

SUPPLEMENTARY DESCRIPTION OF *CALLIANASSA*  
(*CALLICHIRUS*) *TRIDENTATA* VON MARTENS  
(CRUSTACEA, THALASSINIDEA)

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*With 3 Text-figures*

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*Callianassa (Callichirus) tridentata* VON MARTENS, reported for the first time from the coast of Java about a century ago, was recently collected by Dr. Torben WOLFF of the Universitetes Zoologiske Museum, Denmark during the Noona Dan Expedition to New Britain, the Bismarck Archipelago in 1962.

The morphology of this species has not yet been fully described. VON MARTENS (1868) originally reported this species, however, his description does not always fix the species as DE MAN (1928a, p. 27) pointed out that "the original description, without figures, appears insufficient for well recognizing it." COUTIÈRE (1899) examined the type specimen, but he was unable to refer to the carpus and chela of the larger cheliped, because these segments were wanting on the specimen. Following him, DE MAN (1928a) examined the type specimen again and gave a good reference to this species, though he could not make a close observation of the same parts of the larger cheliped either.

For the above-mentioned reason, the present author is going to give here the supplementary description of this species basing on the four specimens, one of which was collected from New Britain and the others from Ceylon.

*Callianassa (Callichirus) tridentata* VON MARTENS, 1868

*Callianassa tridentata* VON MARTENS, 1868, pp. 614-615 [type-locality: Java].—A. MILNE-EDWARDS, 1870, p. 101.—MIERS, 1884, pp. 13-15 [locality: Ceylon].

*Callianassa (Callichirus) tridentata*, DE MAN, 1928a, pp. 27-30, pl. 7: figs. 13-13h.—DE MAN, 1928b, pp. 108-110.

*Materials examined:* 1♂ & 2♀♀ from Ceylon. British Mus. Cat. No. 2739. Dec. 1876. Coll.: W. FERGUSEN Esq<sup>1)</sup>. 1♂ from St. 76 of the Noona Dan Expedition.

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1) Dr. A.L. RICE of the British Museum informed me in his letter about the specimens and their collector as "We have in our collection only one sample labelled *C. tridentata* from Ceylon and this contains three specimens rather than the one suggested by MIER's remarks. In addition, whereas MIERS refers to E.W.H. HOLDSWORTH as the collector of the specimen he was talking about, three specimens were presented by W. FERGUSEN Esq."

Brook at Valoka (5° 27'S, 150° 32'E), Cape Hoskins Area, North Coast of New Britain, Bismarck Archipelago. 7th of July, 1962. Coll.: Torben WOLFF.

*Description of species:* The frontal margin of the carapace (Text-fig. 1a, b) is trispinose; the rostrum is sharply pointed and slightly curved upward, and its tip reaches about the middle of the first antennular peduncle—in the specimen from New Britain it fails to reach the middle, while in the Ceylonese specimens it reaches beyond the middle. The lateral spines are somewhat like a hook, as they are each incurvate distally and turning up a little from the frontal margin of carapace at the proximal part. The cervical groove is situated nearly at the level of the posterior one-fourth of the carapace. The eye-stalks are roughly triangular, the corneae are situated just distal to the middle of respective eye-stalks. In front of cornea, the stalk is protruded anteriorly along the inner margin to form an elongate, obtuse protrusion. This portion is terraced by the antero-lateral part of the eye-stalk, which continues to the proximal part of the stalk around the outer side of the cornea. The scaphocerite of the antennal peduncle (Text-fig. 1c) is absent.

In the third maxillipeds (Text-fig. 1d) the dactylus is small, shaped like a sickle, and setose on its margin. The propodus is much broader, a little broader than long; the lower margin is largely convex. The carpus is considerably smaller than the previous segment and triangular in shape. The merus and ischium are jointed each other to form together a broad plate. The margin of all segments but dactylus are fringed with long plumose setae.

The morphology of the cheliped is very significant in the taxonomy of this animal group and some partial variations are found. Then the morphology of the appendage is to be checked on the specimens examined.

*The first legs of the male specimen from New Britain:* The larger cheliped (Text-fig. 2a) lies on the left side. The dactylus bears a longitudinal crest which distinctly comes out from the finger-cleft and fades away toward the tip. The tip is strongly curved downward. The prehensile edge forms a long tooth which reaches a little beyond the middle of the edge. The tooth is provided with the smooth free margin and proximally it is definable rather indistinctly. Between this long tooth and the tip there is a conical tooth, of which the proximal slope is armed with three tubercles. Separated from this conical tooth, the distal part of the free margin of the dactylus bears two distinct clefts, the distal one is narrow but deep, while the proximal is broad but shallow. Along the upper margin the outer surface of the segment is beset with six hair tufts.

The fixed finger is horn-shaped and its cutting edge is terraced near the tip. The tip fails to meet that of the dactylus. There will be left a broad intervening space between the dactylus and the fixed finger even when they are set closest.

The palm is about as long as broad and a little shorter than the dactylus, its distal margin presents a lobe at the base of the dactylus, which is separated by a wide round emargination from the fixed finger. The bottom of this emargination

reaches almost the level of the line perpendicular to the upper margin and passing through the joint with the dactylus. The lobe itself has two prominences with a shallow emargination between them; the upper prominence is small, while the lower

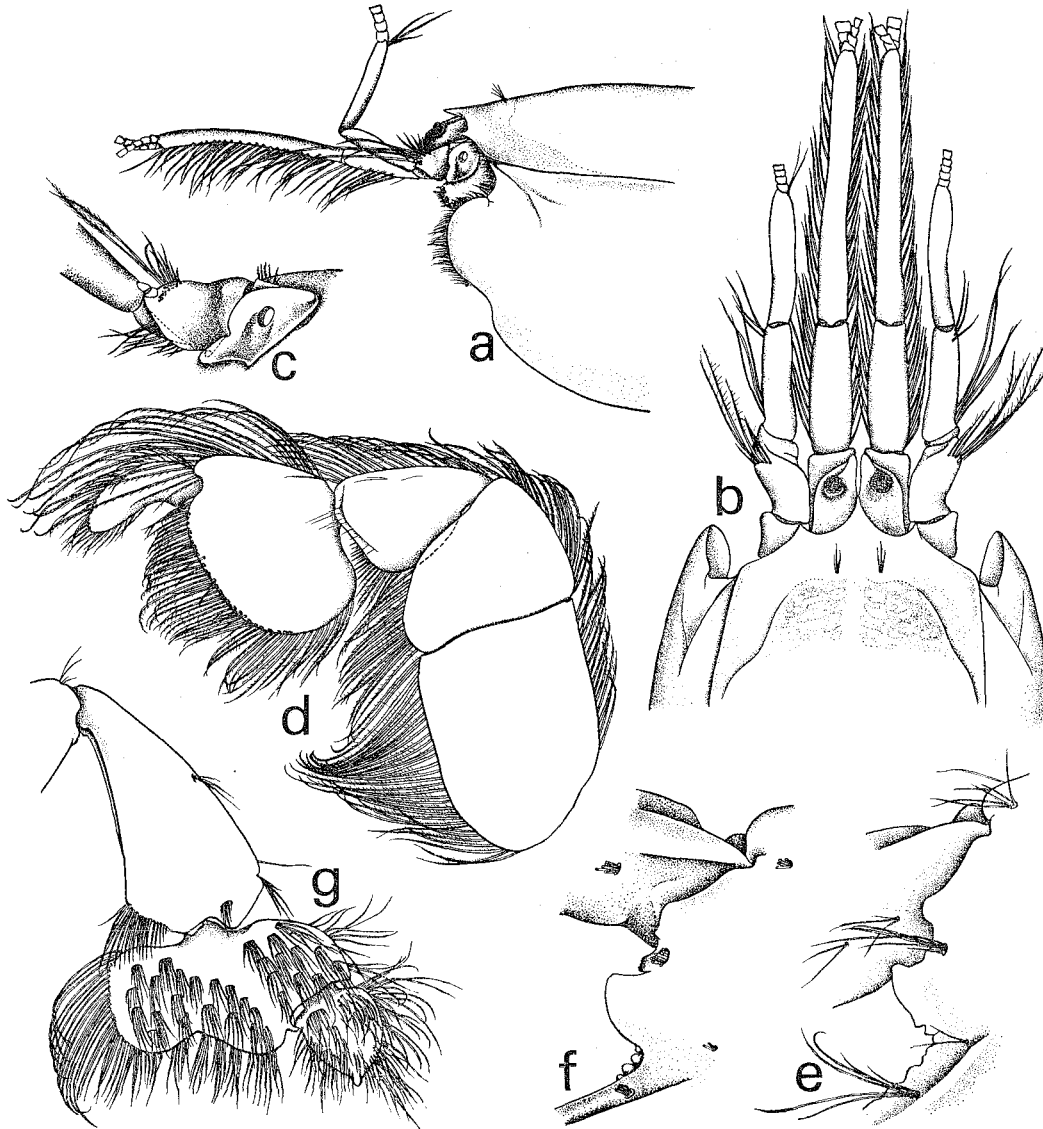


Fig. 1. *Callianassa (Callichirus) tridentata* VON MARTENS. a—Male, front of carapace, lateral view,  $\times 4$ . b—The same, dorsal view,  $\times 6$ . c—The same male, proximal part of antennal peduncle, outer lateral view,  $\times 8$ . d—The same male, third maxilliped,  $\times 4$ . e—Larger female, distal lobe of palm of larger cheliped,  $\times 5.6$ . f—Smaller female, the part same as e,  $\times 7$ . g—Male, distal part of third leg,  $\times 7$ . a, b, c, d and g: male specimen from New Britain, e and f: Ceylonese females.

one is distinct. The tip of the latter is almost truncate, but at its foot it is further protruded significantly.

The carpus is about three-fourths as long as the palm and broader than long.

The merus is oblong and about one and half times the carpus in length. The outer surface bears a longitudinal carina on the middle line. The lower margin bears a characteristic tooth at the proximal end. MIERS (1884, p. 14) mentioned on this structure after he examined the specimens of the British Museum as "There is a strong tooth or lobe at the proximal end of the interior margin of the merus of the larger chelipede. Nothing is said as to the existence of this lobe by v. MARTENS." DE MAN (1928a) figured this tooth (pl. 7: fig. 13e) and described it as a small, probably movable, spinule. The lower margin is somewhat *crenulated by some indistinct tubercles*. Just above this lower margin the outer surface bears a carina, of which the distal half is furnished with 9-10 tubercles.

The ischium is distinctly shorter than the merus, the upper margin is smooth, while the lower margin is armed with a row of minute teeth.

The smaller cheliped (Text-fig. 2b) is on the right side. In the dactylus the prehensile edge presents medially a broad concave part armed with a row of eleven teeth, the proximal one of which is the most distinct and bilobed at the tip. The distal part of the prehensile edge is distinguished from the median portion described above and is provided with a row of minute yellowish transverse denticles. The outer surface is implanted with six hair tufts along the upper margin and with five tufts along the prehensile edge.

The palm is about as long as broad and shorter than the dactylus; the outer surface is sulcate along the lower margin. The distal lobe of the palm ends at the lower corner in an obtuse, rounded prominence. A little apart from this prominence the fixed finger bears a triangular tooth followed by a row of minute denticles, the terminal one of which is situated just near the tip, a little distinct, and obtuse. The tip assumes a yellowish, translucent tooth.

The carpus is about as long as the palm and a little longer than broad. The merus is spindle-shaped and a little longer than the carpus; its outer surface is sulcate along the lower margin. The ischium is about as long as the merus, and its lower margin is minutely denticulate on the whole.

*The first legs of the male Ceylonese specimen:* The larger cheliped lies on the right side. The prehensile edge of the dactylus (Text-fig. 2c) is furnished with two stout teeth. The proximal tooth is truncate, with the free margin slightly concave medially, and is provided with two tubercles on the outer surface. The distal one is very prominent, obtuse, and bears on its proximal slope a distinct, obtuse prominence. The space between this tooth and the finger tip is very remarkable. The outer surface of the dactylus bears along the upper margin eight hair tufts.

The palm is slightly longer than the dactylus and a little longer than broad. The lobe formed on the distal margin of the palm is very characteristic. The lower

part of this lobe is prominently protruded into a stout, triangular tooth. The lobe presents a large shallow concavity above this tooth between its and another large, obtuse prominence in the upper part of the lobe.

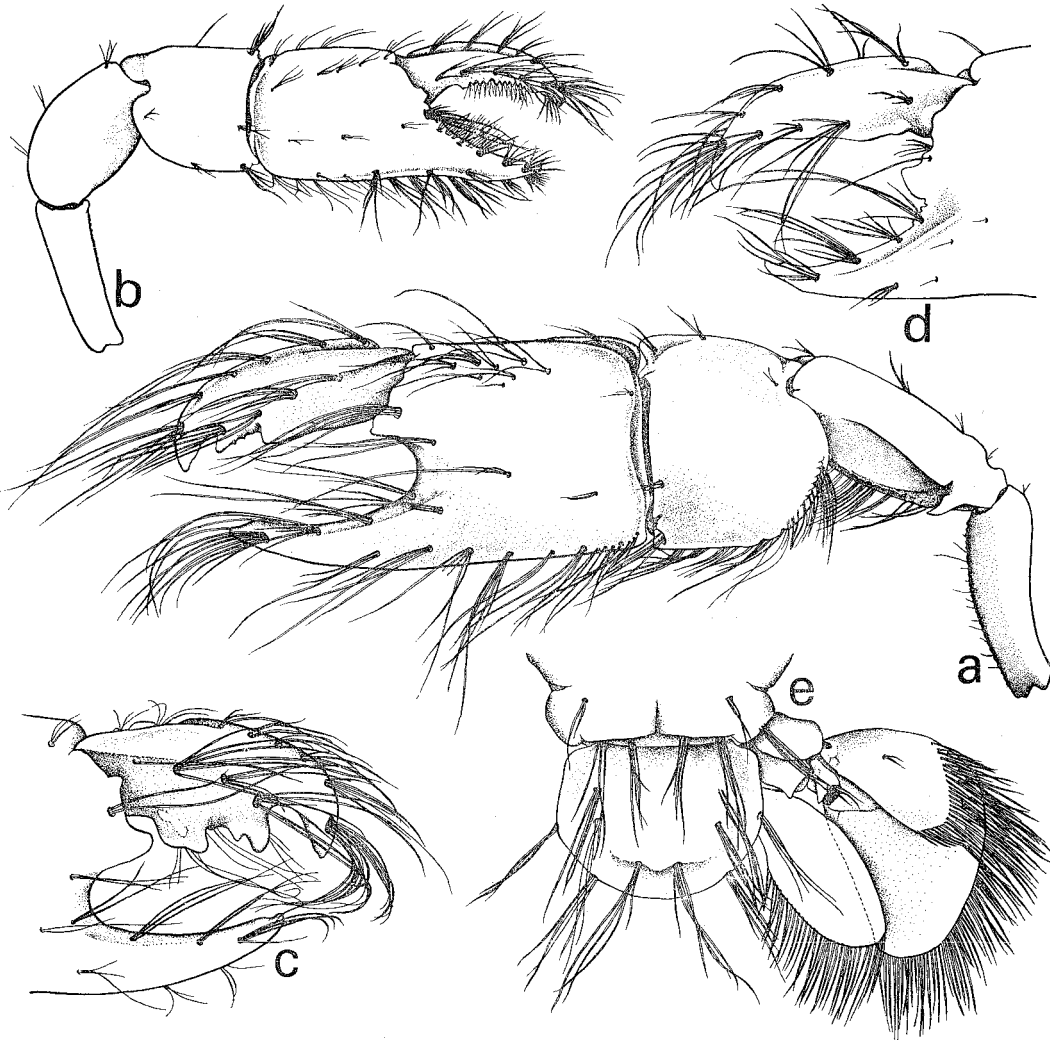


Fig. 2. *Callianassa (Callichirus) tridentata* VON MARTENS. a—Male, larger cheliped,  $\times 3$ . b—The same male, smaller cheliped,  $\times 3$ . c—Another male, distal part of larger cheliped,  $\times 4$ . d—Female, distal part of larger cheliped,  $\times 4$ . e—Male, telson and uropods,  $\times 4$ . a, b and e: Male, specimen from New Britain, c: Male Ceylonese specimen, d: Female Ceylonese specimen.

The lower margin of the merus forms a carina furnished with a row of ten obtuse, but distinct denticles. Another carina above the lower margin is indistinctly tuberculate. In other characters the larger cheliped is similar to the specimen from

New Britain. The smaller cheliped is missing on this specimen.

*The first legs of the larger female Ceylonese specimen:* The larger cheliped is on the left side. The dactylus is rather slender than that of the male in the same sample. The cutting edge is proximally protruded, otherwise the free margin of the edge is entire, though a row of microscopic denticles are found there. The outer surface bears six hair tufts along the upper margin. The cutting edge of the fixed finger is also denticulate on the whole, some proximal denticles are distinct.

The palm is much longer than the dactylus and longer than broad. The distal lobe of the palm (Text-fig. 1e) clearly differs in appearance from that of the male, presenting two distinct prominences which are separated from each other by a concavity broad and rather deep. The lower prominence is roughly triangular in shape and slightly inclined towards the concavity; its lower foot continues to the cleft between the lobe and the fixed finger, with two obtuse teeth at the base of the former. There is a small, round swelling at the upper foot of the lower prominence. The upper prominence is smaller than the lower, but is broad and arcuated at the tip.

The carpus is much shorter than the palm and about as long as broad. The merus is similar to that of the male in the same sample; it is a little longer than the carpus and bears along its lower margin *a carina with a row of thirteen obtuse denticles* and another carina just above the lower margin indistinctly denticulated.

On the smaller cheliped the dactylus is much less concave, rather straight on the whole, and bears some tubercles proximally on the edge. The outer surface bears nine tufts of hair along the upper margin and eight tufts along the cutting edge. The palm is shorter than the dactylus and slightly broader than long. The carpus is about as long as the palm and as long as broad. The merus is spindle-shaped, a little longer than the carpus, and more than one and half times as long as broad. The ischium is finely creased on the lower margin.

*The first legs of the smaller female Ceylonese specimen:* The larger cheliped lies on the left side. The cutting edge of the fixed finger (Text-fig. 2d) is almost smooth, but is provided with some distinct, obtuse denticles on the proximal part. The palm is longer than broad, and longer than the dactylus. The lobe on the distal margin of the palm (Text-fig. 1f) is roughly similar to that of the larger female. However, the emargination between the two prominences is rather shallow and the lower prominence bears only a single tubercle at the lower foot and a small swelling at the upper foot, which is ridged on the top. In the merus the lower margin is provided with a row of distinct, obtuse teeth.

The first pleopod of the male (Text-fig. 3a, b) is two-segmented, however the joint is imperfect and the segments are connected with each other partially on the inner side. The distal segment is short. Its anterior surface is largely concave from the central part to the tip. The tip is bilobed; the inner lobe is obtuse and shorter than the outer one which bears further slender protrusion at the tip. The first

pleopod of the female (Text-fig. 3c) is elongated, and consists of two segments. The distal segment seems to be divisible into two segments, because the posterior surface is transversely furrowed. The half distal to this furrow protrudes slightly inwards seemingly to form a distinct foliaceous segment. The second pleopod on both the male (Text-fig. 3d) and female infoliaceous, and smaller than the following third to fifth pleopods.

Telson (Text-fig. 2e) is typically arcuate on its posterior margin, considerably shorter than the uropods.

*Habitats:* According to Dr. T. Wolff's information the male specimen was caught in New Britain in such a manner as "in a tiny brook near the coast, fed by numerous springs, a big *Thalassinid* was chased out of its hole. Depth about 10 cm. Bottom: clean sand. Temp.: 26°C. S‰: 0."

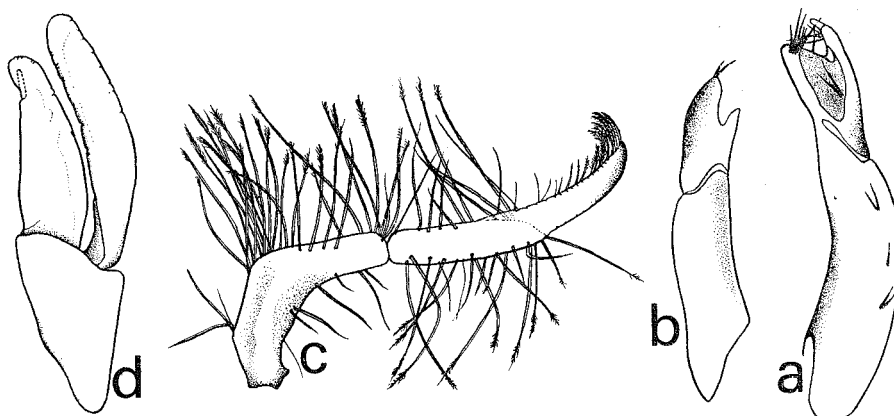


Fig. 3. *Callianassa (Callichirus) tridentata* VON MARTENS. a—Male, left first pleopod, posterior view,  $\times 36$ . b—Male, right first pleopod, anterior view,  $\times 36$ . c—Female, left first pleopod, outer lateral view,  $\times 6.5$ . d—Male, left second pleopod, posterior view,  $\times 7$ .

It is interesting that it was found limnetic in the brook near the coast, as compared with the fact that the Japanese common callianassid, *C. (Trypaea) japonica*, is usually collected on the beach, but occasionally in the brackish estuarine area.

*Measurements (in mm):*

| Locality                               | New Britain |    | Ceylon |    |
|--|-------------|----|--------|----|
|  | ♂           | ♂  | ♀      | ♀  |
| Body length                            | 80          | 75 | 100    | 83 |
| Carapace length<br>(including rostrum) | 17          | 14 | 18     | 15 |
| Larger cheliped (length)               | 41          | 38 | 49     | 41 |
| Smaller cheliped (length)              | 26          | —  | 30     | 28 |

*Remarks:* In the larger cheliped the proximal tooth on the lower margin of the merus presents a specific characteristic in both the male and female. However, some variations are found in other characters as seen in the morphology of the cutting edge of the dactylus, the distal lobe of the palm, and the lower margin of the merus.

The cutting edge of the dactylus seems to be variable. In the male, two specimens described differ from each other in the appearance. In the specimen from New Britain the cutting edge is furnished with a long proximal tooth and a conical distal one which is armed with three tubercles on its proximal edge, while in the specimen from Ceylon the cutting edge bears two stout teeth, the proximal one of which is shorter than that of the New Britain specimen and the distal bears a distinct prominence on its proximal edge. In the female, the cutting edge is entire, but with a row of denticles.

The distal lobe of the palm is variable in the appearance of the prominences. In the male specimen from New Britain the upper one of the two prominences is rather indistinct and the lower is prominent and truncate at the tip, while in the male Ceylonese specimen the upper prominence is rather distinct and with an arcuate tip and the lower one is roughly triangular in shape.

The exact appearance of denticulation on the lower margin of the merus seems to differ, too, between the male specimen from New Britain and the male Ceylonese specimen. DE MAN (1928a) described on the morphology of this part of the type specimen as "This lower margin is armed with 10 teeth, ...; just above the lower border and parallel with it one observes on the outer surface another carina, that ends at a short distance from the distal extremity and on the distal half of which 6 or 7 small obtuse teeth are visible." In the male Ceylonese specimen the lower margin bears 10-13 stout and obtuse denticles on the carina, while in the male specimen from New Britain the margin bears some indistinct tubercles. Another carina just above the lower margin is generally indistinctly and irregularly armed with some tubercles in both sexes. For instance the male Ceylonese specimen bears 10 denticles on this carina.

*Acknowledgements:* Throughout the course of this study, the present author is much indebted to Dr. Torben WOLFF of the University Zoological Museum, Copenhagen, who submitted so kindly his important specimen together with its data to the present author's examination, and also to Drs. I. GORDON and A.L. RICE of the British Museum for their kindness of lending the present author for reference the very precious specimens which have been preserved in the Museum since MIERS (1899) examined them.

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