Crustaceana 62 (3) 1992, E. J. Brill, Leiden

TWO NEW SPECIES OF *MUNIDA* LEACH, 1820 (DECAPODA, ANOMURA, GALATHEIDAE) FROM THE INDIAN OCEAN

BY

NASIMA M. TIRMIZI

Centre of Excellence in Marine Biology, University of Karachi, Karachi-75270, Pakistan

AND

WAQUAR JAVAID

Department of Zoology, University of Karachi, Karachi-75270, Pakistan

RÉSUMÉ

Munida arabica et *M. janetae* spp. nov. sont décrites de l'Océan Indien. Elles ont été recueillies au cours de l'International Indian Ocean Expedition (IIOE).

INTRODUCTION

Munida Leach, 1820 is a large cosmopolitan genus containing nearly ninety-five species, out of which forty-two species inhabit the Indo-West Pacific waters (Baba, 1988: 81). A large collection of galatheideans obtained during the International Indian Ocean Expedition (IIOE), 1963-67, is available for study. Since the publication of the report will take a fairly long time, it seems appropriate to describe at least the two new species, *M. arabica* and *M. janetae*.

The types will be deposited in the National Museum of Natural History (USNM), Smithsonian Institution, Washington D.C.

The abbreviations used are: c.b., carapace breadth; c.l. + r., for carapace length, including rostrum, measured from the tip of the rostrum to the posterior margin of the carapace; r.l., for rostral length, measured from the tip to the base of the rostrum; ch.l, for length of entire cheliped; p.l., palm length, from the base of the movable finger to the proximal margin of propodus; f.l., movable finger length, measured from the apex of the movable finger to the base.

Munida arabica sp. nov. (fig. 1)

Material and measurements.—Off Somalia, 10°00′N 51°15′E, 59-61 m, 16 December 1964, IIOE, Cruise 9 sta. 447, 174 specimens: 82 males (smallest c.l. + r. 5 mm (rostrum broken), largest c.l. + r. 12 mm, ch.l.22-46 mm), 7 females (6 ovigerous) c.l. + r. 6.5-11 mm, ch.l. 23 mm, 85 specimens broken into pieces.

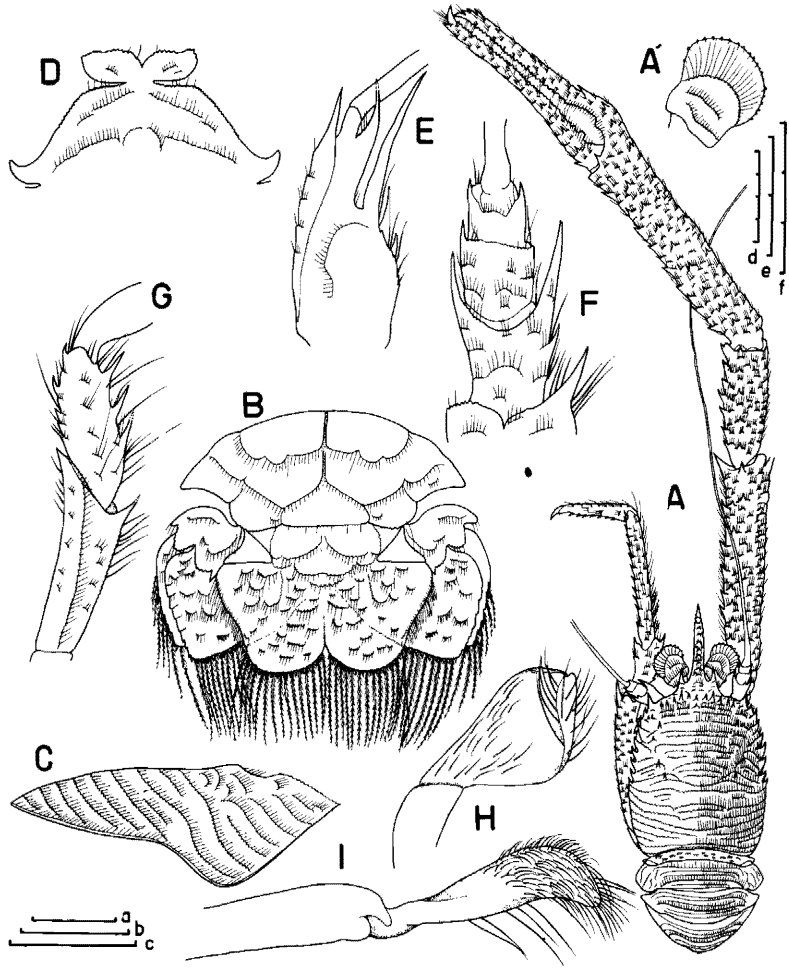

Fig. 1. *Munida arabica* sp. nov., holotype male, c.l. + r, 11. 5 mm. A, animal, dorsal view; A′, left eye, ventral view; B, last abdominal segment, telson and uropods, dorsal view; C, right pterygostomian flap; D, anterior part of sternal segments; E, basal segment of right antennule, dorsal view; F, right antennal peduncle, ventral view; G, ischium and merus of right third maxilliped, in ventral view; H, distal part of right first pleopod; I, distal part of right second pleopod.

Measurements of the holotype male: c.l. + r. 11.5 mm, r.l. 3.5 mm, ch.l. 41 mm, p.l. 11.5 mm, f.l. 10.5 mm.

Description.—*Munida arabica* n.sp. is a medium sized species. The rostrum (fig. 1A) is less than half the length of the carapace, and more than three times as long as the supraorbital spines, all the three are furnished with setose, granular scales, and are at a higher level than the carapace. The transverse

gastric row has five pairs of spines; the median gastric row is formed by two spines and one scale. In some specimens there may be twelve or eleven spines in the transverse gastric row, and 2 to 4 in the median row, some specimens have scales as well as spines in the median gastric row; 1 to 4 spines are present on each hepatic region. The two anterior striae, each having a spine on either end, are continuous; besides this the third stria may have one or two spines on each lateral end. A spine is present in each cervical triangle and one behind each bifurcation of the cervical groove; in some specimens, the cervical triangles may have two spines instead of one. The anterolateral spines are fairly well developed, each is followed by eight spines. The number of lateral spines of the hepatic region may vary from 4 to 6, whereas there are always five spines behind this region on the lateral margin of the carapace. The abdomen is unarmed; the second and third abdominal segments each have a deep median groove, anterior to which there are three, and posteriorly two fine grooves. The number of these fine grooves is subject to variation. The few setose striae and scales of the last abdominal segment, the telson and the uropods are as illustrated in fig. 1B.

The majority of the setose striae on the pterygostomian flap (fig. 1C) are continuous, and the tip is acutely pointed.

The third thoracic sternite (fig. 1D) shows a marked resemblance to that of *M. roshanei* Tirmizi, 1966, but the anterior part of the fourth sternite is very different in the two species, that of *M. roshanei* being narrow and abruptly slanting laterally.

The eye (fig. 1A, A′) is barrel-shaped with rows of setae and long 'lashes' on both surfaces.

The basal segment of the antennule (fig. 1E) has three long and slender spines on the lateral margin and a rather stout spine on the proximal portion, the disto-median angle is also produced into an acute and slender spine. The proximal spine on the outer border may be missing, and in some the margin behind the last spine is serrated throughout. The basal spine of the antennal peduncle (fig. 1F) is of moderate length. Those of the following segments are long and needle-like; in some segments the inner margin of the second segment has an additional spine. Further, the outer distal angle of the third segment, and both angles of the ultimate segment are produced into spines.

The merus of the third maxilliped (fig. 1G) has a strong armature which shows considerable variations. The distal angles of the ischium are produced into spines. The inner margin of the merus has three spines, in some specimens there may be four or five spines, the distolateral angle has a sharply pointed spine followed by a strongly serrated margin which may bear one or more spines.

The chelipeds are long and slender being more than three times the length of the carapace, including the rostrum; in some, they may be even four times the length of the carapace. The armature is not very strong nor are the hairs

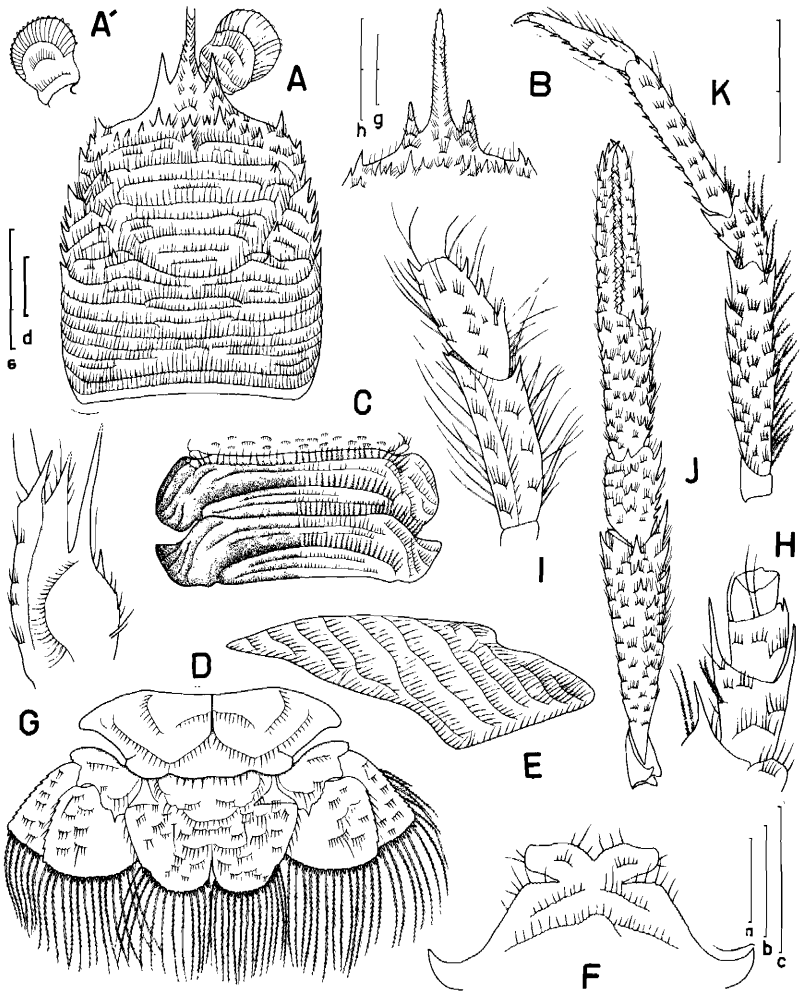

Fig. 2. *Munida janetae* sp. nov. A,A′, C holotype, female, c.l. + r, 5 mm (rostrum broken); B, J, K, paratype female, c.l. + r, 9.5 mm, A, carapace and right eye, dorsal view; A′, right eye, ventral view; B, anterior part of carapace and right eye, dorsal view; C, second and third abdominal segments, dorsal view; D, last abdominal segment, telson and uropods, dorsal view; E, right pterygostomian flap; F. anterior part of sternal segment; G, basal segment of right antennule, dorsal view; H, left antennal peduncle, ventral view; I, ischium and merus of right maxilliped, ventral view; J, left cheliped; K, left detached walking leg.

very long, as can be seen in fig. 1A. The chela is more than half the entire length of the cheliped, the fingers are shorter than the palm (ch.l. 41 mm, chela 22 mm, f.l. 10.5 mm). In several specimens a large hiatus is present between the fingers. The walking legs are long and rather flat. In one of the specimens under study, only the third leg was attached. Epipods are lacking on all the

TABLE I

Features	*Munida roshanei* Tirmizi	*Munida arabica* sp. nov.	*Munida janetae* sp. nov.
Rostrum	serrated laterally, but without setae.	serrated laterally, furnished with setose granulated scales, situated at a higher level than the carapace.	serrated laterally, thickly beset with setae.
Supraorbital spines	short with setose scales	short, with setose granulated scales, raised above the level of carapace like rostrum.	of medium size, scales with long setae.
Striae on carapace	striae with plumose setae, visible under microscope.	striae with medium size setae, plumose under microscope.	striae thickly beset with setae which appear plumose to the naked eye.
Median gastric row	consists of 1-3 spines.	consists of 2-4 spines & few setose scales.	consists of 1-2 spines & one scale.
Ratio of carapace length to width	longer than wide (specimens mutilated).	longer than wide (c.l. = 7.5 mm, c.b. = 6 mm).	almost as long as wide (c.l. = 6.5 mm, c.b. = 6 mm).
Pterygostomian flap	with complete setose striae, anterior margin produced into a small spine.	majority of striae continuous and setose, anterior margin pointed.	rather broad bearing continuous striae with long hairs.
Sternum	third sternite almost as wide as the anterior margin of the fourth, strip-like, antero-lateral margin of fourth sternite inclined abruptly.	third sternite similar to *M. roshanei*, antero-lateral margin of fourth sternite inclined gradually.	third sternite as wide as the anterior margin of the fourth, divided by a v-shaped notch into two petaloid structures.
Eyes	'lashes' long, on dorsal ocular peduncle with a setose striae on both surfaces.	'lashes' long on both surfaces; ocular peduncle with two setose striae on dorsal surface.	'lashes' very long on both surfaces, over reaching the cornea; ocular peduncle with striae having long setae dorsally.
Antennal peduncle	basal spine of medium length, third segment unarmed, surface smooth except one scale.	basal spine of medium length but stout; disto-lateral angle of third segment armed, distal margins of fourth segment produced into acute spines, surface with setose granulated scales.	basal spine small, slender, directed medially, disto-lateral margin of third segment armed, fourth segment unarmed, surface with setose granulated scales.
Chelipeds	finger nearly as long as the palm	more than three or four times the length	nearly twice the length of carapace,

TABLE I (continued)

Features	*Munida roshanei* Tirmizi	*Munida arabica* sp. nov.	*Munida janetae* sp. nov.
	(f.l. = 10 mm, p.l. = 10 mm).	of carapace, finger shorter than the palm (f.l. = 10.5 mm, p.l. = 11.5 mm).	finger longer than the palm (f.l. = 5 mm, p.l. = 4 mm).
Male pleopods:			
First pleopod	elongated, narrow, reflected margin less hairy.	not elongated, broad, reflected margin more setose.	male not available.
Second pleopod	tip of second pleopod considerably elongated.	tip of second pleopod not elongated.	

pereiopods, thereby showing a general resemblance to those of *M.japonica* Stimpson, 1858 (Tirmizi, 1966: fig. 1A,B).

Etymology.—The specific epithet is taken from the type locality: Arabian Sea.

Munida janetae sp. nov. (fig. 2)

Material and measurements.—Off Somalia, 09°36′N 51°01′E, 78-82 m, 16 December 1964, IIOE cruise 9 stat. 444, 1 holotype female, c.l. + 5.5 mm (rostrum broken), c.b 4.5 mm.

Off Natal, South Africa, 29°34′S 31°39′E, 118 m, 9 September 1964, IIOE cruise 7 sta. 398, 1 paratype female, c.l. + r. 9.5 mm, c.b. (carapace posteriorly) 6 mm; ch.l. 18 mm.

Of the two females, one measuring 5 mm in carapace length (rostrum broken) is selected as the holotype, the other one as paratype, it has a complete rostrum and left cheliped, but the carapace is mutilated posteriorly.

Description.—This interesting species is represented by two specimens, both females. It is closely related to *M. arabica* sp. nov. The carapace (fig. 2A) is almost as wide as long, it is beset with striae bearing long setae, and is armed with five pairs of gastric spines, forming a transverse gastric row, the median row consists of two spines, in the other specimen there is only one spine in that row. Each end of the first two continuous striae bears a spine in the hepatic region. A spine is present in each cervical triangle and one behind each bifurcation. These spines are absent or reduced in the paratype. The rostrum is narrow, thickly beset with setae and about three times the length of the supraorbital spines, it is complete in one specimen only, as can be seen in figure 2B; The tip of the rostrum is serrated laterally. In both females the holotype has seven on the left side (hepatic region has three spines instead of four). The abdominal segments are unarmed. The second and third abdominal segments each have a deep median groove, the anterior half of the second segment bears one fine groove, whereas that of the third segment is with one complete and one interrupted groove, the posterior half of each segment bears two fine

transverse grooves (fig. 2C). The last abdominal segment, telson and uropods are with scant striae and scales as illustrated in fig. 2D.

The pterygostomian flap is rather broad, and with continuous striae bearing long hairs, the tip is rounded in one specimen (fig. 2E) and acute in the other.

The posterior margin of the third sternite (fig. 2F) is almost as wide as the anterior margin of the following sternite. The anterior margin has a 'V'-shaped notch, on either side of which there is a slight bulging; laterally it is more or less truncated.

The eye is large and with several rows of long setae on both surfaces of the peduncle, the 'lashes' are long and outreach the cornea.

The distomedian and distolateral spines of the basal segment of the antennule (fig. 2G) are almost of equal size, the second spine on the outer margin is larger than the others, and at its base is a small spine followed by a serrated outer margin. The basal antennal spine (fig. 2H) is sharp and slender, reaching a little beyond the middle of the next segment. Both the outer and inner spines of the second segment are well developed, the inner spine being larger, reaching as far as the middle of the ultimate segment; the distolateral angle of the third segment bears a well developed spine.

Only one cheliped is present, it is nearly twice the length of the carapace (ch.l. 18 mm; c.l. + r. 9.5 mm). It is moderately hairy and spinose, as can be seen in fig. 2J. The fingers are longer than the palm (f.l. 5 mm; p.l. 4 mm). A detached walking leg is as illustrated in fig. 2K. Epipods are wanting on all the pereiopods.

Etymology.—The present species is named in honour of Dr. Janet Haig.

ACKNOWLEDGEMENTS

Thanks are due to Dr. R. B. Manning, Smithsonian Institution Washington, for giving us the opportunity of studying this very interesting collection. We are much indebted to Dr. Janet Haig, Allan Hancock Foundation, California, for her readiness in answering our queries and reading the manuscript. We are grateful to Mrs. Qaseem Tahera, Marine Reference Collection Centre, University of Karachi, for helping in various ways.

LITERATURE CITED

BABA, K., 1988. Chirostylid and galatheid Crustaceans (Decapoda: Anomura) of the "Albatross" Philippine Expedition. Researches on Crustacea, Tokyo, (special No.) **2**: 1-203.

TIRMIZI, N. M., 1966. Crustacea: Galatheidae. Sci. Rep. John Murray Exped. 1933-34, **11** (2): 171-234, figs. 1-40.

Received for publication 23 November 1990.