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NOTES ON CARIDEAN SHRIMPS OF EASTER ISLAND WITH DESCRIPTIONS OF THREE NEW SPECIES

by

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Key words: Crustacea, Decapoda, Caridea; descriptions, new species; Easter Island.

A collection of caridean shrimps from Easter Island is described and figured. Three species are described as new to science: *Discias pascuensis, Palaemonella disalvoi* and *Periclimenes rapanui*.

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INTRODUCTION

After Holthuis (1972) summarized the known caridean decapods (Alpheidae excepted) of Easter Island no other publications concerning caridean shrimps of Easter Island have appeared. During fieldtrips executed between 1983 and 1986 Dr. L.H. DiSalvo collected Decapod crustaceans which were send to the Rijksmuseum van Natuurlijke Historie, Leiden for identification. Many of the species appeared to be new for the region. The material contained three new species belonging to the genera — *Periclimenes, Palaemonella* and *Discias*, which are described here. From the seven other species five had not been recorded from Easter Island before.

Disciadidae
Discias pascuensis spec. nov.
(figs. 1-3)

Holotype — Tahai, west coast of Easter Island, Chile; depth 39 m; in dead coral; February 1986. 1♀ (RMNH 37156 dissected) cl. 1.06 mm.

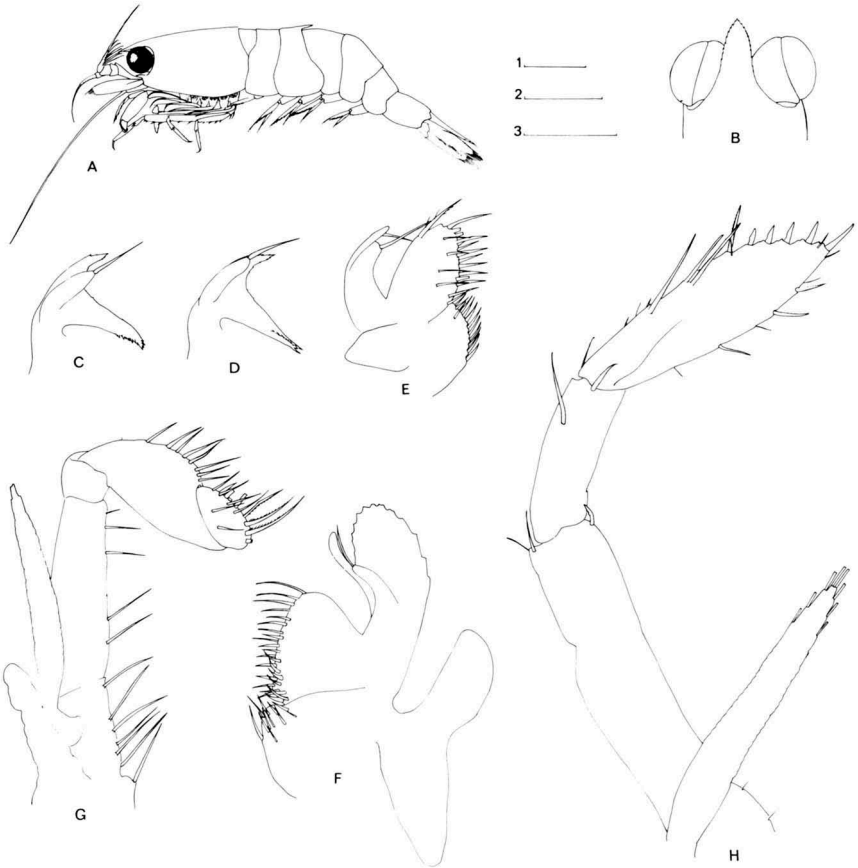

Fig. 1. *Discias pascuensis* spec. nov. A. Habitus, lateral view. B. Rostrum, dorsal view. C-D. Mandible. E. Maxillula. F. First maxilliped. G. Second maxilliped. H. Third maxilliped. (scale 1, C-H = 0.1 mm; scale 2, B = 0.5 mm; scale 3, A = 1 mm)

Description. — The rostrum nearly reaches the distal end of the proximal segment of the antennular penduncle; it tapers distally, at first slightly, then more strongly ending in an acute point. The lateral margins are serrate with 11 teeth on each side. The central part of the upper surface is raised.

The carapace is very thin. The orbit is rounded, and has the inferior orbital angle with a broad and acute marginal antennal spine. The anterior margin of the carapax below the antennal spine is without denticulations. The pterygostomian angle is rounded.

The second abdominal segment has a slender acute spine in the middle of the posterior margin. The posterior pleural margins of all abdominal segments are rounded, they are more strongly convex and more expanded than the

anterior pleural margins. The sixth abdominal segment is 1.3 times as long as the fifth and 1.2 times longer than wide.

The telson is 1.7 times as long as the sixth abdominal segment and 2.3 times longer than ist proximal width. The lateral borders are straight with about ten indistinct serrations, each provided with a short seta. The dorsal surface of the telson shows scattered small setae. The distal margin is rounded and bears three very small teeth of which the central one is longest. Three pairs of short submarginal dorsal spines are present. The proximal pair is situated at 0.61 of the telson length. The intermediate pair at 0.81 and the distal pair at 0.93 of the telson length. The posterior margin bears two pairs of long blunt spines of which the inner pair is feathered.

The eyes are large. The cornea is hemispherical. The eyestalk is short, distally as broad as the cornea, tapering proximally.

The antennular peduncle is shorter than the scaphocerite. No statocyst is present, the stylocerite is well developed, acutely pointed distally, not reaching beyond the eyes. The outer margin of the stylocerite is setose. The distal and inner lateral margin of the first antennular segment is setose. The second antennular segment is about as long as wide with the anterior margin setose. The third antennular segment is about twice as long as broad. The upper antennular flagellum has the two rami completely fused forming a basal thickening bearing seven groups of aesthetascs laterally. The distal portion of the flagellum tapers and is slender. The lower antennular flagellum is slender, tapering distally and is about as long as the upper antennular flagellum.

The antennal basicerite reaches $^{2}/_{5}$ of the scaphocerite. The flagellum is long and slender. The scaphocerite has its greatest width medially and is about 2.7 times longer than wide. The lateral margins are convex. The inner margin and the straight distal margin are setose. A distal tooth on the outer margin is absent.

The mandible has a serrate molar process, with sharp teeth distally. The incisor process is shorter than the molar process and forms an angle of about 90° with it, some fine serrations are present at the tip. The palp is oblong, unsegmented, nearly as long as the incisor process and carries one distal seta.

The maxillula is bilobed and has thick setose inner margins and a pseudobilobed palp with one seta.

The maxilla were lost during preparation.

The first maxilliped has a distally blunt, non-setiferous exopod nearly as long as the caridean lobe. The basal endite has a rounded anterior margin, and a straight median margin provided with setae. The palp is small bearing one distal long plumose seta. The coxal segment is broad, with the medial border produced bearing few setae; the lateral margin has a bilobed epipod.

Second maxilliped with the dactylar segment of the endopod small with about eight dentate setae and several simple setae. The propodal segment is broad, large, and has a convex antero-lateral margin bearing nine setae. The carpal segment is as long as wide. The merus and ischium are fused, the combined segment has straight lateral margins of which the median margin bears about six setae. The basal segment is robust with the median border bearing plumose setae. The lateral margin bears an epipod. The exopod bears four distal plumose setae.

Fig. 2. *Discias pascuensis* spec. nov. A. First pereiopod, lateral aspect. B. Detail of carpal region of first pereiopod, medial aspect. C. Detail of the chela of the first pereiopod, medial aspect. D. Second pereiopod. E. Detail of the chela of the second pereiopod. F. Antennula. (scale = 0.1 mm for A-E; scale = 0.4 mm for F)

The third maxilliped has the antepenultimate segment four times as long as wide with nearly straight parallel margins without setae, the distomedial corner is provided with a curved dentate seta, the distolateral corner has a few simple setae. The penultimate segment is about three times longer than wide and half as long as the antepenultimate segment, it is feebly curved and bears few setae. The terminal segment is lanceolate and compressed, somewhat twisted, nearly twice as long as the penultimate segment, and three times longer than wide; it bears five short stout spines on its distal dorsal margin and four dentate setae on its proximal dorsal margin, three dentate setae are present in distal half of ventral margin. The median surface of the fifth segment has transverse rows of dentate setae. The exopod is well developed and bears eight distal plumose setae.

The first pereiopods extend to the level of the end of the antennular peduncle. The chelae of the left and right pereiopod are similar. The dactylus is round and has a radula-like cutting edge. A spiniform unguis is present as well as a submarginal spine. The palm of the chela is about three times longer than wide, swollen proximally projecting backwards of the carpus, tapering and compressed distally, bearing few long dentate setae on its median surface and several cleaning setae distally of the hinge with the carpus. The carpus is small, short and compressed, not visible in lateral view, it fits into a recess in the ventral surface of the palm. The merus and ischium are fused, the combined segment is nearly as long as the palm, distally broadening with the dorsal aspect hollow to receive the swollen proximal part of the palm. A long seta is present on the latero-distal corner. The median straight margin bears few setae on the proximal half. The basis is robust with a straight median border bearing five plumose setae. The exopod is well developed and has eight plumose setae.

The second pereiopods are smaller than the first. The dactylus is compressed, 1.2 times longer than wide, $^1/_3$ of the palm length, with a spiniform preterminal unguis and nine short stout spines on the cutting edge which increase in size towards the unguis. The fixed finger is short; the distal half of the cutting edge has six short simple spines increasing in length towards the tip; near the basal part of the edge the ventral surface of the fixed finger carries a long serrate spine. The palm of the chela is subcylindrical proximally, becoming compressed distally, about twice as long as wide. Two serrate setae are present on the ventral surface of the palm. The carpus is short, without spines, its dorsal aspect is hemispherical. The merus and ischium are fused, the combined segment is about twice as long as the palm of the chela. It is three times longer than wide with a simple seta on the latero-distal corner, a few simple setae are present on the medial border. The basis is robust with a well developed exopod with 14 plumose setae.

The ambulatory pereiopods all possess well developed exopods similar to those of the first and second pereiopods. The third pereiopod reaches to the level of the distal margin of the scaphocerite and is longer and stouter than the fourth pereiopod which is longer and stouter than the fifth. The ratio of the lengths of pereiopods three, four and five is 1.5:1.2:1.0. The third pereiopod has a slender dactylus bearing two small spines on the corpus and one spine

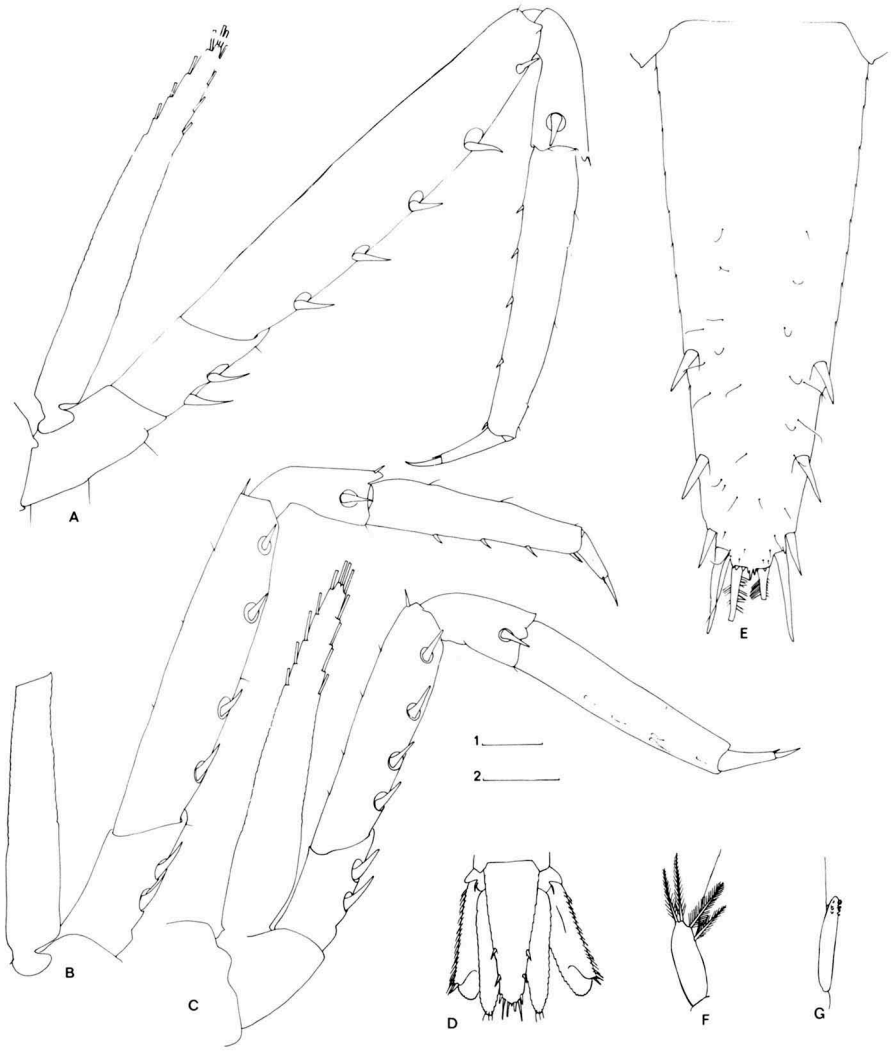

Fig. 3. *Discias pascuensis* spec. nov. A. Third pereiopod. B. Fourth pereiopod. C. Fifth pereiopod. D. Telson and uropods, dorsal aspect. E. Telson, dorsal aspect. F. appendix first pleopod. G. Appendix interna fourth pleopod. (scale1, A-C, E-G = 0.1 mm; scale 2, D = 0.5 mm)

subdistally. The unguis is spiniform. The propodus is six times longer than wide, feebly tapering distally; it bears five ventral spines. The carpus is twice as long as broad, $^2/_5$ of the propodus length, widening distally, and bearing a stout lateral subdistal spine. The merus is five times longer than wide, about four times longer than the carpus, bearing five evenly spaced stout ventral spines. The ischium is clearly separated from the merus by an oblique groove and bears two acute strong ventral spines. The basis has a few setae on the small ventral protuberance. The fourth pereiopod is similar to the third, bearing three small spines on the corpus of the dactylus and one in the distal part near the base of the unguis, four small spines on the inner margin of the propodus, one stout spine on the carpus, four similar spines on the merus and two on the ischium. The fifth pereiopod is twisted inward. One distal seta is present on the dactylus next to the unguis, four small spines on the ventral margin of the propodus, one strong spine on the carpus, four similar spines on the merus and two on the ischium.

The pleopods are normal. The endopod of the first pleopod is small and bears four plumose distal setae; it is without appendix interna. The endopod of the second pleopod has a slender appendix interna.

The exopods of the uropods have the lateral margin straight, with a dense submarginal fringe of setae ventrally, and terminating distally in an acute tooth. A large mobile spine is present medially of that tooth. The posterior margin nearly reaches the level of the distal margin of the telson. The endopods are narrower and longer than the exopods and reach beyond the distal margin of the telson.

Remarks. — The description is based on one dissected female specimen. Therefore no range in variation is known. From the species known (Kensley, 1983) — *Discias serrifer* Rathbun, 1902, *D. atlanticus* Gurney, 1939, *D. musicus* Holthuis, 1981, *D. serratirostris* Lebour, 1948, *D. exul* Kemp, 1920 and *D. brownae* Kensley, 1983, the last is most similar. Most striking differences are: (1) The mandibular palp of *D. pascuensis* consists of one segment, *D. brownae* has a mandibular palp with two segments; (2) *D. pascuensis* has four spines on the merus of pereiopod 4, *D. brownae* has only three spines there; (3) *D. pascuensis* has a rostrum tapering distally with 11 serrations on each side, *D. brownae* has a rostrum which has a median broadening and has 18-20 serrations on each side; (4) in *D. pascuensis* the scaphocerite reaches beyond the level of the distal margin of the antennular peduncle, in *D. brownae* the scaphocerite reaches to the level of the distal margin of the antennular peduncle.

Differences with *D. serratirostris* Lebour, 1948: (1) the fifth pereiopod of *D. serratirostris* has two meral spines that of *D. pascuensis* four; (2) the mandibu-

lar palp in *D. serratirostris* has five setae and in *D. pascusensis* only one; (3) the ischium-meral segment of the third maxilliped in *D. serratirostris* is strongly curved, in *D. pascuensis* it is almost straight; (4) the cutting edges of the chela of the second pair of pereiopods in *D. serratirostris* bear 12 spines, in *D. pascuensis* nine on the dactylus and six on the fixed finger.

Gnathophyllidae
Gnathophyllum americanum Guérin, 1857
(fig. 4)

Gnathophyllum americanum Guérin, 1857: viii, pl.2 fig. 14; Holthuis 1949: 244-250, figs. 5, 6; 1978: 49.
Gnathophyllum fasciolatum Chopra, 1930: 114, 126.
Gnatophyllum americanum — Moreno, Bacallado & Pérez, 1982: 219, fig. 4b.

Material. — Hanga Piku, Easter Island, Chile; in dead coral; in tide pool; 1985; 2♀ cl. 3.3 mm (RMNH 37157).

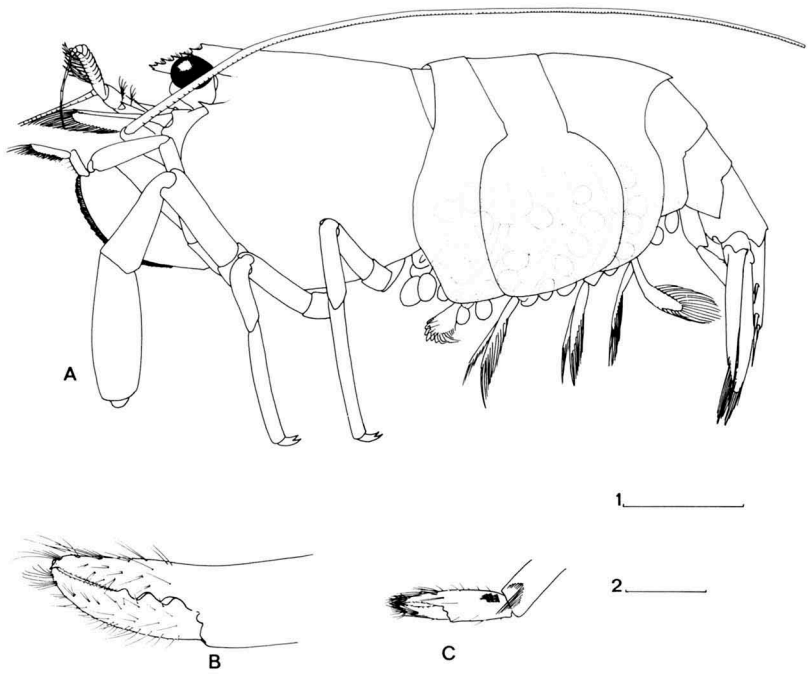

Fig. 4. *Gnathophyllum americanum*. Habitus ♀ov, lateral view. B. Detail chela second pereiopod. C. Detail chela first pereiopod. (scale 1 = 2 mm for A; scale 2 = 1 mm for B and C)

Remarks. — No differences were noted regarding the description given by Holthuis (1949) except for the number of dorsal rostral spines. Six dorsal rostral spines are present in the Easter Island specimen and 4-5 in the specimens of the Canary Islands (Holthuis 1949). The colourpattern is also similar to the pattern of the Atlantic specimens (L.H. DiSalvo, pers. comm.). The species was not found before on Easter Island and this is the most eastern record for the Pacific Ocean.

Distribution. — The species is known from the litoral of the Indowest Pacific region (from East Africa to Polynesia) and the western (West Indies) and eastern (Canary Islands) Atlantic.

Palaemoninae

Brachycarpus biunguiculatus (Lucas, 1846)

(fig. 5)

Palaemon biunguiculatus Lucas, 1846: 45, pl. 4 fig. 4.
Brachycarpus biunguiculatus — Holthuis, 1952: 3-10, pl. 1 fig. a-q (synonymy); 1972: 33.

Material. — Tahai, west coast of Easter Island, Chile; depth 39 m; in dead coral; February 1986; 1♀ cl. 4.65 mm (RMNH 37158).

This pantropic species was first recorded from Easter Island by Holthuis (1972). The two branches of the upper antennular flagellum are fused for 7 segments. The specimen fits the descriptions given by previous authors.

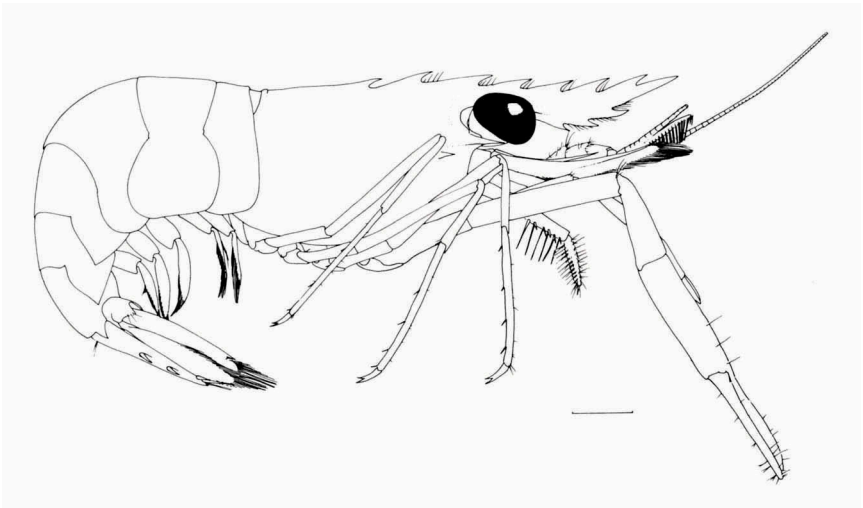

Fig. 5. *Brachycarpus biunguiculatus*. Habitus, lateral view. (scale = 1 mm)

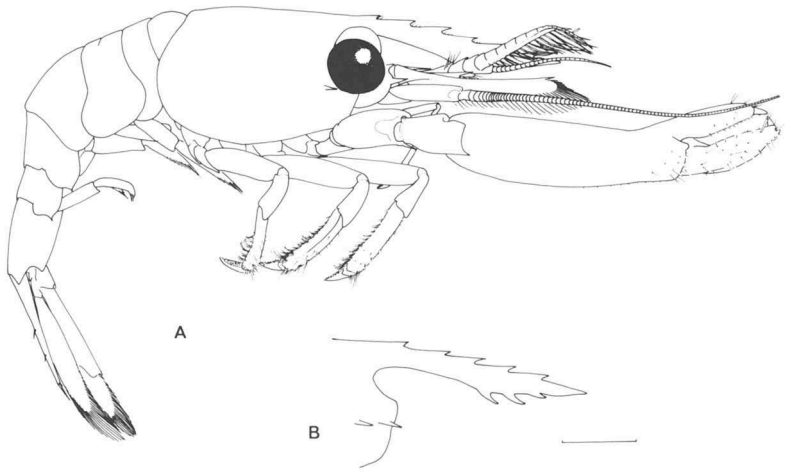

Fig. 6. *Harpiliopsis beaupresii*. A. Habitus, lateral view. B. Rostrum, lateral view. (scale = 1 mm)

Pontoniinae
Harpiliopsis beaupresii (Audouin, 1826)
(fig. 6)

Palaemon Beaupresii Audouin, 1826: 91.
Palemon Beapresii — Roux, 1831: 16.
Harpilius Beaupresii — Heller, 1861: 27.
Pontonia (Harpilius) dentata Richters, 1880: 165, pl. 17 figs. 36-38.
Harpilius beaupresi — Borradaile, 1917: 324, 379, pl. 55 fig. 21.
Harpilius beaupresi — Tattersall, 1921: 389, pl. 28 fig. 8.
Harpilius beaupresii — Balss, 1927: 223.
Harpiliopsis beaupresi — Edmondson, 1933: 213.
Harpilus beaupresi — Bruce, 1977: 8.
Harpiliopsis beaupresii — Bruce, 1980: 276.

Material. — In front of Hanga Piko, Easter Island, Chile; in living *Pocillopora damicornis* (Linnaeus, 1758); depth 43 m; February 1986; 1♀ cl. 2.0 mm (RMNH 37159).

Remarks. — A common coral-associated species (mostly with pocilloporid corals). Known from Easter Island (Holthuis, 1972).

Distribution. — Widespread and common throughout the Indo-West Pacific region.

Palaemonella disalvoi spec. nov.
(figs. 7-12)

Holotype. — Tahai, west coast of Easter Island; depth 35 m; in substrate of dead coral; 1985; 1♀ov cl. 2.4 mm (RMNH 37160).

Paratypes. — Off Hanga Rao, Easter Island, Chile; depth 60 m; in dead coral; February 1986; 2♀ov. cl. 2.9 and 2.6 mm, 2♂ cl. 2.5 mm (RMNH 37161). — Tahai, west coast of Easter Island; depth 39 m in dead coral; February 1986; 1♂ cl. 2.8 mm (RMNH 37162 dissected). — Motu Tautara, Easter Island; depth 33 m; in dead coral; 1985; 1 juvenile cl. 1.4 mm (RMNH 37163).

Description. — A small species of pontoniine shrimp. The carapace is smooth. The rostrum is straight directed slightly upwards reaching the tip of the scaphocerite. The rostral lamina is without distinct lateral carina. The dorsal margin bears six or seven acute teeth, of which the first is situated on the carapace at 0.3 of the carapace length and is separated from the other dorsal teeth by a larger gap than is found between the other teeth which are evenly spaced. The last tooth is small and close to the acute distal point of the rostrum. The ventral margin is almost straight and bears two acute teeth on its proximal half. A supraorbital spine is present, acute, located just in front of the level of the second rostral tooth. A postorbital ridge is present. The lower orbital angle is not produced. A hepatic spine is present straight below the supraorbital spine, on a slightly lower level than the antennal spine. The antero-lateral angle of the carapace is broadly rounded and feebly produced. The posterior border of the branchiostegite is also broadly rounded. The abdominal segments are smooth. The third abdominal segment is slightly produced. The fourth abdominal segment has the posterior margin of the pleura bluntly rounded. The fifth abdominal segment with this margin angular. The sixth abdominal segment has 1.7 times the length of the fifth segment. The telson is 1.6 times longer than the sixth abdominal segment and twice as long as its posterior width. The lateral margins are almost straight, ending in a broadly V-shaped posterior margin with a central tooth. Two pairs of dorsal submarginal spines are present at 0.38 and 0.60 of the telson length. Three pairs of distal marginal spines are present. The outer pair is stout and short, the intermediate pair is 0.36 times the telson length, the central pair is feathered, 0.42 times the length of the intermediate spines. At the dorsal base of the central pair of spines three or four simple setae are present directed disto-laterally, the longest placed laterally.

The eyes are well developed with a hemispherical cornea. A small dorsal ocellus is present. The podophthalmite is only slightly narrower than the cornea.

The antennular peduncle is normally developed and reaches about as far as the tip of the rostrum. The outer margin of the segment is slightly sinuous, with

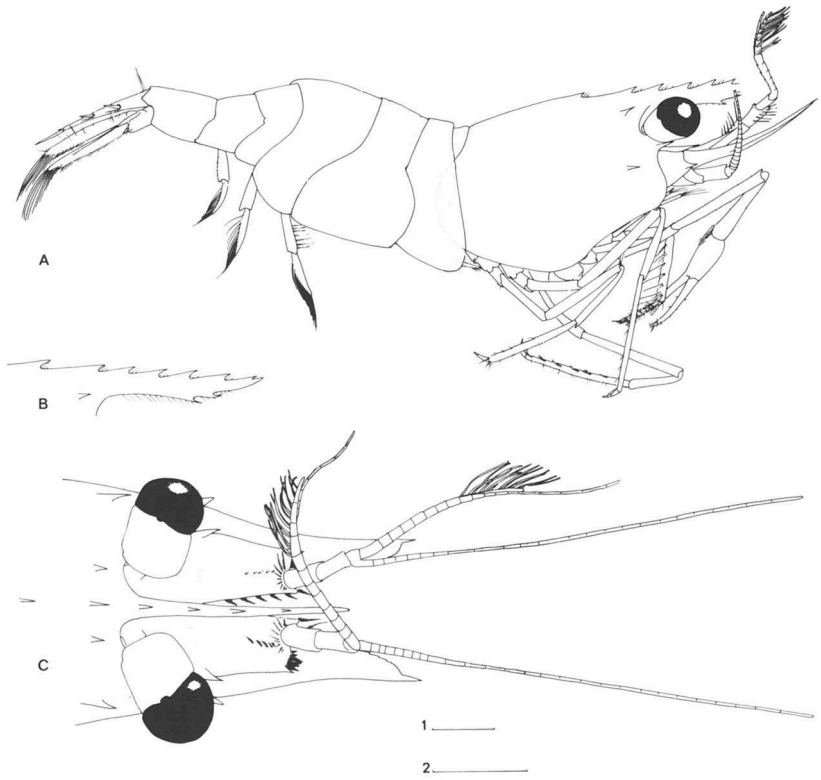

Fig. 7. *Palaemonella disalvoi* spec. nov. A. Habitus ♀ov, lateral view, second pereiopods missing. B. Rostrum, lateral aspect. C. Anterior region, dorsal aspect. (scale 1, a, b = 1 mm; scale 2, c = 1 mm)

a well developed, slender, acute disto-lateal tooth. The outer half of the anterior margin is broadly convex and slightly produced medially. The median border of the segment is straight and has several plumose setae. A statocyst is well developed. The stylocerite is nearly as long as half the basal segment. The intermediate segment is about twice as long as wide and has about 0.3 times the length of the basal segment. The ultimate segment is as long as the intermediate segment but more slender. The upper flagellum is biramous with the rami fused for the first nine segments. The short ramus consists of two free segments, the free part of the longer ramus consists of seven or eight slender segments. Eight groups of aesthetascs are present.

The antenna consists of a robust basicerite with an acute lateral tooth. The carpocerite is about three times longer than wide. The scaphocerite is well developed with a concave lateral border bearing an acute distal tooth that

exceeds the anterior margin of the lamina. The lamina is four times longer than wide, with its greatest width proximally. The median border is feebly convex in the distal part and strongly convex in the proximal part. The flagellum is long and slender.

The mandible is robust and provided with a two-segmented palp. The palp has three simple setae on its ultimate segment. The molar process is stout with six blunt teeth distally and a central area with short setae. The incisor process is also robust with three distal acute teeth of which the middle one is shortest.

The maxillula has a slender upper lacinia with on the dorsal margin about nine stout simple spines and three serrate setae; the lower margin shows two serrate setae. The lower lacinia is also slender with numerous serrate setae distally and one plumose setae on the lower margin. The palp is bilobed and bears one plumose seta on its distal lobe.

The maxilla has a stout tapering palp without setae. The distal endite is well developed, deeply divided in two similar lobes with many slender long simple distal setae. The proximal endite is lacking. The scaphognathite is broad centrally and proximally, tapering distally, about three times longer than its proximal width.

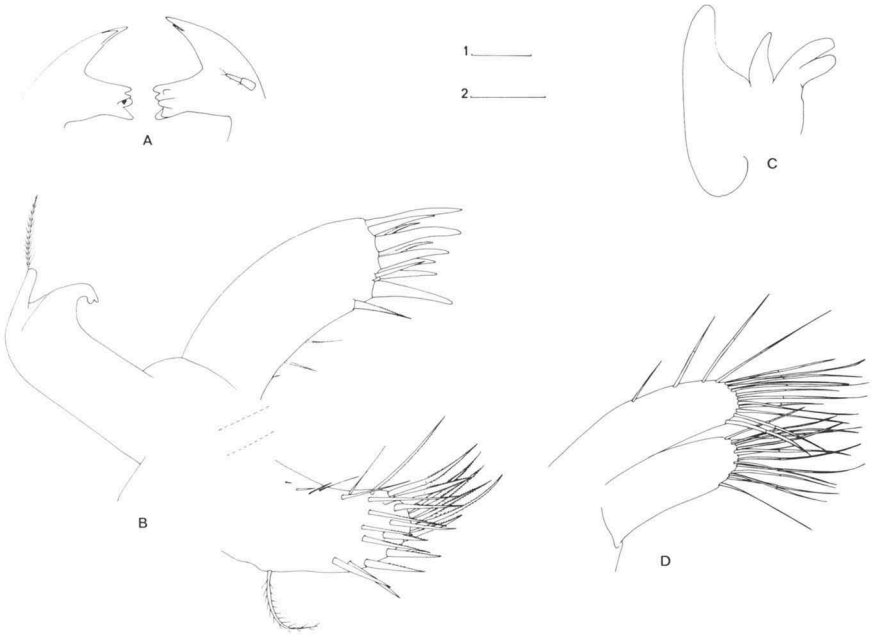

Fig. 8. *Palaemonella disalvoi* spec. nov. A. Mandible, rostral and caudal view. B. Maxilla. C. Maxillula, setae omitted. D. Maxillula, detail setation. (scale 1, B, D = 1 mm; scale 2, A, C = 0.5 mm)

Fig. 9. *Palaemonella disalvoi* spec. nov. A. First maxilliped, setae omitted. B. First maxilliped, detail setation. C. Second maxilliped, setae omitted. D. Second maxillidped, detail setation. (scale 1, B, D = 0.1 mm; scale 2, A, C = 1 mm)

The first maxilliped has a palp with one plumose seta placed halfway the distal border. The basal endite is large with the anterior margin convex with long simple setae and the median margin straight with several rows of simple serrate shorter setae. The coxal endite is separated from the basal endite by a deep incision and bears several rows of simple and serrate setae; the setae of the anterior most row are long, distally curved, and serrate. One plumose seta arises from the anterior margin. The caridean lobe is small with 15 marginal plumose setae. The exopod is long with seven distal plumose setae. The epipod is large and more or less triangular.

The second maxilliped has the dactylar segment three times longer than wide bearing robust serrate, distally hooked, setae on the median border. Short plumose setae are present on the distal $^2/_3$ of the ventral surface of the dactylar segment, furthermore, five long dentate setae are present distally

here. A few simple setae are present proximo-medially. The propodal segment has a strongly produced convex antero-medial border with a row of nine robust setae that are serrate in the middle part and about eight simple slender setae. The median angle bears one long simple seta. The carpal segment is short somewhat wider than long with one anterior distal simple short seta. The meral segment is about three times longer than the carpal segment and twice as long as wide with a few simple short setae. The ischio-basal segment is without setae and 1.8 times longer than wide, nearly completely fused with the coxal segment separated from it by a medial furrow. The coxal segment has two rows of simple slender setae. The epipod is subtriangular. The exopod is well developed and bears eight distal plumose setae. The caridean lobe is rudimentary present.

The third maxillipid has the antepenultimate segment of the endopod almost completely fused with the basal segment and is strongly bowed, about

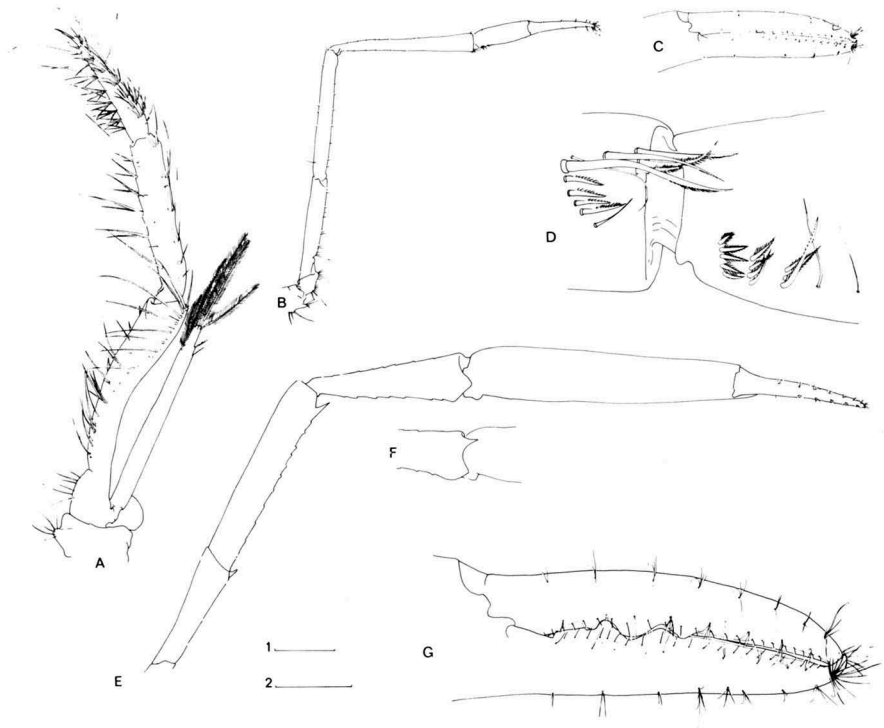

Fig. 10. *Palaemonella disalvoi* spec. nov. A. Third maxilliped. B. First pereiopod. C. First pereiopod, detail chela. D. First pereiopod, detail carpo-propodal joint. E. Second pereiopod, ventral aspect. F. Second pereiopod, dorsal aspect carpo-propodal joint. G. Second pereiopod, detail chela. (scale 1, B, E, F = 1 mm, D = 0.1 mm; scale 2 A, C, G, = 0.5 mm)

five times longer than its distal width, and with four small spines along the distal median border. The lateral border bears several groups of slender dentate setae with a longintudinal row of stouter setae ventrally. The penultimate segment is 0.85 times the length of the antepenultimate segment and about 5.5 times longer than wide, with serrate setae along the medial and lateral borders. The terminal segment is about 0.6 times the penultimate segment length and tapering distally to a strong terminal spine; it has six groups of finely serrate setae along the median and lateral borders. The basal segment bears a few long setae medially and the coxal segment has a small setose median process. The exopod is normally developed, reaching almost to the distal border of the antepenultimate segment of the endopod; it bears six long plumose setae distally. The coxal segment bears a rounded epipod and a small arthrobranch is present.

The first pereiopod is slender. The subcylindrical palm is about 0.45 of the total chela length, and three times longer than wide. The fingers are almost straight, slender with straight cutting edges and hooked points. Four to five groups of simple setae are present on the dorso- and ventro-medial surfaces. The carpus is distinctly longer than the chela broadening distally becoming as broad as the palm. Cleaning setae are present on the ventral surface at both sides of the carpalpropodal hinge: ten dentate robust setae are present on the carpus of which one is very long and S-shaped, three transverse rows of rather short dentate setae are present on the propodus. The merus is nearly as long as the carpus, nine times longer than wide with straight parallel margins. The ischium is 0.6 times the merus length, five times longer than wide with ventro-medial simple setae. The basis is short with a distal and a proximal setose median tubercle. The coxa also possess a distal and proximal setose tubercle.

The second pereiopod has a subcylindrical palm which is 0.68 times the totale chela length and 3.5 times longer than wide, almost without setae. The fixed finger and dactylus both have three teeth on the proximal half of the cutting edges. The distal half of the cutting edges is straight. Both fixed finger and dactylus have eight groups of simple setae near their respectively ventral and dorsal margins. The carpus is 1.16 times longer than the dactylus, broadening distally with a medial and ventro-lateral blunt tooth and a dorso-lateral acute tooth. About eight tubercles or indistinct serrations are present on the ventral and dorsal surface. The merus is 1.2 times longer than the carpus and seven times longer than wide. A very acute, robust subdistal tooth is present on the ventral surface. About ten tubercles or serrations are present on the ventral surface. The ischium is as long as the carpus, broadening distally, bearing an acute subdistal tooth on its ventral side. A few ventral tubercles are present. The basis is without special features.

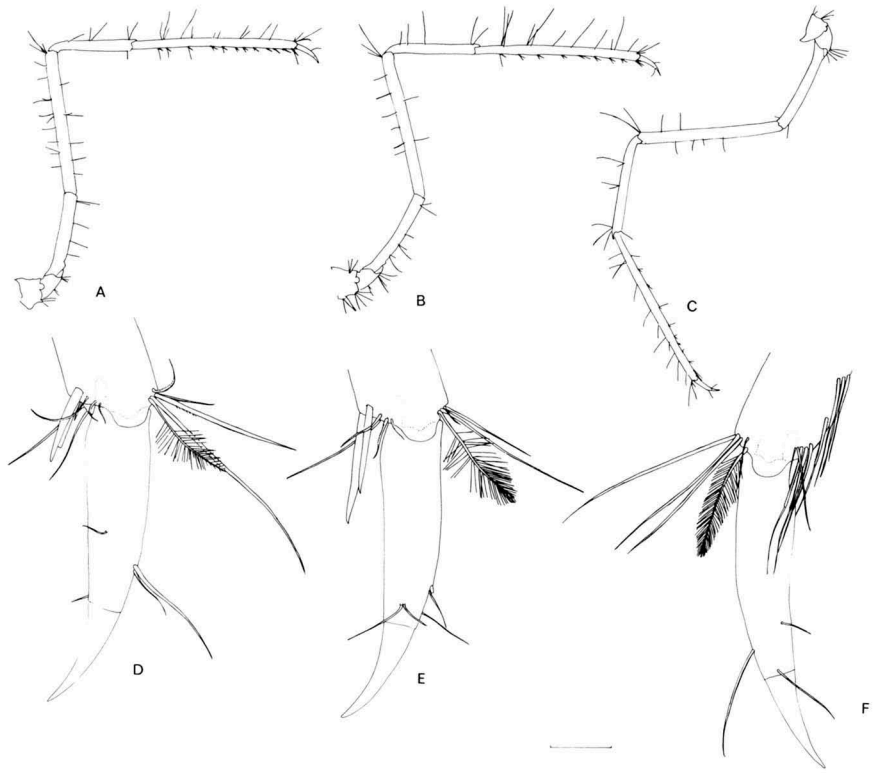

Fig. 11. *Paleamonella disalvoi* spec. nov. A. Third pereiopod. B. Fourth pereiopod. C. Fifth pereiopod. D. Third pereiopod, detail dactylus. E. Fourth pereiopod, detail dactylus. F. Fifth pereiopod, detail dactylus. (scale A-C = 1 mm; D-F + 0.1 mm)

The ambulatory pereiopods are equal in length. The dactyli are long and slender, simple and curved, with two dorsal simple setae. The ungues are spiniform. The propodi are straight, about 20 times longer than wide. The carpi are half as long as of the propodi, without special features. The meri are 1.8 times longer than de carpi and 11 times longer than wide. The ischia are all as long as the carpi, six times longer than wide. The basis are without special features. The coxae have a medial setose protuberance. The propodus of the third pereiopod bears 13 ventral spines, the propodus of the fourth pereiopod 10 and the propodus of the fifth pereiopod 9. The distal part of the propodus of the fifth pereiopod has three transverse rows of long, proximally dentate setae.

The fourth thoracic sternite bears a long slender median process between de coxae of the first pereiopods. The fifth thoracic sternite bears a pair of large acute submedian teeth with sinuous lateral borders just proximal of the coxae of the second pair of pereiopods. The eighth thoracic sternite bears a stout

anteriorly directed median process.

The endopod of the first pleopod is about four times longer than its central width and has the distal portion expanded medially. The proximal $^2/_3$ of the median margin bears 10 setae, from long slender simple proximally to short curved dentate more distally. The distal part of the endopod has 17 setae, small curved dentate setae medial to long slender plumose setae lateral. The proximal lateral border is without setae. The endopod of the second pleopod in males is small and bears a well developed appendix interna which extends far beyond the tip of the endopod. The appendix masculina is very large, almost as long as the exopod and twice as long as the appendix interna; it bears about 37 simple short setae.

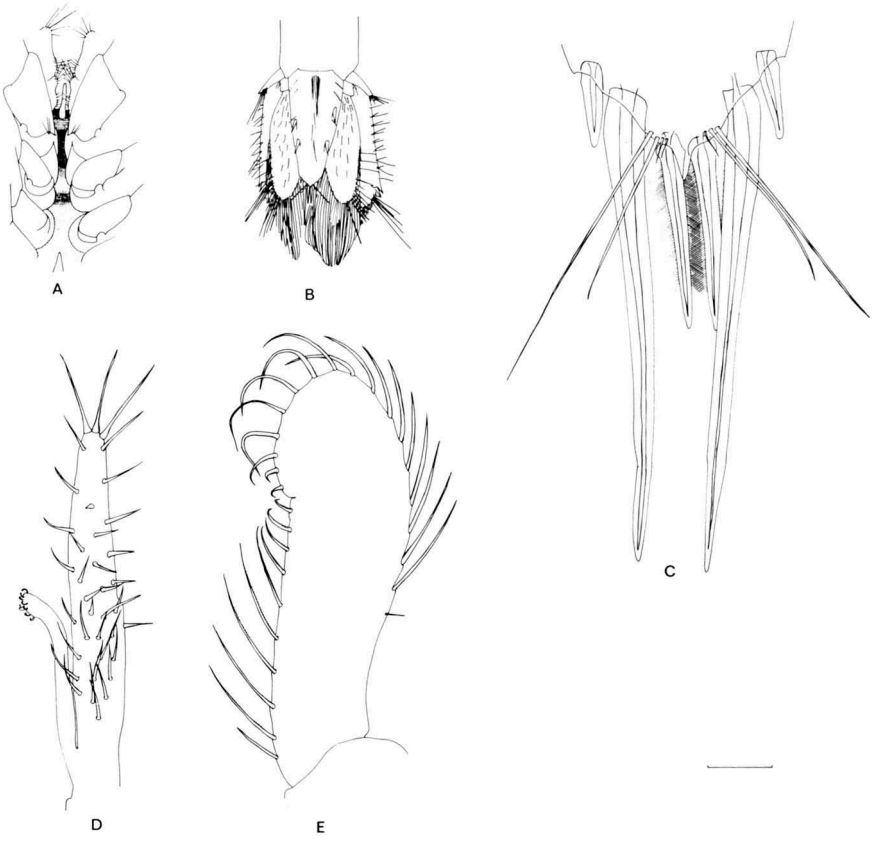

Fig. 12. *Palaemonella disalvoi* spec. nov. A. Scematic drawing of ventral thoracic region. B. Telson and uropods, dorsal aspect. C. Telson, distal part. D. Second pleopod male, detail appendix masculina and appendix interna. E. Endopod of first pleopod male. (scale B = 1 mm; C-E = 0.1 mm)

The uropods are longer than the telson. The exopod has a straight lateral border terminating in an acute tooth with a robust articulating spine beside it. Both endopod and exopod have simple setae on the dorsal surface.

Remarks. — *Palaemonella disalvoi* is closely related to *P. crosnieri* Bruce, 1978. The most striking difference is found in the rostral formula which is $^{8}/_{3}$ in *P. crosnieri* and $^{6\text{-}7}/_{2}$ in *P. disalvoi*. *P. crosnieri* was found in India and only one specimen is known at present. About the infraspecific variation nothing is known yet. Without exception the five specimens of *P. disalvoi* have the rostral formula $^{6}/_{2}$ or $^{7}/_{2}$. As long as no other records are available which could clarify the relation between de forms they will be treated as different species.

Periclimenes rapanui spec. nov.
(fig. 13-15)

Holotype. — Tahai, W. coast of Easter Island, Chile; depth 39 m; in dead coral; February 1986; 1♀ cl. 1.59 mm (RMNH 37164).

Paratypes. — Tahai, W. coast of Easter Island, Chile; depth 39 m; in dead coral; Februari 1986; 1♀ cl. 1.56 mm (RMNH 37165, dissected). — Off Hanga Rao, Easter Island; depth 30 m; in dead coral; February 1986; 3♀ov. cl. 1.56, 1.60, and 1.65 mm (RMNH 37166).

Description. — A small sized species of *Periclimenes*.

The rostrum is well developed, slender, distally acute, slightly arched upwards, reaching the distal end of the scaphocerite. The dorsal lamina of the rostrum has seven evenly spaced teeth. Between the teeth 3 to 5 feathered setae are present. The epigastral tooth is situated at 0.3 of the postorbital carapaxlength. The first rostral tooth is situated above the postorbital margin. The lateral rostral carinae are feebly developed and lie close to the lower margin of the rostrum. The lower margin of the rostrum has three acute teeth situated in the distal half.

The orbit is distinct. A supraorbital spine is absent. A postorbital ridge is present. The inferior orbital angle is strongly produced and distally acute. The antennal spine is well developed, submarginal, longer than and just below the inferior orbital angle. The hepatic spine is as long as the antennal spine and situated somewhat lower than the antennal spine, slightly in advance of the level of the epigastric spine. The anterolateral angle of the carapace is rounded. The carapace is smooth.

The abdomen is well developed, not carinate. The anterior margin of the second pleuron is straight, its posterior margin rounded. The third abdominal segment is without hump; the posterior lateral margin of the pleuron is rounded, ventrally bearing setae. The fourth abdominal segment has posterolaterally rounded pleura, which ventrally bear setae. The pleura of the

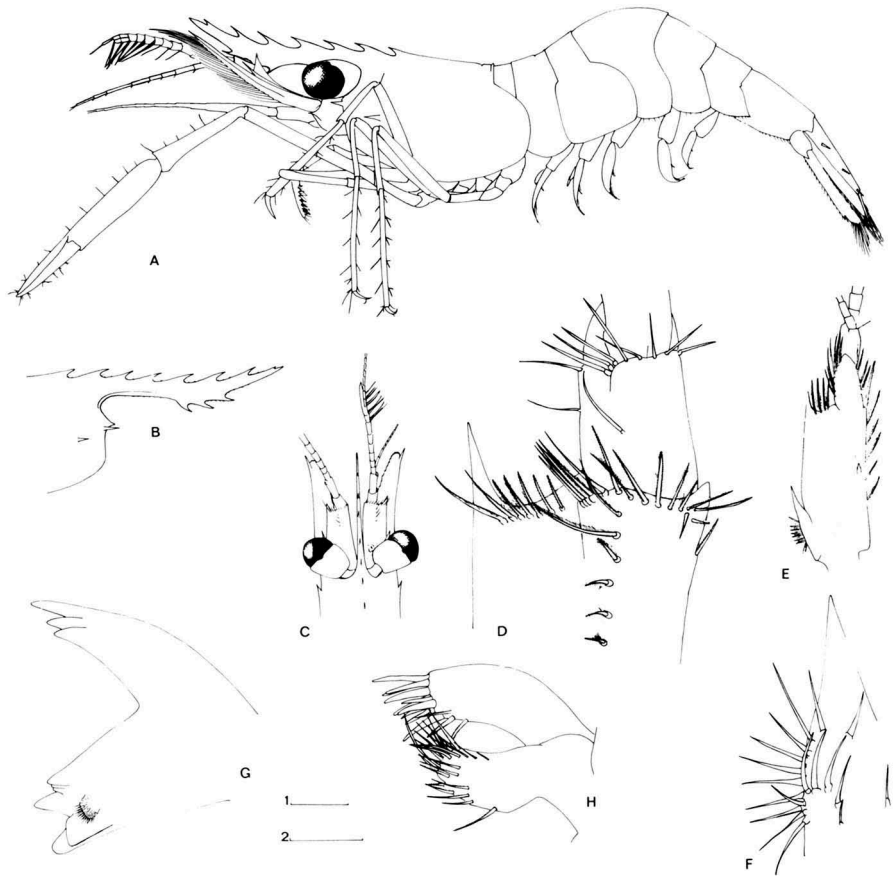

Fig. 13. *Periclimenes rapanui* spec. nov. ♂. A. Habitus, lateral view. B. Rostrum, lateral view. C. Anterior region, dorsal aspect. D. First segment of antennular segment, dorsal view of distal region. E. First segment of antennular peduncle, ventral view. F. First segment of antennular peduncle, dorsal aspect of basal lateral part. G. Mandible. H. Maxillula. (scale 1, A, C = 1 mm, D, F-H = 0.1 mm; scale 2, E = 0.5 mm)

fifth abdominal segment have acute posterior angles and ventral margins with setae. The sixth abdominal segment is nearly twice as long as deep, and twice as long as the fifth abdominal segment. The telson is about three times as long as its anterior width and has nearly straight lateral margins. Two pairs of robust dorsal spines are present at $^1/_3$ and $^2/_3$ of the telson length. The posterior margin of the telson is triangular with a median point. The lateral posterior spines are shorter than the dorsal spines. The intermediate spines are very long, 0.4 times the telson length. The submedian spines are plumose, 0.5 times as long as the intermediate spines. A pair of setae is situated near the posterior margin of the

telson between intermediate and submedian posterior spines.

The eyes are well developed and have large globular cornea. The dorsal accessory ocellus is inconspicuous. The podophthalmite is subcylindrical and tapers proximally; it is about as long as wide. The basiophthalmite is short.

The antennular peduncle reaches $^4/_5$ of the length of the rostrum. The proximal segment is 3.0 times longer than wide with straight lateral and median borders; the lateral border has an acute distolateral spine; the anterior margin is sinuate; the lateral margin straight. A small acute tooth is present ventrally at 0.5 of the length of the median border. The stylocerite is well developed, acute, reaching half the length of the proximal segment. The statocyst is normally developed. The intermediate segment is 1.5 times as long as wide. The distal segment is 1.5 times as long as the intermediate segment and 3.0 times longer than wide. The upper flagellum is biramous, with the proximal seven segments fused. The free part of the shorter ramus consists of two segments, the free part of the slender longer ramus of six segments. Aesthetascs are present on the fused portion. The lower flagellum is slender, filiform with about 17 segments.

The antenna has a basicerite with a well developed lateral spine. The ischiocerite and merocerite are normal. The carpocerite is about 3.0 times longer than broad, and reaches $^2/_3$ of the length of the antennular peduncle.

The scaphocerite is 4.5 times longer than its central width, and reaches the end of the rostrum; the lateral border is slightly concave with a very acute distolateral tooth; its lamina is slender and does not extend beyond the distolateral tooth; the anterior margin is narrow; the median border is slightly convex. The flagellum is well developed, equal to about 6 - 7 times the post-orbital carapax length.

The mandible is normally developed, without palp. The right molar process is robust with six blunt teeth and one knob with setae. The incisor process bears three acute teeth, the outer teeth being the larger.

The maxillula has a palp. The upper lacinia has about 13 stout spines of which ten are simple and three plumose. The lower lacinia is somewhat shorter and has numerous short plumose setae.

The maxilla has a slender palp with two plumose setae situated halfway the lateral margin. The basal endite is deeply bifid with a somewhat stouter distal lobe; both lobes have non-plumose setae. The scaphognathite is well developed, about 2.5 times longer than its central width. The posterior lobe is small and rounded, the anterior lobe broad, distally emarginate.

The first maxilliped has a palp with one stout plumose seta, situated subterminally. The basal endite has a straight median border with feebly plumose setae, and a broadly rounded anterior border with longer feebly setulose setae,

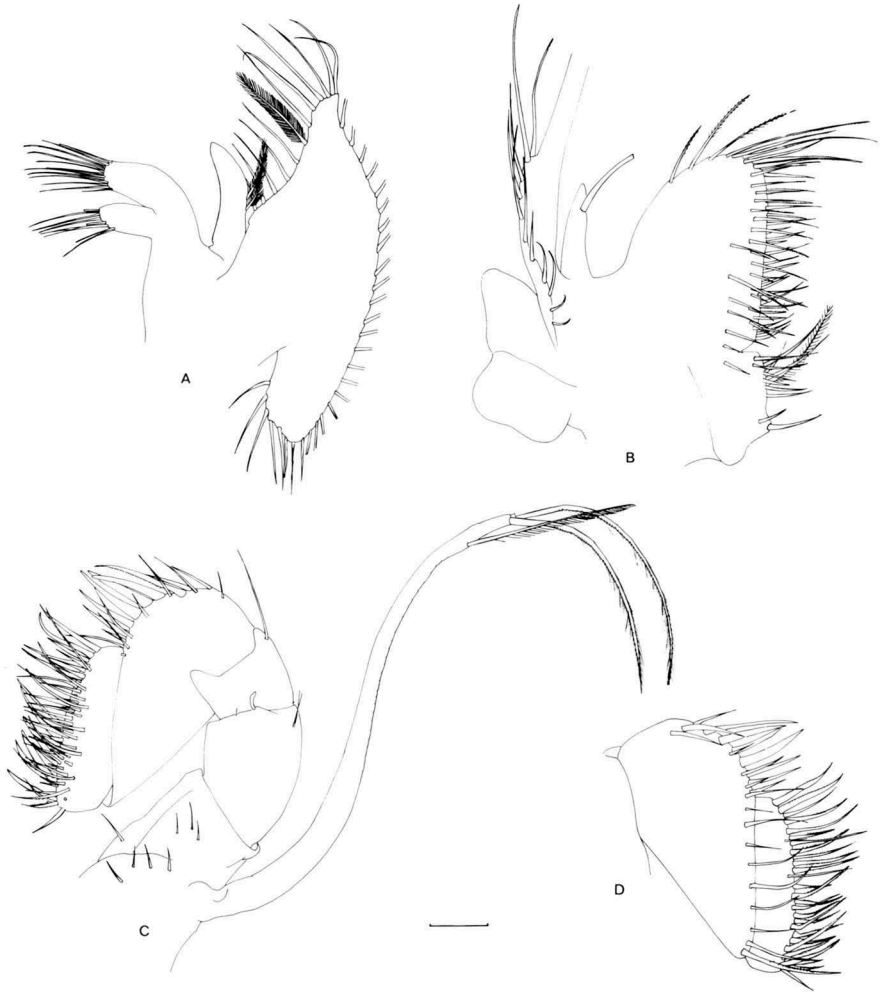

Fig. 14. *Periclimenes rapanui* spec. nov. ♂. A. Maxilla. B. First maxilliped. C. Second maxilliped, rostral view. D. Second maxilliped, detail two ultimate segments, caudal aspect. (scale = 0.1 mm)

it is separated from the coxal portion by a small notch. The coxal portion has short simple setae. The exopod is well developed and bears terminal plumose setae. A small elongated caridean lobe, and a somewhat bilobed more or less triangular epipod are present.

The second maxilliped has the dactylar segment 3.0 times longer than broad, with numerous stout coarsely denticulated spines along the median border. The propodal segment has the antero-median border rounded with long slender setae and stout denticulated spines. The median border of the

propodal segment is straight and has about 10 denticulated spines. The exopod is well developed; it bears a few terminal plumose setae.

The third maxilliped has a slender endopod that reaches almost to the distal end of the stylocerite. The epipod and arthrobranchs are present. The merus and ischium are separated by a joint. The basis and ischium are more or less fused. The merus is 3.0 times longer than wide and nearly as long as the

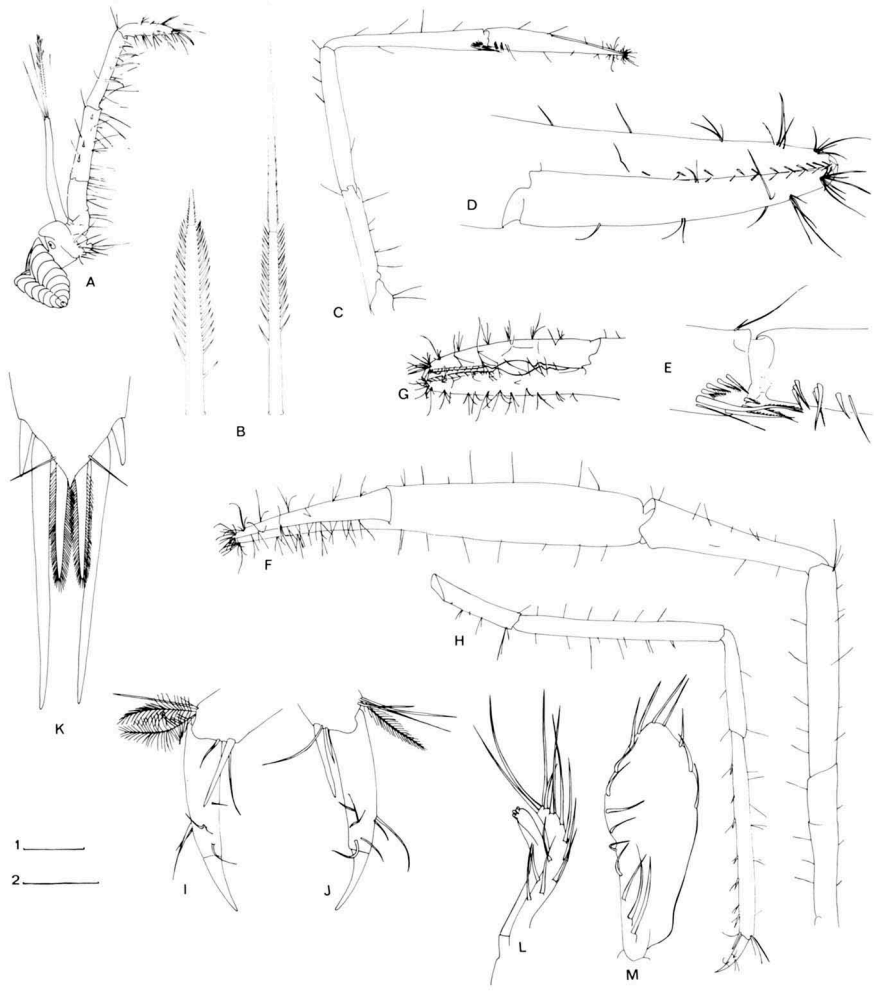

Fig. 15. *Periclimenes rapanui* spec. nov. ♂. A. Third maxilliped. B. Third maxilliped, semi-schematic drawing of dentate setae on meral and carpal segments. C. First pereiopod. D. First pereiopod, detail chela. E. First pereiopod, detail carpo-propodal joint. F. Second pereiopod. G. Second pereiopod, detail chela.. H. Third pereiopod. I. Third pereiopod, detail dactylus. J. Fifth pereiopod, detail dactylus. K. Telson, detail distal end. L. Appendix interna and masculina. M. Endopod of first pleopod in male. (scale 1, D, E, I-M = 0.1 mm; scale 2, A, C, F-H = 0.5 mm)

penultimate segment; it bears four short spines and some long denticulated setae. The penultimate segment is five times longer than wide and has the sides parallel; the median border has five or six denticulated setae; the lateral and distal borders have a few simple setae. The ultimate segment is 0.60 times the penultimate segment, it tapers distally and ends in a sharp angular unguis which has ca. 0.3 times the length of the ultimate segment. The ultimate segment has four rows of denticulated setae on the median and lateral borders. The exopod is well developed, it reaches the distal border of the antepenultimate segment and bears four plumose setae distally. The coxa bears a rounded epipod and a lamellar arthrobranch.

The first pereiopods are slender, reaching the anterior point of the scaphocerite. The palm of the chela is subcylindrical, about three times longer than wide with three rows of cleaning setae of the proximal ventral part. The fingers are 1.25 times the palm length, slender, and have straight cutting edges and short hooked tips, several groups of simple setae are present. The carpus is 1.25 times the length of the chela, broadening distally; it has mostly eight serrulate cleaning setae of which the most proximal longest seta is S-shaped. The merus is 0.9 times the carpus length. The ischium is 0.8 times the merus length. The coxa and basis have two median knobs each.

The second pereiopods are robust. The merus reaches the distal part of the stylocerite. The palm is subcylindrical, almost four times longer than wide, laterally compressed, 1.6 times as long as the fingers. The fingers are straight or slightly curved and have hooked distal tips bearing many groups of simple setae. The distal $^2/_3$ of cutting edges are straight; in males one median notch on each finger may be present. The carpus broadens distally and is about 0.5 the length of the chela. The merus is 1.1 times longer than the carpus and 1.4 times longer than the ischium. The basis and coxa are without special characters.

Pereiopods 3, 4 and 5 are slender, subequal, the third reaching the anterior tip of the scaphocerite. The dactyli are slender with the unguis 0.5 the length of the carpi. The width of the carpi is proximally 0.25 of the dactyli length. No disto-ventral accessory spines are present. Several groups of sensory setae are present. The propodi are about 6.5 times longer than the dactyli and 15 times longer than wide with straight parallel sides, armed with 8 ventral spines each, in paires or scattered, not including two distal ventral serrate spines. The carpi are 0.5 times the propodus length and without spines. The meri are twice as long as the carpi and 11 times longer than wide. The ischia are as long as the carpi. The basis and coxae are without characteristic features. Pereiopods 4 and 5 are slightly longer than pereiopod 3 in the ratio 1:1.24:1.30.

A slender finger-shaped process is present on the fourth thoracic sternite, between coxae of the first pereiopods. Two submedian scales are present on

the fifth thoracic sternite behind the coxae of the second pair of pereiopods.

The pleopods are normal. The endopod of the first pleopod in males is spathulate with a notch halfway the medial margin. The medial and distal margin have feathered setae. The appendix masculina on the second pair of pleopods is as long as the appendix interna and bears 14 setae.

The uropods are normal in shape, the outer margin of the exopod ends in a posterior tooth, which at its inner side bears a single movable spine.

Discussion. — The species is closely related to *Periclimenes americanus* (Kingsley, 1878), which is known from the tropical West Atlantic (Holthuis, 1951: 60-66). Differences are found in the following characters:

— The shape of the scaphocerite which is broader at the tip in *P. americanus* than in *P. rapanui*.

– The scaphocerite in *P. rapanui* reaches the third fused segment of the antennular flagellum, in *P. americanus* it reaches the end of the antennular peduncle.

– The size of the fingers of the second pereiopods which are ca. 0.5 times as long as the palm in *P. americanus* and ca. 0.7 times in *P. rapanui*.

Alpheidae
Alpheus lottini Guérin, 1829

Alpheus lottini — Banner & Banner, 1982: 65-68, fig. 15 (synonymy).

Material. — Vaihu, Easter Island, Chile; depth 16 m; in dead coral; February 1986; 1 juv. cl. 1.90 mm (RMNH 37167).

The specimen is incomplete. Most of the pereiopods are missing. This is the first record of the species for Easter Island.

Hippolytidae
Hippolyte spec.
(fig. 16f)

Material. — Vaihu, Easter Island, Chile; depth 16 m; in coral; February 1986; 1♀ov cl. 1.34 mm (RMNH 37168).

Most of the pereiopods are missing. Identification to species level was not possible. This is the first record of a member of the genus *Hippolyte* from Easter Island.

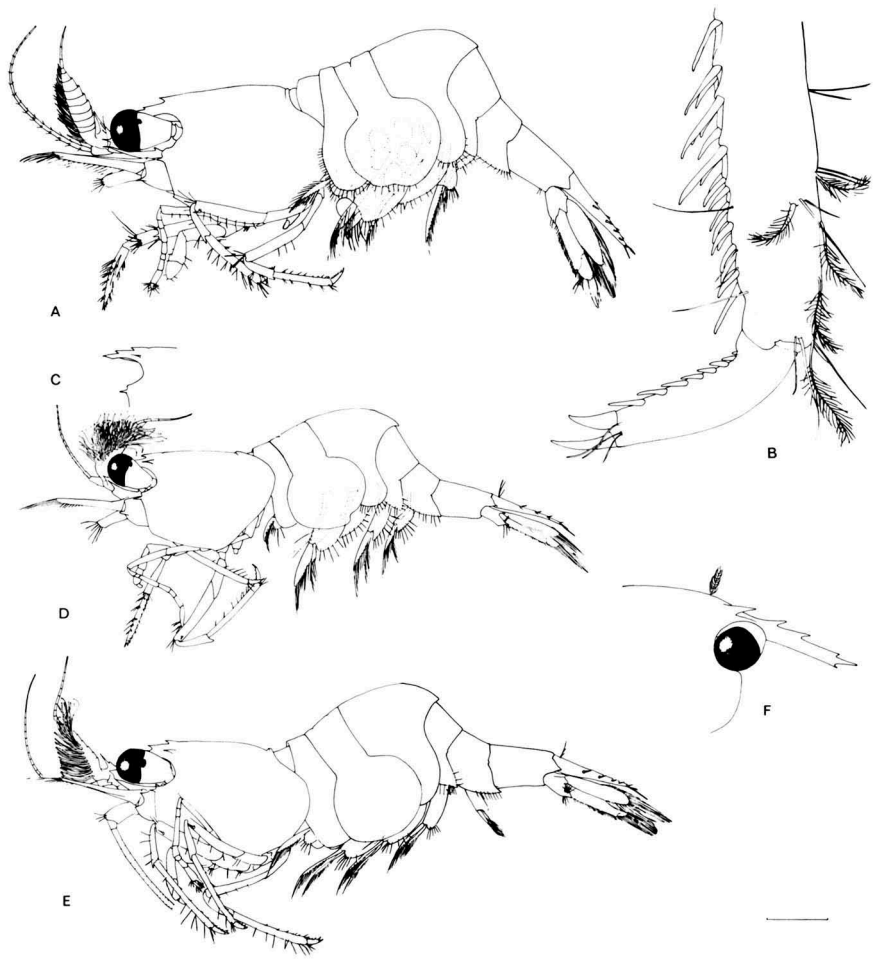

Fig. 16. A-B. *Thor amboinensis*. A. Habitus ♀ov, lateral view. B. Third pereiopod, detail dactylus and distal part propodus male. C-E. *Thor spinosus*. C. Rostrum of junvenile, lateral view. D. Habitus juvenile, lateral view. E. Habitus adult ♀ov, lateral view. F. *Hippolyte* spec. Anterior region, lateral view. (scale A, C-F = 1 mm, B = 0.1 mm)

Thor amboinensis (De Man, 1888)
(fig. 16a, b)

Hippolyte amboinensis De Man, 1888: 535.

Thor discosomatis Kemp, 1916: 388, fig. 1, pl. 36 fig. 1; 1925: 330; Barnard, 1954: 103, 104; Fishelson, 1970: 113.

Thor amboinensis — Holthuis, 1947: 50 (synonymy); Miyaki & Hayashi, 1966: 152-154, figs. 5, 6, 8b; Patton, 1966: 280-281; Ledoyer, 1968: 307, pl.5 figs. 1A-6A; Kensley, 1970: 105, 116, 117,

figs. 10, 11a-e; 1972: 62; Chace, 1972: 130-132, figs. 55, 56; Bruce, 1975: 27, fig. 13 (in colour); 1976: 51, fig. 22c; 1978: 168; Hirata et al., 1973: 57 fig.; Read, 1974: 16; Miyake, 1975: 102; 1982: 47, pl. 16 fig. 2; Abele 1976: 270; Suzuki & Hayashi, 1977: 195, figs. 2a, 3a, 4; Sefton, 1977: 37, fig. (in colour); Mergner, 1979: 479, 496, fig. 6; Sarver, 1979: 176-178; Takeda, 1982: 72; Criales, 1984: 313; Chace et al., 1986: 327, pl. 106 (in colour), pl. 9 fig. 11.

Material. — Off Hanga Roa, Easter Island, Chile; depth 60 m; in dead coral; February 1986; 2♀ov. cl. 1.80 and 1.88 mm, 1♀ cl. 1.2 mm and 3 juveniles cl. 1.00, 1.09 and 1.09 mm (RMNH 37169). — Motu Tautara, Easter Island; depth 33 m; in dead coral; 1985; 1♀ cl. 1.65 mm (RMNH 37170). — Tahai, west coast of Easter Island; depth 39 m; in dead coral; February 1986; 1♀ cl. 1.41 mm (RMNH 37171). — Motu Nui, Easter Island; depth 5 m; in dead pocilloporid coral; February 1983; 1 juvenile cl. 1.1 mm (RMNH 37172).

Remarks. — The specimens collected by L.H. DiSalvo had the striking colour-pattern as shown by Bruce (1975: fig. 13), Sefton (1977) and Chace et al. (1986: pl. 106) (L.H. DiSalvo, pers. comm.). Most features were constant in the specimens examined and fall within the description given by Chace (1972). In two specimens a very small distal meral spine on the fifth pereiopods was observed. The number of dorsal rostral teeth increases with postorbital carapace length.

Distribution. — The species is known from the Indo-Pacific and Caribbean, occuring on Scleractinia and Actiniaria.

The species was recorded from: Kenya, from *Seriatopora* sp. and *Stylophora mordax* (Dana, 1846) [= *S. pistillata* Esper, 1797] (Scleractinia) (Bruce, 1976); Mozambique (Kensley, 1970); South Africa (Kensly, 1971); Madagascar, from *Stoichactis*, (Actiniaria) (Barnard, 1954); Red Sea (Merguer, 1979); Red Sea, on *Cryptodendrum adhesivum* Klunzinger, 1877 (Actiniaria) (Fishelson, 1970); Andaman Island, on *Discosoma*, Actiniaria (Kemp, 1916, 1925); Nancowry Island, Nicobar Island (Kemp, 1925); Binongko, Kai Island, Semaoe Island, Indonesian Archipelago (Holthuis, 1947); Ambon (De Man, 1888); Japan, on Actiniaria (Hirata et al., 1973; Suzuki & Hayashi, 1977; Miyake, 1975, 1982; Takeda, 1982); Queensland, Australia, on pocilloporid and acroporid corals (Patton, 1966); Palau, on *Stoichactis*, Actiniaria (Sarver, 1979); Hawaii Archipelago, on *Antheopsis papillosa* (Kwietniewski, 1898) [= *Heteractis malu* (Haddon & Shackleton, 1893)] (Actiniaria) (Read, 1974); Colombian Caribbean, on Crinoid (*Comactinia echinoptera* (J. Müller, 1840)), anemones (*Condylactis gigantea* (Weinland, 1860), *Bartholomea annulata* (Lesueur, 1817), *Stoichactis* (= *Telmatactis*) *rufa* (Verrill, 1900), *Lebrunia danae* (Duchassaing & Michelotti, 1860), *Bunodosoma grandiliferum* (Lesueur, 1817)) (Criales, 1984); Panama (Abele, 1976); Bermuda (Chace et. al., 1986); Caribbean, on Actiniaria (Sefton, 1977); Caribbean, associated with sea anemones (Chace, 1972).

Thor spinosus Boone, 1935
(fig. 16c-e)

Thor spinosus Boone, 1935: 192, pl. 52; Bruce, 1976: 51-60, figs. 16-21, 23; Wicksten, 1983; 25, 26.
Thor maldivensis — Hayashi & Miyake, 1968: 153, 154, fig. 15.
Thor ?spinosus — Ledoyer, 1984: 20, 21, fig. 7.

Material. — Tahai, west coast of Easter Island, Chile; depth 39 m; in dead coral; February 1986; 2♀ov. cl. 1.66 mm, 1♀ cl. 1.41 mm RMNH 37173). — Tahai; depth 35 m; in substrate of dead coral; 1985; 1♀ cl. 1.41 mm (RMNH 37174). — Motu Tautara, Easter Island; depth 33 m; in dead coral; 1985; 1♀ cl. 1.00 mm (RMNH 37175).

Thor spinosus Boone, 1935 is closely related to *Thor maldivensis* Borradaile, 1915. Most striking differences were found in the colouration as described by Bruce (1976). Morphological differences are small. *Thor spinosus* has a distal meral spine on the 4th pereiopod which is lacking in *T. maldivensis*. In adults of *T. spinosus* the rostrum bears 3-5 dorsal teeth, in *T. maldivensis* only 1. Bruce (1976) observed that the juveniles of *T. spinosus* bear fewer dorsal teeth on the rostrum than the adults. Juveniles without dorsal rostral teeth were observed. In the present material some characters vary (table I).

Table 1. Variation in characters in *Thor spinosus*.

♂/♀	dorsal spines telson	dorsal rostral teeth	cl. (in mm.)
♀ov.	4 pair	4	1.66
♀ov.	4 pair	3	1.66
♀	3 pair	4	1.41
♀	3 pair	2	1.41
♀	3 pair	2	1.00

Comparison with *T. maldivensis* specimens from Indonesia (RMNH 29123, one specimen) and the Marshall Islands (RMNH 9205, one specimen) showed that adults of *T. maldivensis* bear one dorsal rostral tooth.

Distribution. — Tropical Indo-Pacific: Kenya (Bruce, 1976); Seychelle Islands (Bruce, 1976); Celebes, Indonesia (Bruce, 1976); Obi Latoe, Indonesia (Bruce, 1976); Japan (as *T. maldivensis*) (Hayashi & Miyake, 1968); Noumea, New Caledonia (as *T.* cf. *spinosus*) (Ledoyer, 1984); Bay of California (Wicksten, 1983).

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