

**ON THE *BATHYCONCHOECIA* (OSTRACODA MYODOCOPA)  
FROM THE AZORES  
COLLECTED BY THE BATHYSCAPH « ARCHIMEDE » IN 1969**

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**SUMMARY**

Several species of the genus *Bathyconchoecia* are reported from plankton hauls of the French bathyscaph "Archimède" off the Azores islands. Two species, *B. nodosa* and *B. latirostris*, are described as new. A tentative key of all known species of the genus *Bathyconchoecia* is given.

**RESUME**

Sur les *Bathyconchoecia* (Ostracodes Myodocopides) des Açores récoltés par le bathyscaph français "Archimède" en 1969.

Quelques espèces du genre *Bathyconchoecia* sont étudiées d'après les récoltes planctoniques de l'Archimède aux Açores durant l'été 1969. Deux espèces, *B. nodosa* et *B. latirostris*, sont décrites comme nouvelles et figurées. Une clé de toutes les espèces de *Bathyconchoecia* connues est donnée.

The Station marine d'Endoume, Marseilles, has kindly trusted me with the investigation of some Ostracods collected by the French Bathyscaph "Archimède" during the expedition to the Azores archipelago in Summer 1969. The present paper deals only with the genus *Bathyconchoecia* of the subfamily Euconchoecinae. The material is deposited in the Zoological Museum of Copenhagen.

The samples forwarded to me are described by the Station as follows :

- Dive AC 1, June 23, 1969. 37° 08'N — 25° 35.5'W to 37° 07.5'N — 25° 36'W, South of Sao Miguel west of Santa Maria. Bottom depths 445-1470 m. Plankton net open during the whole dive.
- Dive AC. 3, June 27, 1969. 37° 22.7'N — 25° 45.2'W to 37° 21.6'N — 25° 48.8'W. Southwest of Sao Miguel. Bottom depths 620-800 m. Plankton net open between 680 and 780 m, bathyscaph on the sea bottom.
- Dive AC. 4, July 8, 1969. East of Santa Maria, 37° 00.1'N — 24° 42.1'W to 36° 57.3'N — 24° 40.3'W. Bottom depths 2370 to 2700 m. Plankton net open between 2400 and 2450 m.
- Dive AC. 6, July 21, 1969. Northwest of Sao Miguel, 37° 54.4'N — 24° 54.7'W to 37° 56.4'N — 25° 56.2'W. Bottom depths 720-1730 m. Grab sample of sediments.

The following species and specimens were observed in the samples :

- AC. 1. One *Orthoconchoecia haddoni* (Brady-Norman).
- AC. 3. Two *Metaconchoecia skogsbergi* Iles ; two *Microconchoecia echinulata* var. *laevis* Claus ; a few unidentifiable juveniles or larvae of Conchoecinae ; one female of *Bathyconchoecia paulula* Deevey.

- AC. 4. Unindentifiable larvae and juveniles of Conchoecinae; *Bathyconchoecia sagittarius* Deevey (two empty shells and one body); *B. darcythompsoni* (Scott), one male; *B. lacunosa* (Müller)?, one shell only; *B. nodosa* n. sp., one female and one juvenile; *B. latirostris* n. sp., one female.
- AC. 6. Two *Conchoecilla daphnoides* (Claus); one *Microconchoecia echinulata* var. *laevis* Claus.

### *Bathyconchoecia* Deevey

Deevey (1968) described six new species: *paulula*, *laqueata*, *kornickeri*, *galerita*, *sagittarius*, and *foveolata*, and arranged them in a new genus *Bathyconchoecia*. In this genus she included also the two previously described species *lacunosa* (Müller) and *darcythompsoni* (Scott) which earlier had been included in the genus *Euconchoecia*. In 1969, Kornicker described *B. deeveyae* as a new species. In the same year the present author described *B. baskiae* n. sp. (Poulsen, 1969 a) and *B. crosnieri* n. sp. (Poulsen, 1969 b), giving in the latter paper some additional characters for *B. darcythompsoni*. Finally Angel (1970) has described *B. septemspinosa* n. sp. and *subrufa* n. sp. Thus until 1968 only two species of this genus were known (*lacunosa* and *darcythompsoni*), but since then no less than 11 new species have been described, or when including the two new species to be described in this paper 13 new species, making a total of 15 species.

However, compared to this relative richness of species, the number of individuals described or observed is only low, in all about 40 mature individuals. This indicates that the species live in a habitat only little fished by the gears used, probably in the uppermost layer of the bottom or just above it, to the effect that they only rarely are taken in the nets, or are observed – as is the case with the six species described by Deevey – in the intestines of fish from deeper water.

The fairly deep water is obviously the home of this genus. Deevey's six species were all observed in the intestines of fish caught between 1000 and 3165 m, *darcythompsoni* is from 725-2 400 m, *baskiae* 1 500-2 000 m, *subrufa* 352 m, *septemspinosa* 1 800-3 600 m, *latirostris* and *nodosa* 2 400 m, *deeveyae* 520 m, and *crosnieri* only 130 m.

The regional distribution is almost exclusively tropical, except that *lacunosa* is recorded from the Antarctic and *darcythompsoni* from 59° N in the Atlantic; the latter species is, however, also recorded from the Tropics (Poulsen 1969 b and the present paper).

Due to the only few individuals described of the genus *Bathyconchoecia* and to the resulting rather restricted knowledge of the morphology, especially as to individual variations and sexual differences, I have in the following, besides describing the two new species, given some additional descriptions of the other, already described, species, and attempted to provide a key to all the known 15 species, and a summary of their morphological interrelationships.

#### *Bathyconchoecia nodosa* n. sp. Fig. 1

**Locality:** 37° 00'N – 25° 41'W, Azores. Bottom depth 2 370-2 700 m. July 8, 1969. Plankton net open between 2 400 and 2 450 m. One mature female, 1.15 mm. Type. One juvenile 1.00 mm.

**Description (female):** The shell (Fig. 1 a and b) is short, height 61 % of length. The dorsal margin is straight; rostrum is broad and blunt, downwards bent, its tip reaches slightly below the middle of the shell. The anterior, ventral and posterior margins form an almost smooth arch, a little more flattened posteriorly than anteriorly. The dorso-posterior shell corners form each a large, rounded process carrying the openings of the posterior glands. The process is a little larger on the right than on the left valve. The shell surface has an irregular pattern of polygons each filled by small pits. No flange and no serrature was observed along the posterior margin.

The first antenna is of the shape typical for the genus. The segmentation is rather indistinct. Near the tip and a little medially on the limb is one long dorsal bristle with long marginal hairs; most distally are two very long bristles and one shorter bristle; on the ventral surface of the distal part is the usual cluster of numerous (about 200) long, tubelike bristles placed in several rows.

A frontal organ was not observed.

**Second antenna.** The protopodite is very stout, almost as high as it is long. The natatory bristles of the exopodite have short marginal spines proximally and more distally long natatory hairs. The endopodite

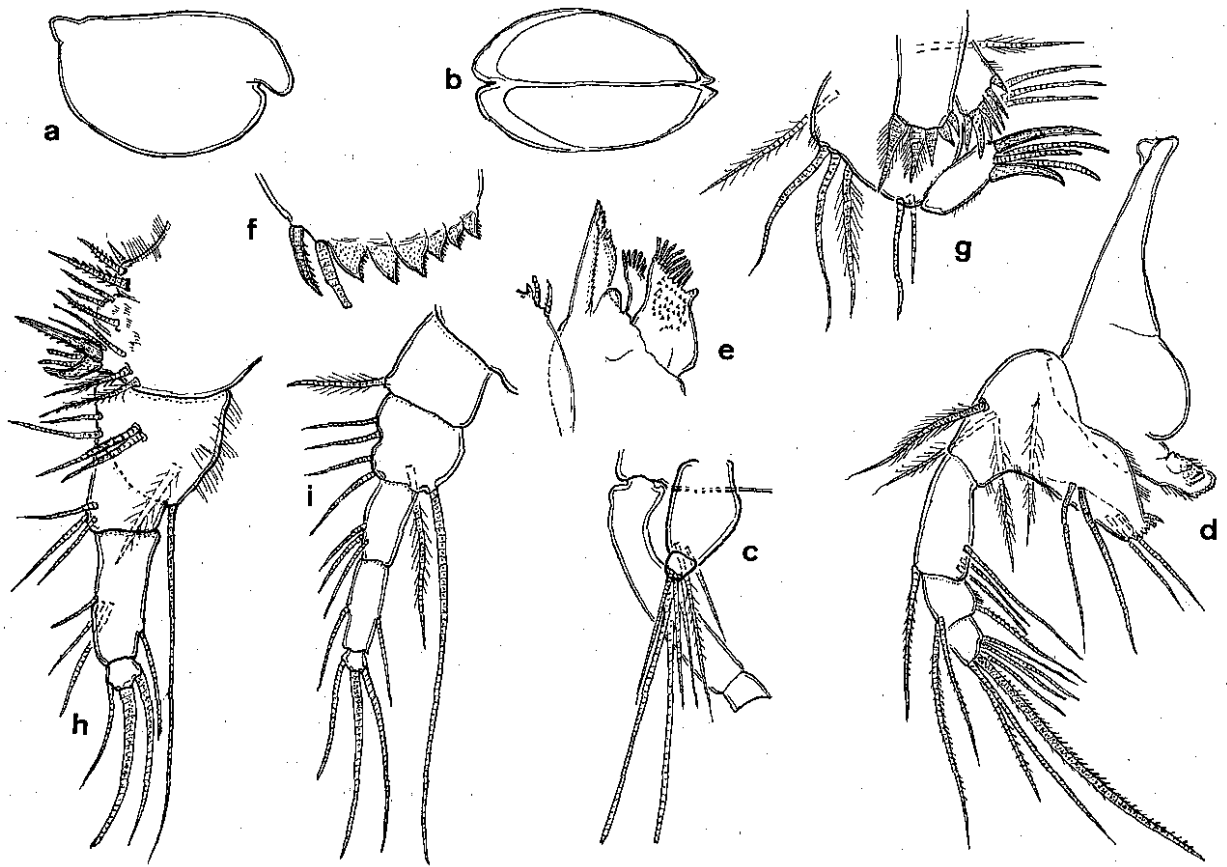


Figure 1 - *Bathyoconchoecia nodosa*, female, 1.15 mm. a - shell, lv ; b - same, from below ; c - 2nd antenna, endopodite and 1st exopodite segment, mv ; d - mandible, lv ; e - same, coxale endite, mv ; f - same, basale endite, mv ; g - maxilla, mv ; h - 5th limb, mv ; i - 6th limb, mv. (For this and the following figures : lv = laterally viewed, mv = medially viewed).

(Fig. 1 c) has three segments of which the third is present only as a transverse ledge medially and a little inside the distal margin of the second segment. The first segment has distally a longer bristle with rather long hairs and a smaller, bare bristle. The second segment has distally two long, bare bristles, and the third has three shorter, bare bristles. The surfaces of the two branches are bare.

Mandible (Fig. 1 d, e and f). The coxale endite is long and slender ; as in most species of the genus a process towards basale is missing. Below the largest tooth of the endite is a serrate margin like that figured by Deevey (1968) for *pauhula*. The teeth of the edge and of the two lists appear to be of the usual type. Between the proximal tooth list and the masticatory pad is a rounded process. The masticatory pad is divided into two parts, distally free of one another, both have distally a cluster of long papillae and proximally a cover of short papillae. Near the basis of the pad is a triangular tooth. The ventral edge of the endite of basale has most proximally a short, curved spine lined with short teeth, then follows a short tubelike, blunt bristle ; the six triangular teeth of the edge have serrate distal margins. Near the ventral margin of the endite are two lateral, bare bristles and higher up near the anterior margin two longer, bare bristles. On the main part of basale are medially and most proximally one long plumose bristle (epipodial bristle) and disto-medially one long plumose bristle. Near the dorsal margin are distally 3 long plumose bristles of which one is placed laterally (exopodite bristle) and 2 medially. The first endopodite segment has disto-dorsally one long bristle and disto-ventrally 3 rather long bristles. The second segment has two disto-dorsal and one disto-ventral bristle. The third segment has the usual 7 bristles. None of the endopodite bristles are plumose ; the longer ones are pectinate, the others are bare or have a few spinules.

Two other characters of the mandible have to be mentioned, as they are repeated in the other species examined here, and as far as could be ascertained in species described earlier. The first is that the most anterior tooth on the edge of the coxale endite not is broad, flat, and transversely cut distally as in Conchoecinae, but rounded or pointed as the other teeth along the edge. This is obvious a character to be added to the diagnosis of the genus. Another character which also could be added is that on the basale the

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A frontal organ was not observed.

Second antenna. The protopodite is very stout, almost as high as it is long. The natatory bristles of the exopodite have short marginal spines proximally and more distally long natatory hairs. The endopodite

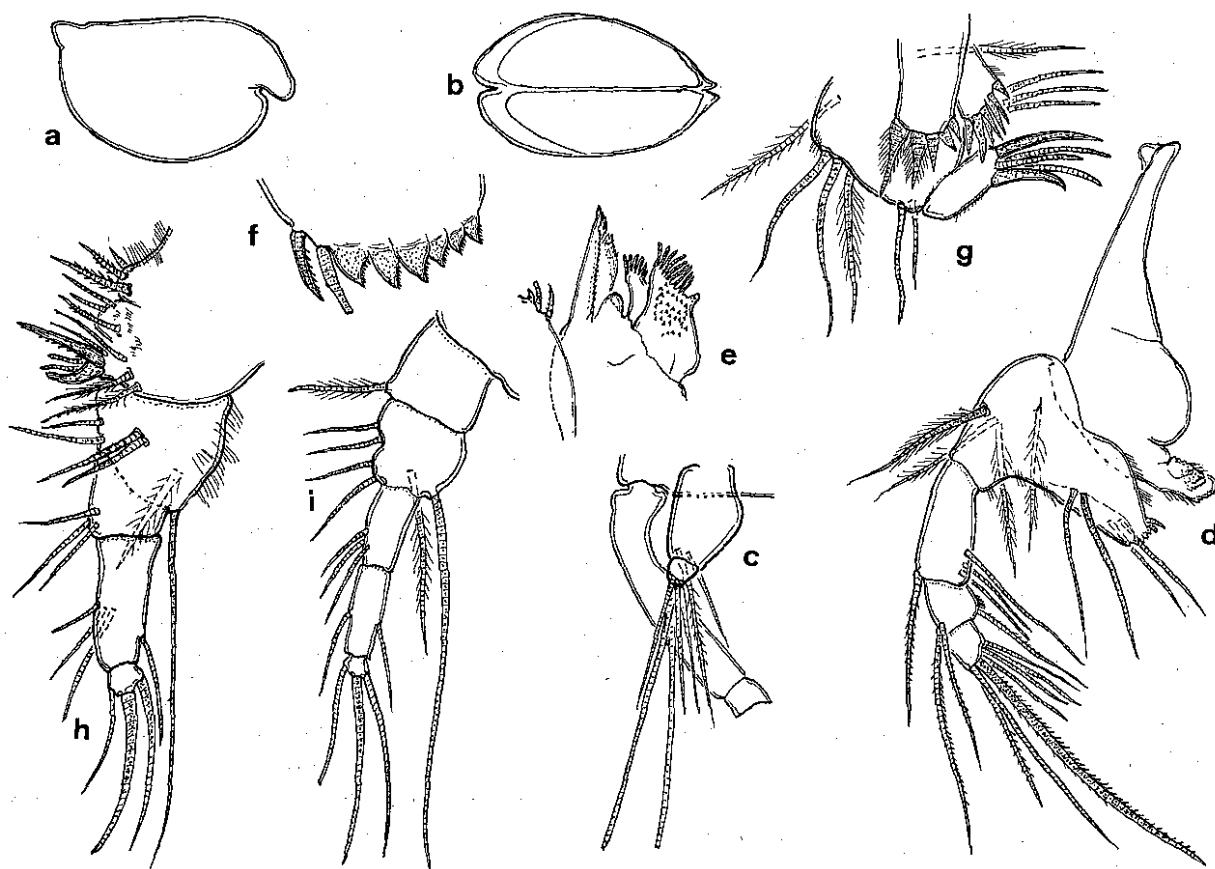


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(Fig. 1 c) has three segments of which the third is present only as a transverse ledge medially and a little inside the distal margin of the second segment. The first segment has distally a longer bristle with rather long hairs and a smaller, bare bristle. The second segment has distally two long, bare bristles, and the third has three shorter, bare bristles. The surfaces of the two branches are bare.

Mandible (Fig. 1 d, e and f). The coxale endite is long and slender ; as in most species of the genus a process towards basale is missing. Below the largest tooth of the endite is a serrate margin like that figured by Deevey (1968) for *paulula*. The teeth of the edge and of the two lists appear to be of the usual type. Between the proximal tooth list and the masticatory pad is a rounded process. The masticatory pad is divided into two parts, distally free of one another, both have distally a cluster of long papillae and proximally a cover of short papillae. Near the basis of the pad is a triangular tooth. The ventral edge of the endite of basale has most proximally a short, curved spine lined with short teeth, then follows a short tubelike, blunt bristle ; the six triangular teeth of the edge have serrate distal margins. Near the ventral margin of the endite are two lateral, bare bristles and higher up near the anterior margin two longer, bare bristles. On the main part of basale are medially and most proximally one long plumose bristle (epipodial bristle) and disto-medially one long plumose bristle. Near the dorsal margin are distally 3 long plumose bristles of which one is placed laterally (exopodite bristle) and 2 medially. The first endopodite segment has disto-dorsally one long bristle and disto-ventrally 3 rather long bristles. The second segment has two disto-dorsal and one disto-ventral bristle. The third segment has the usual 7 bristles. None of the endopodite bristles are plumose ; the longer ones are pectinate, the others are bare or have a few spinules.

Two other characters of the mandible have to be mentioned, as they are repeated in the other species examined here, and as far as could be ascertained in species described earlier. The first is that the most anterior tooth on the edge of the coxale endite not is broad, flat, and transversely cut distally as in Conchoecinae, but rounded or pointed as the other teeth along the edge. This is obvious a character to be added to the diagnosis of the genus. Another character which also could be added is that on the basale the

tubelike distal bristle is placed very close to the most posterior tooth of the edge, touching it or even covering part of its basis, whereas in *Conchoecinae* it is placed a little away from it.

**Maxilla.** The precoxale endite has only 5 distal bristles. The coxale endite (only shown partly in Fig. 1 g) has about 12 bristles. Basale has two long bristles. The first endopodite segment has on the anterior margin or a little medially of it 5 long bristles, one of them plumose, on the posterior margin are 3 long, bare bristles. The end segment has 2 clawlike bristles and 3 more slender bristles.

**Fifth Limb (Fig. 1 h).** On the epipodial appendage only 4-3-3 bristles were observed? The surface of the first endite has long hairs, the endite has 3 bristles bare or with short hairs. The second endite has shorter surface hairs and 3 bristles, none of them plumose.

The endopodite has two strong claws, two plumose and 4 non-plumose bristles. The exopodite has three segments, the first has medially a weak suture or ridge, its dorsal margin has long hairs and distally one very long bare bristle; there is one lateral, plumose bristle and two bare, medial bristles; along the ventral margin are 5 bare bristles. The second segment has one disto-dorsal and three ventral bristles. Of the 3 bristles of the third segment the dorsal and mid bristles are clawlike and of about the same length, the ventral bristle is shorter and more slender.

**Sixth Limb (Fig. 1 i).** The epipodial appendage has in the dorsal group 1 short and 6 longer bristles, the two other groups have each 5 bristles. Only one bristle was observed on the endopodite. The short first exopodite segment has dorso-distally one very long, bare bristle, laterally one long plumose bristle and ventrally 4 bare bristles. The second segment has 3 ventral bristles, the third one dorsal and one ventral bristle. The fourth segment has 2 clawlike bristles and ventrally one slender bristle half as long as the two others.

**Furca** has 7 pairs of claws (the specimen is probably juvenile), and one long, single dorsal bristle with short, marginal hairs. The first claw is proximally "segmented" by two weak sutures.

The size of this female is 1.20 mm. In the same sample was an individual only 0.9 mm long. Its shell form is similar to that of the larger individual, only the posterior shell process is larger and more well-defined.

*Bathyconchoecia latirostris* n. sp. Fig. 2

**Locality:** 37° 00'N – 25° 41'W. Azores. Bottom depth 2 370-2 700 m. July 8, 1969. Plankton net open between 2 400 and 2 450 m. One mature female, 1,5 mm. Type.

**Description (female).** The shell (Fig. 2 a) is very short, height 68 % of length. Both dorso-posterior corners are evenly rounded. The rostrum is very short, high and broad with a rounded hardly downwards bent tip. The antero-ventral, ventral and posterior margins form an almost half-circle. The surface has the characteristic reticulated pattern of half-circular "scales" filled with small pits.

Both first antennae were missing.

**Second Antenna.** The protopodite is not so high as in *nodosa*, and the whole limb (protopodite + exopodite) is rather long and slender; in *nodosa* it measures only 60 % of the shell length against in *latirostris* 90 %. The natatory bristles on the exopodite has as in *nodosa* short spines proximally and long swimming hairs distally. All bristles of the endopodite have short marginal hairs.

**Mandible (Fig. 2 b and c).** Coxale is characterized by having a triangular process towards basale. The toothed edge of the coxale endite has distally about 5 larger teeth and proximally 5-6 much smaller teeth; the most anterior tooth on the edge is not broad and flat as in *Conchoecinae* but as common for *Bathyconchoecia* of the same shape as the other larger teeth of the edge. The two tooth lists are placed close to one another, and it is difficult to see which teeth belong to the one or other of them. There appears to be about 8 pointed teeth in each of the lists and further a pair of large pointed teeth more proximally. The masticatory process is large and broad with groups of stout hairs and short papillae; near its basis is a row of short teeth. On the medial side inside the process to basale is an oval plate with a serrate margin, distally of the plate is a group of small teeth. The basale endite has the usual form with six triangular teeth, a small tubelike and a short spinelike bristle; a lateral triangular tooth with a serrate margin is present. The bristles on basale and the endopodite are as in *nodosa* with the exception that one of the ventral bristles on the first endopodite segment is plumose.

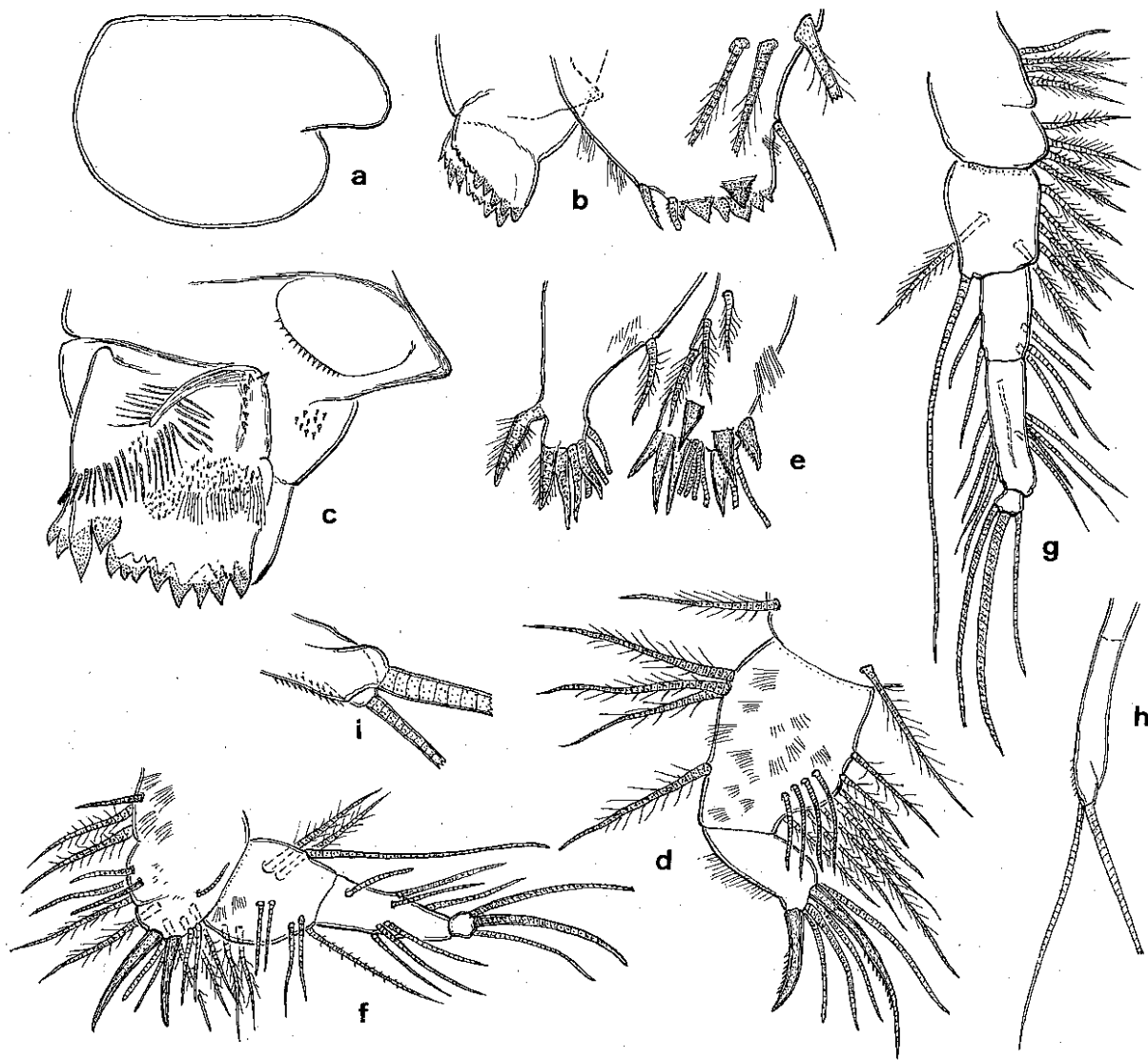


Figure 2 - *Bathytochoecia latirostris*, female, 1.5 mm. a - shell, lv; b - mandible, endites of coxale (left), proximal list not shown, and of basale (right), lv; c - same, endite of coxale (edge only shown stipled), mv; d - maxilla, basale and endopodite, mv; e - same, endites of precoxale (left) and coxale (right); f - 5th limb, mv; g - 6th limb, mv; h - 7th limb; i - tip of same.

Maxilla (Fig. 2 d and e). The precoxale endite has one proximal, plumose bristle; along its distal edge are 2 stout bristles with long hairs, one of them has a kind of narrow, bare shaft, 3 spinelike, and 3 tubelike bristles. The broader coxale endite was not clearly divided into two parts; it has 3 proximal plumose bristles, 7 spinelike bristles of which 3 are placed a little inside the edge (2 of them have serrate margins) and 6 tubelike bristles. Basale has 2 plumose bristles. The first endopodite segment is characteristic by its high number of bristles on the posterior margin, viz. 4 bare medial bristles and 7 plumose bristles along the edge. On the anterior margin are 4 plumose bristles (3 in a proximal group and one more distally). The second segment has 2 claws and 4 bristles, further a series of long hairs along the anterior margin.

Fifth Limb (Fig. 2 f). The epipodial appendage has 5-4-4 bristles. The protopodite has a proximal group of two plumose and one bare (medial) bristle (first endite), and a distal group (second endite) of 3 bare and one plumose (lateral) bristle. The surfaces of the endites have groups of longer and shorter hairs. The endopodite has 2 claws, 5 bare bristles and 4 long, plumose, laterally placed bristles. The first exopodite segment has in all 10 bristles of which the 4 laterally placed are plumose. The second segment has the exceptionally high number of 7 bristles, none of them plumose. The third segment has two slender claws and one bristle, all of about the same length.

Sixth Limb (Fig. 2 g). On the protopodite are two groups each with 4 plumose bristles. The first exopodite segment has one long distodorsal bristle, 2 lateral and 4 ventral plumose bristles. The second and third segments have exceptionally high numbers of bristles, 6 and 9 respectively. The fourth segment has the usual 3 claws or bristles.

The Seventh Limb (Fig. 2 h and i) has rows of short spines near its tip and one shorter and one longer terminal bristles. It appears as if the limb is furcate at the tip.

Furca has 8 pairs of pectinate claws all rather slender, the first claw has proximally 4 sutures, dividing it into "segments". Dorsally of the claws is one single bristle,  $5/4$  the length of the most dorsal claw and provided with fairly long, marginal hairs.

**Remarks.** The outstanding features of *B. latirostris* is the high numbers of bristles on the maxilla, 5th and 6th limbs, and the angular process of coxale. Both features relate the species to *Bathyconchoecia sagittarius* Deevey. However the species is well separated from *sagittarius* by the lacking of a vertical shell striation.

*Bathyconchoecia darcythompsoni* Scott Fig. 3

*Euconchoecia darcythompsoni* Scott, 1909

*Bathyconchoecia darcythompsoni*, Poulsen, 1969 b

**Locality :** 37° 00'N – 25° 41'W. Azores. Bottom depth 2 370-2 700 m. July 8, 1969. Plankton net open between 2 400 and 2 450 m. One male, 4.9 mm.

**Description (male).** As the descriptions by the above-mentioned authors are only incomplete some additional remarks on the morphology are given here.

The shape of the shell with the bifid rostrum, the small, blunt spine on the right dorso-posterior shell corner, the 2 posterior glands opening in a slit on a very low bulge of the upper posterior shell margin, and the dorsal of the 3 bristles on the end of the male 6th limb being by far the longest of the 3, leave no doubt as to the identification of the present male with Scott's species. The surface of the shell is "scaly".

The first antenna has one plumose disto-dorsal bristle, and terminally one long and 3 somewhat shorter bristles. The group of sensory bristles disto-ventrally on the limb numbers at least 200 bristles. Pigment spots are present through most of the stem.

Second Antenna (Fig. 3 a, b and c). The natatory bristles (only 1 on the end segment) have long swimming hairs and are not lancet-shaped distally. The 3 shorter bristles of the last segment have short marginal spines. The first endopodite segment has distally one longer bristle with long hairs and a shorter with short hairs. The two lateral bristles of the second segment are short and spinelike. Between the 2 long terminal bristles, both with short marginal hairs, is a small spinelike bristle. The third segment forms the male clasping organ, much larger on the right than on the left limb. The distal backwards curving part of the organ is limited from the proximal part by a weak suture and marginal incisions which could indicate that the organ is composed of two segments – thus the endopodite would include four segments, the number found in some Podocopa. Distally on the proximal part arise the usual 3 bristles of which the two longer have marginal spinules.

Mandible (Fig. 3 d, e and f). Coxale has no triangular process towards basale. The edge of the endite and the two tooth lists appear to be composed each of about 10 pointed teeth. The masticatory pad is densely covered by low spinelike papillae, proximally are groups of longer bristles. The basale endite appears as shovel-shaped with medially bent edges; the six teeth on the edge are triangular, pointed and have slightly serrate margins. The bristles on basale are of the common type, 4 bare bristles on the endite and 5 plumose higher up on the segment. The endopodite follows the pattern for the genus, none of its bristles are plumose.

Maxilla (Fig. 3 g, h and i). The two endites are characterized by comparatively long and slender bristles, about 9 on the precoxale and 15 on the coxale endite, the latter is distally split into two parts. Basale has two plumose bristles. The first endopodite segment has 5 plumose anterior bristles and 4 non-plumose posterior bristles. The second segment has 2 claws and 4 slender bristles.



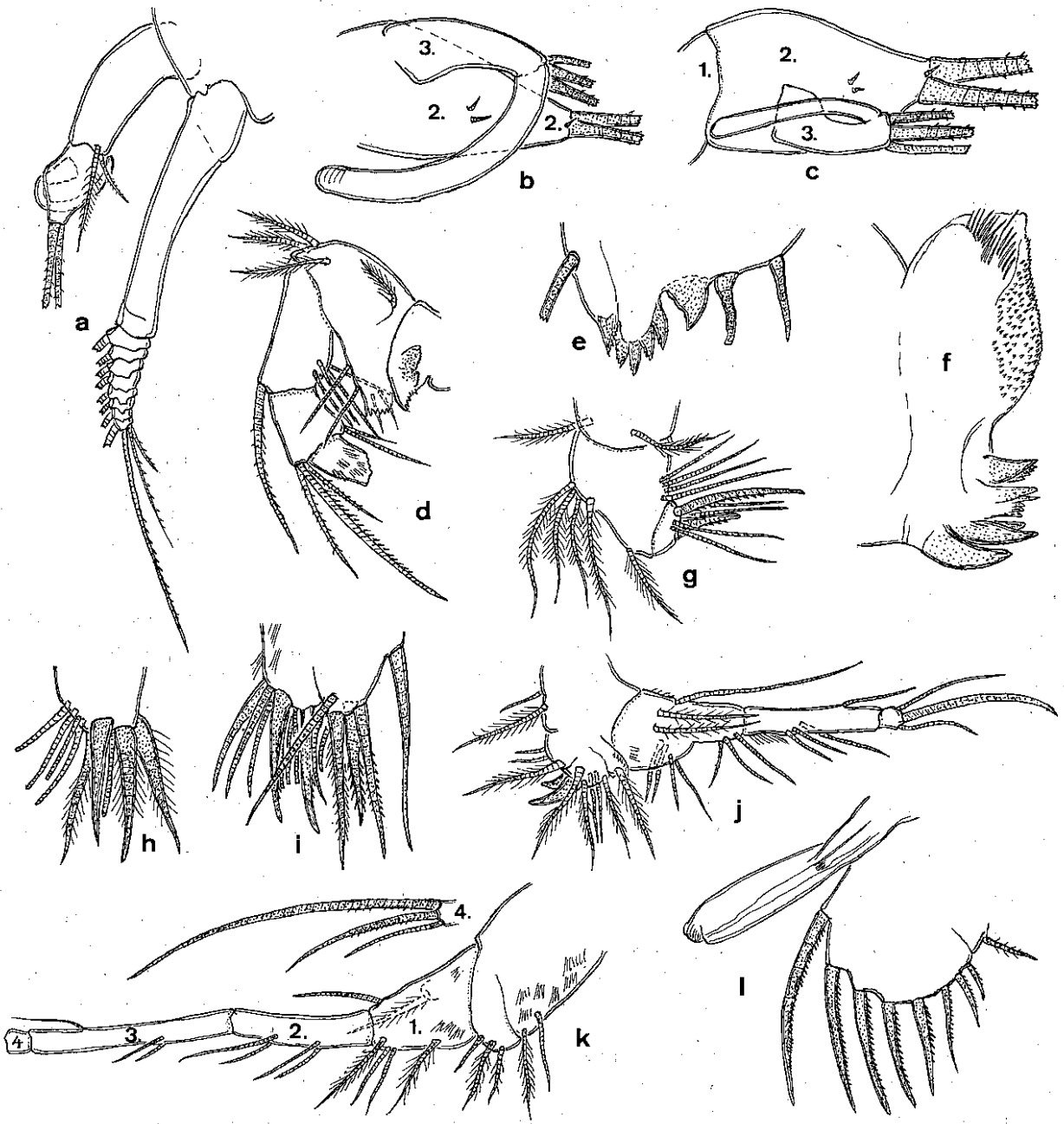


Figure 3 — *Bathyonchoecia darcythompsoni*, male, 4.9 mm. a — 2nd antenna right limb, exopodite and endopodite, lv ; b — same, endopodite, right antenna, mv ; c — same, left limb, endopodite, mv ; d — mandible, mv ; e — same, endite of basale, mv ; f — same, coxale endite, obliquely viewed ; g — maxilla, basale and endopodite, mv ; h — same, precoxale endite ; i — same, coxale endite ; j — 5th limb, lv ; k — 6th limb, mv ; l — copulatory limb and furca.

The fifth Limb (Fig. 3 j) is of the typical shape, but only two bristles were observed on the first endite. The second endite has 3 bristles, and the endopodite 8 (the two clawlike bristles are very stout and short). The first exopodite segment has 10 bristles, the second 4 bristles.

The sixth Limb (Fig. 3 k) is — as already appears from Scott's figure — characterized by the dorsal bristle of the end segment being considerably longer than the 2 others, and also by the rather short disto-dorsal bristle of the first exopodite segment.

The copulatory limb and furca are shown in Fig. 3 l.

*Bathyconchoecia paulula* Deevey, 1968 Fig.4

**Locality.** 37° 23'N – 25° 45'W. Azores. Bottom depth 620-800 m. June 27, 1969. Plankton net open between 680 and 780 m. Bathyscaph on the sea bottom.

A single female, length 0.79 mm, was present in the sample. The very short shell, height 73 % of the length, the strongly ventrally bent rostrum, the rounded, hump-like projecting shoulder vaults (Fig. 4), and the very long claw-like setae of the sixth limb leave no doubt as to the identification with Deevey's *paulula*.

*Bathyconchoecia sagittarius* Deevey, 1968 Fig. 5

**Locality :** 37° 00'N – 25° 41'W. Azores. Bottom depth 2 370-2 700 m. July 8, 1969. Plankton net open between 2 400 and 2 450 m.

In the sample were two empty shells and one loose body of a female. As Deevey (1968) only describes the male, I give in the following a description of the female from the present collection.

**Description (female).** The two empty shells agree in shape and sculpturing completely with Deevey's male. They have the characteristic dense vertical striation and "the row of dentate structures" along the posterior shell edge. As Deevey's specimen had both posterior margins somewhat damaged, I give figures of this margin (Fig. 5 a and b). The serrature consists of a dense row of small, dorsally pointing teeth extending right from the dorso-posterior shell fusion to the ventero-posterior shell rounding, where the teeth gradually become lower until they eventually disappear. Inside the serrature are one or two rows of irregularly rounded "plates", and from the innermost of these arise the vertical striae. I did not observe any punctuation between the striae.

The first antennae were lost.

On the exopodite of the second antenna none of the natatory bristles had short spines; only on the shortest of the bristles of the ninth segment such spines were found. The endopodites has the same number and structure of bristles as *B. latirostris*.

The coxale endite of the mandible (Fig. 5 c) has an edge with 5 larger and about the same number of smaller teeth, the distal tooth list has 2 larger pointed teeth and a large number of smaller round teeth. The proximal list has 6-8 larger teeth; distally of the list is a single large tooth. The masticatory pad is similar to that of *latirostris*; it is covered with shorter or longer papillae and hairs and has some larger, bristle-like hairs along the edge; proximally of it is a short serrate list. Coxale has a triangular process toward basale, and at the basis of this process is a "plate" with a serrate edge, distally of this a group of small pointed teeth. The bristles of basale and endopodite are as described by Deevey for the male, except that the ventero-lateral long bristle of the first endopodite segment is plumose.

The two endites of the maxilla (Fig. 5 d) are shaped and provided with bristles in the same way as in the male. It was observed that the coxale endite was cleft distally into two parts. Most of the bristles are – as noted by Deevey – rather short and broad. On the precoxale endite are 10-11 bristles, on the coxale endite 21 bristles, i.e. rather high numbers. The first endopodite segment has – as in the male – also a high number of bristles, arranged in the same way as in *B. latirostris*. The second endopodite segment has two claws and 4 bristles and a series of long hairs along the anterior margin.

The female fifth limb is shown medially viewed in Fig. 5 e. The endopodite has in the male according to Deevey 2 claws and 4 curved spines, and the endites plus the endopodite have a total of 9 setae of which 5 are plumose, in all 15. In the present female the number is a little higher in all 18 and as follows: 1st endite – 1 bare + 2 plumose, 2nd endite – 3 bare + 1 plumose, endopodite – 2 claws + 4 bare bristles + 5 plumose bristles. I did not in the female find that the first exopodite segment is divided into two as described by Deevey for the male. On the first segment the female has a total of 10 bristles; the distoventral bristle is exceptionally long, almost as long as the distodorsal bristle. The second segment has 9 bristles, that is considerably less than in the male (13), but still an exceptionally high number. The third segment has the usual 3 clawlike bristles, the ventral is only 2/3 the length of the others. The epipodial appendage has 5-4-4 bristles.

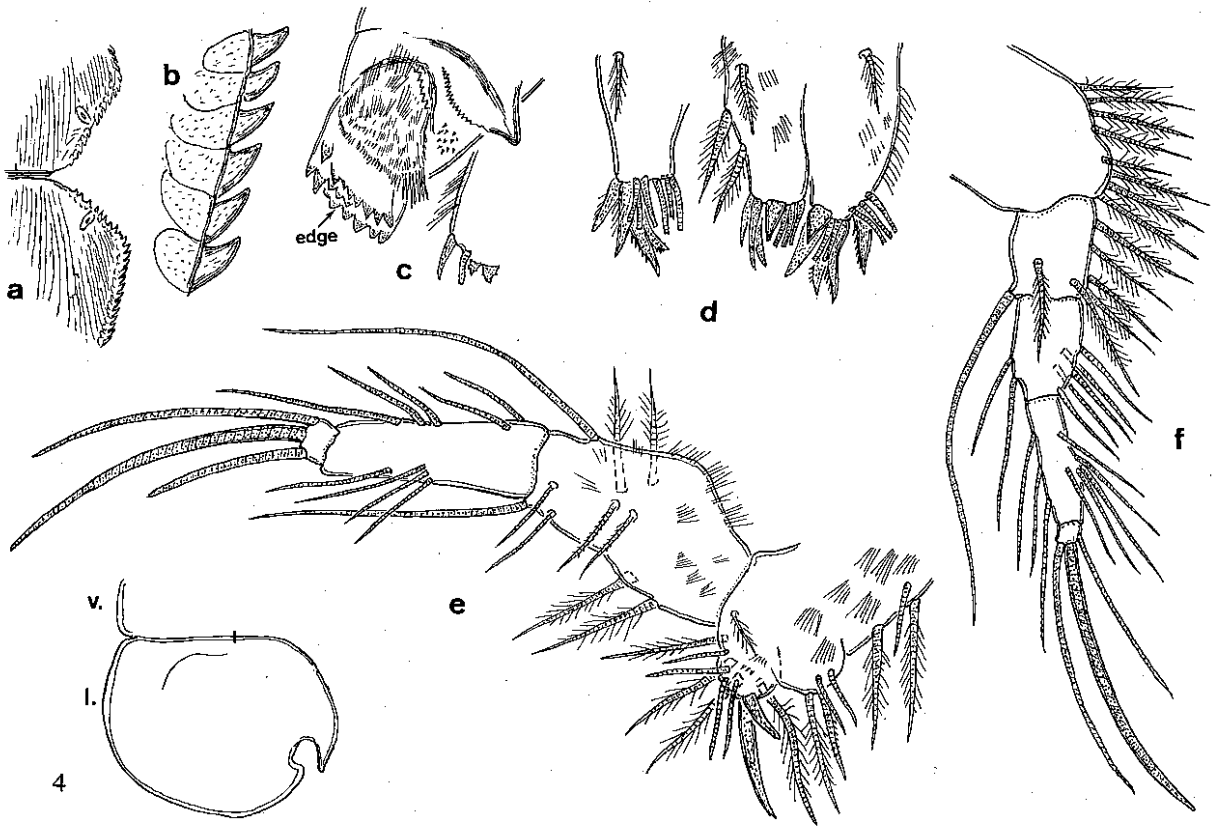


Figure 4 — *Bathyconchoecia paulula*, female, 0,79 mm ; left shell, mv, dorso-posterior corner of right shell shown (v) — Figure 5 — *Bathyconchoecia sagittarius*, female, 2,7 mm. a — left and right dorso-posterior corners of shell, lv ; b — part of posterior shell margin, lv ; c — coxale endite and part of basale, mv ; d — precoxale (left) and coxale (right) endites of maxilla ; e — 5th limb, mv ; f — 6th limb, lv.

The sixth limb (Fig. 5 f) has on the protopodite two groups of long plumose bristles, 4 in each group. The first exopodite segment has a long disto-dorsal bristle, one lateral bristle and 5 ventral plumose bristles, i. e. one more than in the male. The second segment has 7 bristles (male 12) ; the third has 8 (male the same). The fourth segment has 3 bristles of which the central one is the longest and stoutest.

The seventh limb is as in *B. latirostris*, only the distal part has no spines on the surface.

Furca is as in the male.

**Key to the species of *Bathyconchoecia***

As the keys to the species provided in the existing literature only include 4 (Poulsen 1969a) and 8 (Deevey, 1968) species, I have in the following key attempted to include all 15 species. The key must, however, be considered as only provisional, and it should be used with caution. Most of the species are described only from one or a few specimens, so the individual variation of the specific characters remains unknown ; of some species only one of the sexes are described, of others only a juvenile individual.

- 1. Shell with long rostral, lateral, dorsal or posterior spines .....2
- 1. Shell without such spines .....3
- 2. Shell surface with short fringes of fine "hairs" ..... *septemspinosa*
- 2. Shell surface without such fringes ..... *deeveyae*
- 3. Right dorso-posterior shell corner with point or short spine .....4
- 3. Right posterior corner without point or spine .....8
- 4. Each half of male rostrum bifid ..... *darcythompsoni*
- 4. Each half of rostrum single .....5
- 5. Posterior glands open level with edge of shell .....6
- 5. These glands open on a round process from the edge .....7

6. Shell with dense vertical striation	.....	<i>sagittarius</i>
6. Shell with polygons or bands filled with pits	.....	<i>latirostris</i>
7. First antenna first segment with a large ventero-distal bulge	.....	<i>crosnieri</i>
7. This segment without such bulge	.....	<i>subrufa</i>
8. Length of mature individuals over 4 mm	.....	9
8. Length of mature individuals less than 4 mm	.....	10
9. Posterior shell margin straight or backwards vaulting	.....	<i>foveolata</i>
9. Posterior shell margin forwards sloping	.....	<i>baskiae</i>
10. Length of mature specimens less than 1.5 mm (1.0-1.5)	.....	11
10. Length of mature specimens over 1.5 mm (1.6-2.0)	.....	13
11. Posterior shell corners form a large, round process	.....	<i>nodosa</i>
11. Posterior shell corners without such process	.....	12
12. Posterior shell corners bluntly rounded, height about 70 % of length	.....	<i>paulula</i>
12. Posterior shell corners sharply right-angled, height about 55-60 % of length	.....	<i>laqueata</i>
13. Shell not strikingly sculptured though punctuation may be present	.....	<i>galerita</i>
13. Shell strikingly sculptured with polygonal cells filled with pits	.....	14
14. Shell sculpturing prolonged as a flange along posterior margin below the shell glands	.....	<i>kornickeri</i>
14. No such flange along the posterior shell margin	.....	<i>lacunosa</i>

*Remarks on classification of the species of Bathypochoecia*

Deevey (1968) notes that the three smaller species (*paulula*, *laqueata* and *kornickeri*) and probably also *lacunosa* form a natural group; they are fairly similar in shape and sculpture of shells and in the morphology of the appendages, and she further notes that the two largest species, *foveolata* and *darcythompsoni*, may possibly be grouped together. With the larger number of species now known a further grouping can be attempted.

Between the two species *B. deeveyae* and *septemspinosa* and the other species are — as stressed by Angel (1970) — clear differences. Firstly they are distinguished by their long spines on the valves and secondly by the form of the endopodite of the second antenna which is shorter and broader, more rounded, in these two species than in the others. Further, these two species — forming the first group of the genus — are, as described, characterized by having only few bristles on the mandible, maxilla, fifth and sixth limbs and few claws on the furca. However, both species are described only from juveniles, and juveniles have as a rule fewer bristles and claws than the adults.

Two other species *B. sagittarius* and *B. latirostris* can clearly be set apart in a second group, distinguished from all remaining species by the high number of bristles on the posterior and ventero-posterior parts of the first endopodite segment of the maxilla, viz. 10 in *sagittarius* and 11 in *latirostris* against only 4 (*nodosa* — 3) in the remaining species. Also the fifth and sixth limbs have high numbers of bristles, as follows:

	5th limb, 2nd exopod.-segm.	6th limb, 2nd and 3rd exop. segm.
<i>sagittarius</i>	9-10	7 + 8
<i>latirostris</i>	7	6 + 9
other species	3-5	3 - 6 + 2 - 3

Finally, these two species are set apart from the others by having a triangular, stout process on the margin of the coxale of the mandible towards the basale, and a serrate "plate" at the basis of this process.

The remaining 11 species fall according to size into two groups: the 3rd group: *baskiae* — 7.0 mm; *foveolata* — 5.2 mm; *darcythompsoni* — 4.5 mm; *crosnieri* — 3.7 mm; and *subrufa* — 3.5 mm. 4th group: *galerita* — 1.9 mm; *kornickeri* — 1.7 mm; *lacunosa* — 1.6 mm; *laqueata* — 1.3 mm; *nodosa* — 1.2 mm; and *paulula* — 0.9 mm. The 3rd and 4th groups differ also in the shape of the shell: the height of the shell in % of total length is for the 5 species of the 3rd group (all males) — 48, 46, 43, 43, and 42, and for the 6 species in the 4th group — 60, 60, 60, 62, 62, and 73 (males and females). Connected with the smaller height of the shell the species in the 3rd group have a straight or almost straight ventral shell margin, whereas species of the fourth group have a more arched ventral margin. Other differences between

these two groups are that the endite bristles of the maxilla are rather long (longer than the distal width of the endite) in the 3rd group, but rather short and stout in the 4th group ; further, that in the 3rd group one of the bristles on the 1st endopodite segment of the 2nd antenna has long marginal hairs, whereas in the 4th group both bristles have only short hairs (one may be bare).

It is hardly advisable now to consider whether these groups should be defined as genera or subgenera, as our present knowledge of the genus *Bathyconchoecia* is rather restricted. When more species become known, which with the high number of new species reported in the last 2-3 years is bound to happen, and when more individuals of the species are described, allowing a determination of sexual differences and individual variations, the problem of division into genera or subgenera can be approached.

## REFERENCES

- Angel M.V. 1970. *Bathyconchoecia subrufa* n. sp. and *B. septemspinosa* n. sp., two new halocyprids (Ostracoda Myodocopa) from the tropical North Atlantic and the description of the larval development of *B. subrufa*. *Crustaceana*, 19 (2).
- Deevey G.B., 1968. *Bathyconchoecia*, a new genus of pelagic ostracods (Myodocopa Halocypridae) with six new species from the deeper waters of the Gulf of Mexico. *Proc. biol. Soc. Washington*, 81.
- Kornicker L.S., 1969. *Bathyconchoecia deeveyae*, a highly ornamented new species of Ostracoda (Halocyprididae) from the Peru-Chile Trench system. *Ibid.*, 82.
- Müller G.W., 1908. Die Ostracoden der deutschen Südpolar-Expedition 1901-1903. *Deutsche Südpolar-Exp. 1901-03*, 10, Zoologie 2 : 53 - 181, pl. 4-19.
- Poulsen E.M., 1969 a. Ostracoda-Myodocopa, 1. Halocypriformes Thaumatoocypridae. *Dana-Report*, n° 75.
- 1969 b. Ostracoda-Myodocopa from the eastern tropical Atlantic. *Vidensk. Medd. dansk naturh. Foren.*, 132.
- Scott T., 1909. On some new and rare Entomostraca from the Scottish seas. *Ann. Mag. nat. Hist.*, (Ser. 8) 3.

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