Senckenbergiana marit. | 22 | (3/6) | 203–210 | Frankfurt am Main, 15. 5. 1992

Senckenberg am Meer 462.

Munida magniantennulata, a New Deepsea Decapod Crustacean from Active Thermal Vent Areas of Valu-Fa-Ridge in the Lau Basin, SW-Pacific

(Anomura: Galatheidae).

With 3 Text-Figures.

KEIJI BABA & MICHAEL TÜRKAY.

Abstract.

[BABA, K. & TÜRKAY, M. (1992): *Munida magniantennulata*, a new deepsea decapod crustacean from active thermal vent areas of Valu-Fa-Ridge in the Lau Basin, SW-Pacific (Anomura: Galatheidae). — Senckenbergiana marit., **22** (3/6): 203–210, 3 figs.; Frankfurt a. M.]

Munida magniantennulata, a new deepsea species of galatheid crustacean is described and illustrated from two specimens collected from active thermal vent areas of Valu-Fa-Ridge, Lau Basin. Its affinities to *M. subcaeca* BOUVIER 1922, and *M. parvioculata* BABA 1982, are discussed.

Kurzfassung.

[BABA, K. & TÜRKAY, M. (1992): *Munida magniantennulata* n. sp., ein neuer Tiefseekrebs von hydrothermal aktiven Zonen des Valu-Fa-Rückens im Lau Becken, SW-Pazifik (Crustacea: Decapoda: Galatheidae). - Senckenbergiana marit., **22** (3/6): 203–210, 3 Abb.; Frankfurt a. M.]

Munida magniantennulata n. sp. wird aufgrund zweier Exemplare beschrieben und abgebildet, die aus hydrothermal aktiven Bereichen der Valu-Fa-Schwelle im Lau Becken des Pazifik stammen. Ihre Beziehungen zu *M. subcaeca* BOUVIER 1922, und *M. parvioculata* BABA 1982, werden diskutiert.

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Introduction.

During cruise No. 48 of the German R. V. *"SONNE"* (1987), rock samples were taken with a heavy hard-bottom dredge with an opening of 98 x 32 cm. The net with a mesh size of 1.5 x 1.5 cm was protected by a chain-sack. Furthermore, an electrohydraulic two-jawed grab equipped with a TV-camera was used to pick up selected pieces of substrate. The cruise, dedicated to exploration of hydrothermal activity and associated mineralization processes in the Lau Back Arc Basin, complemented the preliminary results of an earlier cruise (So–35 1984/85) (von Stackelberg et al. 1988). The investigated area is situated east of the Fiji Islands (see Fig. 1). The dredgings in the hydrothermally active area yielded, among other organisms, two unusual galatheid crustaceans, which were made available for study by Dr. U. von Stackelberg from the "Bundesanstalt für Geowisssenschaften und Rohstoffe" at Hannover. They apparently represent a new species, which is hereby described and illustrated. The material will be deposited in the collection of the Senckenberg-Museum, Frankfurt a. M.

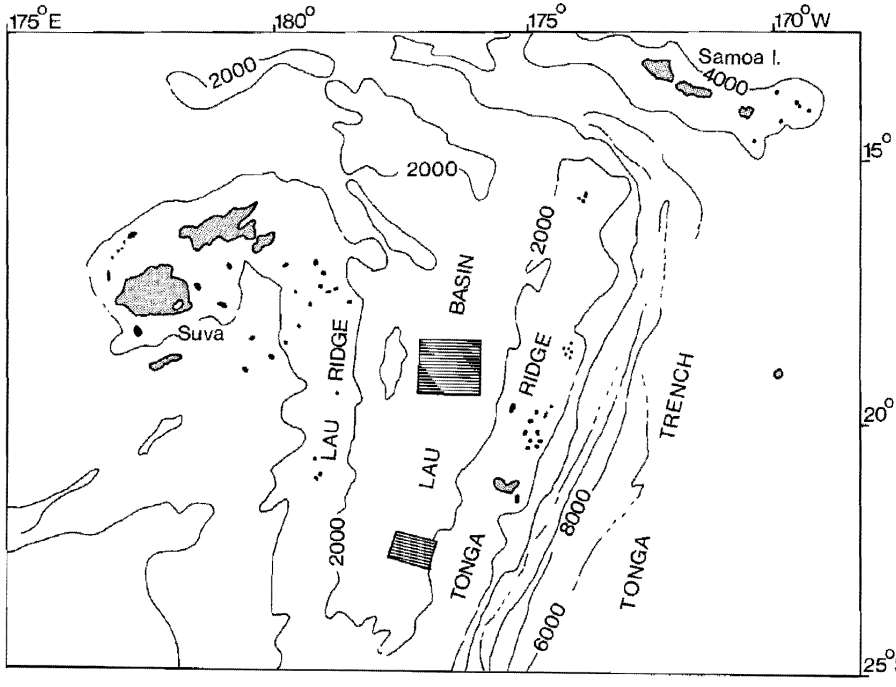

Fig. 1. General map showing the situation of the survey area of the Lau Basin, SW-Pacific. — After von Stackelberg et al. (1988), modified. Depths in meters.

Abb.1. Übersichtskarte mit Angabe des Untersuchungsgebietes im Lau-Becken, SW-Pazifik. — Nach von Stackelberg et. al. (1988), verändert. Tiefenangaben in m.

In this paper the following abbreviations are used: GA = TV-Grab; KD = Hard-bottom dredge; SMF = Senckenberg-Museum, Frankfurt a. M., MNHN = Muséum national d'Histoire naturelle, Paris. Measurements of the specimens are shown in parentheses under "Material," indicating the postorbital carapace length.

Systematic Part.

Munida magniantennulata n. sp.

Figs. 2–3.

Holotype: ♂ [7.2 mm] (SMF 20355) East side of Valu-Fa-Ridge, Sta. So-48/145-GA (22° 33.34'S, 176° 43.02'W), 2003 m depth, rough bottom, partly fresh vulcanites, 29.III.1987 [GMT].

Paratype: 1 ♀ [5.0 mm] (SMF 20356) Southern end of Valu-Fa-Ridge, Sta. So-48/127-KD (22° 40.80'S, 176° 44.26'W 22° 39.60'S, 176° 43.65'W), 1806–1870 m depth, bottom probably very rough, fresh basaltic andesites, probably no sediment cover, evidence of earlier hydrothermal activity present, 25.III.1987 [GMT].

Description of holotype (Fig. 2): Specimen not intact. Endopod of left third maxilliped and right cheliped detached from body and missing. Distal portion of movable finger of left cheliped broken and lost. Left first walking leg missing, and distal 2 segments lost from left second and right third walking legs.

Carapace partly broken, with fissures of injury on left gastric and anterior branchial regions; 1.14 times as long as broad, exclusive of spines; lateral margins subparallel. Dorsal surface with somewhat elevated, mostly interrupted transverse ridges. Gastric region moderately inflated, epigastric region with 2 small spines (right one broken) and several additional granulate short ridges, followed by somewhat elevated, interrupted transverse ridges. Hepatic region pronouncedly swollen laterally, nearly smooth on surface, ventrolaterally in particular, bearing well-developed anterolateral spine and another smaller midlateral one. Cervical groove well developed. Median transverse ridge dividing carapace into anterior and posterior halves. Small postcervical spine distinct on each side. Anterior branchial region barely strigose dorsally, bearing small spine directly behind midpoint of anterior cervical groove, laterally armed with 4 spines, third (penultimate) one larger, rather remote from second one. Posterior branchial region with slightly oblique rugae generally continued into cardiac region. Cardiac region delimited by very shallow groove, anteriormost ridge somewhat elevated, lacking spines, preceded by concave trough. Front margin moderately oblique. Lower margin of orbit visible in dorsal view, well produced anteriorly, bearing 2 small spines.

Rostrum spiniform, half as long as remaining carapace, slightly curving dorsad but nearly horizontal; rounded dorsal ridge continued backward to level between 2 median epigastric spines. Supraocular spines considerably distant from rostral spine, accommodating eyes between them; directed somewhat laterad, rather short, not reaching midlength of rostral spine.

Abdomen with smooth surface, barely setose, pleura ending in rounded margin. Second segment with 2 transverse ridges, anterior ridge about at midlength somewhat elevated, bearing 2 small spines, posterior ridge without spines preceded

by concave trough extending across whole tergite. Following segments lacking transverse ridges and grooves. Gonopods present only on second abdominal segment, uniramous pleopods on third, fourth and fifth abdominal segments.

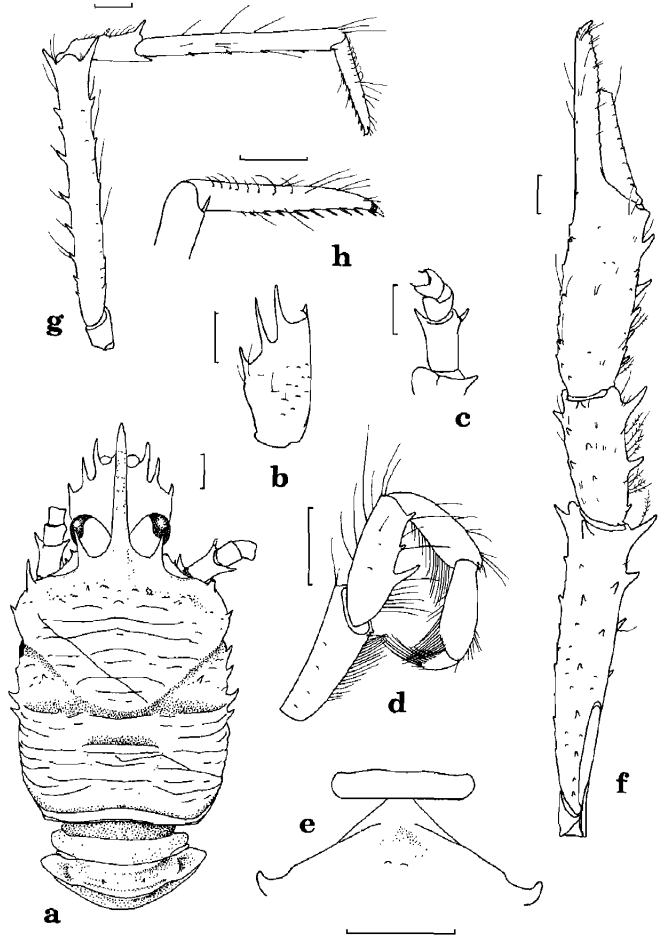

Fig. 2. *Munida magniantennulata* new species, male holotype. — a. carapace and anterior part of abdomen, dorsal view; b. basal segment of right antennule, ventral view; c. right antennal peduncle, ventral view; d. endopod of right third maxilliped, lateral view; e. anterior part of sternum; f. left cheliped, dorsal view; g. right first walking leg, lateral view; h. same, distal segment. — Scales equal 1 mm.

Abb. 2. *Munida magniantennulata* n. sp., Holotypus, Männchen. — a. Carapax und Vorderteil des Hinterleibes, dorsal; b. Basalsegment der rechten Antennula, ventral; c. Stiel der rechten Antenne, ventral; d. Endopodit des rechten dritten Maxillipeden, lateral; e. Vorderteil des Sternums; f. linker Scherenfuß; g. rechtes erstes Laufbein, lateral; h. id., Distalabschnitt. — Maßstäbe 1 mm.

Eyestalks without setae relatively small, overreaching supraocular spines but falling short of midlength of rostral spine, cornea not dilated, less than half length of remaining eyestalk.

Pterygostomian flap anteriorly ending in rounded margin.

Antennular basal segment unusually large, but barely reaching end of rostrum, well visible in dorsal view; 2 terminal and 2 lateral spines present, mesial one of former rather reduced, distal one of latter well developed and directed dorsoanteriad. Antennal peduncle relatively stout, first segment ventrally bearing sharp distomesial spine, second segment distinctly longer than broad, with distomesial and distolateral spines, third segment unarmed.

Endopod of right third maxilliped comparatively slender. Ischium thin, unarmed on distodorsal margin, bearing very small, blunt spine on distal flexor margin and about 23 denticles on mesial ridge. Flexor margin of merus bearing 3 spines, proximal one prominent, situated at midlength, distal one small and terminal in position, median one much smaller; dorsal margin unarmed.

Sternite at base of third maxillipeds laterally expanded to great extent, with nearly subparallel anterior and posterior margins; following sternum also relatively broad, about twice as long as preceding one, anteriorly narrowed, bearing anterior median excavation on surface.

Left cheliped moderately massive, about 3 times as long as postorbital carapace length. Setation usually not pronounced. Merus with 5 rows of spines (2 dorsal,

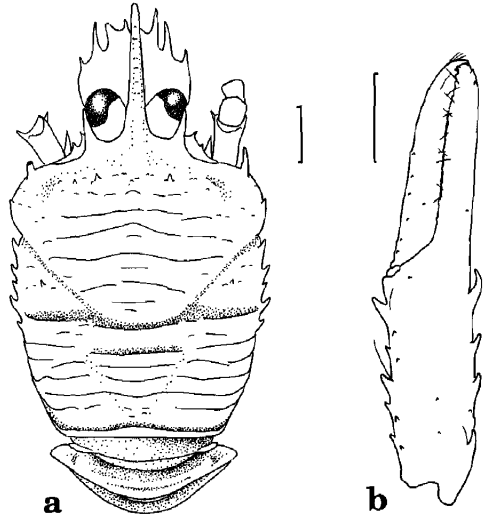

Fig. 3. *Munida magniantennulata* new species, female paratype. — a. carapace and anterior part of abdomen, dorsal view; b. right chela, dorsal view. — Scales equal 1 mm.

Abb. 3. *Munida magniantennulata* n. sp., Paratypus, Weibchen. — a. Carapax und Vorderteil des Hinterleibes, dorsal; b. rechte Schere, dorsal. — Maßstäbe 1 mm.

1 ventral, 1 mesial, 1 lateral). Carpus also with 5 rows of spines (1 mesial, 1 lateral, 2 dorsal and 1 ventral), distal spine of mesial row prominent. Palm somewhat depressed, barely 1.5 times as long as carpus, ventrally unarmed, mesially with 2 rows of a few spines and laterally with line of spines, dorsally with a few small spines along mesial margin and another few spinules slightly dorsal to proximal lateral margin. Fingers barely gaping (though distal portion of movable finger broken and missing), feebly curving laterad, about as long as palm; fixed finger unarmed on lateral margin but with 3 minute spines directly proximal to curved distal claw.

Walking legs relatively slender, successively decreasing in size posteriorly, sparsely provided with long setae. Merus of right first walking leg with 9 spines on whole dorsal margin and 3 on distal one-third of flexor margin, distal one of latter prominent. Carpus with 2 spines on dorsal margin (1 distal, 1 at midlength) and another spine at distal flexor margin. Propodus fully 10 times as long as broad, twice as long as dactylus, flexor margin with 5 equidistant movable slender spines, excluding another spine mesial to terminal one. Dactylus feebly curving ventrad distally, ending in sharp curved claw preceded by 10 successively diminishing relatively low teeth each bearing seta-like spine on flexor margin. Following walking legs with spination successively diminishing posteriorly. — Epipods absent from all pereopods.

Paratype (female; Fig. 3): Carapace uninjured, part of abdomen (fourth abdominal segment through tailfan) detached from body. All pereopods detached; left cheliped broken into 2 pieces, walking legs broken into pieces (meral segments of left first and second walking legs, meral and carpal segments combined of both right first and left third walking legs, pair of distal 2 segments, and another pair of distal 3 segments). Endopod of right third maxilliped also detached from body. Pleopods present on second through fourth abdominal segments, but not fully developed.

Differing from holotype in following respects: carapace posteriorly narrowed; hepatic region more distinctly plump in ventral view; branchial region with 5 marginal spines; postcervical spines barely discernible on each side. Rostrum somewhat curved dorsad distally. Second abdominal segment lacking dorsal spine. Merus of third maxilliped with prominent midventral spine, but 2 other spines as in holotype barely discernible on left appendage. Right cheliped generally in agreement with that of holotype, fingers not gaping, lacking marginal spines. Distal 2 segments of detached walking leg, possibly first one, having somewhat shorter propodus 1.8 times as long as dactylus.

Ecology: In the area So-48/145-GA, in which the holotype was collected, hydrothermal activity was observed during the German/French campaign "Nautilau" in April 1989 (FOUQUET et al. 1990). Water temperatures of about 40 °C were measured in this active region (VON STACKELBERG, pers. comm.).

Etymology: The Latin magnus (large) plus antennula (antennule) plus tus (suffix denoting possession) refers to the unusually developed basal antennular segment of the species.

Remarks: The small eyes and unusually large basal antennular segment, characteristic of this species, are also possessed by *Munida subcaeca* BOUVIER, 1922, from the eastern and western Atlantic in 842–1700 m (BOUVIER 1922:46; CHACE 1942:43). There is no close relative in the Indo-West Pacific. Examination of one

(female) of the syntypes of *M. subcaeca* from off Madeira, now registered as paratype under MNHN Ga. 949 in the collection of the Muséum national d'Histoire naturelle, Paris, discloses that the shapes of the antennular basal segments, sternites at the bases of both the third maxillipeds and chelipeds and meri of the third maxillipeds are very similar in the two species. However, we are inclined to believe that the following differences between them are consistent: the branchial region of *M. subcaeca* bears no dorsal spine but two lateral (one directly behind the anterior bifurcation of the cervical groove and the other at either end of the midtransverse ridge on the carapace), while that of *M. magniantennulata* bears one dorsal spine and four or five laterals; the second of the lateral marginal spines of the carapace in *M. subcaeca* is somewhat close to the anterolateral spine and distinctly anterior to midpoint of the hepatic margin between the anterolateral spine and the end of the anterior cervical groove, whereas in *M. magniantennulata* it is located at midlength of the pronouncedly swollen hepatic lateral margin; the propodus of the first walking leg in *M. subcaeca* bears nine spines on the flexor margin, instead of only five as in *M. magniantennulata.*

The small eyes, short supraocular spines, two spines on the second abdominal segment also link the new species to *M. parvioculata* BABA 1982, from deep waters off the Izu Islands, Japan (BABA 1982:104). That species, however, has the carapace rather weak in striation, the second lateral marginal spine of the carapace well developed, the antennular basal segment relatively small in size, the distoventral spine on the merus of the third maxilliped rather prominent and nearly as large as the proximal one, the third to fifth abdominal segments distinctly strigose and setose, the propodus of the first walking leg bearing more numerous spines on the flexor margin, and the dactylus of the same relatively short.

Acknowledgements.

We thank Dr. ULRICH VON STACKELBERG for making the material available for study and for providing pertinent biological background data. Access to the comparative material of *Munida subcaeca* was made possible by the permission of MICHELE DE SAINT LAURENT of the Muséum national d'Histoire naturelle, Paris. AUSTIN B. WILLIAMS of the National Marine Fisheries Service, Washington, D. C. kindly reviewed a draft of the manuscript.

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