

ON *BATHYCONCHOECIA LACUNOSA* (MÜLLER), A RARE HALOCYPRID
OSTRACOD FROM THE ARABIAN SEA

ABSTRACT

The plankton samples collected during the research cruises of R. V. *Varuna* along the southwest coast of India in 1963 contained males, females and juvenile specimens of *B. lacunosa* (Müller), one of the lesser known bathypelagic ostracods, the male of which has remained undescribed. Müller's (1908) original description of *B. lacunosa* is also incomplete in some respects being based on a juvenile female obtained at 66° 2' 9" S, 89° 38' E in the Antarctic waters. This note embodies a redescription of the species based on adult males and females and confirms its earlier record (George, 1967) from Indian Seas.

MÜLLER (1908) described *Euconchoecia lacunosa* based on a 1.6 mm female, possibly a juvenile, collected on 2-12-1902 from 66° 2' 9" S, 89° 38' E in the Antarctic waters. The genus *Bathyconchoecia* Deevey (1968) includes the two species *Euconchoecia lacunosa* Müller and *E. darcythompsoni* Scott. Recently *B. lacunosa* (Müller) has been listed as occurring in the Arabian Sea (George, 1967) but no description of the species is available from tropical waters. Besides, the male has remained undescribed and a redescription of the species based on both sexes is given here.

Bathyconchoecia lacunosa (Müller)

Euconchoecia lacunosa Müller, 1908, p. 80-81; Pl. 10; Fig. 1-8. (Type locality: Gauss Station at 66° 2' 9" S, 89° 38' E); George, 1967, p. 645.

Material: R. V. VARUNA Stations: 2017 at 10° 57' N, 75° 07' E on 6-11-'63 in tow with IOS Net from 200-0 m, depth at station being 220 m (3 M, 1 F, 10 j); Stn. 2041 at 14° 58' N, 72° 32' E on 10-12-'63 from 160-0 m with IOS Net, depth at station being 183 m (2 F, 3 j).

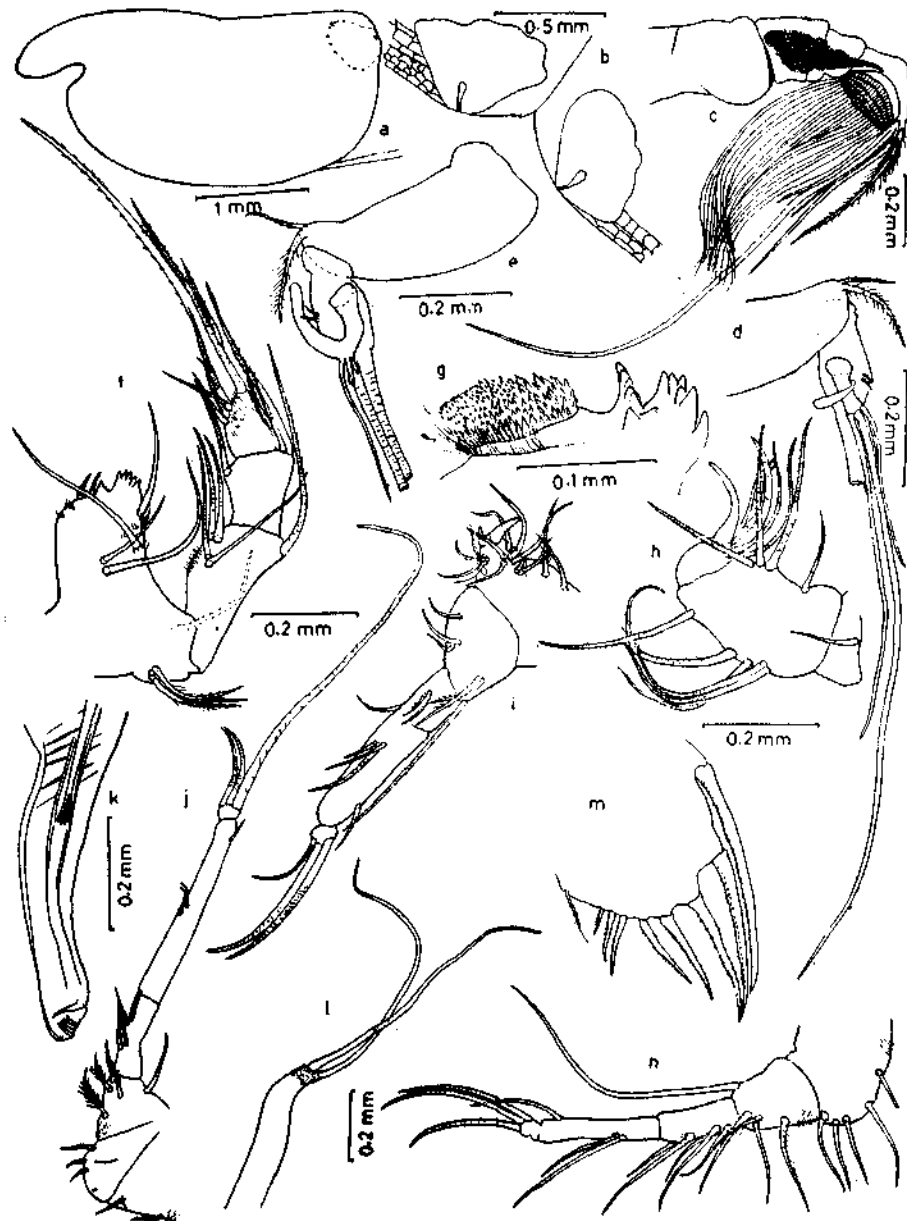


Fig. 1. *Bathyonchoecla lacunosa* (Müller)-Male: a. Carapace-lateral view; b. Postero-dorsal part of carapace showing shell glands; c. First antenna; d. Endopodite of left second antenna; e. Endopodite of right second antenna; f. Mandible; g. Coxale endite of mandible; h. Maxilla; i. Fifth limb; j. Sixth limb; k. Copulatory limb; l. Seventh limb; m. Caudal furca; and n. Sixth limb of female.

Description of male (Fig. 1 a - m):

Carapace (Fig. 1 a, b): Length 2.6 mm, height ranges from 52-53 per cent of length; antero-ventral and postero-ventral corners rounded; dorsal margin with a slight concavity at hinge line at about half shell length; rostrum large with a deep rounded incisure; sculpturing of shell distinct; beneath rostrum and on anterior and posterior margins striations form an irregular pattern of polygonal cells; on rostrum sculpturing is in a scale-like pattern as it is described by Müller (1908); shell glands symmetrically situated just below postero-dorsal corner with key-hole shaped openings. *Frontal organ* absent. *First antenna* (Fig. 1 c): Shaft short with indistinct segmentation; 2nd, 3rd and 4th segments with numerous dark pigment corpuscles; outer distal margin of second segment with a patch of minute hairs; 4th segment has a plumose seta at its outer distal margin and ventrally with a cluster of more than 150 sensory filaments arranged in four to five rows; 5th segment with four setae, principal seta being more than twice length of sensory filaments and remaining 3 setae shorter and subequal. *Second antenna* (Fig. 1 d, e): Basal segment of exopodite about 70 per cent of length of shaft; exopodite joints with long setae as in genus; first endopodite segment with 2 setae disto-dorsally, longer one plumose and shorter with small marginal spinules; second endopodite segment medially has 2 short spines and terminates in 2 long setae which carry fine spinules along their whole length; hook appendage on right side well developed with 3 subequal setae on basal right angle of appendage; left hook appendage weak with 3 subequal setae. *Mandible* (Fig. 1 f, g): Coxale endite with a large masticatory pad formed of numerous short stout teeth and hairs (Fig. 1 g); toothed edge with 6 uneven teeth; proximally a pair of teeth one behind the other present (as are the two lists in other halocyprids), followed by a single row of 5 or 6 uneven teeth; toothed edge of basale has 6 triangular serrated teeth of which innermost is broader and separate, other teeth preceded by 2 recurved processes; basale endite with 4 lateral setae and 3 plumose setae at antero-distal corner and a long bare seta at posterior distal region.

First endopodite segment with a long spinous seta disto-dorsally; ventral surface covered with fine hairs and bears 4 setae; 2nd joint disto-dorsally has 3 subsequent bristles of which shortest is bare; ventrally 2nd joint with a bare seta; terminal segment with rows of short hairs; disto-dorsally 3 subequal stout bristles with marginal hairs of which longest bristle is longer than endopodite; distoventral corner with 4 short thin bristles decreasing in length; of these, shorter 3 bristles are bare. *Maxilla* (Fig. 1 h): Basale with a single seta; anterior edge of first endopodite segment with 5 setae, of which proximal 3 are bare while remaining 2 are placed wide apart and have marginal hairs; posterior edge with one short bristle proximally and 3 setae distally; lateral seta absent; terminal segment with 2 stout claw-like bristles and 4 slender setae inbetween.

Fifth limb (Fig. 1 i): First endite of protopodite with one bare and one plumose setae; endopodite triangular, wedged inbetween protopodite and exopodite forming antero-ventral corner of knee-bent limb and carrying 2 spine-teeth anteriorly, 7 bare setae proximally and 4 bare setae distally; 1st exopodite segment with 2 plumose setae on inner face and with 3 bare setae ventrally; disto-dorsal corner with a long seta as in genus; 2nd segment with one seta middorsally and 2 ventrally; terminal segment with 2 claw-like bristles and one slender bristle distally, latter about half length of former. *Sixth limb* (Fig. 1 j): Sexually dimorphic; dorsal seta on first exopodite segment short, but surpasses half length of second segment; ventral margin of 2nd segment has 4 bare setae; 3rd segment with 2 bare setae middorsally and one short bare seta disto-dorsally; terminal segment with 3 bristles, dorsal

one about 5 times longer than remaining two short bristles. *Seventh limb* (Fig. 1 l) Long, segmentation indistinct with two subequal terminal setae devoid of marginal hairs. *Caudal furca* (Fig. 1 m): Eight pairs of hook spines provided with fine hairs; an unpaired dorsal plumose seta present. *Copulatory limb* (Fig. 1 k): Flat, broader proximally; 5 transverse muscle bands present towards base; rod with a brush-like structure at its tip penetrating vas deferens proximally; vas deferens opens near ridged blunt tip.

Female (Fig. 2 a to f):

Carapace (Fig. 2 a, b, c, and f): Length 2.95 to 3.00 mm; height ranges from 57 to 58 per cent of length and is relatively higher than that of male; sculpturing of carapace (Fig. 2 b, c) as described by Müller (1908); location of shell glands as in male. *First antenna* (Fig. 2 d): Shaft shorter than in male; end segments with 3 terminal setae, longest being a little longer than sensory filaments and other 2 short terminal setae being subequal and shorter than sensory filaments; plumose seta at 4th joint with long hairs along proximal half and with short hairs distally. *Second antenna* (Fig. 2 e): Protopodite and exopodite segments shorter than in male; first endopodite disto-dorsal setae longer than in male with fine hairs proximally on longer seta and with spinules distally; longer seta more than thrice length of shorter seta; second endopodite segment with 5 subequal setae each provided with fine spinules. *Mandible, Maxilla and Fifth limb* as

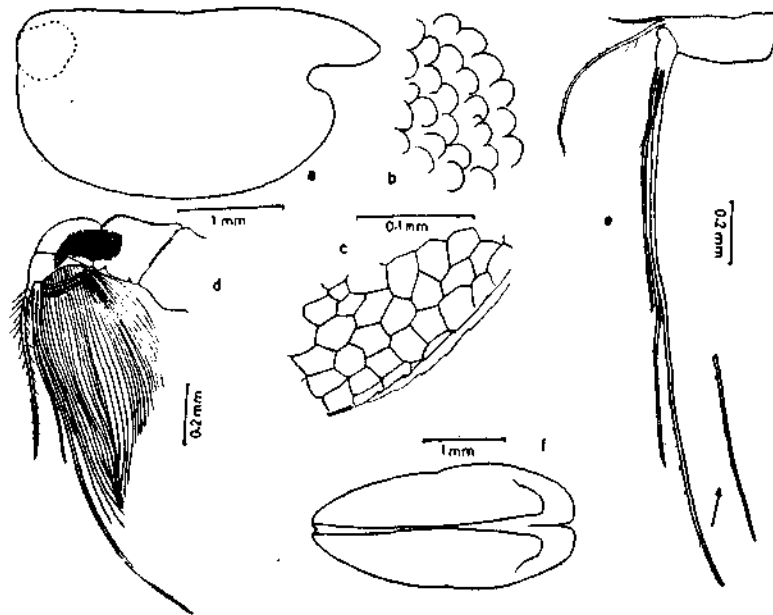


Fig. 2. *B. lacunosa* (Müller) female: a. Carapace-lateral view; b. pattern of sculpturing on rostrum; c. pattern of sculpturing below incisur; d. first antenna; e. second antenna endopodite; and f. carapace-ventral view.

in male. *Sixth limb* (Fig. 1 n): All setae are longer than that in male; dorsal seta on first segment very long and surpasses tip of end segment; 3 terminal setae of end joint are subequal and smoothly curved.

Discussion

In the diagnostic characters such as the shape of the shell, the type of sculpturing on the carapace and in the structure of the appendage, the present material agrees well with Müller's (1908) description of *E. lacunosa*.

The genus *Bathyconchoecia* is known from 13 species, ranging, in length from 0.93 - 7.00 mm. Deevey (1968) suggested that *B. paulula* Deevey, *B. laqueata* Deevey, *B. kornickeri* Deevey and *B. lacunosa* (Müller) belong to a natural group in which the length of the carapace varies from 0.93 to 3.00 mm and are more or less similar in general shape, sculpturing of shell and structure of appendages. However, *B. lacunosa* differs from the above mentioned species in the shape of the carapace, characteristic sculpturing on the rostrum, in the structure of the appendages and in the shape of the male copulatory limb.

The hydrographic data collected from the two 'VARUNA' Stations from where the specimens were obtained is given below. Since the collections were made as open vertical tows, it is difficult to give the actual depths from where the specimens were caught.

Depth (m)	Temp. (°C)		Sal. (‰)		Oxygen (ml/l)	
	Stns. 2017	2041	2017	2041	2017	2041
0	28.8	28.8	34.69	34.94	4.35	4.75
10	28.99	28.8	34.67	35.03	4.05	5.00
25	28.88	28.77	34.67	35.57	3.55	4.90
50	28.39	28.89	35.68	34.96	4.30	0.05
75	26.90	26.74	35.50	35.68	3.75	3.05
100	26.78	25.12	35.64	35.43	3.15	1.90
125	21.89	-	35.07	-	0.80	-
150	18.03	18.16	34.97	35.05	0.45	0.45
200	15.14	-	35.03	-	0.40	-

Species of the genus *Bathyconchoecia* are considered to inhabit deeper waters. Deevey (1968) opined that the species occur either on or just above the bottom in regions not easily sampled with plankton nets, since the specimens were taken from the stomach and intestines of 3 species of bottom fish *Nezumia hildebrandi*, *Bassozetes normalis* and *Dicromitta agassizii* collected at depths of 1000 and 3165 m in the Gulf of Mexico. Poulsen (1969) described *B. baskiae* in the 'Dana' material collected from 1500-2000 m depth from Malaya Archipelago. Angel (1970) has described *B. subrufa* obtained from sledge plankton net with rectangular opening fishing 12 cm above the sea-bed at 352 m depth and no specimens were found in a similar haul from 173 m from a nearby station. The occurrence of the species such as *B. deeveyae* Kornicker (recorded by George, 1971) and *B. lacunosa* on the continental shelf edge off south west coast of India in plankton collections is thus of interest.

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A NOTE ON THE WHALE SHARK, *RHINCODON TYPUS* SMITH NETTED OFF MANAPAD

ABSTRACT

The capture of a 540 cm male whale shark on 2-2-1973 off Manapad, Gulf of Mannar is recorded here with measurements of body proportion.

ON 2. 2. 1973 at about 4 P.M. a male whale shark was entangled in a nylon gill net which was operated by the fishermen about 6-7 miles off Manapad at a depth of 20-24 metres, and the shark was dragged to the shore. The last reported catch of a whale shark off Tirunelveli Coast was when a whale shark measuring 5.9 m in length was caught in the net off Tiruchendur and towed to Tuticorin (Pai and Mahadevan Pillai, 1970). Prior to that, a female whale shark measuring 5.6 m in total length entangled in the net was towed to Tuticorin (Silas and Rajagopalan, 1963). In 1953 a whale shark over 7 m in length was sighted on Tholayiram Paar (Chacko and Mathew, 1954). Observations of similar catches of whale sharks all along the southern coasts are not uncommon and they are invariably caught by accident in the fishing nets (Kaikini *et al.*, 1959; Gopalan, 1962; and Thomas and Kartha, 1964).

The measurements (in cm) of the specimen caught off Manapad are given below:-

Total length	.. 540	Interspace between:	
Standard length	.. 420	First and second dorsals	.. 60.5
Head length	.. 140	Pelvic and anal origins	.. 110
Girth of Body (maximum)	.. 240	Pectoral and Pelvic origins	.. 150
Width of mouth (angle to angle)	.. 61	Length of Pectoral fin along	
Vertical height of:		outer margin from anterior	
First dorsal fin	.. 40	insertion.	.. 100
Second dorsal fin	.. 21	Length of Pectoral fin from	
Length of caudal fin from		angle of inner base to tip	.. 85
caudal pit along upper margin	.. 120	Maximum width of Pectoral fin	.. 40
Snout to:		Length of First dorsal fin	.. 55
First dorsal fin	.. 230	Length of Second dorsal fin.	.. 20.5
Second dorsal fin	.. 290.5	Least height of caudal peduncle	.. 17.5
Pectoral fin	.. 130	Anterior margin of snout to	
Pelvic fin	.. 280	Eye	.. 50
Anal fin	.. 370	First gill opening.	.. 100