

DR. R. PLANTE'S COLLECTION OF THE FAMILIES CALLIANASSIDAE
AND GOURRETIIDAE (DECAPODA, THALASSINIDEA) FROM
MADAGASCAR, WITH THE DESCRIPTION OF TWO NEW GENERA AND
ONE NEW SPECIES OF THE GOURRETIIDAE SAKAI, 1999 (NEW STATUS)
AND TWO NEW SPECIES OF THE CALLIANASSIDAE DANA, 1852

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ABSTRACT

Unstudied callianassids available to Dr. Raphael Plante, collected in 1965-70 around Madagascar from the shallow waters to a depth of 1050 m, have been examined. Most specimens are small and heavily damaged, but they include interesting species of the families Callianassidae and Gourretiidae. Four species of callianassids had earlier been reported from the region around the Mozambique Channel, and in the present study three new species and two new genera of the family Gourretiidae, i.e., *Laurentgourretia rhopalommata* n. gen. and sp., *Gourretia nosybeensis* n. sp., and *Paragourretia phuketensis* (Sakai, 2002), n. gen. and three species of the family Callianassidae, *Callianassa chakratongae* Sakai, 2002, *C. mocambiquensis* n. sp., and *C. plantei* n. sp., are added to the known Madagascan fauna.

RÉSUMÉ

Des Callianassidés non étudiés du Dr. Raphael Plante, collectés en 1965-70 autour de Madagascar, dans les eaux peu profondes et jusqu'à 1050 m, ont été examinés. La plupart des spécimens étaient petits et fortement endommagés, mais parmi eux, se trouvaient des espèces intéressantes appartenant aux familles Callianassidae et Gourretiidae. Quatre espèces de Callianassidés avaient été signalées de la région autour du Canal du Mozambique, et dans la présente étude, trois nouvelles espèces et deux nouveaux genres de la famille des Gourretiidae, *Laurentgourretia rhopalommata* n. gen. et sp., *Gourretia nosybeensis* n. sp. et *Paragourretia phuketensis* (Sakai, 2002), n. gen., ainsi que trois espèces de la famille des Callianassidae, *Callianassa chakratongae* Sakai, 2002, *C. mocambiquensis* n. sp. et *C. plantei* n. sp. ont été ajoutés à la faune connue de Madagascar.

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INTRODUCTION

The Callianassidae and related (sub-)families from around the Mozambique Channel, eastern Africa, were studied. In this region, four callianassids have been reported: *Lepidophthalmus grandidieri* (Coutière, 1899) from the river Mahanara, northeastern coast of Madagascar, by Coutière (1899); *Lepidophthalmus rosae* (Nobili, 1904) from Madagascar, by Balss (1933); *Neocallichirus mucronatus* (Strahl, 1862) from Baie de Pasandava, Madagascar, and Zanzibar, by Sakai (1999b); and *Podocallichirus madagassus* (Lenz & Richters, 1881) from Madagascar, by Lenz & Richters (1881). In the present study, six species of two families, the Gourretiidae Sakai, 1999 and the Callianassidae Dana, 1852 are added to the known Madagascan fauna: three species and two new genera in the family Gourretiidae are *Laurentgourretia rhopalommata* n. gen. et sp., *Gourretia nosybeensis* n. sp., and *Paragourretia phuketensis* (Sakai, 2002), n. gen., and three new species of the family Callianassidae Leach, 1814 are *Callianassa chakratongae* Sakai, 2002, *C. mocambiquensis* n. sp., and *C. plantei* n. sp. The total of the species Gourretiidae and Callianassidae treated in the present paper is listed as follows:

Family GOURRETIIDAE Sakai, 1999 (new status)

Genus *Laurentgourretia* n. gen.

Laurentgourretia rhopalommata n. sp.

Genus *Gourretia* De Saint Laurent, 1973

Gourretia nosybeensis n. sp.

Genus *Paragourretia* n. gen.

Paragourretia phuketensis (Sakai, 2002)

Family CALLIANASSIDAE Dana, 1852

Genus *Callianassa* Leach, 1814

Callianassa chakratongae Sakai, 2002

Callianassa diaphora Le Loeuff & Intès, 1974

Callianassa mocambiquensis n. sp.

Callianassa plantei n. sp.

SYSTEMATICS

Family CALLIANASSIDAE Dana, 1852

Dana, 1852: 12, 14; Sakai, 1999b: 10.

Diagnosis. — Rostrum either more or less developed, or well developed, sharp (*Lipkecallianassa*), unarmed laterally, and lacking a rostral carina (exceptionally bearing a rostral carina in *Bathycallianopsis* and *Anacalliax*). Carapace with or without dorsal oval. Abdominal somites 3-5 dorsolaterally with a tuft of setae. Eyestalks usually flattened dorsoventrally, or subglobose, or elongate and contiguous. A2 scaphocerite present or reduced; when present, pointed or obtuse

and of small size. Maxilla 2 without posterior seta. Mxp3 pediform, subpediform, suboperculiform, or operculiform; propodus oblong or broadened, and dactylus digitiform or ovate. P1 chelate; equal, unequal, or subequal in size, and similar or dissimilar in shape; larger cheliped usually with or without proximal meral hook, palm oblong, and fingers of moderate length, not pectinate. P3 propodus often broadened in a heel-shape or oblong. Plp1-2 usually present or absent; when present, smaller than Plp3-5. Male Plp2 with or without both appendix interna and appendix masculina, or only with appendix interna; female Plp2 with or without appendix interna. Plp3-5 with appendices internae in both sexes. Uropodal exopod usually without lateral notch (except in *Calliax*).

Type genus. — *Callianassa* Leach, 1814.

Genera included. — *Anacalliax* De Saint Laurent, 1973, *Bathycalliax* Sakai & Türkay, 1999, *Callianassa* Leach, 1814, *Calliapagurops* De Saint Laurent, 1973, *Calliax* De Saint Laurent, 1973, *Callichirus* Stimpson, 1866, *Glypturus* Stimpson, 1866, *Lepidophthalmus* Holmes, 1904, *Lipkecallianassa* Sakai, 2002, *Michaelcallianassa* Sakai, 2002, *Neocallichirus* Sakai, 1988, *Paracalliax* De Saint Laurent, 1979, *Paraglypturus* Türkay & Sakai, 1995, and *Podocallichirus* Sakai, 1999b.

Family CTENOCHELIDAE Manning & Felder, 1991

Ctenochelidae Manning & Felder, 1991: 784; Poore, 1994: 103; Hendrickx, 1995a: 387 (key), fig. 8; Tudge et al., 2000: 135; Davie, 2002: 463.
Ctenochelinae – Sakai, 1999a: 87.

Diagnosis. — Rostrum short, unarmed laterally, and usually bearing a denticulate rostral carina (except *Ctenocheles collini*). Carapace without dorsal oval. Abdominal somites 3-5 dorsolaterally with a tuft of setae. Eystalks flattened dorsoventrally and contiguous. A2 scaphocerite developed as a sharp spine. Maxilla 2 without posterior seta. Mxp3 pediform or subpediform; propodus oblong and dactylus digitiform. P1 chelate, dissimilar; larger cheliped without proximal meral hook, palm subglobular, fingers elongate, pectinate; smaller cheliped without proximal meral hook, fingers elongate, and not pectinate. P3 propodus oblong. Male Plp1-2 smaller than Plp3-5; female Plp1 smaller than Plp2-5; male Plp2 with appendix interna and appendix masculina; female Plp2 with finger-like appendix interna. Plp3-5 with appendices internae in both sexes. Uropodal exopod with lateral notch or incision.

Type genus. — *Ctenocheles* Kishinouye, 1926.

Genera included. — *Ctenocheles* Kishinouye, 1926.

Remarks. — In 1999 I (Sakai, 1999a) placed the Ctenochelinae as a subfamily on the same level as the subfamily Gourretiinae. However, since two new genera,

Laurentgouretia and *Paragouretia* have now been found, the subfamily Gourretiinae is elevated to family level, clearly separated from the families Ctenochelidae Manning & Felder, 1991 and Callianassidae Dana, 1852.

Family GOURRETIIDAE Sakai, 1999 (new status)

Gourretiinae Sakai, 1999a: 95.

Diagnosis. — Rostrum short, unarmed laterally, and lacking a rostral carina. Carapace without dorsal oval. Abdominal somites 3-5 dorsolaterally with a tuft of setae. Eyestalks flattened dorsoventrally and contiguous. A2 scaphocerite an obtuse process of small size, or present as a strong spine (in *Laurentgouretia*). Maxilla 2 without posterior seta. Mxp3 subpediform; propodus oblong, and dactylus digitiform. P1 chelate, dissimilar; larger cheliped with a meral hook, palm oblong, fingers elongate, not pectinate; smaller cheliped usually with meral hook (not in *Gouretia lahouensis*), fingers elongate, and not pectinate. P3 propodus broadened to a heel-shape. Male Plp1 usually chelate; female Plp1 uniramous, bi- or tri-articulate, distal segment simple; male Plp2 biramous, with or without appendix interna and appendix masculina; female Plp2 biramous, with appendix interna. Plp3-5 with appendices internae in both sexes. Uropodal exopod with or without lateral notch or incision.

Type genus. — *Gouretia* De Saint Laurent, 1973.

Genera included. — *Gouretia* De Saint Laurent, 1973, *Callianopsis* De Saint Laurent, 1973, *Dawsonius* Manning & Felder, 1991; *Laurentgouretia* n. gen., and *Paragouretia* n. gen.

Remarks. — In the Gourretiidae the rostral carina is not present as it is in the Ctenochelidae, and the rostral carina is absent as in the Callianassidae. The new genus *Laurentgouretia* bears the strong spine of the A2 scaphocerite as in the Ctenochelidae, but does not bear the rostral carina, and the other new genus, *Paragouretia* bears a cardiac prominence as in the Ctenochelidae, but does not bear the rostral carina as the Ctenochelidae do. Those three families, Gourretiidae, Ctenochelidae, and Callianassidae are provided with a setal row on abdominal somites 3-5, and lack a posterior long seta on the maxilla 2 scaphognathite.

In the Gourretiidae, three genera (a fourth one is in press) are included, *Laurentgouretia* n. gen., *Paragouretia* n. gen., and *Gouretia* De Saint Laurent, 1973. *Laurentgouretia* is separated from *Gouretia* by the presence of a strong A2 scaphocerite and a lateral notch on the uropodal exopod, like in some species of *Gouretia*, and *Paragouretia* is characteristic in bearing a cardiac prominence.

In *Laurentgouretia*, *L. rhopalommata* is included; in *Gouretia* are included: *G. barracuda* Le Loeuff & Intès, 1974; *G. coolibah* Poore & Griffin, 1979; *G. crosnieri* Ngoc-Ho, 1991; *G. denticulata* (Lutze, 1937); *G. lahouensis* Le Loeuff &

Intès, 1974; *G. laresi* Blanco Rambla & Liñero Arana, 1994; *G. manihinae* Sakai, 1984; and *G. nosybeensis* n. sp.; and in *Paragourretia* are included: *P. aungtonyai* (Sakai, 2002) and *P. phuketensis* (Sakai, 2002).

Genus **Laurentgourretia** n. gen.

Diagnosis. — Carapace lacking dorsal oval and rostral carina; rostral spine distinct. No transverse cardiac sulcus or cardiac prominence present. Scaphocerite strong. Mxp3 ischium-merus subpediform, merus with three mesial spines. Exopod absent. P3 propodus oval. P4 simple. P5 subchelate. Abdominal somite 6 lacking acute lateral projections. Male Plp1-2 unknown. Female Plp1 uniramous, biarticulate, distal segment simple. Female Plp2 biramous, with appendix interna. Uropodal exopod bearing lateral notch or incision.

Remarks. — The new genus *Laurentgourretia* differs from *Gourretia* in having a stick-like eyestalk, a remarkably sharp scaphocerite, an Mxp3 lacking an exopod, and the Mxp3 merus with three strong teeth on the mesial margin. In *Gourretia*, the eyestalks are distally convergent, the scaphocerite is obtuse, the Mxp3 bears an exopod, and its merus usually bears a subdistal tooth on the mesial margin of the merus.

Etymology. — The name is a combination of the generic name *Gourretia* and the family name of Mme Michèle De Saint-Laurent, Maître de Conférences Honoraire, France, who established the genus *Gourretia* and who died recently in Côtes d'Armor, France.

Laurentgourretia rhopalommata n. sp. (figs. 1-3)

Material examined. — MNHN [Muséum national d'Histoire naturelle, Paris] Th 1438, holotype, female (TL/CL [Total Length/Carapace Length] = 17.0/4.2 mm, lacking larger cheliped), parasitized by an ostracode on the left branchial region (fig. 1), Nosy Mitsio, 12°38.400'S 48°33.200'E, muddy sand with oysters and shells, 50 m depth, 08.v.1969, R. Plante.

Diagnosis. — Eyestalks distally obtuse. A1-2 flagella short and about the same length. A2 scaphocerite strongly protruded. Mxp3 merus with three strong mesial teeth.

Description of female holotype (fig. 1). — Rostrum (fig. 2A-C) triangular, distally pointed in dorsal view. Carapace smooth, with sharp anterolateral spine; dorsal oval absent; cervical groove located in posterior third of carapace; linea thalassinica entire.

Eyestalks (fig. 2A-C) obtuse distally, 1.5 times longer than broad proximally, convex and directed downwards on dorsal surface distally, extending to distal end of antennular basal segment; cornea small, located distomedially, pigmented faintly brown in alcohol.

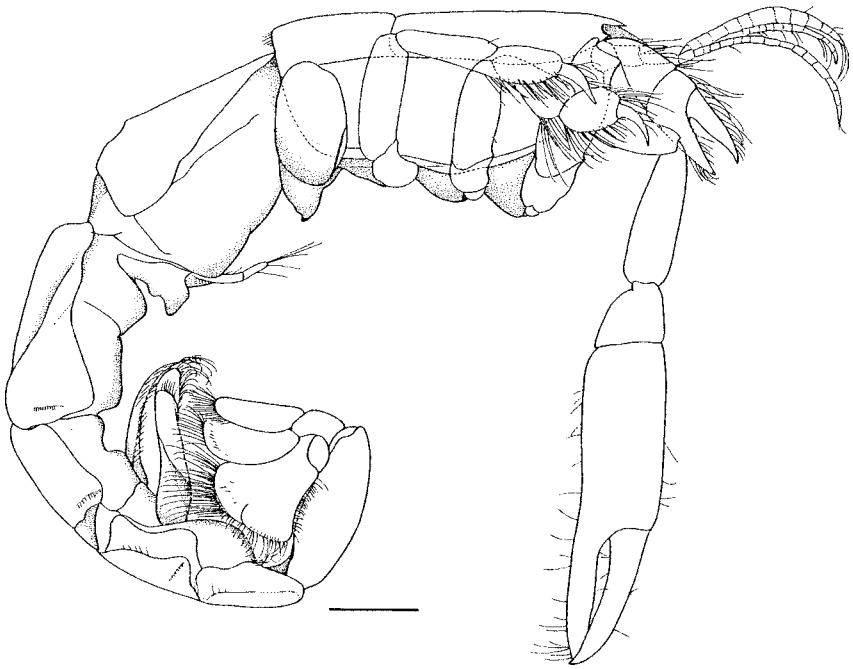


Fig. 1. *Laurentgourretia rhopalommata* n. sp.: whole body, lateral view. MNHN Th 1438, holotype female (Total Length/Carapace Length: 17.0/4.2 mm, lacking larger cheliped), Nosy Mitsio, muddy sand with oyster and shells, 50 m. Scale 1 mm.

Antennular peduncle (fig. 2B) about as long as antennal peduncle, terminal and penultimate articles of equal length. A2 scaphocerite (fig. 2A-C) strongly protruded; A2 terminal article half length of penultimate one; antennal flagellum short and about same length as antennular flagellum. Maxilla 2 scaphognathite without a long posteriorly-directed seta. Mxp3 (fig. 2D, E) without exopod; merus-ischium of endopod subpediform; ischium rectangular, twice as long as broad; crista dentata elevated with some obtuse denticles; merus twice as broad as long, bearing three sharp teeth on mesial margin; carpus subtriangular, 1.8 times as long as broad; propodus subrectangular, slightly convergent distally, about as long as carpus, twice as long as broad; dactylus digitiform, 0.7 times length of propodus, and distally obtuse.

Branchial formula as shown in table I.

Larger cheliped missing. Smaller cheliped (figs. 1, 2F) slender and less massive; ischium slender, three times as long as broad, dorsal margin slightly convex and unarmed, ventral margin convex in distal half, unarmed; merus subrectangular, about 1.3 times length of ischium, three times as long as broad and unarmed; carpus divergent distally, 0.4 times length of merus and slightly broader than long; inferior margin rounded. Chela tapering distally, five times length of carpus; palm

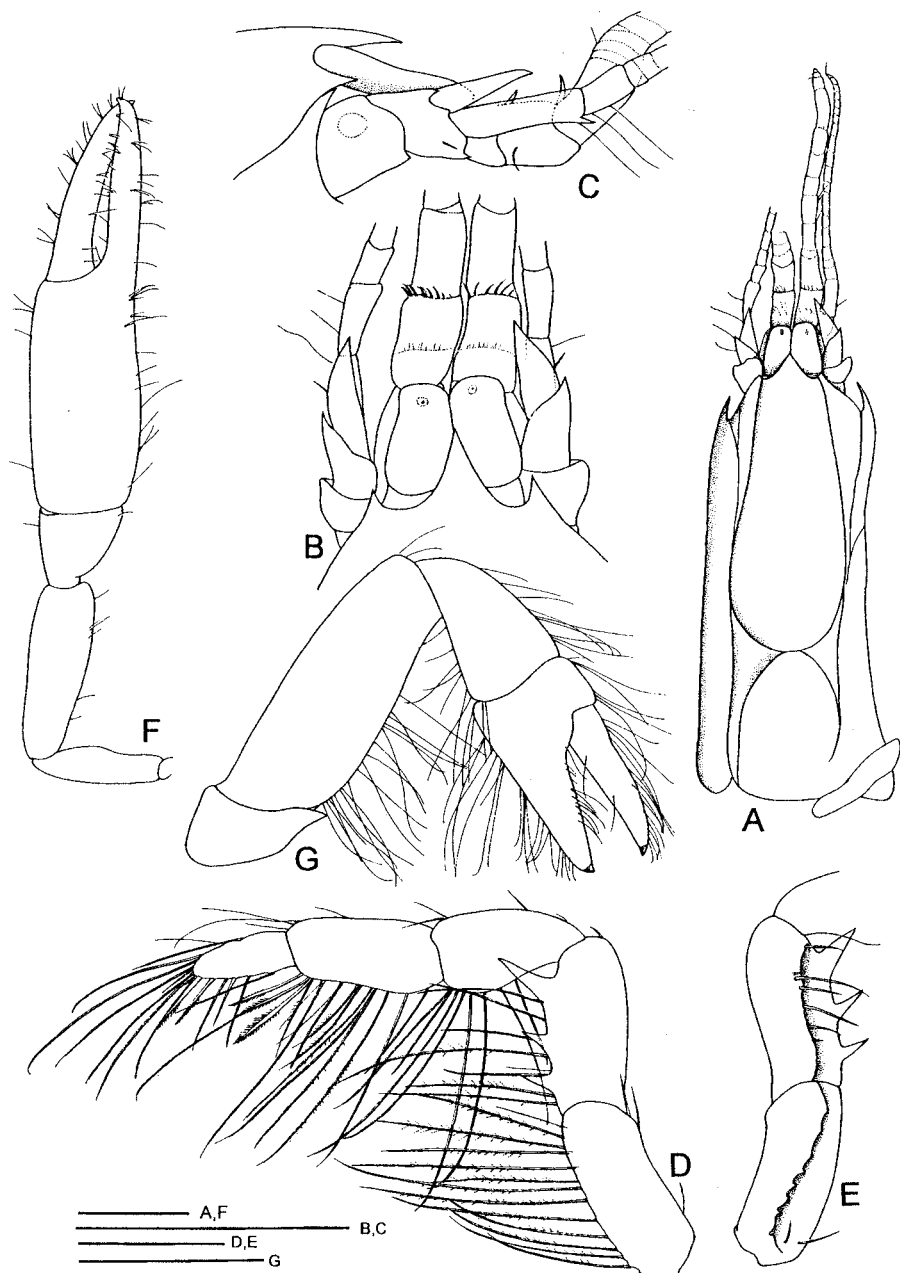


Fig. 2. *Laurentgourretia rhopalommata* n. sp.: A, carapace, dorsal view; B, anterior part of carapace, lateral view; C, anterior part of carapace, lateral view; D, Mxp3, lateral view; E, same, mesial view; F, smaller cheliped; G, pereiopod 2, lateral view. A-G, MNHN Th 1438, holotype female (17.0/4.2, lacking larger cheliped), Nosy Mitsio, muddy sand with oyster and shells, 50 m. A-C, F-G, scales 1 mm; D-E, scale 0.05 mm.

TABLE I
Branchial formula of *Laurentgourretia rhopalommata* n. sp.

	Maxillipeds			Pereiopods				
	1	2	3	1	2	3	4	5
Exopods	1	1	—	—	—	—	—	—
Epipods	—	—	—	—	—	—	—	—
Podobranchs	—	—	—	—	—	—	—	—
Arthrobranchs	—	2	2	2	2	2	2	—
Pleurobranchs	—	—	—	—	—	—	—	—

subsquare and elongate, about three times length of carpus and twice as long as high; fixed finger 0.7 times length of palm, prehensile margin unarmed; gap between fingers also unarmed; dactylus slender, 0.7 times length of palm, about same length as fixed finger, prehensile margin also unarmed.

P2 (fig. 3G) chelate; merus 2.5 times as long as broad, ventral margin convex with closely set setae; carpus about half length of merus; chela about 1.2 times length of carpus, setose on margins; dactylus 2.8 times length of dorsal margin of palm.

P3 (fig. 3A) simple; merus twice as long as broad; carpus 0.8 times length of merus; propodus oval, setose on both dorsal and ventral margins, 0.7 times length of carpus and 1.3 times as long as broad, dorsal margin more convex and shorter than ventral one. Dactylus elongate, sickle-shaped, about as long as propodus.

P4 (fig. 3B) simple; ischium subsquare, 1.5 times as long as broad, merus three times as long as broad, and twice as long as ischium; carpus three times as long as broad, and 0.7 times length of merus; propodus subquadrate, slightly more than twice as long as broad, and slightly shorter than carpus; ventrodistal corner not protruding; dactylus sickle-shaped, 0.7 times as long as propodus.

P5 (fig. 3C) subchelate; ischium short; merus three times as long as broad; carpus 0.7 times length of merus; propodus as long as carpus, forming a short fixed finger ventrodistally; dactylus slender, 0.3 times length of propodus, sickle-shaped, hooked towards external side of fixed finger.

Abdominal somites (fig. 1) smooth, glabrous dorsally; somites 1-2 obviously higher than somites 3-6; pleurites 3-5 each with a tuft of setae laterally; abdominal somite 6 (fig. 3G) smooth on lateral margin.

Female Plp1 (fig. 3D) uniramous, two-segmented; Plp2 (fig. 3E) foliaceous and biramous; exopod slender and shorter than endopod; endopod mesially with appendix interna. Plp3-5 (fig. 3F) biramous, broadly foliaceous, larger than Plp2, each bearing an appendix interna on mesial margin of endopod.

Telson (fig. 3G) subsquare, about as long as broad; lateral margins laterally convex in proximal third, and parallel in distal two-thirds; posterior margin largely



Fig. 3. *Laurentgourretia rhopalommata* n. sp.: A, pereopod 3, lateral view; B, pereopod 4, lateral view; C, pereopod 5, lateral view; D, female pleopod 1; E, female pleopod 2; F, female pleopod 3; G, abdominal somite 6 and tail-fan. A-G, MNHN Th 1438, holotype female (17.0/4.2, lacking larger cheliped), Nosy Mitsio, muddy sand with oyster and shells, 50 m. A-D, G, scales 1 mm; E-F, scales 0.05 mm.

convex, setose and without a median spine; dorsal surface medially with transverse row of setae in anterior fourth. Uropodal endopod subquadrate; distal margin convex, extending to the same level as the posterior margin of the telson; dorsal surface with median longitudinal carina. Uropodal exopod broadly expanded distally in a triangular form, bearing a series of marginal spines and a lateral notch or incision.

Type locality. — Nosy Mitsio, 12°38.400'S 048°33.200'E, East Africa, 50 m depth.

Etymology. — The specific name is a combination of the Greek “rhopalon”, stick, and “ommata”, eyes, because of the stick-shaped eyes. It thus is a noun in apposition to the generic name.

Remarks. — The present new species is included in the Gourretiidae, but is clearly different in the shape of eyestalks, which are truncate distally, it bears a strong scaphocerite on the antennal peduncle, and is provided with three strong mesial teeth on the Mxp3 merus; but it is not provided with a cardiac prominence.

Genus **Gourretia** De Saint Laurent, 1973

Gourretia De Saint Laurent, 1973: 514; Le Loeuff & Intès, 1974: 26; Poore & Griffin, 1979: 278; De Saint Laurent & Le Loeuff, 1979: 48 (key), 78; Manning, 1987: 398 (list); Manning & Felder, 1991: 785, fig. 3; Poore, 1994: 103 (key); Sakai, 2002: 468; Davie, 2002: 464.

Diagnosis. — Carapace lacking dorsal oval and rostral carina; rostral spine usually present; transverse cardiac sulcus absent; cardiac prominence present or absent. Dorsal surface of eye flattened. A2 scaphocerite obtuse. Mxp3 ischium-merus subpediform, usually with one meral distolateral spine; propodus oblong, dactylus digitiform; exopod present. Larger cheliped with proximal meral hook. P3 propodus broadened. P4 simple. P5 chelate. Abdominal somite 6 lacking acute lateral projections. Male Plp1 uniramous, biarticulate, distal segment chelate distally. Male Plp2 biramous, foliaceous, usually bearing appendix interna and appendix masculina. Female Plp1 uniramous, biarticulate, distal segment simple. Female Plp2 biramous, bearing appendix interna. Uropodal exopod with or without lateral notch or incision.

Type species. — *Callianassa denticulata* (Lutze, 1937), by original designation and monotypy. Gender of generic name feminine.

Remarks. — The genus *Gourretia* is now conceived to include 9 species, including one new. Those are divided into two major groups by the presence or absence of the lateral notch in the uropodal exopod. Two other species are moved to the new genus, *Paragourretia* (see below).

Group A, no lateral notch in the uropodal exopod can be recognized: *Gourretia barracuda* Le Loeuff & Intès, 1974; *G. denticulata* (Lutze, 1937); *G. lahousiensis*

Le Loeuff & Intès, 1974; *G. laresi* Blanco Rambla & Liñero Arana, 1994; *G. manihinae* Sakai, 1984; *G. nosybeensis* n. sp.

Those six species are characterized by the Mxp3 merus bearing a subdistomesial tooth. However, exceptionally the Mxp3 merus is unarmed on the mesial margin in *G. lahouensis*.

Group B, lateral notch in uropodal exopod present: *G. biffari* Blanco Rambla & Liñero Arana, 1994; *G. coolibah* Poore & Griffin, 1979; and *G. crosnieri* Ngoc-Ho, 1991. In those species the Mxp3 merus bears no subdistomesial tooth.

KEY TO THE SPECIES OF THE GENUS *GOURRETIA*

1. Uropodal exopod without lateral notch 2
 - Uropodal exopod with lateral notch 7
2. Mxp3 merus without subdistomesial tooth, recorded from Ivory coast, 15 m *G. lahouensis*
 - Mxp3 merus with subdistomesial tooth 3
3. Telson subsquare, recorded from Nosy Bé, Ampasindava peninsula, Mozambique Channel
 - *G. nosybeensis* n. sp.
 - Telson trapezoid in form, lateral margins convergent posteriorly 4
4. P3 propodus oval 5
 - P3 propodus oblong. Smaller cheliped with cutting edges of chela denticulate. Recorded from Ivory coast, 100-250 m *G. barracuda*
5. Distal margin of P3 propodus broadened, Tanzania: Pangani Bay, 35 m *G. manihinae*
 - Distal margin of P3 propodus narrow 6
6. Male Plp1 with short distal segment, distally chelate, recorded from eastern Atlantic Ocean and Mediterranean Sea *G. denticulata*
 - Male Plp1 with elongate distal segment, distally chelate, recorded from northwestern Chimana Islands, Venezuela, 71 m *G. laresi*
7. Telson pentagonal, rounded on posterior half 8
 - Telson trapezoid, lateral margins convergent towards concave posterior margin. Ventral margin of merus of female larger cheliped denticulate distal to ventroproximal tooth, New Caledonia: Prony Bay, Île Oue, 29 m *G. crosnieri*
8. A1-2 peduncles about of same length, recorded from northwest Barcelona, Venezuela, 50 m depth *G. biffari*
 - A1 peduncle longer than that of A2, recorded from Western Australia, 58 m *G. coolibah*

***Gouretia nosybeensis* n. sp. (figs. 4-6)**

Material examined. — Types: MNHN Th 1439, holotype, female (TL/CL = 15.0/3.4 mm, posterior half of carapace damaged; with bopyrid isopod), between Nosy Bé and Ampasindava peninsula, 47 m depth, 09.iii.1968, R. Plante; SMF [Senckenbergs Museum, Frankfurt] 29517, paratype, 1 female (10.0/2.3, bearing both chelipeds), W. of Ankify, zw. Nosy Faly, 30 m depth, 17.iv.1969, R. Plante; SMF 29518, paratype, 1 male (16.0/2.4, lacking larger cheliped), Mozambique Channel, 15°54.300'S 045°50.300'E, 33 m depth, grab, 2.iv.1970, R. Plante; SMF 29519, paratype, 1 female (11.0/2.7, lacking chelipeds), between Nosy Bé and Ampasindava peninsula, 47 m depth, 09.iii.1968, R. Plante; MNHN Th 1440, paratype, 1 female (9.0/2.3), Nosy Mitsio, 12°38.400'S 048°33.200'E, 50 m depth, 08.v.1969, R. Plante.

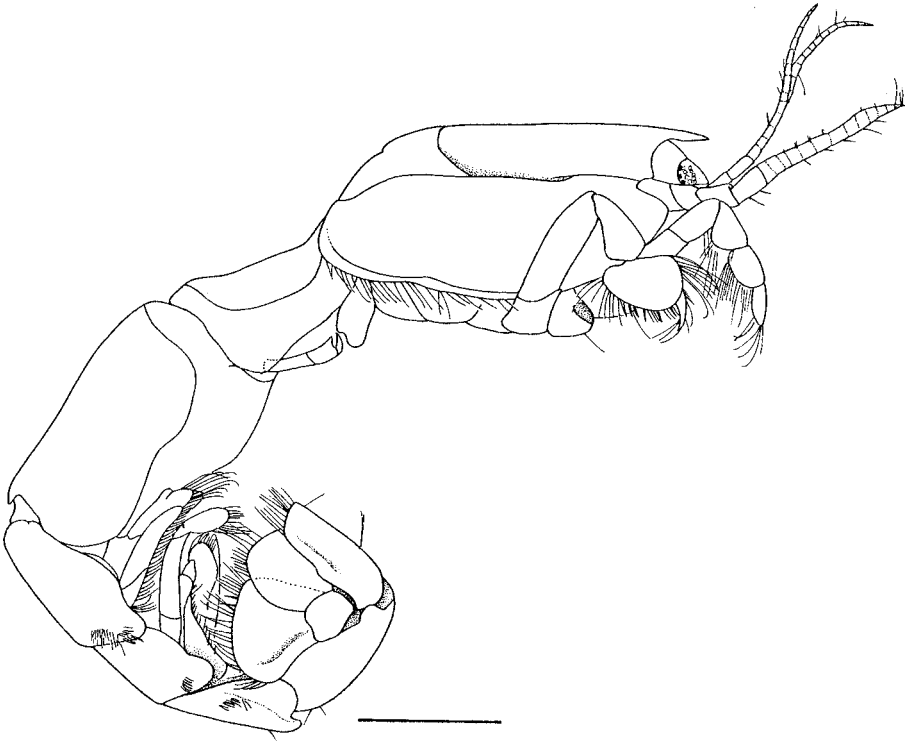


Fig. 4. *Gourretia nosybeensis* n. sp.: male, whole body, lateral view. SMF 29518, paratype male, Mozambique Channel, 15°54.300'S 045°50.300'E, 33 m. Scale 1 mm.

Non type: MNHN Th 1441, 1 carapace (4.2 mm, lacking abdomen and tail fan), Mozambique Channel, 15°54.300'S 045°50.300'E, 33 m depth, 02.iv.1970, grab, R. Plante.

Diagnosis. — Rostrum slender and triangular in shape. Carapace without anterolateral spine. A1-2 flagella short and about the same length. Mxp3 merus with subdistomesial tooth. P3 propodus rounded. Male Plp2 without appendix masculina. Uropodal exopod without lateral notch. Telson subsquare.

Description of female holotype. — Rostrum (figs. 4, 5A, B) slender and triangular in shape, and distally pointed. Carapace (fig. 4) smooth, without anterolateral spine; dorsal oval absent; cervical groove located in posterior fourth of carapace; *linea thalassinica* entire.

Eyestalks (figs. 4, 5A, B) triangular, 1.5 times broader than long proximally, convex and directed downwards on dorsal surface distally; tip obtuse, extending to about distal end of antennular basal article; cornea, located in distal half, pigmented a faint black in alcohol. Antennular peduncle about as long as antennal peduncle, terminal article about as long as penultimate one. Antennal scale small, of an

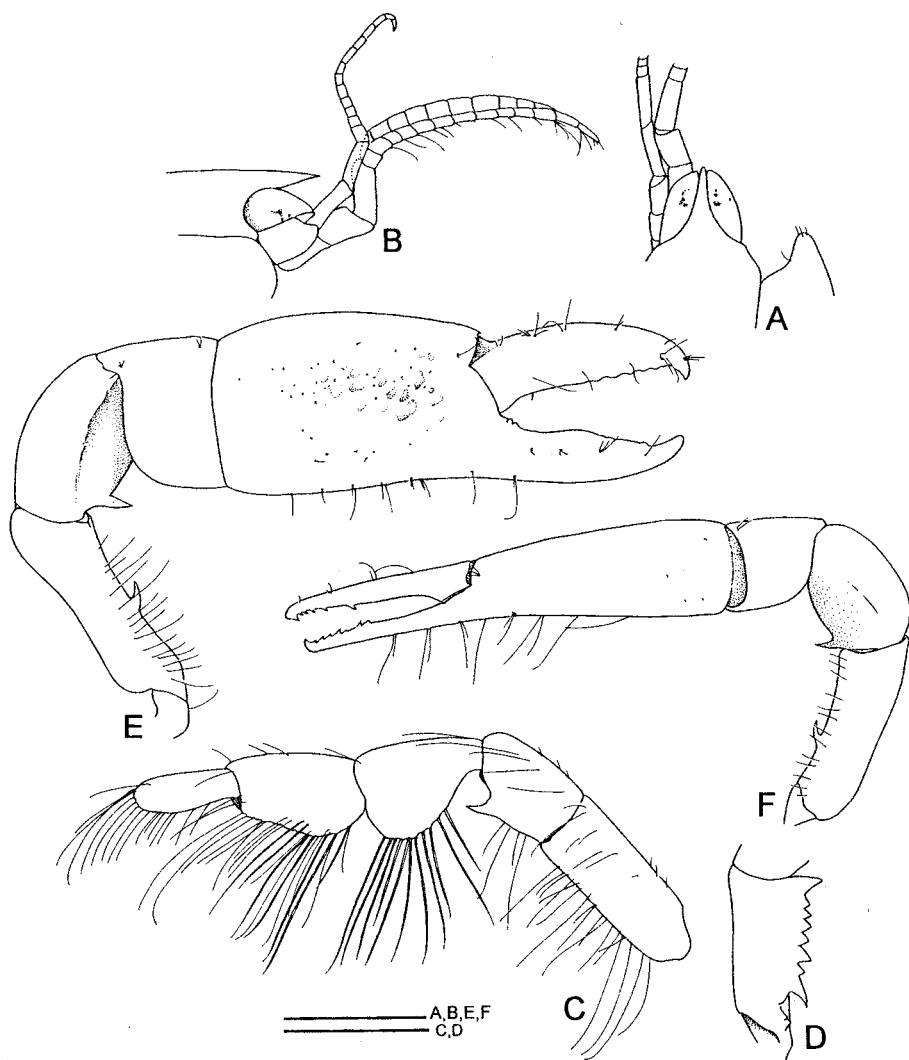


Fig. 5. *Gourretia nosybeensis* n. sp.: A, anterior part of carapace, dorsal view; B, same, lateral view; C, Mxp3, lateral view; D, Mxp3 ischium, mesial view; E, larger cheliped; F, smaller cheliped. A-F, MNHN Th 1439, holotype female (15.0/3.4, posterior half of carapace damaged, and with bopyrid), between Nosy Bé and Ampasindava peninsula, 47 m. A-B, E-F, scales 1 mm; C-D, scales 0.05 mm.

obtuse triangular form; terminal article about as long as penultimate one; antennal flagellum short and about as long as antennular flagellum.

Mxp3 (fig. 5C, D) with exopod; merus-ischium rectangular; ischium rectangular, 2.3 times as long as broad; crista dentata with row of 8 stout denticles; merus rectangular, 1.5 times as broad as long, bearing a sharp subdistal tooth on mesial margin; carpus triangular, 1.3 times as long as broad and slightly longer

than merus; propodus subrectangular, slightly convergent in ventral margin distally, about as long as carpus, 1.4 times as long as broad; dactylus digitiform, 0.8 times length of propodus, and distally obtuse.

P1 unequal in size and dissimilar in shape. Larger cheliped (fig. 5E) chelate, of medium breadth; ischium about twice as long as broad, dorsal margin slightly convex distally, unarmed, and ventral margin bearing distinct denticles medially; merus 0.8 times length of ischium, about 1.4 times as high as long, dorsal margin slightly arcuate and unarmed, ventral margin bearing a sharp proximal tooth, distal remainder smooth. Carpus broadened with a rounded posteroventral angle, dorsal margin 0.8 times as long as high and 0.7 times length of merus. Chela 5 times length of carpus; palm 3 times length of carpus, about 1.4 times as long as high, dorsal and ventral margins smooth, distal margin unarmed and directed obliquely downward to fixed finger; fixed finger 0.7 times length of palm, prehensile margin proximally with two denticles, medially smooth and slightly convex, and slightly concave in distal half; dactylus 0.8 times as long as palm, curved downward distally, prehensile margin roughly denticulate in distal half. Smaller cheliped slender and less massive than larger cheliped (fig. 5F); ischium slender, dorsal margin slightly convex distally and unarmed, ventral margin bearing a strong tooth at proximal third; merus rounded, about 0.7 times length of ischium, and 1.2 times as long as broad, ventral margin bearing a sharp proximal tooth; carpus triangular, as long as high, 0.7 times length of merus, and rounded at ventroproximal angle. Chela convergent distally, 4.5 times length of carpus measured along dorsal margin; palm elongate, gradually convergent distally, 2.8 times as long as high, and about 2.5 times length of carpus; fixed finger 0.7 times length of palm, prehensile margin armed with a row of teeth in distal two-thirds; gap between fingers unarmed; dactylus slender, 0.7 times length of palm, slightly overreaching tip of fixed finger, prehensile margin armed with a row of sharp teeth in distal half.

P2 chelate; ischium 1.3 times as long as broad, ventral margin protruded distally; merus broadened, 4.2 times length of ischium along median line, 2.5 times as long as broad, ventral margin convex with closely set setae; carpus half length of merus; chela about 1.3 times length of carpus, setose on margins; both fingers twice length of palm. P2 on right side missing.

P3 (fig. 6A) simple; ischium as long as broad measured along ventral margin, ventral margin protruded distally; merus 3 times as long as broad; carpus 0.7 times length of merus; propodus oval, 0.6 times length of carpus, and 0.7 times as long as broad, setose on both lateral and mesial surfaces and both dorsal and ventral margins; dactylus slender, triangular, 0.7 times as long as palm. P3 on left side missing.

P4 missing on both sides.

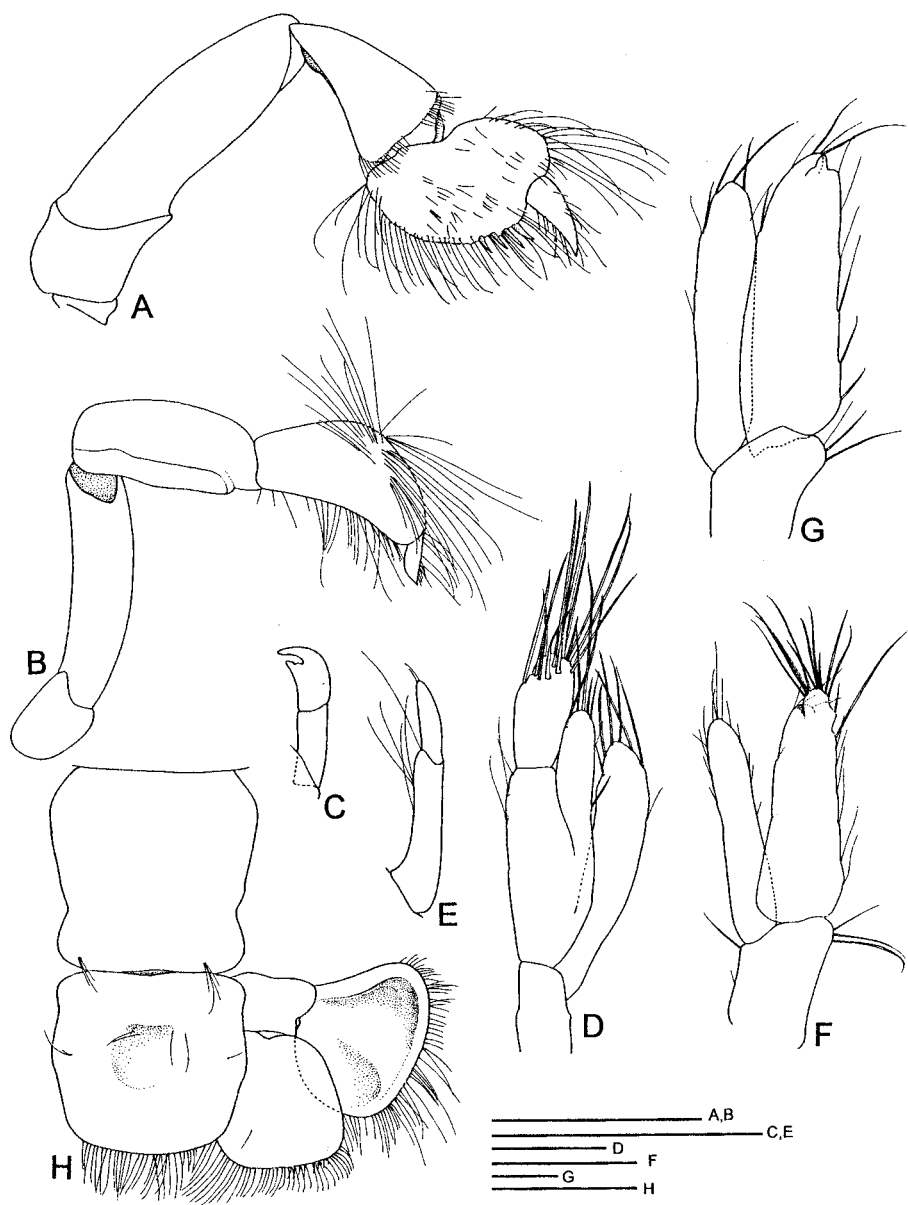


Fig. 6. *Gourretia nosybeensis* n. sp.: A, pereopod 3, lateral view; B, pereopod 5, lateral view; C, male pleopod 1; D, male pleopod 2; E, female pleopod 1; F-G, female pleopod 2; H, abdominal somite 6 and tail fan. A-B, E-F, H, MNHN Th 1439, holotype female (15.0/3.4, posterior half of carapace damaged, and with bopyrid), between Nosy Bé and Ampasindava peninsula, 47 m; C-D, SMF 29518, paratype male (16.0/2.4, lacking larger cheliped), Mozambique Channel, 15°54.300'S 045°50.300'E, 33 m; G, SMF 29519, paratype female (11.0/2.7, lacking chelipeds), between Nosy Bé and Ampasindava peninsula, 47 m. A-C, E, H, scales 1 mm; D, scale 0.1 mm; F, scale 0.005 mm; G, scale 0.001 mm.

P5 (fig. 6B) chelate; ischium short; merus 3.5 times as long as broad; carpus 0.8 times length of merus; propodus as long as carpus, protruding at ventral half of distal margin to make a subchela with dactylus; dactylus narrow, convex on dorsal margin and distinctly concave on ventral margin.

Abdominal somites (fig. 4) smooth, glabrous dorsally; somites 1-2 obviously higher than somites 3-6. Abdominal somite 6 (fig. 6H) about as long as broad in dorsal view, lateral margins largely concave at posterior fourth; pleurites 3-5 each with a tuft of setae laterally. Female Plp1 (fig. 4) uniramous, two-segmented, Plp2 biramous, endopod (fig. 6F, G) distally with appendix interna. Plp3-5 biramous, broadly foliaceous, each bearing a small triangular appendix interna medially on the mesial margin of the endopod.

Telson (fig. 6H) subsquare, slightly shorter than abdominal somite 6, and slightly broader than long; lateral margins slightly concave proximally, and convex medially; posterior margin largely convex, setose, and without a distinct median spine; dorsal surface medially with transverse row of setae in anterior fourth. Uropodal endopod subquadrate; anterior margin straight, extending to straight distal margin by rounded anterodistal angle; dorsal surface without median longitudinal carina. Uropodal exopod broadly expanded distally, making a largely rounded anterolateral angle, dorsal surface shallowly concave, without a median longitudinal carina or a lateral notch.

Description of male pleopods 1-2. — Male Plp1 (fig. 6C) uniramous, two-segmented, distal segment chelate distally; Plp2 (fig. 6D) biramous; exopod shorter than endopod; endopod distally bilobed, inner lobe with appendix interna, bearing no appendix masculina.

Type locality. — Between Nosy Bé and Ampasindava peninsula, 47 m.

Distribution. — Nosy Bé, Ampasindava peninsula, Mozambique Channel, 33-50 m depth.

Remarks. — In gourretiid species the telson is usually convergent posteriorly, whereas the present species is characterized by a square telson and the male Plp2, which is different from that of the type species, *G. denticulata* (Lutze, 1937); in *G. denticulata*, Plp2 distally bears an appendix interna attached to the appendix masculina, but in the present species it is similar to that of *Calliax doerjesti* Sakai, 1999 from Georgia, U.S.A. (Sakai, 1999b, fig. 29e), which bears a distinct appendix interna with distal setae, but no appendix masculina.

Genus **Paragouretia** n. gen.

Diagnosis. — Carapace large and thick, lacking dorsal oval and rostral carina; rostral spine absent; transverse cardiac sulcus incomplete; cardiac prominence present; row of transverse setae present in anterior branchial region. Dorsal surface

of eye flattened. A2 scaphocerite obtuse. Maxilla 2 scaphognathite without long posterior whip. Mxp3 ischium-merus subpediform, usually with one meral distolateral spine; propodus oblong and dactylus digitiform; exopod present. Larger cheliped with proximal meral hook. P3 simple, propodus oblong. P4 subchelate. P5 chelate. Abdominal somite 6 lacking acute lateral projections. Male Plp1 uniramous, biarticulate, distal segment distally chelate; Male Plp2 biramous, foliaceous, and usually with appendix interna and appendix masculina. Female Plp1 uniramous, biarticulate, distal segment simple. Female Plp2 biramous, endopod with appendix interna. Uropodal exopod with lateral notch or incision.

Type species. — *Gourettia phuketensis* Sakai, 2002, by present designation. Gender of generic name feminine.

Species included. — *Paragourettia phuketensis* (Sakai, 2002); *P. aungtonyai* (Sakai, 2002).

Remarks. — The present genus *Paragourettia* is most similar to *Dawsonius* Manning & Felder, 1991 in having a thick carapace and the cardiac prominence, but differs from it by the presence of the Mxp3 exopod, a transverse cardiac sulcus, and a transverse row of setae on the anterior branchial region. From the species until now included in the genus *Gourettia*, *G. phuketensis* Sakai, 2002 and *G. aungtonyai* Sakai, 2002 are to be transferred to *Paragourettia*, as they bear a thick carapace with a transverse row of setae at the anterior branchial region. However, for *P. aungtonyai* it is not certain whether its thick carapace does bear a cardiac prominence as in *P. phuketensis*, or not.

***Paragourettia phuketensis* (Sakai, 2002) (figs. 7-8)**

Gourettia phuketensis Sakai, 2002: 469, figs. 4A-H, 5A-H.

Material examined. — MNHN Th 1442, 1 female (TL/CL = 22.5/6.7 mm, abdominal somites 4-5 broken), E. of Nosy Iranja, 20 m depth, 17.ix.1966, R. Plante, by grab; MNHN Th 1443, 1 female (19.0/5.4) between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 02.v.1967, R. Plante; SMF 29520, 1 female (19.0/5.4), 1 male larger cheliped, Mozambique Channel, 15°43.450'S 045°52.000'E, 41 m depth, by grab, 12.iv.1970, R. Plante; SMF 29521, 1 damaged ovigerous female (32.0/7.5, no chelipeds), Ampasindava Bay, S. of Tany Kely, Madagascar, 20 m depth, 12.vii.1967, R. Plante; SMF 29522, 1 male (22.0/5.8), between Nosy Bé and Ampasindava peninsula, sand and gravel, 47 m depth, 20.iii.1967, R. Plante.

Diagnosis. — Small in size. Rostrum triangular in dorsal view. Carapace thick, bearing a row of setae in branchial region; cardiac protuberance present. Mxp3 merus with mesiodistal tooth. Cheliped unequal. P3 propodus rectangular. Uropodal exopod with marginal notch or incision.

Description. — Rostrum (fig. 7A, B) triangular in dorsal view, fails to reach distal margin of eyestalks; lateral margin setose proximally. Carapace smooth,

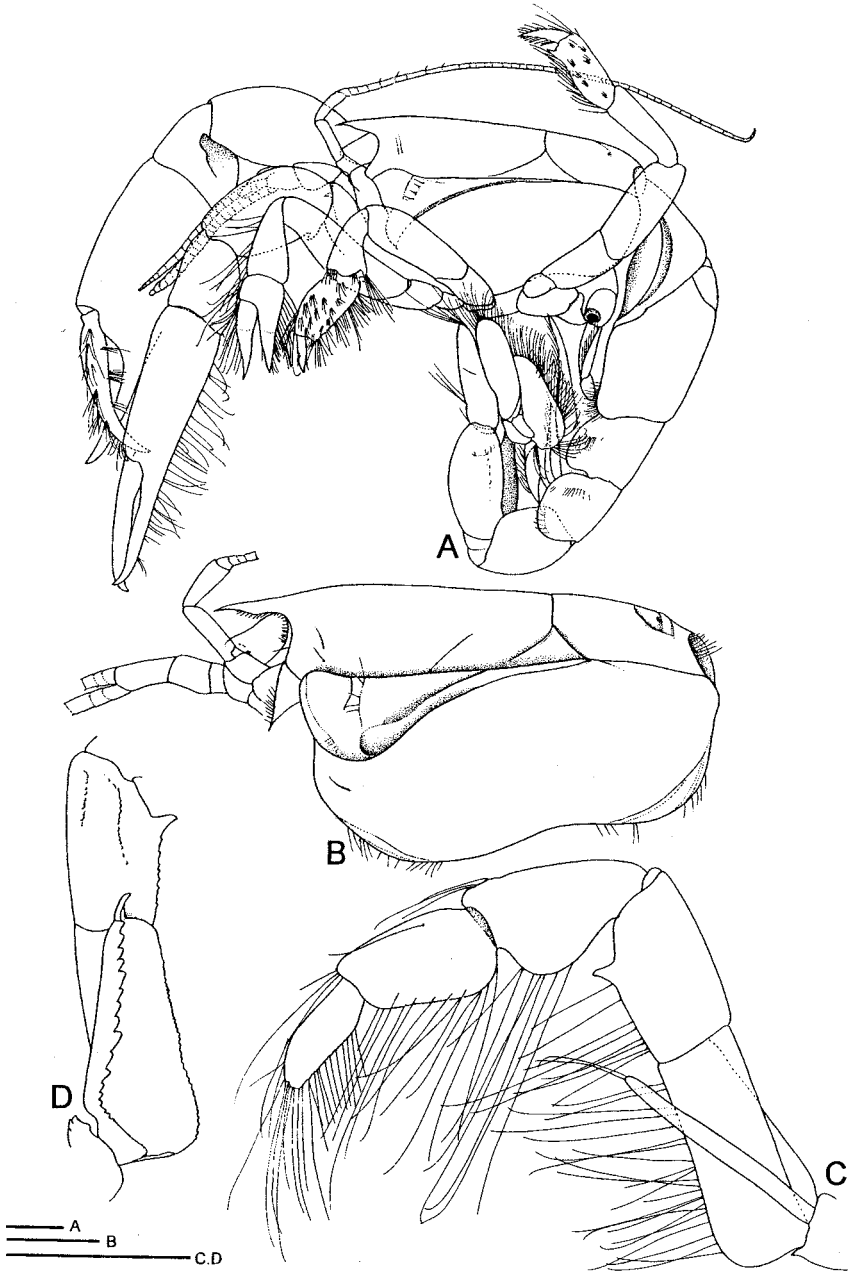


Fig. 7. *Paragouretia phuketensis* (Sakai, 2002): A, female whole body, lateral view; B, carapace, lateral view; C, Mxp3, lateral view; D, same, mesial view. A-B, MNHN Th 1443, female (19.0/5.4) between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m; C-D, MNHN Th 1442, female (22.5/6.7, abdominal somites 4-5 broken), E. of Nosy Iranja, 20 m. A-D, scales 1 mm.

dorsal oval absent, cervical groove located approx. at posterior third, and cardiac prominence present, with a pit; linea thalassinica complete; transverse row of setae present on branchial region.

Eyestalks (fig. 7A, B) triangular in dorsal view, dorsal surface declined forward, leaving space around rostrum; cornea located ventromedially, spotted with blackish pigments. Antennular peduncle slightly shorter than antennal peduncle; proximal segment reaching eyestalk; terminal segment as long as penultimate segment; flagella 1.6 times as long as peduncle. Antennal peduncle with a small triangular scaphocerite; terminal article two-thirds as long as penultimate article; flagellum long, 2.5 times as long as antennular flagella.

Mxp3 with ischium-merus (fig. 7C, D) pediform, with a simple exopod that reaches the level of distal margin of ischium; ischium subquadrate, about 2.5 times as long as wide, with high crista dentata on internal surface; merus subsquare, 1.8 times as long as wide, 0.8 times length of ischium, and armed with 1 sharp submesiodistal tooth; carpus 1.7 times as long as wide, about as long as merus, ventral margin largely triangular; propodus broadened proximally on ventral margin, about 1.6 times as long as wide and shorter than carpus; dactylus small and log-shaped, shorter than propodus.

Larger female cheliped (fig. 8A) with ischium three times as long as broad, dorsal margin smooth and convex in distal half, ventral margin entirely minutely denticulate. Merus oval, 1.7 times as long as broad, about as long as ischium, dorsal margin smooth and rounded, ventral margin with a subproximal tooth, and with a smooth surface distal to that tooth. Carpus half length of merus and 0.6 times as long as broad, ventral margin descending vertically with rounded ventroproximal angle. Chela four times as long as carpus, palp 2.5 times as long as carpus and 1.5 times as long as broad, distal margin descending obliquely to cutting edge of fixed finger, fixed finger 0.6 times as long as palm, unarmed on cutting edge; dactylus 0.7 times length of palp, cutting margin unarmed and incurved distally to cross with fixed finger. Smaller female cheliped (fig. 8B) elongate; ischium 3 times as long as high, dorsal margin unarmed and convex in distal half, ventral margin straight and denticulate in proximal half; merus swollen medially, 1.7 times as long as broad, slightly longer than ischium, dorsal margin smooth and rounded, ventral margin weakly curved with a ventroproximal tooth; carpus 1.2 times as long as broad, 0.6 times as long as merus; chela elongate, about 3.5 times as long as broad, 3 times length of carpus, distal margin declined to prehensile margin of fixed finger; fixed finger roughly denticulate on prehensile margin; dactylus 0.8 times as long as palm, prehensile margin unarmed and incurved distally.

P2 (fig. 7A) chelate, dactylus slender and longer than slender fixed finger. P3 (fig. 7A) simple; merus rectangular, about 2.5 times as long as wide; carpus triangular, 1.8 times as long as wide, and 0.6 times as long as merus; propodus rectangular, 1.8 times as long as wide, and about as long as carpus, ventral margin almost

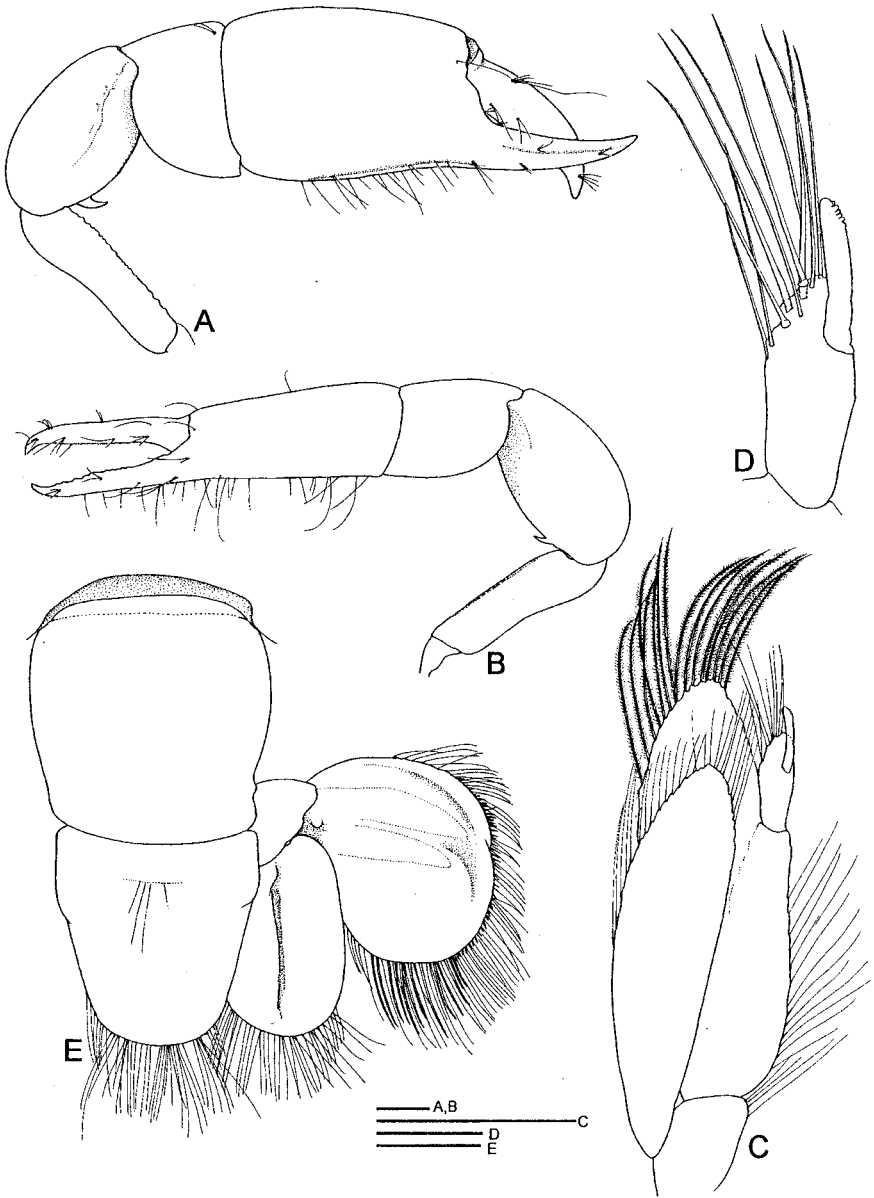


Fig. 8. *Paragourretia phuketensis* (Sakai, 2002): A, female larger cheliped, lateral view; B, female smaller cheliped, lateral view; C, male pleopod 2; D, appendix interna and appendix masculina; E, abdominal somite 6 and tail fan. A-B, MNHN Th 1442, female (22.0/6.7, abdominal somites 4-5 broken), E, of Nosy Iranja, 20 m; C-D, SMF 29522, male (22.0/5.8), between Nosy Bé and Ampasindava peninsula, sand and gravel, 47 m; E, MNHN Th 1443, female (19.0/5.4) between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m. A-C, E, scales 1 mm; D, scale 0.1 mm.

straight, dorsal margin largely convex, lateral surface armed with rows of short setae; dactylus digitiform, terminating in corneous tip. P4 (fig. 7A) subchelate; ischium twice as long as broad; merus 2.2 times as long as wide, 1.5 times length of ischium; carpus slightly shorter than merus; propodus rectangular, 0.8 times as long as carpus, lateral surface with rows of setae, ventrodistal angle forming a short protrusion; dactylus digitiform, two-thirds the length of propodus. P5 subchelate.

Abdominal somites 3-5 (fig. 7A) with vertical rows of scanty setae; abdominal somite 6 (fig. 8E) about as long as wide.

Male Plp1 uniramous, two-segmented, chelate; Plp2 (fig. 8C) biramous, elongate, and foliaceous; endopod with appendix interna and appendix masculina (fig. 8D). Plp3-5 biramous, foliaceous, and larger than Plp2; endopods with digitiform appendices internae.

Telson (fig. 8E) trapezoid in dorsal view, about as long as wide; lateral margins largely convex proximally, slightly convergent distally to broadly rounded posterolateral corners; posterior margin convex without a median spine; dorsal surface convex, with transverse row of setae medially in proximal quarter. Uropodal endopod oval, 1.5 times as long as wide, extending to posterior margin of telson, dorsal surface with distinct median longitudinal carina; uropodal exopod broadened, slightly longer than wide, with a median carina; marginal notch present.

Female. — Plp1 two-segmented, distal article elongate, tapering distally. Plp2 biramous, endopod with appendix interna.

Remarks. — The male from the Andaman Sea was described on the type male specimen lacking the larger cheliped. However, in the male specimen, SMF 29522 from the location between Nosy Bé and Ampasindava peninsula, the larger cheliped is present. The specimens here examined are slightly different from those from the Andaman Sea in the length of the Mxp3 ischium and abdominal somite 6. However, those differences are to be dealt with as mere variation, with as a result that the present specimens are identified as conspecific with *G. phuketensis* through the following characters: cutting edges of P1 chelae smooth, P2 chela similar to that of the present specimens, and P3 propodus oblong. In the original description of *G. phuketensis*, it was shown that the uropodal exopod lacks a lateral notch, and the cardiac prominence is absent, but those characters could be more exactly observed in the present specimens. Regarding the cardiac prominence, in the female figured, which is damaged, this structure is observed as a hollow with a pit. Otherwise, a transverse row of setae is present at the anterior part of the branchial region as in *G. aungtonyai*.

Type locality. — Andaman Sea (8°29.993'N 98°06.162'E, 42.0 m, muddy sand).

Distribution. — Andaman Sea, 6°45.961'N 99°20.968'E, 8°29.993'N 98°06.162'E, 38.0-42.0 m; Ampasindava Bay, S. of Tany Kely, Madagascar, 20 m; E. of Nosy Iranja, 20 m, between Nosy Bé and Ampasindava peninsula, Madagascar, 47 m; Mozambique Channel, 15°43.450'S 045°52.000'E, 41 m.

Genus *Callianassa* Leach, 1814

Callianassa Leach, 1814: 386, 400; Sakai, 1999b: 11.

***Callianassa chakratongae* Sakai, 2002 (figs. 9-12)**

Material examined. — SMF 29523, 1 male (TL/CL = 12.0/23.0 mm, with both chelipeds), between Nosy Bé and Ampasindava peninsula, 23.x.1967, R. Plante; MNHN Th 1444, 1 male (13.5/3.5), Nosy Mitsio, 12°38.400'S 048°33.200'E, muddy sand with oyster and shells, 50 m depth, 08.v.1969, R. Plante; SMF 29524, 5 males (13.0/3.1-10.0/2.7), 4 females (14.0/3.4-10.0/2.5), W. of Ankify, zw. Nosy Faly, 30 m depth, 17.iv.1969, R. Plante; MNHN Th 1445, 1 male (10.0/2.5), Nosy Iranja, 47 m depth, grab, 17.ix.1966, R. Plante; SMF 29525, 1 male (9.0/2.4), 2 females (9.0/2.2-11.0/2.5), between Nosy Bé and Ampasindava peninsula, 47 m depth, sucker, 17.i.1967; SMF 29526, 9 males (6.0/1.5-10.0/2.9), 3 ovigerous females (6.0/1.8-9.0/2.4), 4 females (6.0/1.9-9.0/2.5), 1 damaged (CL = 2.4 mm), between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 20.iii.1967, R. Plante; MNHN Th 1446, 5 males (5.0/1.3-9.0/2.1), 6 females (6.0/1.7-10.0/2.4), between Nosy Bé and Nosy Komba, 15 m depth, 21.iv.1967, R. Plante; SMF 29527, 8 males (5.0/1.7-6.0/1.7), 4 females (8.0/2.0-9.0/2.0), between Nosy Bé and Ampasindava peninsula, 47 m depth, 21.iv.1967, R. Plante; SMF 29528, 12 males (6.0/1.5-8.0/1.9), 1 ovig. female (9.0/2.0), 6 females (8.0/2.2-9.0/2.4), between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 02.v.1967, R. Plante; SMF 29529, 3 males (6.0/1.7-9.0/2.3), 3 females (6.0/1.7-9.0/2.3), between Nosy Bé and Ampasindava peninsula, 47 m depth, 02.v.1967, R. Plante; SMF 29530, 13 males (8.0/1.9-11.0/2.6), 7 females (6.0/1.6-8.0/2.2), between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 02.v.1967, R. Plante; MNHN Th 1447, 6 males (7.0/2.0-8.0/2.0), 6 females (8.0/1.7-9.0/2.1), between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 22.vi.1967, R. Plante; SMF 29531, 4 males (8.0/2.1-11.0/2.5), 2 females (8.0/2.1-10.0/2.5), between Nosy Bé and Ampasindava peninsula, grab, 24.vii.1967, R. Plante; MNHN Th 1448, 2 males (10.0/2.0-10.5/2.4), 1 ovig. female (13.0/3.0), 2 females (10.0/2.6-11.0/3.5), between Nosy Bé and Ampasindava peninsula, 23.x.1967, R. Plante; MNHN Th 1449, 1 male (11.0/2.7), 2 females (9.0/2.3-9.0/2.6), between Nosy Bé and Ampasindava peninsula, 47 m depth, 12.i.1968, R. Plante; SMF 29532, 1 male (CL = 2.5, missing abdominal somites from no. 3 up to and including tail fan; no pereopods) between Nosy Bé and Ampasindava peninsula, 47 m depth, 09.iii.1968, R. Plante; SMF 29533, 1 male (TL c. 10.0, CL 2.4, carapace separated from abdomen, no pereopods) 1 female (9.0/2.4), 1 female (carapace broken), between Nosy Bé and Ampasindava peninsula, 47 m depth, 09.iii.1968, R. Plante; SMF 29534, 11 males (8.0/1.8-9.0/2.5), 4 ovig. females (9.0/1.9-11.0/2.7), 10 females (9.0/1.8-11.0/2.8), between Nosy Bé and Ampasindava peninsula, 47 m depth, 03.iv.1968, R. Plante; SMF 29535, 1 male (9.0/2.1), between Nosy Bé and Ampasindava peninsula, 47 m depth, 19.vii.1968, R. Plante; SMF 29536, 1 male (9.0/2.4), 2 females (7.0/2.0-8.0/2.0), between Nosy Bé and Ampasindava peninsula, 47 m depth, 19.vii.1968, R. Plante; SMF 29537, 3 males (10.0/2.4-10.0/2.7), 3 ovig. females (9.0/2.5-10.0/2.4), 2 females (9.0/2.4-10.0/2.4), between Nosy Bé and Ampasindava peninsula, 47 m depth, 09.viii.1968, R. Plante; SMF 29538, 1 ovig. female (8.0/2.3), 1 female (9.0/2.6), Canyon du Banc, 5 miles A, 82 m depth, 29.iv.1970, R. Plante; SMF 29539, 1 male (7.0/2.0), 1 female (9.0/2.4), Canyon du Banc, 5 miles B, 82 m depth, 29.iv.1970, R. Plante; SMF 29540,

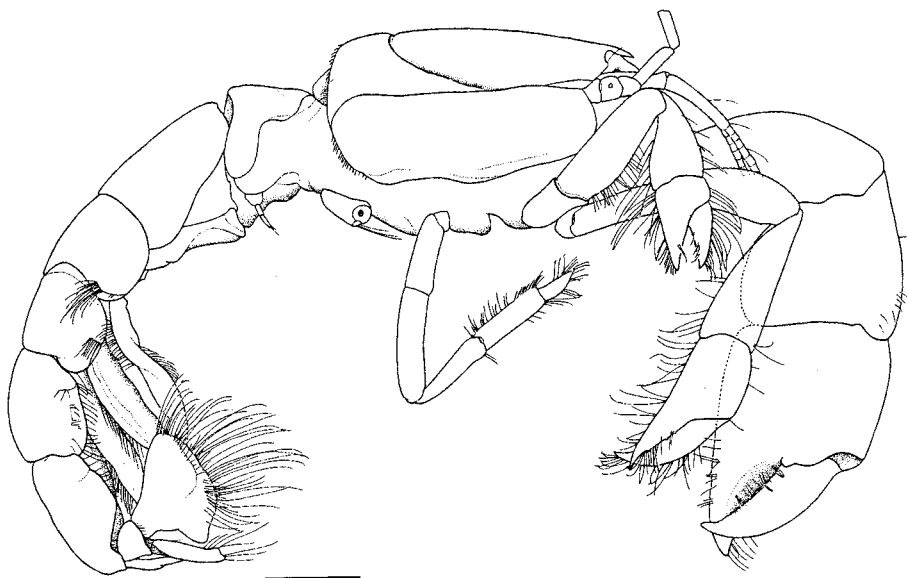


Fig. 9. *Callianassa chakratongae* Sakai, 2002: male, whole body, lateral view. SMF 29523, male (12.0/23.0, with both chelipeds), between Nosy Bé and Ampasindava peninsula. Scale 1 mm.

2 males, Canyon du Banc, 5 miles C, 82 m depth, 29.iv.1970, R. Plante; SMF 29541, 5 males (10.0/2.7-5.0/1.4), 5 females (11.0/2.7-6.0/1.4), 2 detached larger chelipeds, Canyon du Banc, 5 miles E, 80 m depth, 29.iv.1970, R. Plante; SMF 29542, 1 ovig. female (10.5/2.6), Canyon du Banc, 5 miles E, Madagascar, 13°32.550'S 048°05.450'E, 51 m depth, 30.x.1969, R. Plante; SMF 29543, 6 males (9.0/1.8-11.0/2.5), 3 ovig. females (8.0/2.2-11.0/2.5), 14 females (7.0/1.9-10.0/2.5), Mozambique Channel, 16°21.450'S 043°45.000'E, 32 m depth, grab, 09.iv.1970, R. Plante; SMF 29544, 1 male, 2 females, Mozambique Channel, 17°11.000'S 043°37.000'E, 30 m depth, grab, 11.iv.1970, R. Plante; SMF 29545, 3 males (9.0/2.1-10.0/2.7), 1 female (9.0/2.2), between Nosy Bé and Ampasindava peninsula, 47 m depth, 28.viii.1966, R. Plante.

Diagnosis. — Rostrum short, triangular in dorsal view, dorsal surface declined distally; eyestalks declined distally, separated from rostrum; Mxp3 ischium-merus narrow, ischium with crista dentata bearing row of triangular denticles. In larger chelipeds merus armed with proximal lobe on ventral margin. P3 propodus bean-shaped.

Description of male. — Rostrum (fig. 10A, B) narrow, pointed in dorsal view, declining distally, and reaching short of eyestalk-tips. Carapace smooth, anterolateral projections obtuse, dorsal oval present, cervical groove located in posterior one-fifth to one-fourth of carapace, linea thalassinica present throughout length of carapace. Eyestalks (fig. 10A, B) showing an elongate triangle with an obtuse tip in dorsal view, separated distally from one another; dorsal surface declined from rostrum distally, and provided with a borderless cornea medially. Antennular peduncle just fails to reach distal margin of antennal peduncle. Antennal scale rudimentary; terminal segment 1.5 times as long as penultimate one.

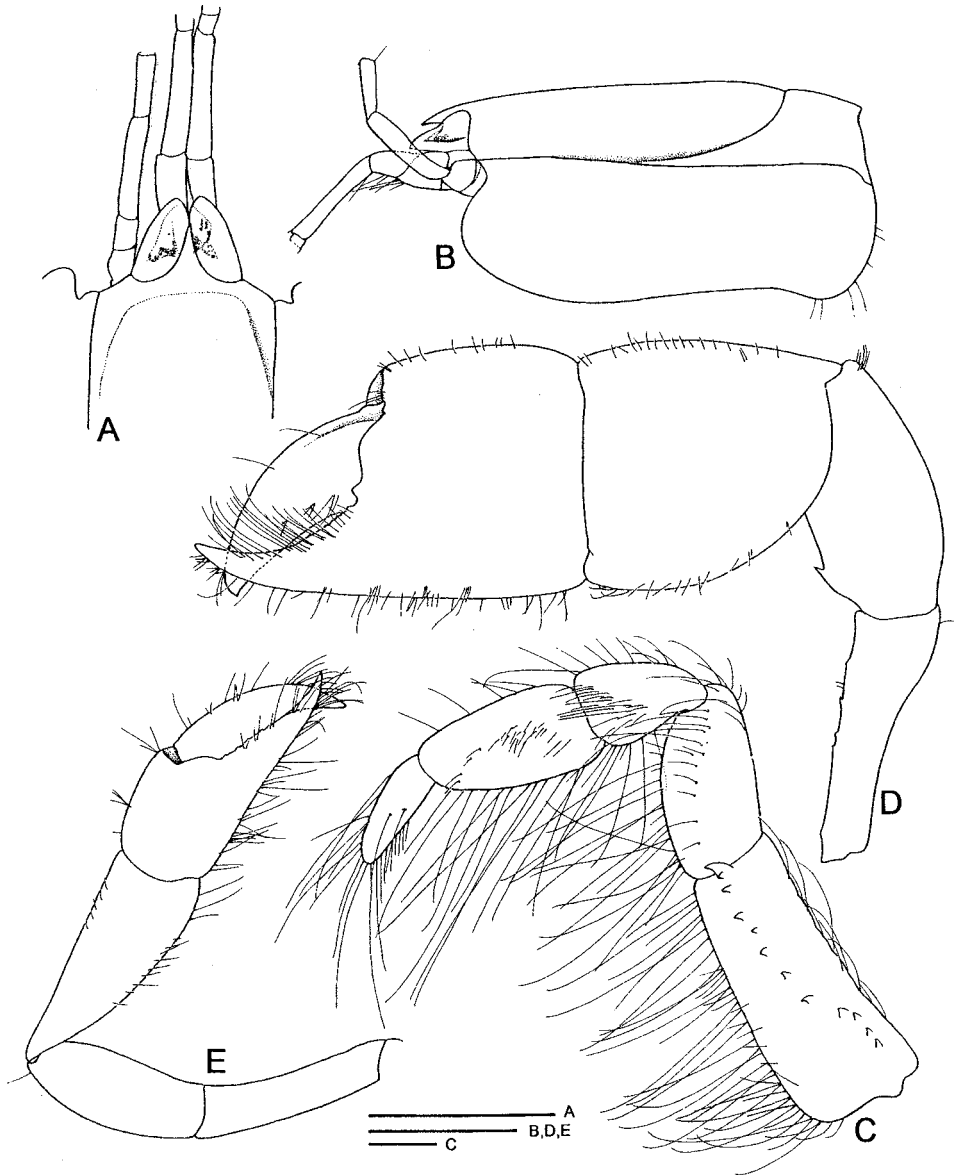


Fig. 10. *Callianassa chakratongae* Sakai, 2002: A, anterior part of carapace, dorsal view; B, carapace, lateral view; C, Mxp3, interior surface; D, male larger cheliped, lateral surface; E, smaller cheliped. A-B, D, SMF 29523, male (12.0/23.0, with both chelipeds), between Nosy Bé and Ampasindava peninsula, 23.x.1967, R. Plante; C, E, SMF 29530, female, between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 02.v.1967, R. Plante. A-B, D-E, scales 1 mm; C, scale 0.01 mm.

Mxp3 (fig. 10C) without exopod. Endopod provided with long setae on mesial margin. Ischium-merus narrow, 3.5 times as long as wide; ischium subrectangular, 2.1 times as long as broad, internal surface provided with crista dentata bearing a row of seven triangular denticles; merus subrectangular, 1.8 times as long as wide, and 0.6 times length of ischium. Carpus 1.5 times as long as broad, and 0.7 times length of merus. Propodus oblong, about twice as long as broad, 1.3 times length of carpus, ventral margin convex proximally; dactylus 0.6 times length of propodus, terminally rounded.

P1 unequal in size and dissimilar in shape. Male larger cheliped (fig. 12A) massive. Ischium 3 times as long as broad, dorsal margin unarmed, sinuous distally, ventral margin straight and armed with four denticles. Merus about twice as long as high, about as long as ischium, dorsal margin unarmed and largely convex, ventral margin straight and provided with a sharp proximal tooth at proximal corner, exterior surface medially swollen. Carpus about as broad as long, about as long as merus, dorsal margin slightly convex medially; ventroproximal margin smooth and largely rounded. Chela heavy, 1.6 times as long as high and 1.5 times length of carpus; palm 0.8 times as long as high, 0.8 times length of carpus, dorsal margin slightly convex, distal margin largely convex in upper part, and armed with a small ventral tooth above lower angle to prehensile margin of fixed finger; fixed finger 0.7 times length of palm, prehensile margin largely concave, slightly denticulate in proximal half, and distally smooth; dactylus thick, about 2.8 times as long as broad, shorter than palm, prehensile margin slightly concave and smooth.

Male smaller cheliped (fig. 10E) narrow and elongate, ischium four times as long as broad, merus oblong, 2.2 times as long as broad, about as long as ischium, dorsal margin convex and unarmed, ventral margin also unarmed and almost straight. Carpus elongate, subtriangular in shape, 2.3 times as long as broad, 1.2 times length of merus, ventroproximal margin regularly divergent to ventrodistal angle; chela 2.4 times as long as broad, 0.8 times length of carpus, palm subrectangular, about as long as broad, half length of carpus, distal margin convex in its ventral half, running to prehensile margin of fixed finger; fixed finger declined distally, about as long as palm, prehensile margin minutely denticulate in proximal half and distally smooth; dactylus incurved, 3.2 times as long as broad, almost same length as fixed finger, prehensile margin unarmed.

P2 (fig. 9) chelate, merus about 2.8 times as long as wide; carpus distally divergent on ventral margin, 1.5 times as long as broad, about 0.6 times length of merus; chela about as long as carpus, palm narrow, 0.5 times as broad as long; fixed finger and dactylus elongate, about twice length of palm.

P3 (fig. 11E) ischium 1.5 times as long as broad, merus about three times as long as broad, twice length of ischium; carpus distally divergent, shaped in a triangle,

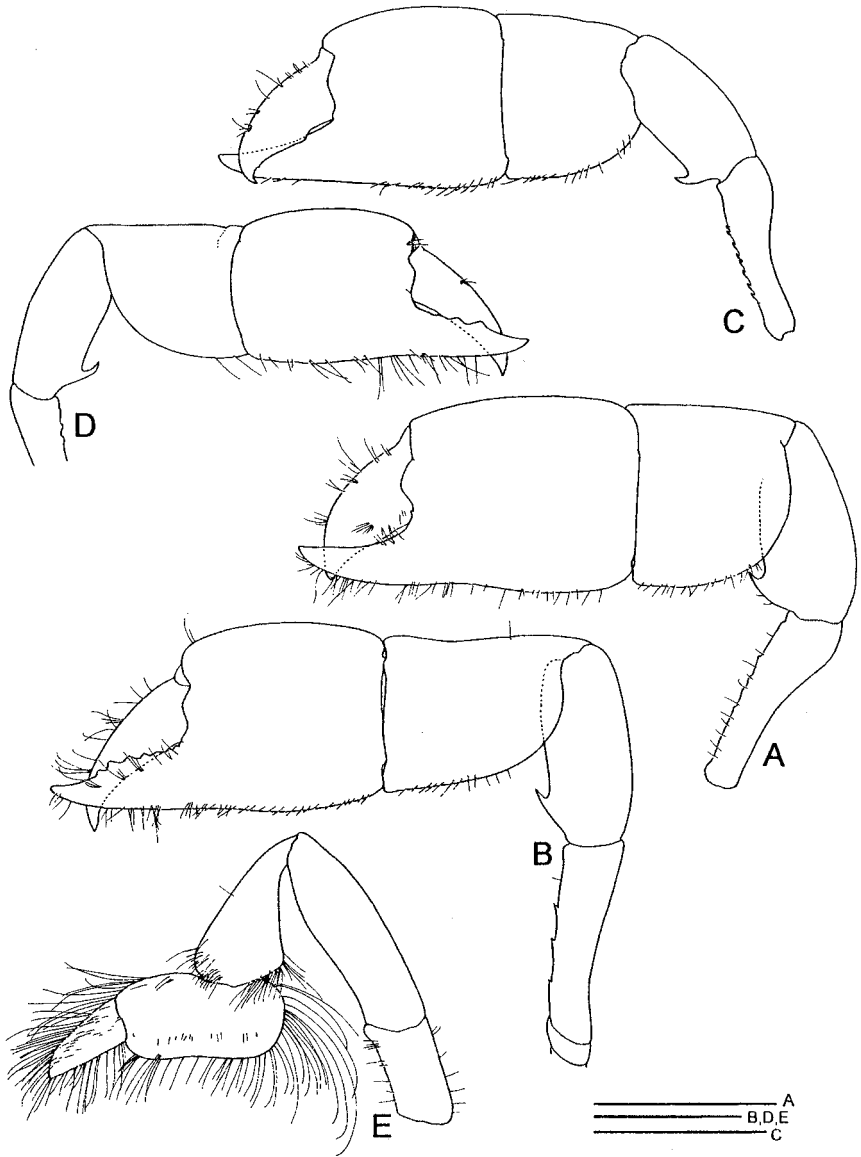


Fig. 11. *Callianassa chakratongae* Sakai, 2002: A, male larger cheliped; B, female larger cheliped; C, detached larger cheliped; D, female larger cheliped; E, pereopod 2. A, SMF 29534, male, between Nosy Bé and Ampasindava peninsula, 47 m depth, 03.iv.1968, R. Plante; B, SMF 29530, female, between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 02.v.1967, R. Plante; C, SMF 29541, sex unknown, detached larger chelipeds, Canyon du Banc, 5 miles E, 80 m depth, 29.iv.1970, R. Plante; D, SMF 29530, female; E, SMF 29523, male (12.0/23.0, with both chelipeds), between Nosy Bé and Ampasindava peninsula, 23.x.1967, R. Plante. A-E, scales 1 mm.



Fig. 12. *Callianassa chakratongae* Sakai, 2002: A, male pleopod 3; B, abdominal somite 6 and tail-fan; C, same. A, SMF 29530, between Nosy Bé and Ampasindava peninsula, Madagascar, sand and gravel, 47 m depth, 02.v.1967, R. Plante; B, SMF 29548, Mozambique Channel, 16°02.30'S 045°49.450'E, 22 m depth, grab, 12.iv.1970, R. Plante; C, SMF 29523, male (12.0/23.0, with both chelipeds), between Nosy Bé and Ampasindava peninsula, 23.x.1967, R. Plante. A, scale 0.01 mm; B-C, scales 1 mm.

2.2 times as long as broad, 0.7 times length of merus, propodus bean-shaped, twice as long as broad, parallel dorsal and ventral margins, dorsal margin largely convex and ventral margin slightly concave medially; dactylus triangular, almost same length as propodus.

P4 (fig. 9) simple; ischium subtriangular, 2.3 times as long as broad; merus oblong, 3.5 times as long as broad, 1.5 times length of ischium; carpus elongate,

0.7 times length of merus; propodus rectangular, slightly less than length of carpus; dactylus triangular, external surface setose.

P5 subchelate; propodus forming a broad fixed finger ventrodistally, lateral surface beset with dense setation in distal half, dactylus hooked towards external side of fixed finger, tip deflexed.

Abdominal somites (fig. 9) smooth, glabrous dorsally; somites 1-2 smooth and glabrous dorsally; pleurites 3-5 laterally with a vertical row of setae; abdominal somite 6 (fig. 12B, C) slightly broader than long, lateral margin broadly convex in anterior half.

Telson (fig. 12B, C) trapezoid in dorsal view; lateral margins parallel in proximal one-third, and convergent in distal two-thirds, distal margin short, not armed with median spinule, dorsal surface convex, with transverse row of setae medially. Uropodal endopod slightly longer than telson, oblong, 1.2 times as long as broad, posterior margin obliquely truncate; dorsal surface convex and without longitudinal carina; uropodal exopod 1.2 times as long as broad; anterior margin convex in its distal half, dorsal surface provided with anterodorsal plate in its anterior half.

Male Plp1 uniramous, two-segmented (fig. 9). Male Plp2 not present. Plp3-5 narrowly biramous, endopods with appendices internae (fig. 12A) narrow, projected from mesial margins.

Description of female. — Larger cheliped in females (fig. 11B, D) different from that of males in shape. Merus 2.2 times as long as broad, with parallel dorsal and ventral margins, ventral margin provided with ventroproximal hook. Carpus 1.0-1.2 times as long as broad, and 0.8-1.0 times length of merus. Chela slightly less than twice as long as broad, slightly less than twice length of carpus, palm about as long as broad or slightly longer than broad and about as long as carpus, distal margin slightly protruded forward, fixed finger about 0.6 times length of palm, prehensile margin roughly denticulate; dactylus about three times as long as broad, prehensile margin smooth. Female Plp1 uniramous, composed of three segments. Plp2 biramous and slender, endopod two-segmented.

Remarks. — The present specimens collected from around Nosy Bé are identified as *C. chakratongae* Sakai, 2002 by the trapezoid form of the telson, the Mxp3 ischium-merus narrow, and the prehensile margin of the fixed finger denticulate in the female larger cheliped. The cutting edges of the chelae in the female larger cheliped are variable, as shown in fig. 11B, D.

The present species is similar to *Callianassa plantei* n. sp., with which it was collected together, in shape and size, but it is morphologically distinguishable, as shown in table II.

The present species is also closely related to *Callianassa matzi* Sakai, 2002 as it is small in size and bears a sharp ventroproximal lobe on the merus of the male

TABLE II

Morphological differences between *Callianassa chakratongae* Sakai, 2002 and *C. plantei* n. sp.

	<i>C. chakratongae</i>	<i>C. plantei</i>
Smaller cheliped	Carpus subtriangular, 2.3 times as long as broad, 1.2 times length of merus, ventroproximal margin regularly divergent to ventrodistal angle	Carpus elongate, 4.5 times as long as broad, 1.6 times length of merus, ventroproximal margin divergent proximally and extending straightly to ventrodistal angle
Telson	Posterior margin unarmed	Posterior margin with a median spinule
Anterior margin of carapace	With obtuse anterolateral projections	With sharp anterolateral spines

larger cheliped, and has a narrow ischium-merus in Mxp3. However, in *C. matzi* the merus of the smaller cheliped is elongate, and the telson bears a median spine on the posterior margin as in *C. plantei*. Otherwise, in *Callianassa jocularis* De Man, 1905, *C. diaphora* Le Loeuff & Intès, 1974, *C. tenuipes* Sakai, 2002, and *C. plantei* n. sp., the form of the ischium-merus of Mxp3 is oblong, as in the present species.

***Callianassa diaphora* Le Loeuff & Intes, 1974 (figs. 13-14)**

Callianassa diaphora Le Loeuff & Intès, 1974: 32, fig. 7a-v; De Saint Laurent & Le Loeuff, 1979: 49, fig. 9a, b, e, g.

Callianassa guineensis – Longhurst, 1958: 31 (part.).

Material examined. — MNHN Th 1450, 1 male (TL/CL = 12.0/3.4 mm), Bay of Russes, grab F, 19.xi.1969; SMF 29546, 2 males (11.0/2-12.0/2.7, lacking chelipeds), 5 larger chelipeds, Mozambique Channel, 17°10.300'S 043°50.300'E, 28 m depth, grab, 11.iv.1970, R. Plante; SMF 29547, 6 males (11.0/2.3-16.0/4.0), 1 ovigerous female (17.0/3.6), 5 females (12.0/2.9-16.0/3.7), Mozambique Channel, 17°09.450'S 043°59.000'E, 21 m depth, grab, 11.iv.1970, R. Plante; MNHN Th 1451, 2 males (11.0/3.0-16.0/4.3), 1 female (15.0/3.1), Mozambique Channel, 16°11.150'S 045°49.150'E, 8 m depth, grab, 12.iv.1970, R. Plante; SMF 29548, 1 male (8.0/2.8, lacking P1), 2 females (13.0/3.0, lacking P3; 14.0/3.3, abdomen broken, lacking P1, P3), Mozambique Channel, 16°02.300'S 045°49.450'E, 22 m depth, grab, 12.iv.1970, R. Plante.

Diagnosis. — Rostrum (fig. 13A, B) slightly projected, showing as a low, rounded triangle in dorsal view. Carapace (fig. 14B) smooth and with dorsal oval; cervical groove located in posterior two-fifths of carapace; linea thalassinica present throughout length of carapace.

Eyestalks (fig. 13A, B) triangular with an obtuse tip, convex on dorsal surface, touching each other along midline, attached dorsally to rostrum; cornea rounded, and placed in proximal half. Antennular peduncle reaching middle of terminal antennal segment.

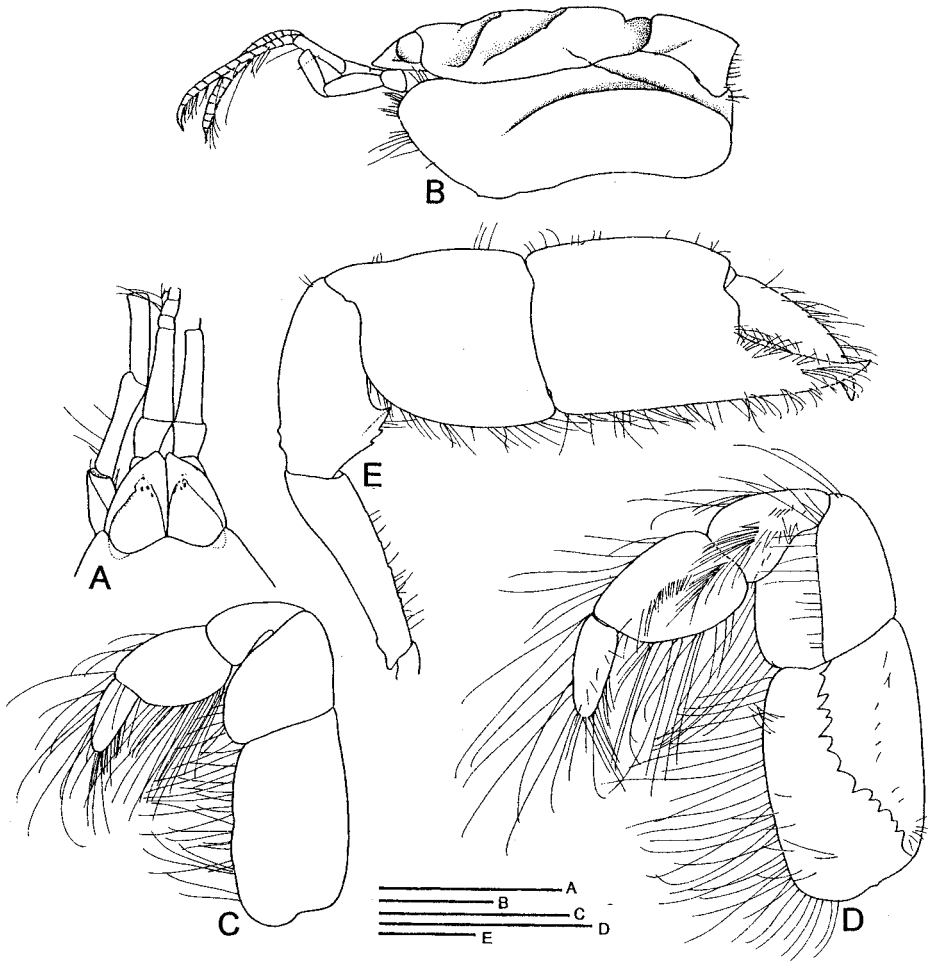


Fig. 13. *Callianassa diaphora* Le Loeuff & Intès, 1974: A, anterior part of carapace; B, carapace, lateral view; C, Mxp3, lateral view; D, same, mesial view; E, female larger cheliped. A-B, SMF 29546, Mozambique Channel, $17^{\circ}10.300'S$ $043^{\circ}50.300'E$, 28 m depth, grab, 11.iv.1970, R. Plante; C-E, SMF 29547, female, Mozambique Channel, $17^{\circ}09.450'S$ $043^{\circ}59.000'E$, 21 m depth, grab, 11.iv.1970, R. Plante. A-E, scales 1 mm.

Mxp3 (fig. 14C, D) without exopod; endopodal merus-ischium 2.5 times length of width; ischium subrectangular, 1.5 times as long as broad, internal surface with crista dentata bearing row of sharp denticles; merus subtriangular, about as long as broad and 0.6 times length of ischium, distal margin slanting, internal surface bearing longitudinal median carina with setae; carpus subtriangular, twice as long as broad, slightly shorter than merus. Propodus 1.2 times as long as broad, about as long as carpus, both dorsal and ventral margins convex; dactylus 0.7 times as long as propodus, terminally rounded, with long setae.

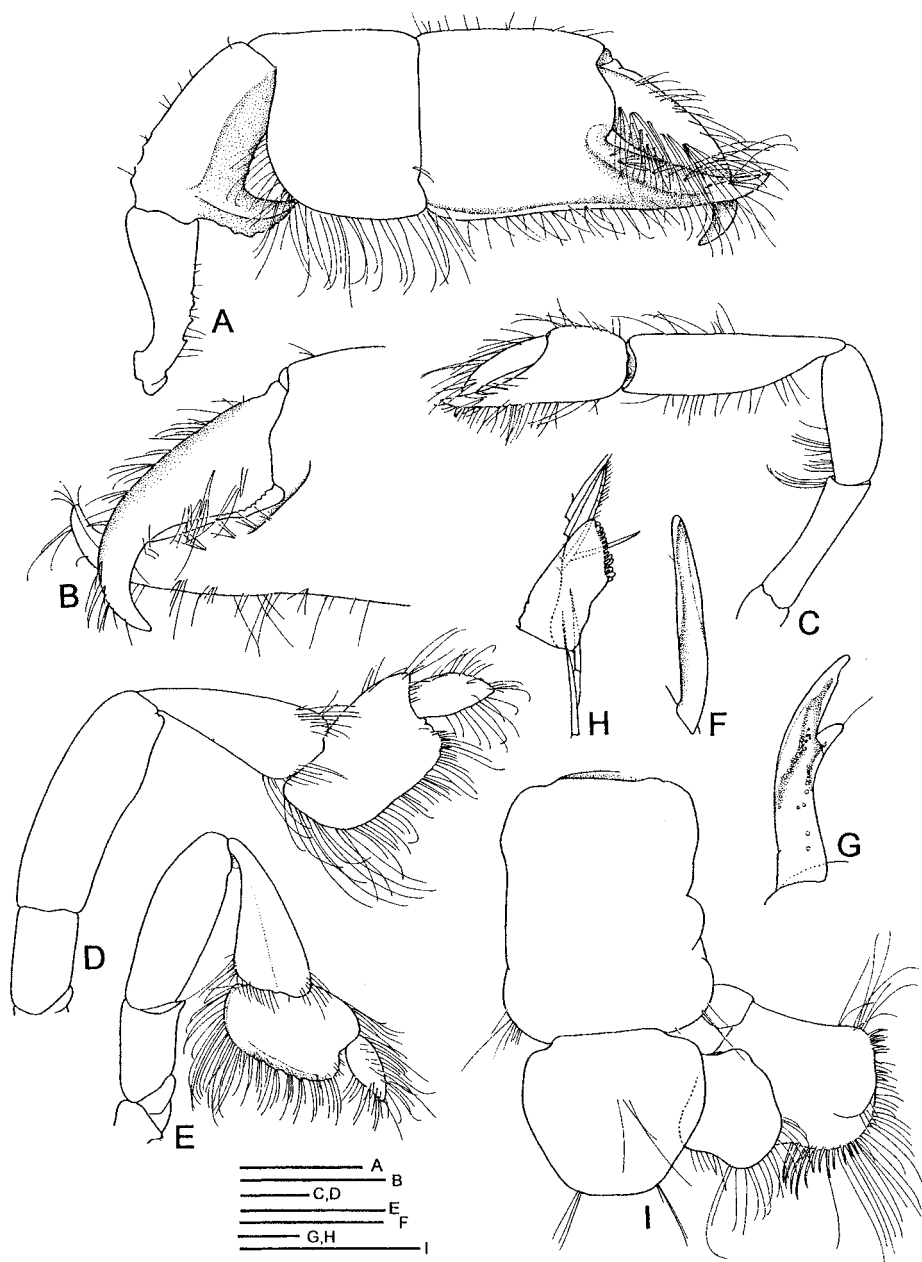


Fig. 14. *Callianassa diaphora* Le Loeuff & Intès, 1974: A, male larger cheliped; B, same, distal part, mesial view; C, smaller cheliped; D, pereiopod 2; E, same; F, male pleopod 1; G, male pleopod 2; H, appendix interna of pleopod 3; I, abdominal somite 6 and tail-fan. A-D, I, SMF 29546, male, Mozambique Channel, 17°10.300'S 043°50.300'E, 28 m depth, grab, 11.iv.1970, R. Plante; E-H, SMF 29547, female, Mozambique Channel, 17°09.450'S 043°59.000'E, 21 m depth, grab, 11.iv.1970, R. Plante. A-E, I, scales 1 mm; F, scale 0.005 mm; G-H, scales 0.01 mm.

P1 shows sexual dimorphism, unequal in size and dissimilar in shape. Male larger cheliped (fig. 14A) massive; ischium 2.5 times as long as high, dorsal margin unarmed and sinuous, ventral margin with row of denticles in median part; merus slightly longer than ischium, 1.8 times as long as high, dorsal margin denticulate proximally, ventral margin armed proximally with a sharp, enlarged lobe, distal to that roughly denticulate; ventroproximal lobe slightly convex, denticulate on ventral margin, medially carinate on lateral surface; carpus 1.2 times as high as long and 0.8 times length of merus, ventroposterior angle largely convex; chela 1.8 times as long as high, 2.2 times length of carpus, palm as long as high, 1.2 times length of carpus, dorsal margin almost straight, ventral margin also smooth, distal margin rounded and continuous to prehensile margin of fixed finger; fixed finger 0.8 times length of palm, prehensile margin unarmed and largely concave; dactylus (fig. 14A, B) 1.2 times length of palm, heavily incurved distally, prehensile margin proximally denticulate and remaining distal part smooth.

Smaller cheliped (fig. 14C) with ischium about 3 times as long as high, ventral and dorsal margins unarmed; merus rectangular, 2.2 times as long as broad, about as long as ischium, unarmed; carpus subtriangular, 3.5 times as long as high, 1.6 times length of merus, ventroproximal margin regularly divergent to ventrodistal angle; palm subrectangular, 2.5 times as long as high, 0.8 times length of carpus, palm about as long as broad, distal margin declined entirely to prehensile margin of fixed finger; fixed finger 1.5 times length of palm, unarmed on prehensile margin; dactylus narrow and incurved, 1.5 times length of palm, unarmed on prehensile margin.

In females, the larger cheliped (fig. 13E) is less massive than in males; ischium about 3.0 times as long as high, dorsal margin unarmed and slightly sinuous, ventral margin armed with some denticles; merus 2.2 times as long as broad, about as long as ischium, dorsal margin denticulate proximally, ventral margin with a small, sharp lobe, distally smooth, ventroproximal lobe slightly convex on ventral margin, bearing two denticles, medially carinate on lateral surface; carpus 1.2 times as long as broad, about as long as merus; posteroventral margin largely convex; chela twice as long as high and 1.8 times as long as carpus, palm 1.2 times as long as high, slightly longer than carpus, almost straight on dorsal and ventral margins, distal margin protruded, continuous to prehensile margin of fixed finger; prehensile margin unarmed; dactylus slightly incurved, unarmed on prehensile margin.

P3 (fig. 14D, E) ischium 1.5 times as long as broad; merus unarmed, 2.8 times as long as broad, 2.2 times length of ischium; carpus broadened distally, 2.2 times as long as broad, 0.7 times length of merus; propodus subquadrate, twice as long as broad, ventral margin slightly divergent distally, distal margin slightly broadened

and slightly concave; dactylus tear-drop-shaped, protruded from distodorsal half of margin of propodus, external surface setose, terminating in narrow tip.

Abdominal somite 6 (fig. 14I) oblong, 1.3 times as long as broad, lateral margins slightly convex posteriorly. Male Plp1 (fig. 14F) uniramous, and a single segment. Male Plp2 (fig. 14G) biramous, exopod small; endopod simple, without appendix masculina or appendix interna. Plp3-5 biramous, narrow, appendices internae (fig. 14H) projected on mesial margin. Female Plp1 uniramous, composed of three segments. Plp2 biramous, endopod two-segmented.

Telson (fig. 14I) trapezoid, broader than long, lateral margins straight in anterior half, convergent in posterior half, and continuous to broad straight posterior margin without a median spine. Uropodal endopod with longitudinal carina; uropodal exopod truncate distally, longer than endopod.

Remarks. — The male pleopod 2 is characteristically biramous, but the exopod is rudimentary. This character as well as the form of maxilliped 3 and of the appendices internae of pleopods 3-5 hint to a close relationship with *Callianassa subterranea* (Montagu, 1808), in which the male pleopod 2 is also biramous.

Type locality. — Ivory Coast, 6°59.4'N 3°52.8'W, 40 m.

Distribution. — Ivory Coast, Cameroun, Dahomey, Congo, and Mozambique Channel.

***Callianassa mocambiquensis* n. sp. (figs. 15-17)**

Material examined. — Holotype: MNHN Th 1452, 1 male (TL/CL = 13.0/3.3 mm, P2 and 5 on left side missing, as also P5 on right side; P1 on right side detached), Mozambique Channel, 16°22.000'S 044°07.300'E, 26 m depth, grab, 09.iv.1970, R. Plante. Paratypes: SMF 29549, 4 males (9.0/2.1-17.0/-, specimen of TL 17.0 with carapace broken, P1 detached on right side, lacking P2-5 on right side and P1-2, 4-5 on left side), Mozambique Channel, 16°21.150'S 044°03.000'E, 31 m depth, 09.iv.1970, R. Plante; SMF 29550, 1 male (15.0/3.8, missing P1, 3 on left side), Baie d'Ambaro S. of Nosy Mitsio, 25 m depth, 29.ii.1968, R. Plante; MNHN Th 1453, 3 males (13.0/3.0, lacking P1, 2, 4 on right side, P4, 5 on left side; 14.0/3.0, lacking P3, 5 on right side; P1, 3, 4 on left side; 15.0/3.7, lacking P1, 4, 5 on right side, P1-5; and 1 detached larger cheliped), Mozambique Channel, 17°10.300'S 043°50.300'E, 28 m depth, grab, 11.iv.1970, R. Plante.

Diagnosis. — Rostrum short, broadly triangular in dorsal view, distally declined; eyestalks declined distally, slightly separated from rostrum; Mxp3 ischium-merus oblong, crista dentata of ischium bearing a row of triangular denticles; merus of cheliped without spine or proximal lobe on ventral margin; P3 propodus oval in shape.

Description of male holotype. — Rostrum (fig. 15A, B) a short, broad triangle with pointed tip in dorsal view, dorsal surface declining distally. Carapace smooth and with dorsal oval; cervical groove located in posterior one-fourth of carapace; linea thalassinica present throughout length of carapace.

Eyestalks triangular with an obtuse tip, dorsal surface declined distally, slightly separated from rostrum, cornea medially scattered with blackish pigment spots.

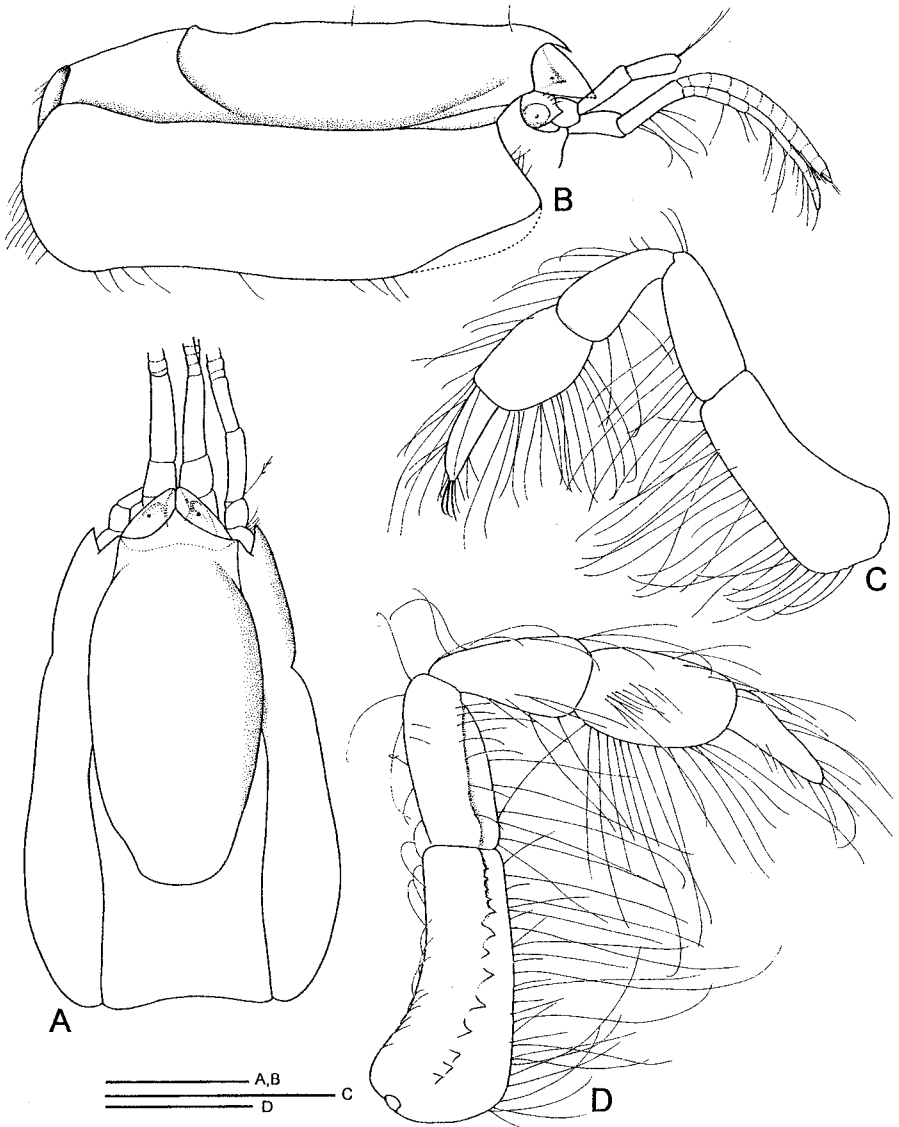


Fig. 15. *Callianassa mocambiquensis* n. sp.: A, carapace, dorsal view; B, same, lateral view; C, Mxp3 lateral view; D, same, mesial view. A-B, male holotype, Mozambique Channel, 16°22.000'S 044°07.300'E, 26 m depth, grab, 09.iv.1970, R. Plante; C-D, SMF 29550, male, Baie d'Ambaro S. of Nosy Mitsio, 25 m depth, 29.ii.1968, R. Plante. A-C, scales 1 mm; D, scale 0.05 mm.

Antennular peduncle almost as long as antennal peduncle. Antennal scale scarcely present; terminal segment slightly shorter than penultimate.

Mxp3 (fig. 15C, D) without exopod; endopod with long setation on mesial margin; merus-ischium three times as long as wide; ischium subrectangular, twice

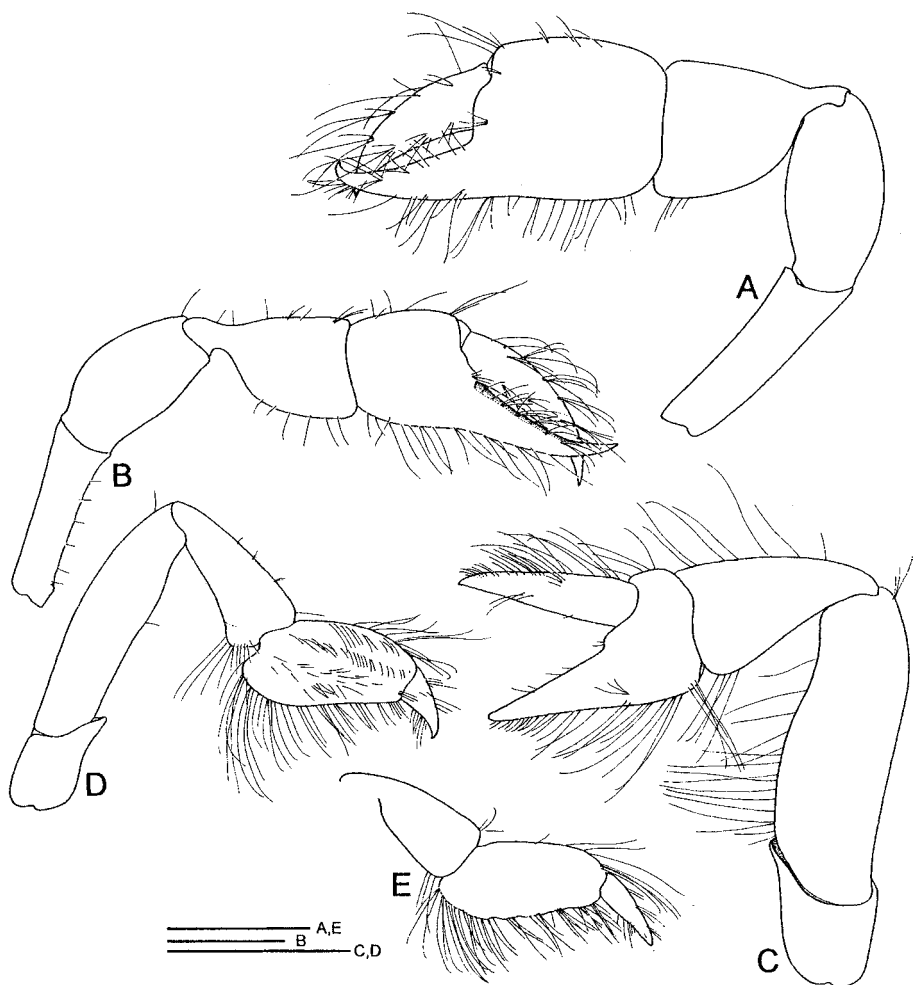


Fig. 16. *Callianassa mocambiquensis* n. sp.: A, male larger cheliped; B, male smaller cheliped; C, pereopod 2; D-E, pereopod 3. A, C-D, MNHN Th 1452, holotype male, Mozambique Channel, 16°22.000'S 044°07.300'E, 26 m depth, grab, 09.iv.1970, R. Plante; B, E, SMF 29549, male, Mozambique Channel, 16°21.150'S 044°03.000'E, 31 m depth, 09.iv.1970, R. Plante. A-E, scales 1 mm.

as long as broad, internal surface defined with crista dentata bearing a row of triangular denticles; merus subtriangular, about twice as long as broad; carpus subtriangular and as long as merus, ventral margin divergent distally. Propodus about as long as carpus, 1.5 times as long as wide, ventral margin convex; dactylus distally convergent in height, shorter than propodus, and terminally truncate with a brush of stiff bristles.

P1 subequal in size and dissimilar in shape. Larger cheliped (fig. 16A) massive; ischium three times as long as high, dorsal and ventral margins straight and

unarmed; merus 1.8 times as long as broad, of same length as ischium, dorsal and ventral margins largely convex, unarmed; carpus 1.3 times as long as high and slightly shorter than merus, dorsal margin slightly concave proximally and distally straight, ventroproximal margin rounded; chela 2.2 times as long as broad, 1.8 times length of carpus, palm 1.2 times as long as broad, of same length as carpus, dorsal margin slightly convex, distal margin convex and unarmed, continuous to prehensile margin of fixed finger. Fixed finger unarmed on prehensile margin, bent upward distally; dactylus about as long as palm, prehensile margin unarmed and largely concave.

Smaller cheliped (fig. 16B) with ischium more than 3 times as long as high, dorsal and ventral margins unarmed; merus spindle-shaped, 1.8 times as long as broad, of about same length as ischium, dorsal margin medially more swollen than ventral margin; carpus subtriangular, 1.5 times as long as high, about as long as merus, dorsal margin concave proximally, ventral margin proximally concave and continuous to ventroproximal angle, largely divergent distally; chela 2.4 times as long as broad, 1.8 times length of carpus; palm subsquare, dorsal margin slightly divergent distally, distal margin bearing a small protrusion at ventral corner, continuous to prehensile margin of fixed finger; fixed finger slender, 1.3 times as long as palm, prehensile margin smooth and largely concave; dactylus 1.3 times length of palm, prehensile margin entirely concave and unarmed.

P2 (fig. 16C) chelate, ischium 1.5 times as long as highest point on protruded ventral margin; merus 2.8 times as long as high, and 3.6 times length of ischium; carpus triangular, divergent distally, 1.6 times as long as high, 0.7 times as long as merus; chela 1.8 times as long as high and 1.2 times length of carpus; palm short, 0.3 times as long as high, distal margin continuous to tip of fixed finger; dactylus slender and triangular, more than 3 times length of palm.

P3 (fig. 16D, E) ischium 1.8 times as long as highest point on protruded ventral margin; merus about 3.5 times as long as high and 3.0 times length of ischium along midline; carpus divergent distally on ventral margin, twice as long as high, 0.7 times length of merus; propodus subquadrate, 1.8 times as long as high, about as long as carpus, ventroproximal angle protruded to form a triangular shape, continuous to straight ventral margin, dorsal margin convergent distally, exterior surface scattered with short setae; dactylus triangular, half length of palm.

P4 (fig. 17A) simple; ischium oblong, length twice its height; merus rectangular, 3 times as long as broad, 1.8 times length of ischium; carpus gradually divergent distally, 3 times as long as high, 0.7 times length of merus; propodus subrectangular, 2.5 times as long as high, 0.8 times length of carpus, external surface scattered with tufts of setae; dactylus triangular, 0.3 times length of propodus, external surface with a tuft of setae.

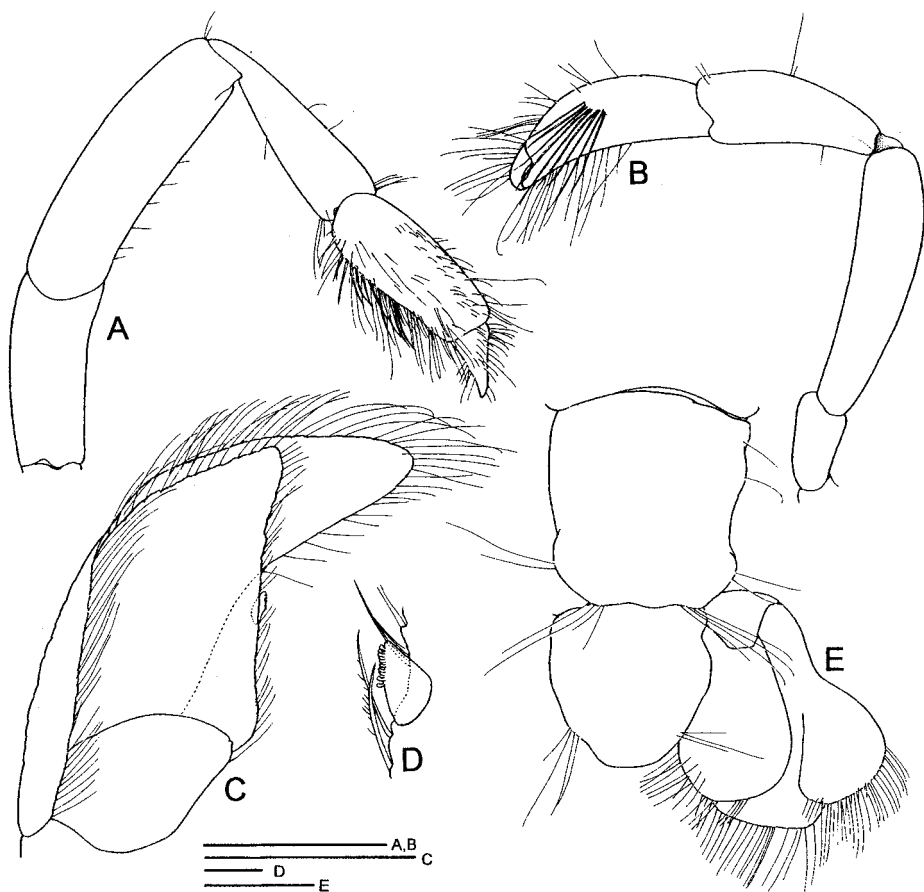


Fig. 17. *Callianassa mocambiquensis* n. sp.: A, pereiopod 4; B, pereiopod 5; C, pleopod 3; D, appendix interna of pleopod 3; E, abdominal somite 6 and tail-fan. A-D, SMF 29550, male, Baie d'Ambaro S. of Nosy Mitsio, 25 m depth, 29.ii.1968, R. Plante; E, SMF 29549, male, Mozambique Channel, 16°21.150'S 044°03.000'E, 31 m depth, 09.iv.1970, R. Plante. A-C, E, scales 1 mm; D, scale 0.01 mm.

P5 (fig. 17B) chelate; ischium oblong, twice as long as high; merus oblong, 3.8 times as long as high, 3 times length of ischium; carpus 2.5 times as long as high, 0.7 times length of merus, chela 1.2 times length of carpus; propodus same length as propodus, protruded ventrodistally as a broad fixed finger, interior surface beset with dense setation, dactylus hooked towards external side of fixed finger, tip deflexed.

Abdominal somites smooth, glabrous dorsally; somites 1-2 smooth and glabrous dorsally; pleurites 3-5 laterally with vertical row of setae; abdominal somite 6 (fig. 17E) slightly longer than broad.

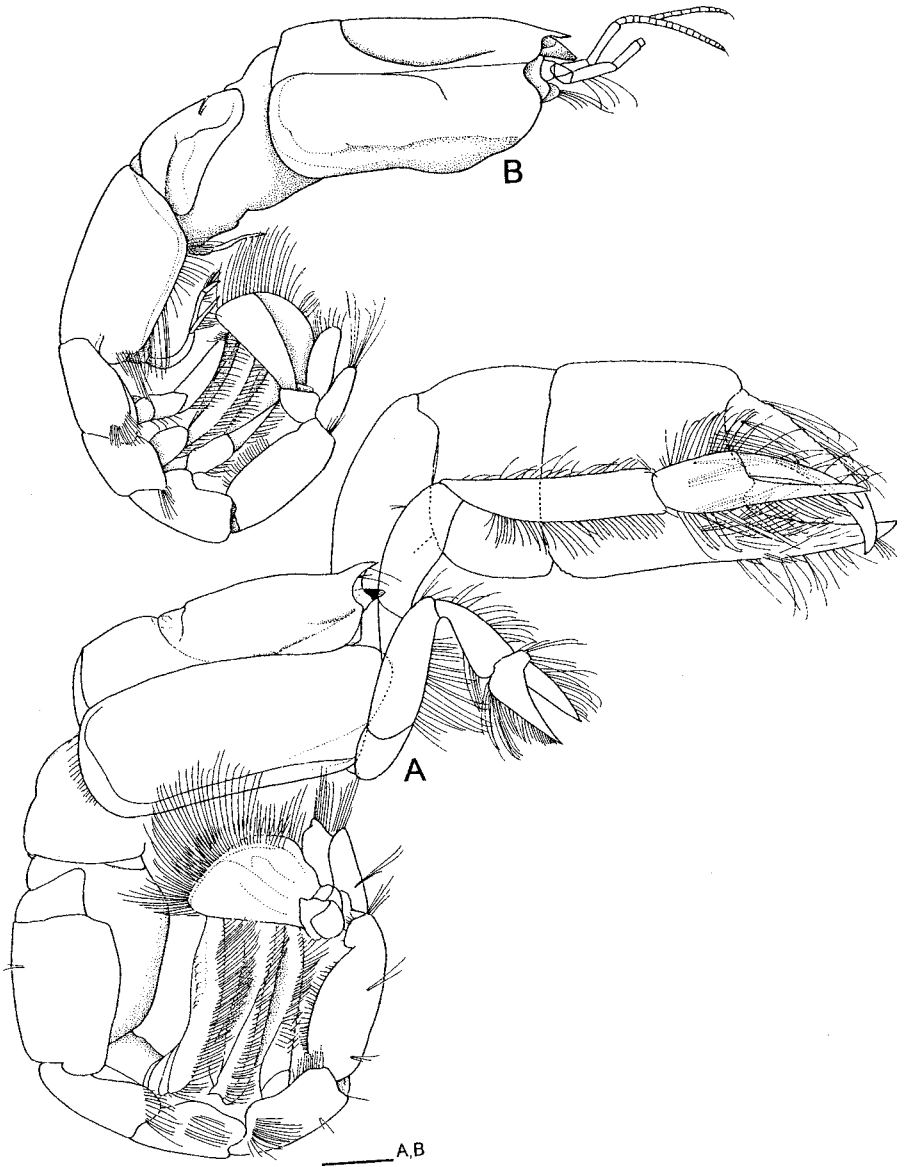


Fig. 18. *Callianassa plantei* n. sp.: A-B, whole body, lateral view. A, SMF 29556, male, Nosy Kisimany NE of peninsula, 30 m depth, 18.iv.1969, R. Plante; B, MNHN Th 1455, female, N. side of the Bay, Nosy Mitsio, 22.vi.1970, R. Plante; MNHN Th 1456, female (11.0/3.0), Bay of Russes, grab D, 16 m depth, 19.xi.1969, R. Plante. A-B, scales 1 mm.

Male Plp1 uniramous, two-segmented. Male Plp2 absent. Plp3-5 biramous, endopod bearing small appendix interna on mesial margin; appendix interna triangular (fig. 19D).

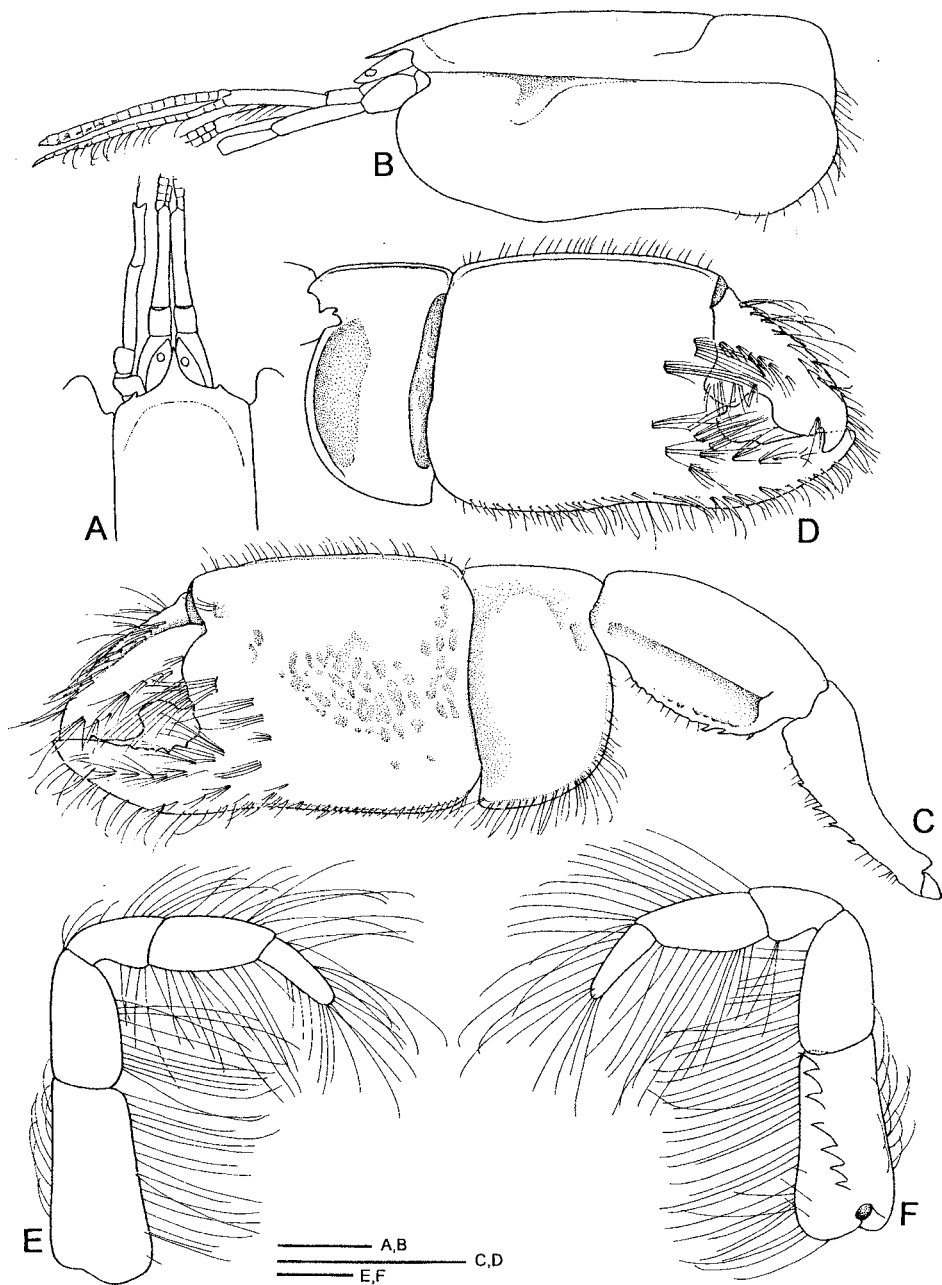


Fig. 19. *Callianassa plantei* n. sp.: A, anterior part of carapace, dorsal view; B, carapace, lateral view; C, male larger cheliped, lateral view; D, carpus and chela of male larger cheliped; E, Mxp3, lateral view; F, same, mesial view. A-D, holotype: MNHN Th 1454, male, 30 m depth, grab, 24.iv.1965, R. Plante; E-F, SMF 29556, male, Nosy Kisimany NE of peninsula, 30 m depth, 18.iv.1969, R. Plante. A-F, scales 1 mm.

Telson (fig. 17E) subtrapezoidal in dorsal view, about as long as broad; lateral margin parallel in proximal half, then concave in posterior half and continuous to a straight posterior margin; dorsal surface convex. Uropodal endopod longer than telson, oval, 1.2 times as long as broad, posterior margin rounded; uropodal exopod oval, broadened distally, dorsal surface provided with anterodorsal plate in its anterior third, lateral notch distinctive.

Remarks. — The present species is very similar to *Callianassa plantei* n. sp. in the form of the eyestalks and in the Mxp3 ischium-merus, which is oblong as in *Callianassa joculatrix* De Man, 1905, *C. tenuipes* Sakai, 2002, *C. chakratongae* Sakai, 2002, and *C. matzi* Sakai, 2002. However, in *C. matzi*, *C. chakratongae*, and *C. joculatrix* the rostrum is pointed and also protruded forward, whereas in the present species it is declined distally along the dorsal margins of the eyestalks, and separated from these by a small space. In *C. tenuipes*, the telson is trapezoidal, convergent posteriorly on the lateral margin to the posterolateral angles; it is different from that of the present species, in which it is broader than in *C. tenuipes*. In *C. amboinensis* the merus of the cheliped is unarmed as in the present species, but in the Mxp3 the ischium-merus, which is quite characteristic, is oval; also, the P3 propodus is short.

The female is unknown.

Type locality. — Mozambique Channel, 26 m.

Distribution. — Mozambique Channel, 26 m; Baie d'Ambaro S Nosy Mitsio, 25 m.

***Callianassa plantei* n. sp. (figs. 18-23)**

Material examined. — Holotype: MNHN Th 1454, male (TL/CL = 18.0/4.8 mm), 30 m depth, grab, 24.iv.1965, R. Plante. Paratypes: SMF 29589, 1 male (17.0/4.8), 1 ovigerous female (15.0/3.9), 1 female (16.0/4.1), N.W. of Nosy Bé, 70 m depth, grab, 20.vi.1967, R. Plante; MNHN Th 1455, 1 male (10.0/2.5), 1 female (16.0/4.0, carapace hardly calcified), N. side of the bay, Nosy Mitsio, 22.vi.1970, R. Plante; MNHN Th 1456, 1 female (11.0/3.0), Bay of Russes, grab D, 16 m depth, 19.xi.1969, R. Plante; SMF 29551, 5 males (11.0/2.7-15.0/4.3), S. of Nosy Iranja, grab F, 18.xi.1969, R. Plante; SMF 29552, 4 males (11.0/3.4-16.0/4.1), 3 females (12.0/3.0-16.0/4.2), S. of Nosy Iranja/A, 18.xi.1969, R. Plante; MNHN Th 1457, 1 female (13.1/3.8), S. of Nosy Iranja/A, 18.xi.1969, R. Plante; SMF 29553, 2 males (15.0/3.9-16.0/4.6), 1 ovig. female (17.0/4.1), 1 female (16.0/4.0), S. of Nosy Iranja (estuary) E, 18.xi.1969, R. Plante; SMF 29554, 1 male (12.0/3.4), Bay of Russes, grab F, 19.xi.1969; SMF 29555, 2 males (10.0/2.3-11.0/2.8), W. of Nosy Iranja, S. Canyon, 100 m depth, 27.ii.1968, R. Plante; SMF 29556, 20 males (10.0/2.5-19.0/4.3), 1 ovig. female (15.0/3.7), 12 females (10.0/2.6-16.0/4.7), Nosy Kisimany N.E. of peninsula, 30 m depth, 18.iv.1969, R. Plante; SMF 29557, 1 female (12.0/3.7), Baie d'Ampasindava, S. of Tany Kely, 35 m depth, grab, 12.vii.1967, R. Plante; SMF 29558, 1 male (10.0/2.3), Ampasindava Bay, S. of Tany Kely, Madagascar, 20 m depth, 12.vii.1967, R. Plante; SMF 29559, 1 male (11.0/3.0), Nosy Mitsio, 12°38.400'S 048°33.200'E, 50 m depth, 08.v.1969, R. Plante; SMF 29560, 1 male (15.0/3.7), grab, 25.vii.1969, R. Plante; SMF 29561, 1 female (10.0/2.6), Tany Kely S. of Nosy Bé, 20 m depth, 17.iv.1969, R. Plante; MNHN Th 1458, paratypes, 3 males (16.0/4.3-13.0/3.5),

1 female (14.0/3.7), same locality as holotype; SMF 29562, 3 males (13.0/3.7-14.0/3.8, lacking larger chelipeds), 3 females (15.0/3.8-16.0/4.2, lacking larger chelipeds), 1 larger cheliped, 30 m depth, grab, 24.iv.1965, R. Plante; SMF 29563, 1 specimen (lacking carapace), between Nosy Bé and Ampasindava peninsula, Madagascar, 13°24.250'S 048°09.000'E, 48 m depth, 28.viii.1967, R. Plante; SMF 29564, 3 males (c. 9.0/2.2), 1 female (10.0/2.8), between Nosy Bé and Ampasindava peninsula, Madagascar, 13°32.550'S 048°05.450'E, 25 m depth, 28.viii.1967, R. Plante; SMF 29565, 1 male (11.0/2.5), Ambaro Bay, off Sosumav, 38 m depth, 29.ii.1968, R. Plante; SMF 29566, 1 male (17.5/4.5), Ambaro Bay, off Sosumav, 15 m depth, grab, 01.iii.1968, R. Plante; SMF 29567, 1 male (12.0/2.8), 1 female (8.0/2.0), Baie d'Ampasindava, Sambirano, 17.iv.1969, R. Plante; SMF 29568, 11 males (8.0/2.0-14.0/3.5), 8 females (8.0/2.4-13.0/3.3), Mozambique Channel, 16°22.000'S 044°07.300'E, 26 m depth, grab, 09.iv.1970, R. Plante; SMF 29569, 1 male (14.0/3.8), Mozambique Channel, 16°22.000'S 044°07.300'E, 26 m depth, 09.iv.1970, R. Plante; SMF 29570, 2 males (10.2/2.3-11.0/2.7), Mozambique Channel, 16°21.150'S 044°03.000'E, 31 m depth, 09.iv.1970, R. Plante; SMF 29571, 2 males (10.0/3.0-11.0/2.8), 1 ovig. female (13.0/3.3), 1 female (11.0/3.0), Mozambique Channel, 16°21.150'S 044°03.000'E, 31 m depth, 09.iv.1970, R. Plante; SMF 29572, 3 larger chelipeds, Mozambique Channel, 17°38.000'S 043°46.300'E, 24 m depth, 10.iv.1970, R. Plante; SMF 29573, 1 male (6.0/2.0), Mozambique Channel, 17°11.000'S 043°29.300'E, 39 m depth, 11.iv.1970, R. Plante; MNHN Th 1459, 5 males (12.0/3.2-13.0/3.4), 5 females (10.0/2.6-16.0/4.1), Mozambique Channel, 17°10.300'S 043°50.300'E, 35 m depth, grab, 11.iv.1970, R. Plante; SMF 29574, 13 males (8.0/1.8-14.0/3.5), 9 ovig. females (11.0/2.9-13.0/3.6), 6 females (9.0/2.1-12.0/3.1), Mozambique Channel, 17°10.300'S 043°50.300'E, 28 m depth, grab, 11.iv.1970, R. Plante; SMF 29575, 1 male (15.0/4.5, carapace hardly calcified), Mozambique Channel, 16°02.300'S 045°49.450'E, 22 m depth, grab, 12.iv.1970, R. Plante; SMF 29576, 5 males (7.0/1.9-14.0/3.5), 1 ovig. female (15.0/3.9), 1 larger cheliped, Mozambique Channel, 15°54.300'S 045°50.300'E, 33 m depth, grab, 2.iv.1970, R. Plante; SMF 29577, 1 female (9.0/2.2), S. of Is. Mohéli (Mwali), 24 m depth, grab, 26.i.1970, R. Plante.

Non-types: SMF 29578, 1 female (11.0/2.7), Canyon du Banc, 5 miles, 64 m depth, 06.v.1968, R. Plante; SMF 29579, 1 male (11.0/2.7), S. of Nosy Iranja, 37 m depth, 18.xi.1969, R. Plante; SMF 29580, 1 male (10.0/2.8), 1 female (11.0/2.6), S. of Nosy Iranja/E, 37 m depth, 18.xi.1969, R. Plante; SMF 29581, 1 male (9.0/2.6), 2 females (10.0/2.5-10.0/2.5), S. of Nosy Iranja /D, 37 m depth, 18.xi.1969, R. Plante; SMF 29582, 1 female (11.0/2.7), E. of Nosy Iranja, 20 m depth, grab, 17.ix.1966, R. Plante; SMF 29583, 2 specimens (one lacking carapace, other lacking posterior part of abdomen), 1 carapace of 1.8 mm (lacking abdominal somites from no. 4 up to and including tail fan), 5 miles from Canyon du Banc, 01.vii.1969, R. Plante.

Diagnosis. — Rostrum spinous in dorsal view; eyestalk declined forward, separated from rostrum. Rostral spine sharp. A1-2 peduncles extending to the same length. Mxp3 ischium-merus pediform, crista dentata bearing a row of seven sharp denticles. Larger cheliped with merus bearing 1-4 small ventroproximal spines; cutting edge of dactylus various in form: with a large proximal notch as in the *harmandi* type, or without as in the *japonica* type of *Callianassa japonica* (Ortmann, 1891). P3 propodus bean-shaped. Telson trapezoidal with a median posterior spine.

Description of male holotype. — Rostrum (fig. 19A, B; see also fig. 18A, B) narrow, elongate in dorsal view, declining distally and falling short of eyestalk-tips. Carapace smooth but with sharp rostral spines, dorsal oval present; cervical groove

located in posterior one-fourth of carapace; linea thalassinica present throughout length of carapace.

Eyestalks showing an elongate triangle with a slender tip in dorsal view, separated distally from each other; dorsal surface flattened, declined and distally separated from rostrum, provided medially with disc-shaped cornea. Antennular peduncle almost reaching distal margin of antennal peduncle; antennal scale rudimentary; terminal segment three times as long as penultimate one.

Mxp3 (cf. fig. 19E, F) without exopod. Endopod with long setation on mesial margin. Ischium-merus narrow, 3 times as long as wide; ischium subrectangular, twice as long as broad, internal surface defined with crista dentata, bearing a row of seven sharp denticles; merus subrectangular, 1.8 times as long as broad, 0.7 times length of ischium. Carpus 0.6 times length of merus. Propodus oblong, twice as long as broad, 1.3 times length of carpus, ventral margin convex; dactylus 0.7 times length of propodus, terminally truncate.

P1 unequal in size and dissimilar in shape. Male larger cheliped (fig. 19C, D) massive. Ischium 2.5 times as long as broad, dorsal margin sinuous and unarmed, ventral margin slightly convex and with four sharp denticles. Merus about 1.8 times as long as high and 1.2 times length of ischium, dorsal margin largely convex, unarmed; ventral margin slightly convex, bearing two spines near proximal corner and distal to those spines armed with a row of denticles; exterior surface medially swollen. Carpus 1.7 times as broad as long, about 0.6 times length of merus, dorsal margin almost straight, ventroproximal margin largely convex with smooth outline. Chela heavy, 1.6 times as long as high, three times length of carpus; palm 1.2 times as long as wide, dorsal and ventral margins carinate, distal margin largely convex in upper part and broadly concave in lower part, continuous to prehensile margin of fixed finger; fixed finger 0.6 times length of palm, prehensile margin roughly denticulate in proximal half, distally smooth; dactylus thick, about twice as long as broad, 0.8 times length of palm, prehensile margin provided subproximally with a distinct concavity and subdistally with a small concavity.

Smaller cheliped (fig. 20B; see also fig. 18A) with ischium narrow and elongate, 3.5 times as long as broad, ventral margin bearing two spines distally; merus oblong, 2.3 times as long as broad, of same length as ischium, dorsal margin convex, unarmed, ventral margin straight and unarmed; external surface swollen medially. Carpus elongate, 4.3 times as long as wide, 1.6 times length of merus, ventroproximal margin divergent in proximal third, distally extending straightly to ventrodial angle; chela 3.5 times as long as broad, about as long as merus; palm subrectangular, 1.5 times as long as broad, less than half length of carpus, distal margin slanting to prehensile margin of fixed finger; fixed finger slender, 1.2 times as long as palm, prehensile margin smooth; dactylus also slender, almost same length as fixed finger, prehensile margin unarmed.

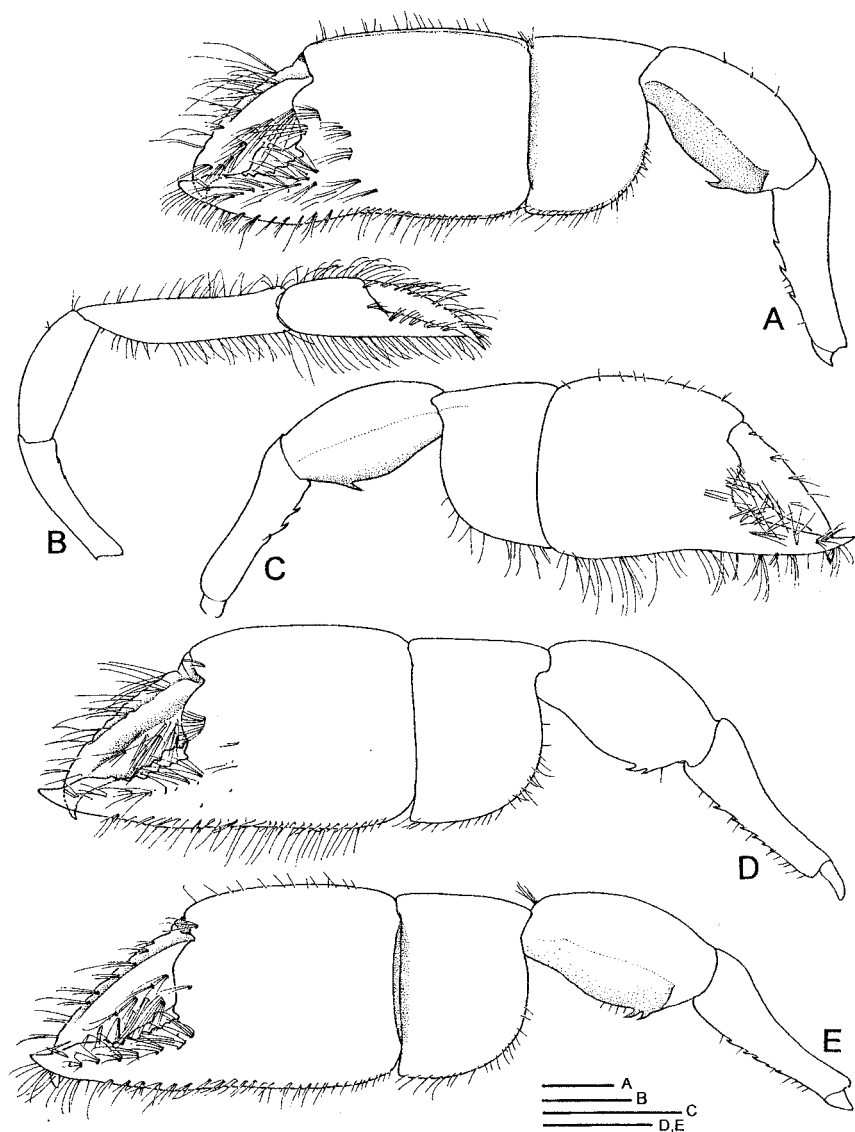


Fig. 20. *Callianassa plantei* n. sp.: A, male larger cheliped; B, male smaller cheliped; C, male larger cheliped; D-E, female larger chelipeds. A-B, MNHN Th 1454, male, 30 m depth, grab, 24.iv.1965, R. Plante; C, SMF 29568, Mozambique Channel, 16°22.000'S 044°07.300'E, 26 m depth, grab, 09.iv.1970, R. Plante; D-E, MNHN Th 1458, 30 m depth, grab, 24.iv.1965, R. Plante. A-E, scales 1 mm.

P2 (see fig. 18A) chelate, merus about 2.6 times as long as broad; carpus distally divergent on ventral margin, 0.7 times length of merus; chela about as long as carpus, palm narrow, 2.7 times as broad as long measured along dorsal margin; fixed finger and dactylus elongate, 4 times length of palm.

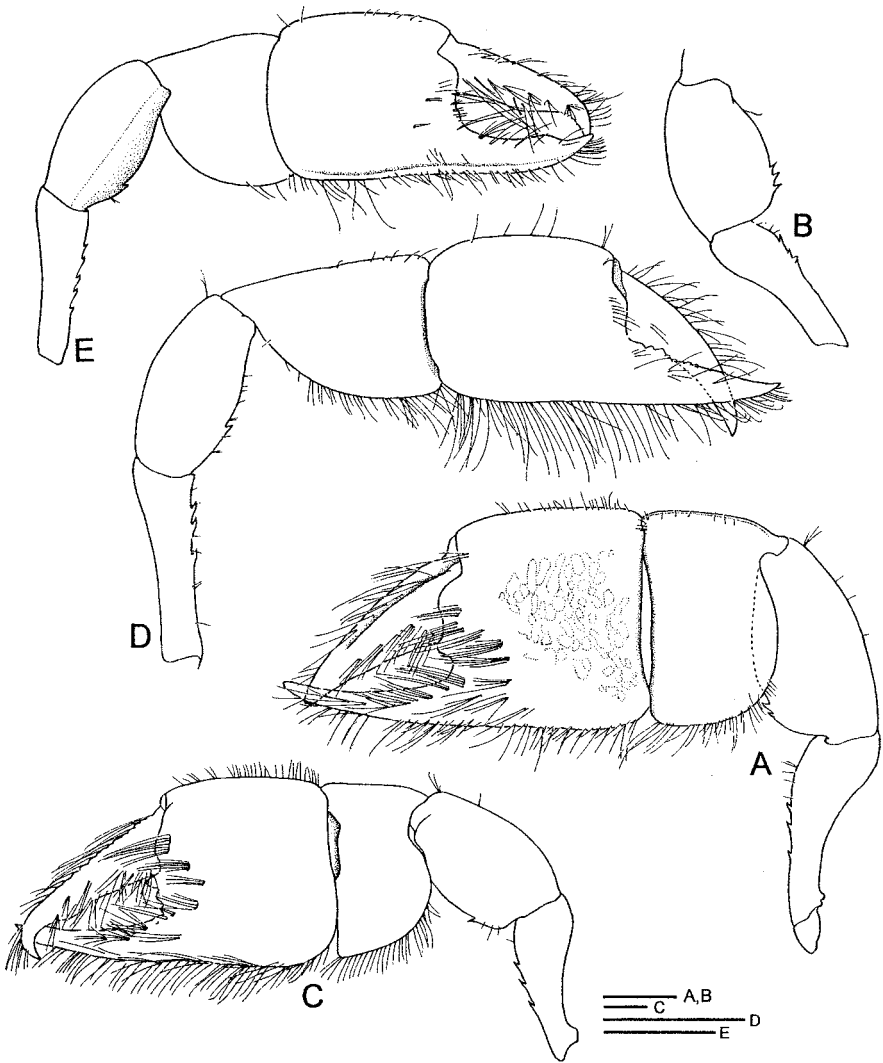


Fig. 21. *Callianassa plantei* n. sp.: A, male larger cheliped; B, ischium and merus of male larger cheliped; C, male larger cheliped, mesial view; D-E, female larger chelipeds. A-C, SMF 29556, male, Nosy Kisimany N.E. of peninsula, 30 m depth, 18.iv.1969, R. Plante; D, SMF 29570, Mozambique Channel, 16°21.150'S 044°03.000'E, 31 m depth, 09.iv.1970, R. Plante; E, SMF 29574, Mozambique Channel, 17°10.300'S 043°50.300'E, 28 m depth, grab, 11.iv.1970, R. Plante. A-E, scales 1 mm.

P3 (see fig. 22A) merus about 3 times as long as broad; carpus distally divergent on ventral margin, 0.6 times length of merus, propodus bean-shaped, twice as long as broad, with parallel ventral and dorsal margins, dorsal margin largely convex and ventral margin medially with two shallow concavities; dactylus triangular, 1.4 times length of propodus.

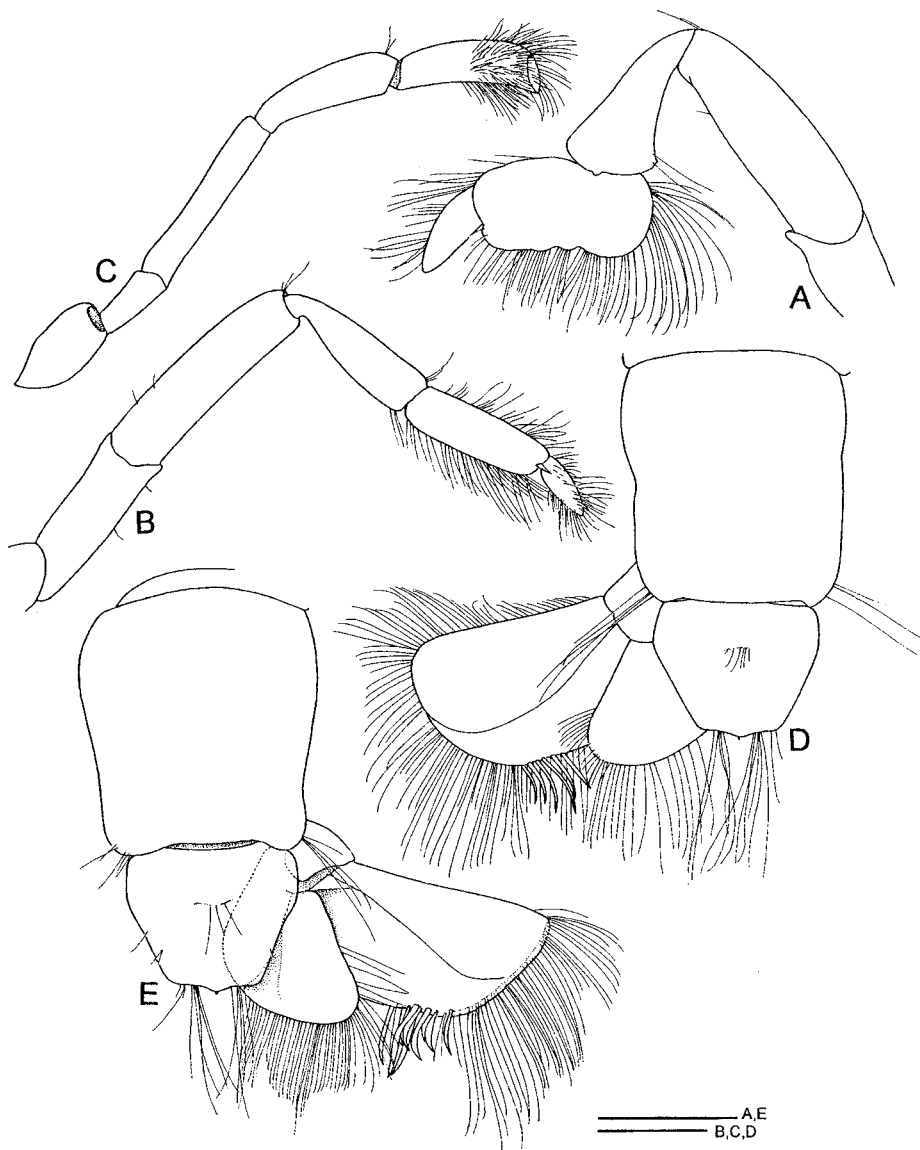


Fig. 22. *Callianassa plantei* n. sp.: A, pereiopod 3; B, pereiopod 4; C, pereiopod 5; D-E, abdominal somite 6 and tail-fan. A, D, SMF 29556, Nosy Kisimany N.E. of peninsula, 30 m depth, 18.iv.1969, R. Plante; B-C, MNHN Th 1454, 30 m depth, grab, 24.iv.1965, R. Plante; E, MNHN Th 1455, N. side of the Bay, Nosy Mitsio, 22.vi.1970, R. Plante. A-E, scales 1 mm.

P4 (fig. 22B) simple; ischium subtriangular, about 2.5 times as long as broad; merus oblong, 3.5 times as long as broad, 2.2 times length of ischium, carpus elongate, 3 times as long as broad, 1.6 times length of merus; propodus rectangular, 2.5 times as long as broad, 0.8 times length of carpus, subterminally bearing a

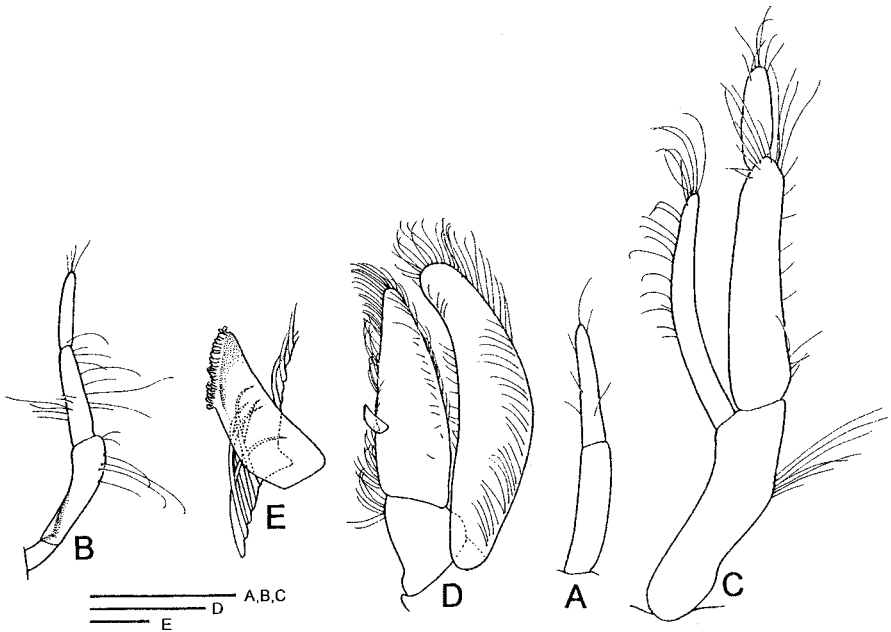


Fig. 23. *Callianassa plantei* n. sp.: A, male pleopod 1; B, female pleopod 1; C, female pleopod 2; D, male pleopod 3; E, appendix interna of pleopod 3. A, D-E, MNHN Th 1454, 30 m depth, grab, 24.iv.1965, R. Plante; C-D, SMF 29562, same location, 30 m depth, grab, 24.iv.1965, R. Plante. A-C, scales 0.05 mm; D, scales 0.1 mm; E, scale 0.001 mm.

sharp lateral spine on external surface; dactylus lanceolate, half length of propodus, external surface setose.

P5 (fig. 22C) subchelate; ischium subtriangular, about twice as long as broad; merus oblong, 4.5 times as long as broad, 2.2 times length of ischium, carpus elongate, three times as long as broad, 0.7 times length of merus; propodus ventrodistally forming a broad fixed finger, 3 times as long as broad, 0.8 times length of carpus, subterminally bearing a sharp ventral spine on lateral surface, setose in distal half of lateral surface; dactylus hooked towards external side of fixed finger, tip deflexed.

Abdominal somites (see fig. 18A, B) smooth, glabrous dorsally; somites 1-2 smooth and glabrous dorsally; pleurites 3-5 laterally with a vertical row of setae; abdominal somite 6 (see fig. 22D, E) slightly longer than broad, lateral margin broadly convex in anterior half.

Telson (see fig. 22D, E) trapezoidal in dorsal view; lateral margins parallel in proximal one-third, convergent in distal two-thirds, distal margin slightly convex, medially with a median spinule, dorsal surface convex, with a transverse row of setae medially. Uropodal endopod longer than telson, oval, 1.2 times as long as broad, posterior margin rounded; dorsal surface convex and without longitudinal

carina; uropodal exopod protruded, 1.8 times as long as broad; dorsal surface provided with anterodorsal plate in anterior third.

Male Plp1 (fig. 23A) uniramous, two-segmented. Male Plp2 not present. Plp3-5 (fig. 23D) narrow, biramous, endopod with appendices internae narrow (fig. 23E), projected from mesial margins.

Description of female. — Larger cheliped of female (figs. 20D, E, 21D, E) different from that of male and variable in shape. Merus spindle-shaped, bearing a median spine on ventral margin; carpus 0.7-1.1 times length of merus and 0.7-1.5 times as long as broad. Chela 1.9-2.8 times as long as carpus, palm about 1.2 times as long as broad and 1.0-1.8 times length of carpus; dactylus 2.5 times as long as broad, prehensile margin denticulate in proximal half and smoothly concave in distal half.

Female Plp1 (fig. 24B) uniramous, composed of three articles. Plp2 biramous, slender, endopod two-segmented (fig. 24C).

Remarks. — The male larger cheliped shows two types, as in *Callianassa japonica* (Ortmann, 1891), in which the *japonica* type and the *harmandi* type are known (Sakai, 1969, 2001). The male larger cheliped in the holotype bears two concavities on the prehensile margin of the dactylus (fig. 21C, D) as in a *harmandi*-type, while in the paratype, SMF 29556, it is simple (fig. 22C, D, E) as in the *japonica* type. The present new species is closely related to *Callianassa matzi* Sakai, 2002 in the form of the telson, which is convex around the distal angle of the anterior margin, and in the narrow ischium-merus of Mxp3. In *C. matzi*, the merus of the male larger cheliped is proximally provided with a sharp ventroproximal lobe, the propodus of pereopod 3 shows a peanut-shape, and the crista dentata of Mxp3 bears nine sharp spines (PMBC 15498), while in the present new species the merus bears 1-3 small, interspaced spinules near the ventroproximal angle, the propodus of pereopod 3 is of a peanut-shape, and the crista dentata bears more than seven distinctly sharper spines.

In *Callianassa jocularis* De Man, 1905, *C. tenuipess* Sakai, 2002, *C. chakratongae* Sakai, 2002, and *C. matzi* Sakai, 2002, the form of the ischium-merus of Mxp3 is narrow as in the present species. However, separated from all other callianassids only by the form of Mxp3, it seems difficult to establish a new genus only based on this single character.

Type locality. — Mozambique Channel, 30 m.

Distribution. — Mozambique Channel, 16-64 m.

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