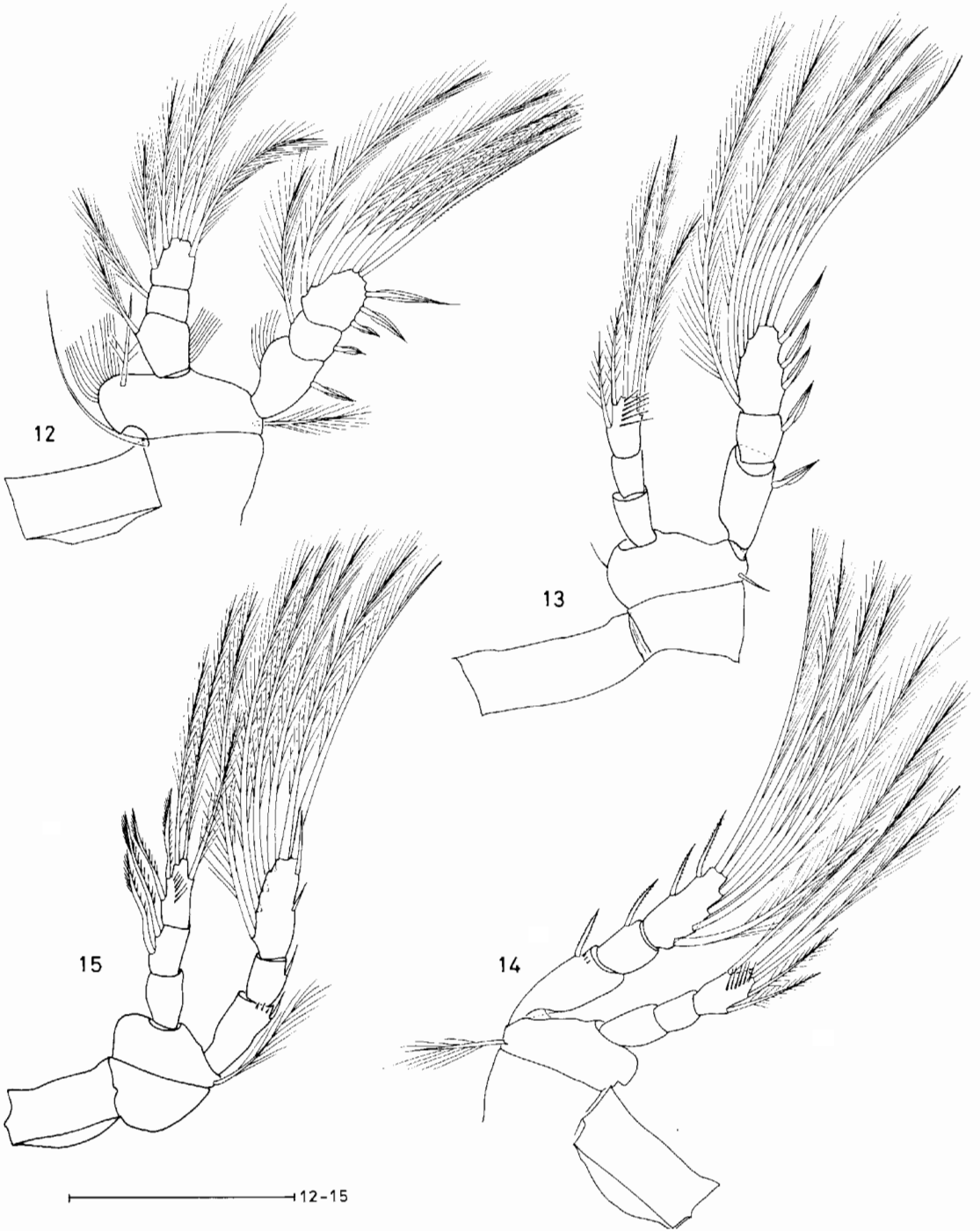


Figs 7-11. *Speleoithona bermudensis* sp. n., female. 7. Antenna. 8. First and second segments of antenna of specimens lacking group of setules on outer face. 9. Mandibular palp. 10. Maxillule. 11. Maxilliped. Scale bar = 50 μ m.

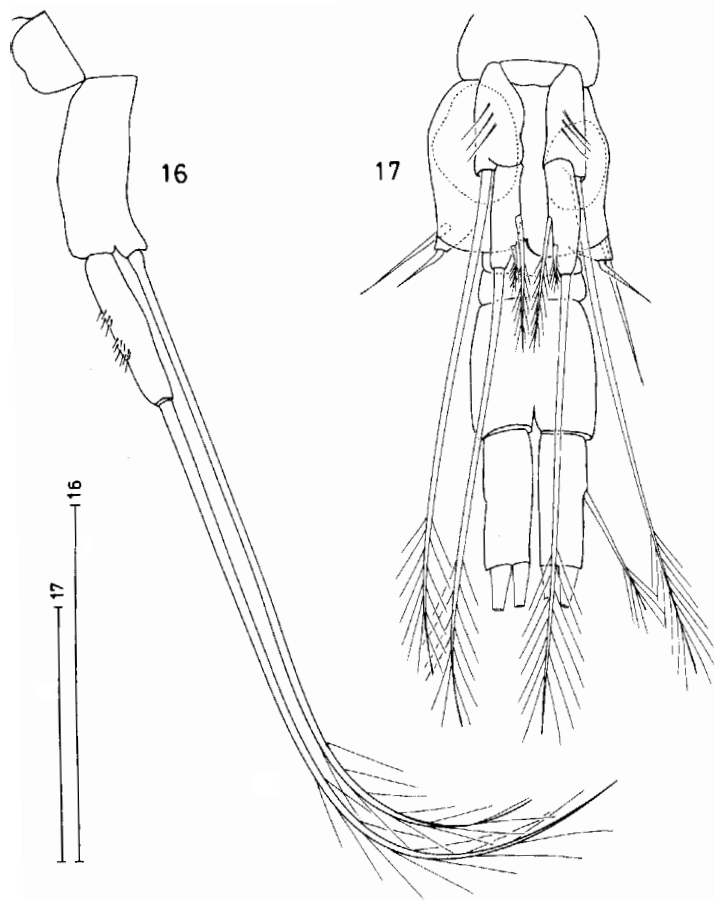
Outer spines of legs 1-3 with lateral serrate membrane. Outer spines of leg 4 diaphanous, smooth. Outer apical seta of leg 1 exopod segment 3 finely serrate on outer margin and plumose on inner margin; corresponding seta of other legs smooth on outer margin. Leg 4 endopod segment 3 twice longer than broad. Inner setae of leg 4 endopod segments 2 and 3 (Fig. 15) stout, curved, with stiff setules on outer margin and fringe of closely set hairs on inner distal margin. Distal seta of leg 4 endopod segment 2 somewhat longer than other modified setae on leg 4 endopod. Remaining setae of leg 4 endopod segment 3 plumose.

Members of leg 5 (Fig. 16) joined by intercoxal sclerite. Each leg uniramous, with coxobasis about 2.5 times longer than wide, a little longer than terminal segment (1.1 : 1), and bearing long plumose seta on outer distal corner. Exopod 1-segmented, about 4 times longer than wide, with 2 groups of pinnules on ventral surface, and long apical seta. Both setae extending beyond end of caudal rami.

Leg 6 (Fig. 3) represented by spine curved forward and long smooth seta reaching posterior margin of urosomite 4.



Figs 12–15. *Speleoithona bermudensis* sp. n., female. 12. Leg 1. 13. Leg 2. 14. Leg 3. 15. Leg 4. Scale bar = 50 μ m.



Figs 16-17. *Speleoithona bermudensis* sp. n., female. 16. Leg 5. Male: 17. Urosome bearing legs 5 and legs 6. Scale bars = 50 μm .

Male. Body length 255–300 μm ($n = 4$). Prosome : urosome ratio = 1.43–1.52 : 1 ($n = 4$). Cephalosome without lateral flap and accompanying integumental organs. Leg 5 (Fig. 17) 2-segmented, with proportions of each segment as in female. Coxobasis bearing row of 3 setules on ventral surface in addition to outer long seta. Exopod with long apical seta and 2 inner setae; inner proximal seta about 3 times longer than inner distal seta. Leg 6 (Fig. 17) represented by short, stiff seta curved dorsally and laterally, and long dorsal seta. Antenna, mouthparts, swimming legs and caudal rami as in female.

In all other respects, this species is similar to *Speleoithona eleutherensis* described by ROCHA & ILIFFE (1991).

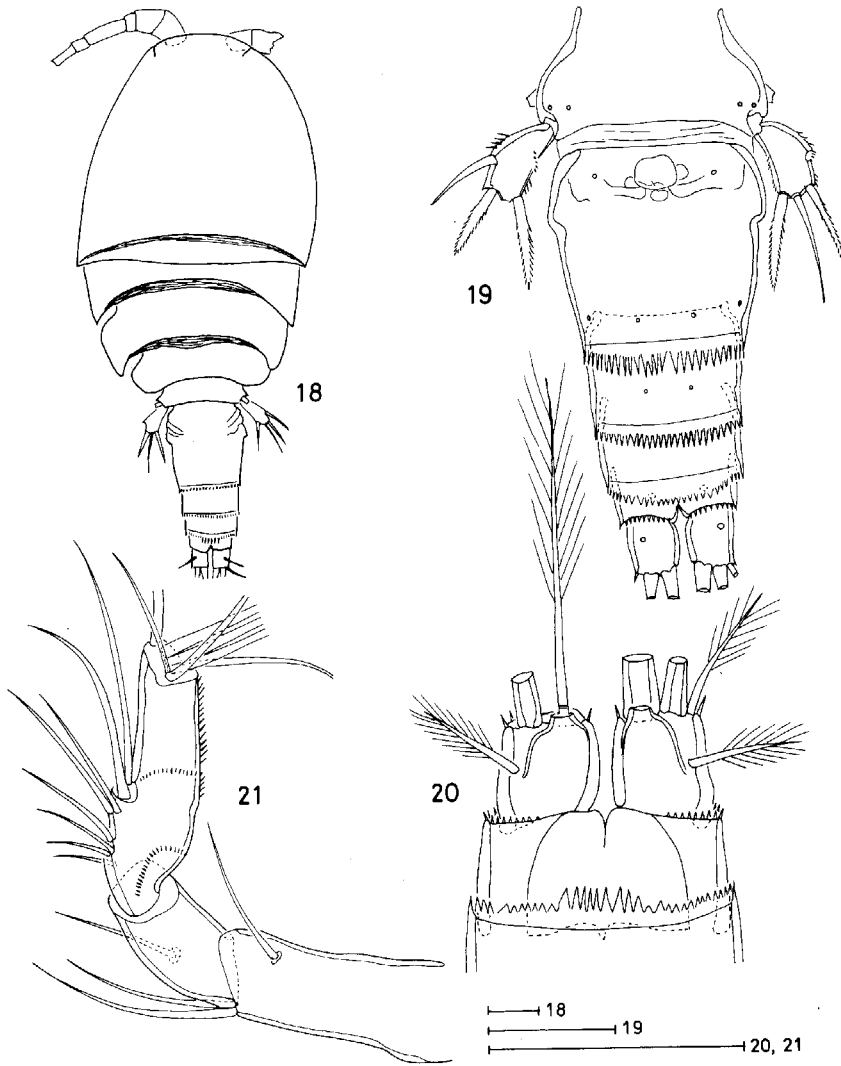
Etymology. The specific name refers to the island where the species was found.

Type locality. Bee Pit Cave, Hamilton Parish, Bermuda.

Remarks. The new species differs from the two Bahamian congeners reported by ROCHA & ILIFFE (1991) in the armature of the swimming legs. It has more spines on the exopods of legs 3 and 4, as well as one seta more on the endopod segment 3 of legs 2, 3 and 4. Also, it is distinguishable by the shape of the genital double somite, the structure of the maxillule, the segmentation and armature of the maxilliped, and the setation of the mandibular endopod 2.

Because of these differences *Speleoithona* needs to be redefined as follows to contain the new species: maxillulary coxa bearing either an endite armed with a seta or an outer seta representing the epipodite; the maximum number of setae on the praecoxal arthrite of the maxillule is 5 and that on the mandibular endopod 2 is 3; finally, 5 different setae, but no more than 4 per species, may be modified on the endopod of leg 4.

ROCHA & ILIFFE (1991) gave the wrong number of setae for the inner distal corner of the antennal segment 2 of *S. salvadorensis*. There are three setae as in *S. bermudensis*. On the other hand, the number of two setae is confirmed for *S. eleutherensis*.



Figs 18–21. *Halicyclops herbsti* sp. n., female. 18. Habitus, dorsal. 19. Urosome, ventral. 20. Anal somite and caudal rami, dorsal. 21. Antenna. Scale bars = 50 μ m.

Family Cyclopidae BURMEISTER, 1834

Subfamily Halicyclopinae KIEFER, 1927

Halicyclops herbsti sp. n.
(Figs 18–23)

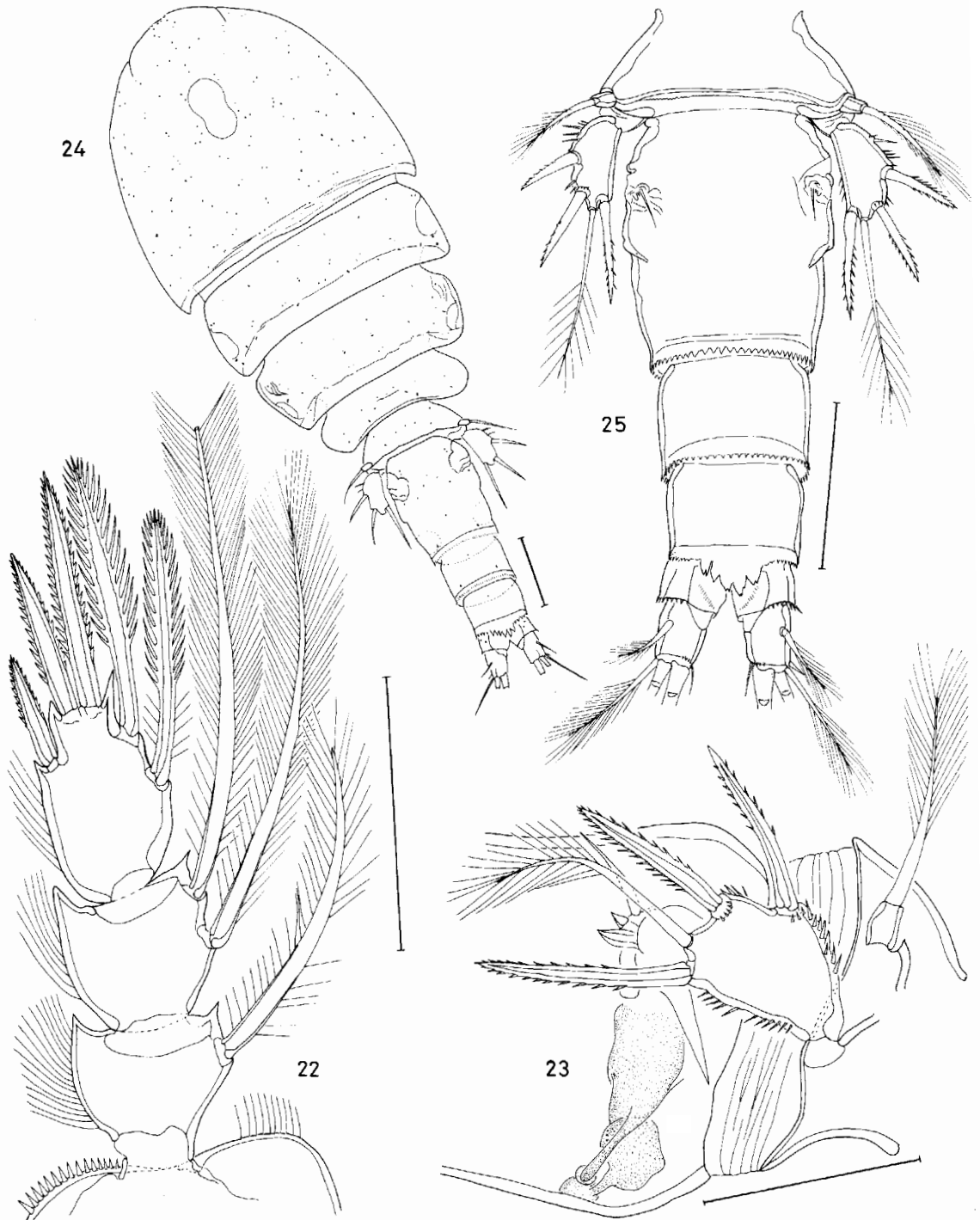
Material examined. Bermuda, Green Bay Cave, Hamilton Parish: 1 female, holotype (USNM 257018), collected with fine mesh plankton net from the water column in the Connection Passage at 12 m depth, 13 March 1984, T. M. Iliffe col.

Female. Body length 550 μ m. Prosome : urosome ratio = 1.75 : 1. Margins of all prosomites smooth (Fig. 18). Genital double somite (Fig. 19) as long

as wide and slightly expanded into lateral protrusions at proximal third. Hyaline frills of posterior border of genital double somite and urosomite 3 with ventral denticles longer and slenderer than dorsal ones. Hyaline frill of urosomite 4 (Fig. 20) with dorsomedial denticles longer than lateral ones, but not forming anal pseudoperculum.

Caudal rami (Fig. 20) as long as broad; outer apical seta 1.2 times longer than ramus; inner apical seta broken; dorsal seta three times longer than ramus; middle apical setae broken.

Antennule 6-segmented and armed as follows: 8, 12, 5 + spine, 6 + aesthetasc, 2, 10 + aesthetasc. Fourth segment 2.6 times longer than wide.



Figs 22–25. *Halicyclops herbsti* sp. n., female. 22. Leg 4 endopod, caudal. 23. Urosomite 1 with leg 5 and proximal part of genital double somite showing genital system, lateral. *Halicyclops bowmani* sp. n., female: 24. Habitus showing integumental pores pattern, dorsal. 25. Urosome, dorsal. Scale bars = 50 μ m.

Antenna (Fig. 21) bearing 8 setae on inner margin of terminal segment. Terminal segment of antenna 3.25 times longer than wide. Mouthparts as those of *Halicyclops glaber* described by ROCHA (1983).

Legs 1-4 armed as follows:

	exopod			endopod		
	1	2	3	1	2	3
Leg 1	I-1	I-1	III,5	0-1	0-1	II,4
Leg 2	I-1	I-1	IV,5	0-1	0-2	III,3
Leg 3	I-1	I-1	IV,5	0-1	0-2	III,3
Leg 4	I-1	I-1	III,5	0-1	0-2	III,2

Leg 1 basis with spine at inner corner reaching posterior border of endopod segment 1. Proximal seta on endopod segment 3 of legs 2-3 spiniform, plumose basally and serrate terminally. Both setae on leg 4 endopod segment 2 (Fig. 22) plumose. Leg 4 endopod segment 3 (Fig. 22) longer than wide (1.6 : 1); inner apical spine 1.2 times longer than segment and 1.4 times longer than outer apical spine; inner setae spiniform, about equal in length, both serrate terminally, but only proximal one plumose basally.

Leg 5 exopod (Fig. 23) 1.5 times longer than broad. Inner spine 1.2 times longer than segment. Other two spines about equal in length and as long as segment.

Male. Unknown.

Etymology. This species is named after Dr. Hans-Volkmar Herbst, eminent copepodologist.

Type locality. Green Bay Cave, Hamilton Parish, Bermuda.

Remarks. The new species resembles *H. laciniatus* described by HERBST (1987) from Barbados in the ornamentation of the hyaline frill of the urosomite 4, the structure of the leg 4 endopod segment 3, and the proportions of the caudal rami. However, they differ in the general outline of the genital double somite, the relative length of the dorsal seta of caudal rami, and the lengths of the spines of leg 5 in relation to the length of the exopod.

H. herbsti shares with another new species, which is being described from Maryland by ROCHA & HAKENKAMP (in press), the presence of eight setae along the inner margin of the terminal antennal segment. The number of setae found at that part of the antenna in *Halicyclops* is usually five.

Halicyclops bowmani sp. n.
(Figs 24-34)

Material examined. Bermuda, Deep Blue Cave, Hamilton Parish: 7 females, 8 males, and 3 copepodids collected with fine mesh dip net from water column and algae covered rocks of shaded entrance pool at 0-2 m depths, 16 January 1984, T. M. Iliffe col. Female holotype (257021), and 10 paratypes (257023) in USNM. Lot of 2 female and 4 male paratypes in MZUSP (11380).

Female. Body length range 500-530 μ m (n = 6). Prosome : urosome ratio = 1.5-1.69 : 1 (n = 5). Posterior borders of all prosomites smooth (Fig. 24). Genital double somite (Fig. 25) 1.2 times longer than broad, and with slight lateral protrusion at half-length. Hyaline frill of posterior border of genital double somite and urosomite 3 (Fig. 26) with ventral denticles longer and more slender than dorsal ones. Urosomite 4 medially expanded into coarsely serrate anal pseudopericulum (Figs 25, 27).

Caudal rami (Fig. 25) 1.3 times longer than wide. Outer apical seta twice longer than ramus and about 4 times longer than inner apical seta. Dorsal seta (Fig. 26) 1.5 times longer than outer apical seta. Outer middle apical seta (Fig. 28) smooth on inner margin and spinulose on outer margin of proximal half, and plumose terminally. Inner middle apical seta (Fig. 28) sparsely spinulose on both sides of proximal half; terminal half more densely spinulose basally and plumose apically.

Antennule of 6 segments, and armed as follows: 8, 12, 5 + spine, 6 + aesthetasc, 2, 10 + aesthetasc. Fourth segment of antennule 2.5 times longer than wide.

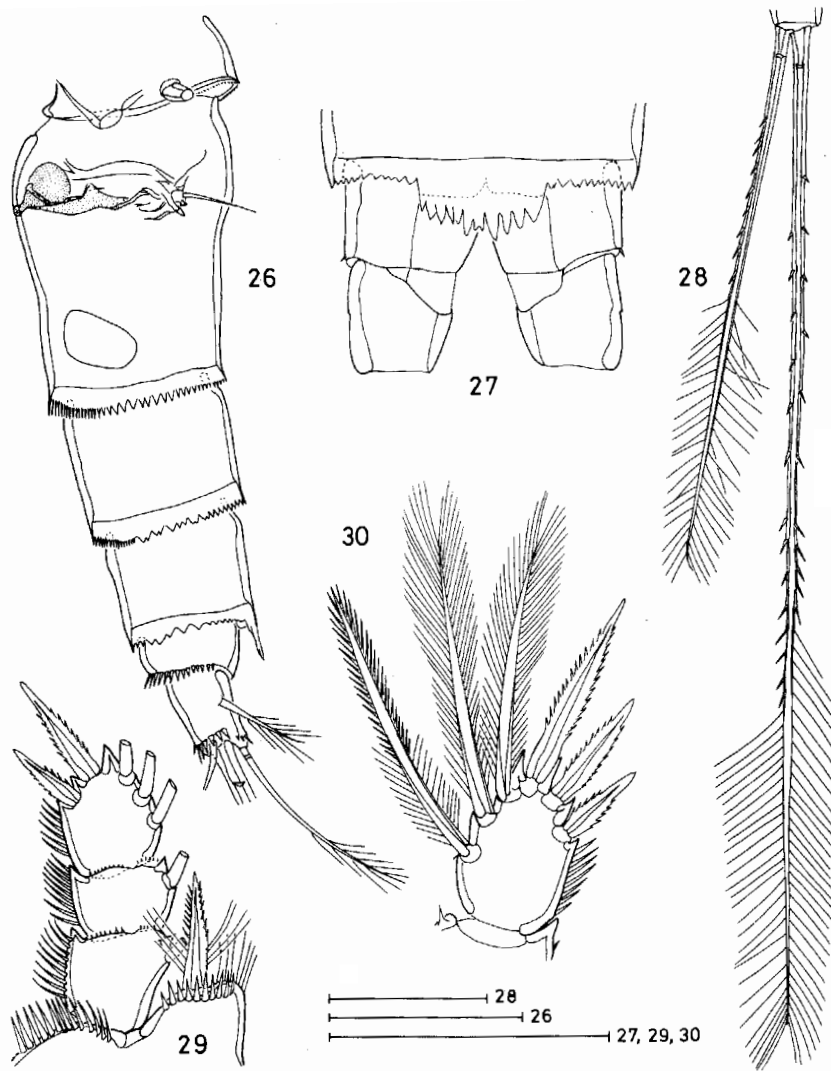
Antenna of 3 segments; length of terminal segment 3.1 times its width and bearing 5 setae along inner margin.

Mouthparts as in *Halicyclops glaber* described by ROCHA (1983).

Legs 1-4 armature as follows:

	exopod			endopod		
	1	2	3	1	2	3
Leg 1	I-1	I-1	III,5	0-1	0-1	II,4
Leg 2	I-1	I-1	IV,5	0-1	0-2	III,3
Leg 3	I-1	I-1	IV,5	0-1	0-2	III,3
Leg 4	I-1	I-1	III,5	0-1	0-2	III,2

Inner spine of leg 1 basis (Fig. 29) reaching insertion level of seta of endopod segment 2. Leg 2 and leg 3 similar to each other; distal endopod segment of these legs (Fig. 30) with spiniform proximal seta being plumose basally and spinulose distally. Both setae on leg 4 endopod segment 2 (Fig. 31) plumose. Leg 4 endopod segment 3 (Fig. 31) about



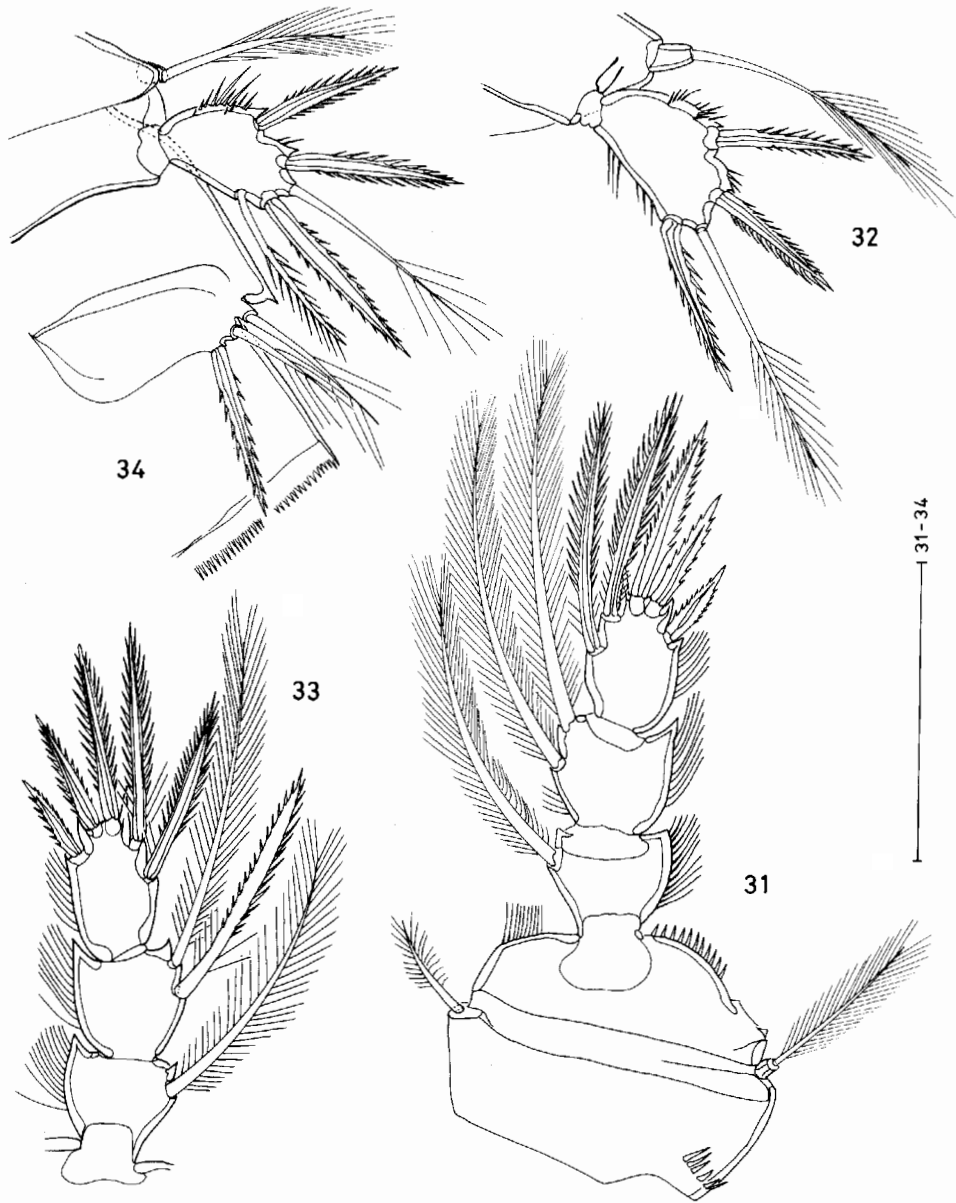
Figs 26–30. *Halicyclops bowmani* sp. n., female. 26. Urosome, lateral. 27. Anal somite and caudal rami, dorsal. 28. Middle apical setae of caudal rami. 29. Inner distal portion of the basis and endopod of leg 1, frontal. 30. Leg 3 endopod 3, caudal. Scale bars = 50 μ m.

1.4 times longer than wide; inner apical spine 1.5 times longer than outer apical spine and segment; inner setae about equal in length, plumose at basal 1/4 and serrate along remaining 3/4.

Leg 5 exopod (Fig. 32) 1.6 times longer than wide. Outer spines about equal in length and slightly shorter than segment. Inner spine 1.1 times longer than segment and 1.25 times longer than outer spines. Apical seta twice longer than segment, slender and plumose.

Male. Body length range 410–430 μ m (n = 8). Prosome: urosome ratio = 1.4–1.8 : 1. Leg 4 endopod (Fig. 33) differing from female in having proximal seta on second segment modified as setae on terminal segment. Proximal seta on endopod segment 3 also shorter.

Leg 5 exopod (Fig. 34) 1.6 times longer than broad, bearing 3 spines and 2 setae. Outer lateral spine as long as segment and little shorter than outer apical spine. Inner spine 1.4 times longer than



Figs 31-34. *Halicyclops bowmani* sp. n., female. 31. Leg 4 protopod and endopod, caudal. 32. Leg 5. Male: 33. Leg 4 endopod. 34. Legs 5 and 6, ventro-lateral. Scale bar = 50 μ m.

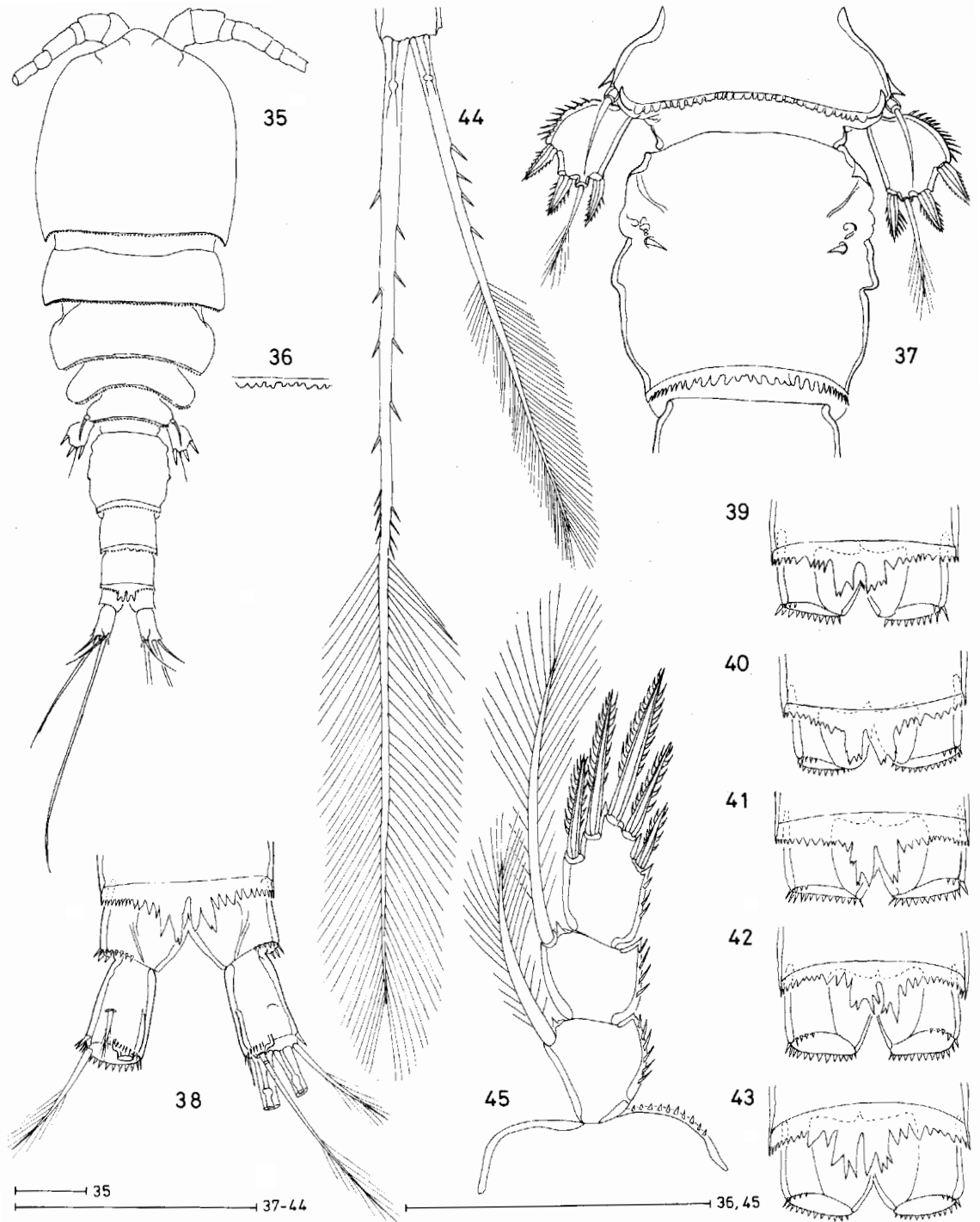
segment and 1.2 times longer than outer apical spine. Inner seta stouter and shorter than apical seta.

Leg 6 (Fig. 34) represented by serrate inner spine, and 2 setae; middle seta shorter than outer seta.

Antenna, mouthparts and legs 1-3 as in female.

Etymology. The species is named after Dr. Thomas Bowman, distinguished carcinologist at the National Museum of Natural History, Smithsonian Institution, Washington.

Type locality. Deep Blue Cave, Hamilton Parish, Bermuda.



Figs 35-45. *Halicyclops ytororoma* LOTUFO & ROCHA, female. 35. Habitus, dorsal. 36. Detail of pediger 3 hyaline frill. 37. Urosomite 1 and genital double somite, dorsal. 38. Anal somite with pseudoperculum and caudal rami, dorsal. 39-43. Pseudopercula outlines of 5 specimens (note deep notch bisecting each pseudoperculum into two parts. 44. Middle apical setae of caudal rami. 45. Leg 4 endopod. Scale bars = 50 μ m.

Remarks. The new species resembles *H. herbsti* in the structure of the terminal segment of leg 4 endopod. They also share the same ornamentation of the posterior borders of the genital double somite and following urosomal somite. However, they differ by the presence of a well-developed anal pseudoperculum in *H. bowmani*. Other differences are in the proportions of the caudal rami, the shape of the leg 5 exopod, and the armature of the last antennal segment.

Halicyclops bowmani differs from *H. laciniatus* in the shape of the genital double somite, the proportions of the caudal rami, and the structure of leg 5 in both sexes.

Halicyclops ytororoma LOTUFO & ROCHA
(Figs 35–45)

Material examined. Bermuda, Walsingham Cave, Hamilton Parish: 33 females, 49 males, 54 copepodids collected with fine mesh dip net from the water column of entrance pool open to daylight at 0–4 m depths, 4 October 1982; Bee Pit Cave, Hamilton Parish: 50 females, 52 males, 44 copepodids collected with fine mesh dip net from water column and submerged soil slope in dimly illuminated main pool at 0–1 m depths, 23 January 1984, all T. M. Iliffe col. Lot of 23 females, 39 males and all copepodids from Walsingham Cave, and 27 females, 29 males and 20 copepodids from Bee Pit Cave in USNM (257020, 257022). The remaining material is in MZUSP (11381, 11382).

Female. Body length 420–430 μm ($n = 5$). Prosome : urosome ratio = 1.42–1.54 : 1 ($n = 5$). Posterior borders of all body somites denticulate (Figs 35 and 36). Genital double somite (Fig. 37) as long as wide and with small expansions in proximal half. Anal pseudoperculum always deeply notched medially, although with outlines differing in detail (Figs 38–43). Caudal rami (Fig. 38) about twice longer than broad. Middle apical setae heterogeneously ornamented (Fig. 44). Legs 1–4 spine formula 3, 4, 4, 3. Endopod segment 2 of all legs with only 1 seta. Both inner setae on leg 4 endopod segment 3 (Fig. 45) spiniform and ornamented similarly to spines. Leg 5 exopod (Fig. 37) with 3 spines shorter than segment.

Male. Body length range 350–385 μm ($n = 5$). Prosome : urosome ratio = 1.43–1.69 : 1 ($n = 5$). Except for sexually dimorphic features in geniculate antennules, 6-segmented urosome and leg 6 represented by inner spine and 2 setae, otherwise as in female.

Remarks. This species belongs to the group of *Halicyclops* with all or some prosomites bearing denticulate posterior border. Within this group, *H.*

yltororoma closely resembles *H. gauldi* which was recorded from the interstitial water in a beach in Ghana (PLESA 1967). They are distinguished only by the number of inner setae on the terminal segment of leg 1 exopod (4 setae in *H. ytororoma* and 3 in *H. gauldi*).

H. ytororoma is so far known from sandy beaches of the State of São Paulo, Brazil (LOTUFO & ROCHA in press). A close comparison between the specimens from Bermuda and Brazil revealed difference only in the relative length of the seta on the middle segment of leg 4 endopod. Such difference is not considered warrant for species distinction. This conclusion was reached partly on the fact of wide distribution of *Halicyclops* species, being recorded on both Brazilian coast and the West Indies, or even farther up to the Atlantic coast of the United States. *Halicyclops exiguus*, described by KIEFER (1934) from Haiti, has been discovered from several places along the Brazilian coast. Moreover, a new species, which is being described by ROCHA & HAKENKAMP (in press) from Wye Island, Maryland, has also been found in Peruibe, State of São Paulo, Brazil (C. Rocha unpublished data).

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