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CRUSTACEA DECAPODA

BY

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The only Decapod Crustacean collected by the Swedish Deep-Sea Expedition is a male belonging to the genus *Munidopsis* of the family Galatheidae. CHACE (1942) estimated that this genus comprises about 115 species; of these DOFLEIN and BALSS (1913) have tabulated 106 according to the depths at which they are known to occur and according to their known geographical distribution. The majority of the species are listed as abyssal, *i. e.* from 800 m. downwards, and of these 46 are said to be endemic. But only four of these species occur below 4,000 m. namely, *Munidopsis abyssorum* A. MILNE-EDWARDS & BOUVIER, *M. antonii* A. MILNE-EDWARDS, *M. crassa* SMITH and *M. parfaiti* (A. MILNE-EDWARDS). Six other species, however, occur at depths exceeding 3,000 m. — see list appended on p. 244.

Unfortunately, many of the species of the genus *Munidopsis* are known from only one or a very few specimens so that it is impossible to judge how much variation may occur with age and sex. The differences between certain species are apparently slight and it is possible that some may prove to be synonyms. The specimen before me is certainly closely related to two of the abyssal species namely, *Munidopsis subsquamosa* HENDERSON from the Pacific and Indian Oceans and *M. crassa* SMITH from the North Atlantic and is, I think, referable to the latter.

Munidopsis crassa S. I. Smith 1885.

SMITH, S. I., 1885, p. 494. (Holotype, ♀).

SMITH, S. I., 1886, p. 645 (p. 41 of reprint), pl. iv. (Holotype and 2 ♀♀, 1 ♂).

MILNE-EDWARDS & BOUVIER, 1893, p. 275 (in Table). No new record.

FAXON, 1895, p. 86 (compared with *M. subsquamosa* var. *aculeata*). No new record.

BENEDICT, 1902, p. 318 and p. 276 (in key). Only the locality of the holotype mentioned.

DOFLEIN & BALSS, 1913, p. 176, p. 177 (in Table). No new record.

BOUVIER, 1922, p. 47, pl. I, fig. 5 (natural colouration). 1 ♂.

CHACE, 1942, p. 73 (in key). No new record.

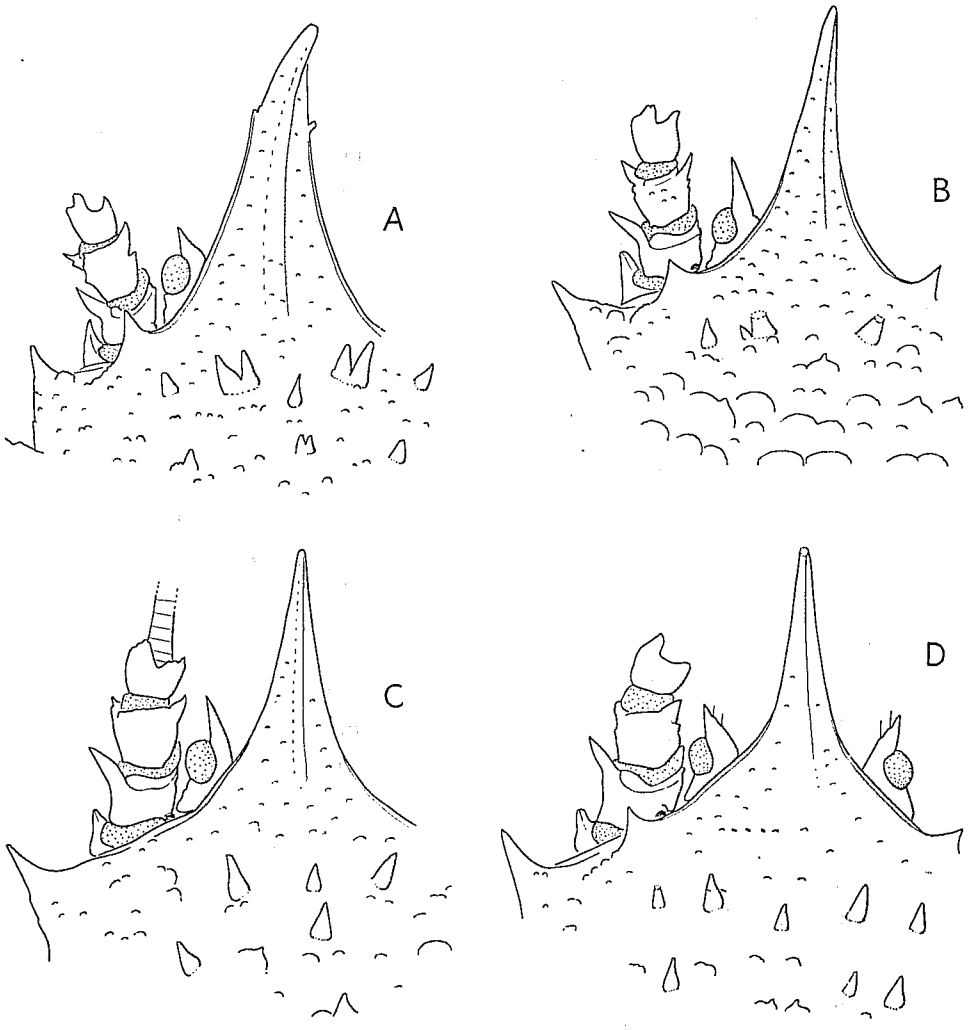
Occurrence

St. 313. 29° 48′ N, 17° 39′ W—30° 05′ N, 17° 18′ W 4,267—4,255 m. June 16th 1948. 1 ♂.

(See map on p. 28 of Reports of the Swedish Deep-Sea Expedition 1947—1948, vol. II, Zoology Fasc. 1.)

Recorded distribution

The species is known only from a small number of specimens. Three females and one male were obtained by the U. S. 'Albatross' at three stations off Cape Hatteras, between 36° to 40° N and 63° to 68° W in 1,742—2,640 fms. (3,185—4,791 m.). One male specimen was obtained at 46° 17′ 30″ N, 30° 25′ W in 4,380 m. by the Prince of Monaco's Expedition in 1910 although it was not described by BOUVIER until 1922. DOFLEIN & BALSS (1913, p. 177) appear to have listed this latter locality twice, as »Westeuropa 4,380 m.» and »Azoren 4,360 m.» The locality is almost due north of the Azores but is too far west to qualify as a European record.

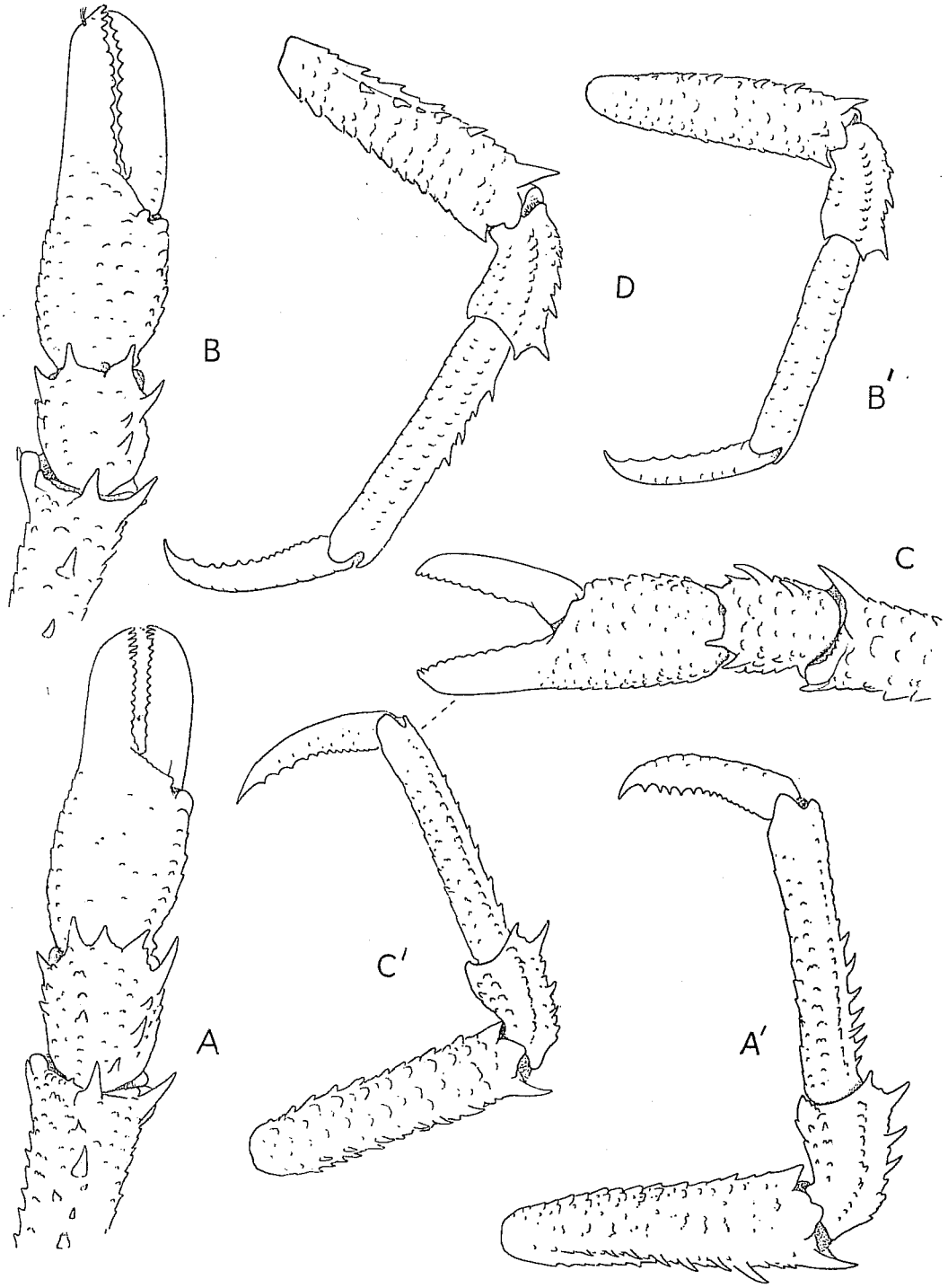


Text-fig. 1. Anterior portion of carapace, in dorsal aspect, showing the eye-stalk and left antennal peduncle, of: A. *Munidopsis crassa* SMITH from the Swedish Deep-sea Expedition. B. *Munidopsis subsquamosa* HENDERSON, lectotype from Station 237, off Yokohama (length of carapace, including rostrum = 37 mm.). C. *Munidopsis subsquamosa* var. *aculeata* HENDERSON from Station 146, between Marion Island and the Crozets. (c. l. = 43.5 mm.). D. *Munidopsis subsquamosa* var. *aculeata* HENDERSON from Station 302, West of Patagonia (c. l. = 45 mm.). All × 2.5.

Description

The general appearance of this rather robust specimen is shown in the photographs reproduced in Plate I. When fully stretched, the body must measure approximately 90 mm. in total length.

The *carapace*, including the rostrum, measures 45 × 28 mm. and the portion behind the rostrum is rather longer than wide. The dorsal surface is convex from side to side; the regions are well defined and closely beset with granules which tend to be spiniform on the gastric region; posteriorly the granules are replaced by short striae arranged medially in transverse, laterally in somewhat oblique, rows. The rostrum, which is approximately half as long as the carapace, is broad (being at its base one-third the width of the carapace), narrowly triangular, strongly carinate and upcurved at the apex. The lateral margins of the rostrum are sharply defined in the proximal two-thirds — up to the bend, where there is a pair of minute spinules, that on the right being the more posterior of the two (see Text-fig. 1. A). The frontal margin of the carapace bears on each side a distinct supra-antennal spine which is about as large as the anterolateral spine. Behind this, on the lateral margin, is a larger



Text-fig. 2. Distal portion of left cheliped, and pereiopod IV (right or left) of: A and A'. *Munidopsis crassa* SMITH from Swedish Deep-sea Expedition. B and B'. *Munidopsis subsquamosa* var. *aculeata* HENDERSON from Station 146. C and C'. *Munidopsis subsquamosa* HENDERSON, lectotype from Station 237. D. *Munidopsis subsquamosa* var. *aculeata* HENDERSON from Station 302. All x approx. 2.5.

spinose lobe (that on the left bears a subsidiary spine), followed by two spines and a few granules (Plate I, dorsal aspect). Immediately behind the posterior branch of the cervical furrow is a sharp spine followed by a number of rather prominent striations. The posterior border is raised and emphasised by two parallel rugose crests of which the posterior is the less

prominent and bifurcates laterally. A wide smooth trench separates these marginal crests from the striae on the posterior portion of the carapace (Plate I, upper photograph). The thoracic sternum is smooth as shown in the lower photograph; the four anterior sternites are fused although three transverse ridges, each slightly interrupted medially, mark the boundaries between them; the last sternite is free and has a prominent transverse carina (between the coxae of pereiopods V).

No attempt was made to straighten out the *abdomen* when the photographs were taken, but most of the details are nevertheless visible. Somites 2 and 3 each bear two strong transverse carinae, somite 4 has only one such carina while somite 5 has an indistinct ridge near its anterior margin. The sixth somite and the tail fan are seen in dorsal aspect in the lower photograph (Plate I) where the tail has been turned back slightly in order to expose the last thoracic sternite. Some traces of granulation are present, notably on the pleura of somite 6 and on the the tail fan.

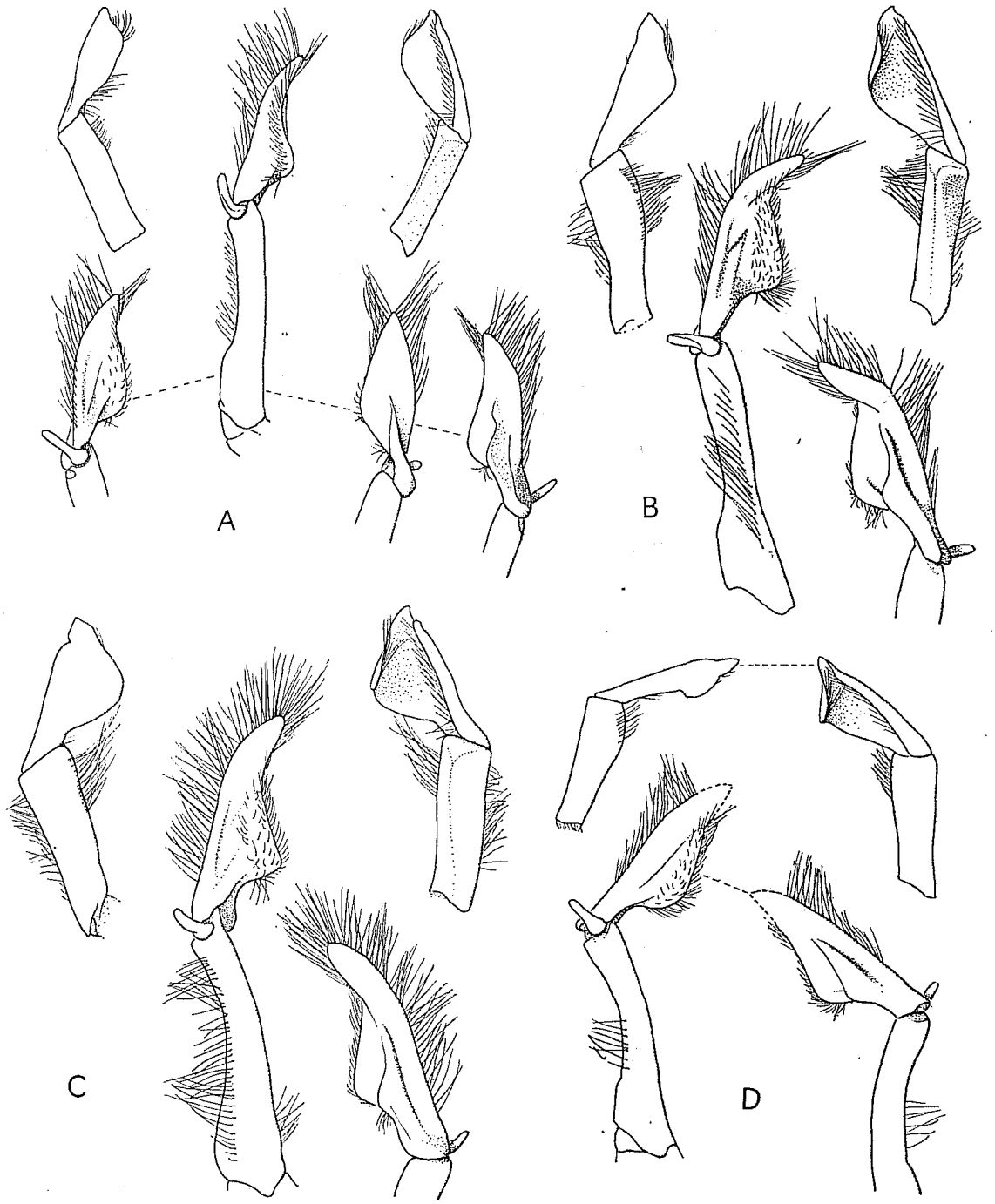
The *eye-stalk*, which is slightly movable, bears a short apical spine projecting beyond the very pale corneal area (Text-fig. 1 A). The details of the *antennal peduncle* are shown in the same figure and in the photograph of the dorsal surface of the specimen; the long flagellum, which measures at least 110 mm., had unfortunately become detached on each side and is therefore not shown in the photographs. The *antennule* is rather shorter than the rostrum and the basal segment of the peduncle is armed with two spines of which the inner is the longer.

The *chelipeds* are somewhat more robust than the walking legs and a trifle shorter than pereiopods II, reaching the distal end of the propodus. The movable finger or dactylus is a little longer than the dorsal margin of the palm. The latter is rather longer than high and somewhat granulose, especially near the upper and lower margins (Text-fig. 2 A). The carpus is slightly longer than wide; the anterior margin (immediately behind the chela) bears a group of three spines while the inner margin bears a strong, and the outer margin a small, distal spine. There is also a hint of two longitudinal series of spines on the dorsal surface (these are more pronounced on the left than on the right cheliped). The merus is armed with three distal spines, one of which is ventral and thus not seen in dorsal aspect (see however the lower photograph in Plate I). Behind the median distal spine is a mid dorsal series of five or six spines. The arrangement of the spines and rugosities on pereiopods II—IV is shown fairly clearly in the photographs (Plate I). Pereiopod IV is represented in Text-fig. 2 A; the dactylus, which is about three-fourths the length of the propodus, bears a series of 14 crenulations and teeth on its ventral margin, those on the distal half being the largest. The propodus, which is rather more than five times as long as wide, bears a proximal dorsal series of spines. The carpus, equal in length to the dactylus, also bears three prominent spines on the distal half of the dorsal margin. The merus, which is rather longer than the propodus, is considerably enlarged at its distal end. Pereiopod V is of the reduced and modified form characteristic of the Galatheidae.

Pleopods 1 and 2, the copulatory appendages, are represented in Text-fig. 3 A. The terminal segment of pleopod 1 is leaflike and somewhat folded. The terminal segment of pleopod 2 is shown in four different aspects; at its base is a short projecting spur (at the distal end of the main segment or shaft).

Remarks

This fine specimen was captured in deep water off the Canary Islands. CHACE (1942, pp. 72—75) gives a key to the determination of the Western Atlantic species of the genus *Munidopsis* according to which this specimen is referable to *M. crassa* except that the statement »frontal margin of carapace between the base of rostrum and anterolateral spine practic-



Text-fig. 3. Pleopods 1 and 2, the male copulatory appendages of: A. *Munidopsis crassa* SMITH from Swedish Deep-sea Expedition. B. *Munidopsis subsquamosa* var. *aculeata* HENDERSON from Station 302. C. *Munidopsis subsquamosa* var. *aculeata* HENDERSON from Station 146. D. *Munidopiss subsquamosa* HENDERSON from Station 237. A—C x 5, D x 6.

ally unarmed» hardly applies. As shown in Text-fig. 1 A, the spine above the antennal peduncle is well formed, as also is that in the female of *M. crassa* figured by SMITH (1886, Pl. IV). I have been unable to compare this specimen with any of those previously referred to *M. crassa* but it seems to agree with SMITH's figure, which is of a female, in most respects. SMITH says that the rostrum is nearly horizontal whereas, in the specimen before me (as also in the male figured by BOUVIER, 1922) the distal portion is markedly upturned. The most

prominent spines on the gastric region, immediately behind the rostrum, are bifid not single as in SMITH's figure. (Text-fig. 1 A). The anterior lateral spine (that immediately behind the anterior branch of the cervical groove) is more broadly triangular and is followed by two instead of four spinules.

The species most closely related to *Munidopsis crassa* is *M. subsquamosa* HENDERSON and its varieties *aculeata* HENDERSON (1888, pp. 152—3) and *pallida* ALCOCK (1894, p. 331, 1901, p. 268, Illust. 'Investigator' Crust. pl. xiii, fig. 7). This species also is known from only a few specimens; the types of *M. subsquamosa* consist of a male specimen from Japan, which I select as the lectotype, and 'the softened remains of another' male. The variety *aculeata* is represented by a male specimen from west of Patagonia and a male specimen from between Marion Island and the Crozets. ALCOCK does not say how many specimens of the variety *pallida* he obtained, but I infer that there was only one male. DOFLEIN & BALSS (1913, p. 155) record one female of the variety *pallida* from off Zanzibar. In addition to these, FAXON (1895, p. 86) recorded two males and an ovigerous female of *M. subsquamosa* var. *aculeata* from the Pacific side of Central America.

Of these, I have only seen the three 'Challenger' specimens described by HENDERSON (the damaged specimen can be discounted). As the illustrations show, these specimens exhibit considerable variation as regards length of rostrum, the nature of the sculpturing of the carapace and appendages, the presence or absence of a supra-antennal spine, the size and form of the eye-stalk, etc. (*c. f.* Text-fig. 1, B, C, and D and Text-fig. 2, B B', C C' and D). Although the cheliped of the specimen from west of Patagonia has not been figured, it is very similar to that of the specimen from between Marion Island and the Crozets (Text-fig. 2 B). The Swedish Deep-Sea Expedition specimen referred to *M. crassa* has a longer, more upcurved rostrum, a more pronounced supra-antennal spine and a shorter spine on the eyestalk than in any of the 'Challenger' specimens (Text-fig. 1 A). Also, as shown in Text-fig. 2, *M. crassa* has relatively shorter

LIST OF DECAPOD CRUSTACEA RECORDED FROM DEPTHS OF 3,000 M. (= 1,640 FATHOMS) OR MORE.

Name of species	Depths in metres
REPTANTIA.	
Family Maiidae.	
Chionoecetes tanneri Rathbun	35—3,000
Family Dorippidae.	
Ethusina abyssicola S. I. Smith	1,230—4,260
» *challengeri* Miers	3,300—4,080
» *gracilipes* Miers	1,280—3,350
Family Paguridae.	
Parapagurus pilosimanus S. I. Smith ...	450—4,100
Tylaspis anomala Henderson.	4343 m.
Family Galatheidae.	
Munidopsis abyssorum A. M.-Edw. & Bouvier	4,060
Munidopsis antonii (A. M.-Edwards) ...	2,500—4,100
» *bairdii* S. I. Smith	2,750—3,240
» *beringana* Benedict	3,240
» *crassa* S. I. Smith	4,360—4,700
» *latirostris* Faxon	3,240
» *parfaiti* (A. M.-Edwards) ..	4,260—4,360
» *reynoldsii* A. M.-Edwards ..	3,700
» *subsquamosa* Henderson ...	3,430
» » var. *aculeata* Henderson ...	2,400—3,279
» *subsquamosa* var. *pallida* Alcock	2,959—3,297
» *vicina* Faxon	3,060—3,430
Galacantha diomedae Faxon	1,200—3,430
Family Eryonidae.	
Willemoesia forceps A. M.-Edwards	3,510
» *indica* Alcock	2,396—3,297
» *inornata* Faxon	2,420—3,330
» *leptodactyla* (W.-Suhm)	2,510—4,070
NATANTIA.	
Family Glyphocrangonidae.	
Glyphocrangon caecescens W. Mason ...	3,196
Family Crangonidae.	
Pontophilus abyssi S. I. Smith	3,200—4,060
» *challengeri* Ortmann	2,010—4,970
» *occidentalis* Faxon	1,778—4,080
» *profundus* Bate	4,760

X Add:— Probebei miradilis Wolff 1961 1145—3570 m.

fingers on the chela, and three spines instead of only two on the distal dorsal margin of the carpus of the cheliped; moreover, the fourth pereiopod is more robust, with the spines on the dorsal margin of the carpus and propodus better developed, than in any of the 'Challenger' specimens of *M. subsquamosa*. The copulatory pleopods of the 'Challenger' specimens are represented in Text-fig. 3, B—D for comparison with those of *M. crassa* but again they differ somewhat from each other. In *M. crassa* the shaft of pleopod 2 is relatively longer and more slender, and the twisted terminal blade is relatively shorter, than in any of the *subsquamosa* material.

At present it is difficult to assess these differences and the distribution of the two supposed species is rather curious. *M. crassa* is restricted to the Northern Atlantic Ocean, whereas *M. subsquamosa* and its varieties is recorded from both sides of the Pacific Ocean and from the Indian Ocean. Until more material is available for study I prefer to keep the two species separate, although later on they may have to be regarded as one widely distributed and very variable species.

The numerous bathypelagic prawns belonging to the families Penaeidae, Hoplophoridae, Nematocarcinidae, Pandalidae, etc. have been omitted from the list on p. 244. These are often stated to have a very wide bathymetric range, such as 0—3,250 or 731—5,390 m.

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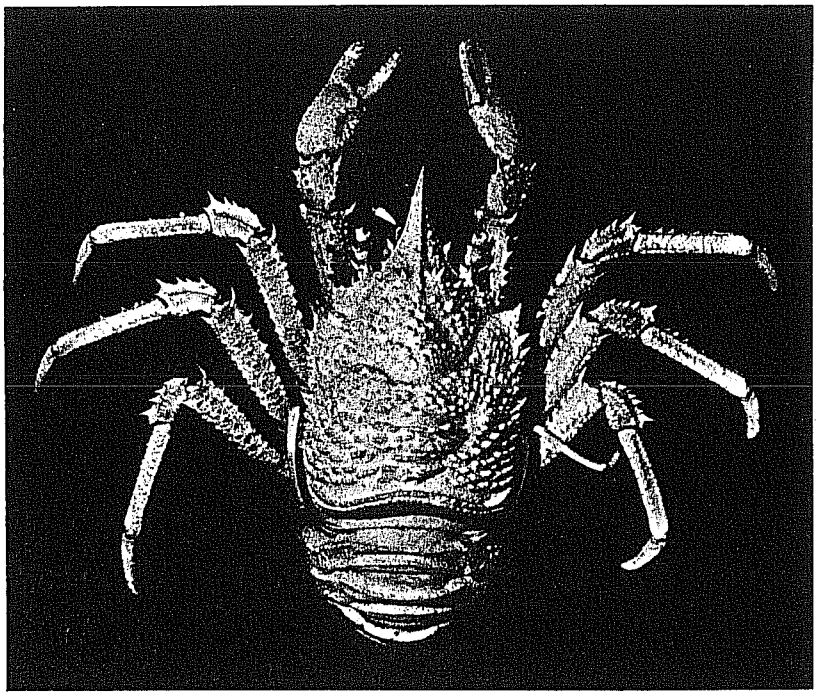

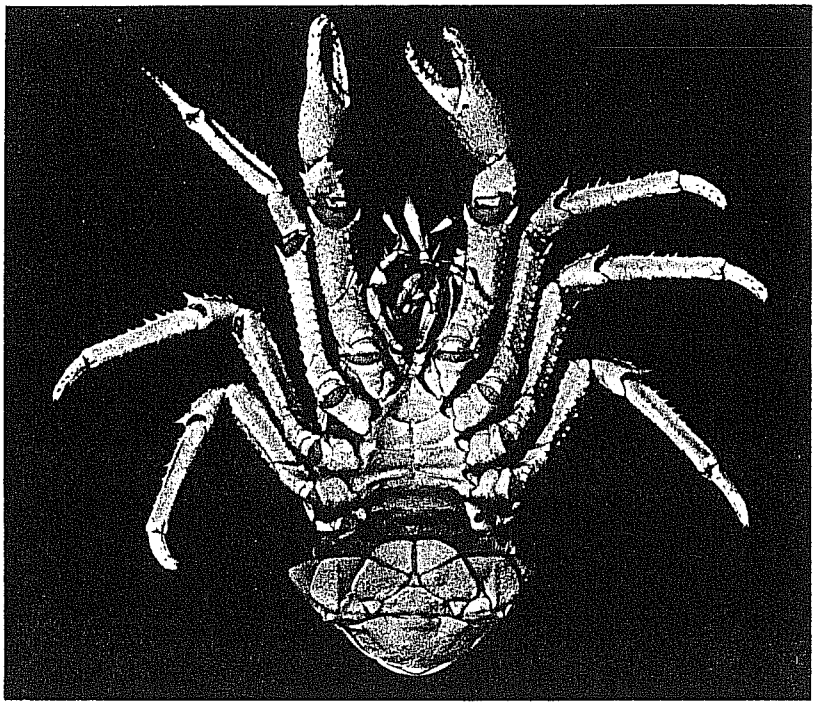

Munidopsis crassa Smith . S. D. Exp. × 1.