

Lysmata debelius new species, a new hippolytid shrimp from the Philippines

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Fig. 1. - *Lysmata debelius* new species, aquarium specimens
Lysmata debelius n. sp., spécimens d'aquarium.

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ABSTRACT

A new species of hippolytid shrimp, *Lysmata debelius*, from Polillo Island, Philippines, is described and illustrated. The species is remarkable for its brilliant colouration and can be immediately separated from all congeneric species by the second pereopod, which has a biarticulate ischium and merus.

INTRODUCTION

Recently examples of a brilliantly coloured hippolytid shrimp have been imported to Europe through Far East Asian aquarium specimen suppliers. Although apparently well known in marine aquarist circles, where it is known as cardinal shrimp or Cardinals - garnele, these shrimps appear to be distinct from all previously described species. I am most grateful to Mr Helmut Debelius, of Frankfurt, after whom this shrimp is named, for bringing it to my attention and providing the holotype specimen and colour photographs of live specimens, and for the biological information concerning the species.

Abbreviations: NTM = Northern Territory Museum, Darwin, Australia; SMF = Senckenberg Museum, Frankfurt am Main, W-Germany.

Lysmata debelius new species

Figures 1-5

Holotype: NTM Cr.000308, 1 ♂, post-orbital carapace length 6.5 mm, Polillo Island, E. of Luzon, Philippines, 28 m, 25 August 1981, coll. H. Debelius.

Paratype: SMF 10773, 1 ♀, post-orbital carapace length 6.5 mm, Philippines, Zoo-Hofmann vend. 1982.

Description

A small sized hippolytid of normal form, slightly compressed, with body generally smooth and glabrous.

Rostrum straight, slender, extending to just beyond intermediate segment of antennular peduncle, dorsal carina extending from slightly in front of middle of carapace length, with five acute teeth, first on anterior fifth of carapace, second over posterior orbital margin and three on rostral process; ventral margin armed with two small teeth on distal fourth; lateral carinae feebly developed, posteriorly confluent with orbital margin; antennal spine large, acute, overlying a small blunt inferior orbital angle; anterolateral margin of carapace obtusely angular, unarmed.

Abdominal tergites smooth, third segment not produced; pleura of first three segments broadly round, fourth and fifth acutely produced posteriorly; fourth segment about 1.3 times length of fifth, about 1.1 times longer than deep, with posteroventral and posterolateral angles acute. Telson about 1.8 times length of sixth segment, 3.3 times longer than wide, sides mostly straight, convergent, posterior width about 0.33 of anterior, posterior margin angular with small median point; two pairs of small dorsal spines at 0.48 and 0.7 of telson length, posterior margin with pair of small lateral spines, similar to dorsal spines, large intermediate spines, about 2.8 times length of lateral spines, two long slender submedian setae; lateral margins of telson strongly setose.

Eye short and stout, with large globular deeply pigmented cornea.

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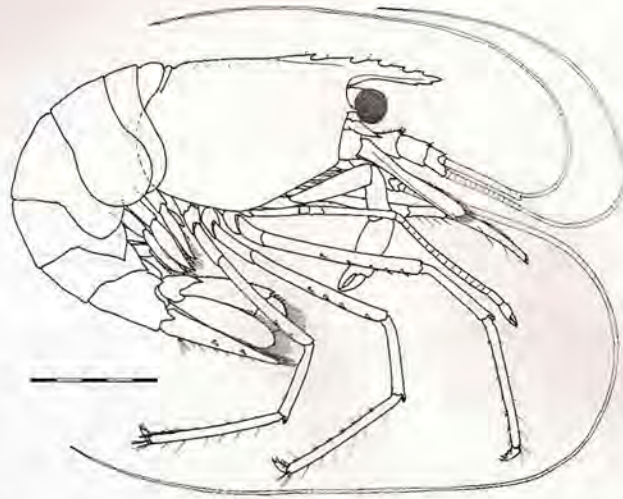


Fig. 2. - *Lysmata debelius* new species, holotype male. Scale in millimetres.
Lysmata debelius n. sp., mâle holotype. Echelle en millimètres.

Antennular peduncle robust; proximal segment about 1.5 times longer than wide, with acute stylocerite reaching to about 6.6 of length, statocyst obsolete; intermediate and distal segments together equal 0.85 of proximal segment, distal segment slightly smaller than proximal; each segment with a few small distolateral spinules; flagella subequal, long and slender; upper flagellum uniramous, with 12 proximal segments thickened, with about 24 groups of aesthetascs, accessory flagellum represented by single small protrusion.

Antenna with basicerite bearing strong ventrolateral spine; carpocerite about 3.0 times longer than wide, reaching to 0.3 of scaphocerite length, flagellum long and slender; scaphocerite extending far beyond antennular peduncle, 4.0 times longer than wide, lateral border feebly concave, with small acute distal tooth, slightly exceeding truncate distal border of lamella.

Mandible with corpus and molar process robust, incisor process and palp lacking. Maxillule with slender, slightly bilobed palp; upper lacinia broad, with densely spinulose medioventral border; lower lacinia slender with a few long slender setae. Maxilla with slender simple non-setose palp extending beyond distal border of basal endite, basal endite strongly bilobed, distal lobe broader and much larger than small slender lower lobe, both densely setose; coxal endite reduced, angular, sparsely setose; scaphognathite well developed, about 3.3 times longer than wide, anterior lobe distally narrowed, medial margin sinuous. First maxilliped with slender, three segmented palp, sparsely setose distally and medially, extending beyond basal endite; basal endite simple, elongated, narrow, with long slender setae along straight medial border; coxal endite broader, shorter, with convex distally setose medial border; exopod with well developed flagellum with long narrow caridean lobe; epipod large, bilobed. Second maxilliped with endopod normal, dactylar segment small and narrow, densely spinulose medially, propod elongated with numerous long slender spines distomedially; endopod well developed; epipod rounded, with small podobranch. Third maxilliped slender, endopod extending beyond scaphocerite by length of distal segment, ischio-merus and basis fused, combined segment slender, tapering distally, about 8.0 times longer than width near base; penultimate segment about 0.3 of length of antepenultimate, about 4.5 times longer than wide, with 5 groups of short serrate spines medially; distal segment twice length of penultimate, generally tapering but slightly swollen at one third of length, with about 14 groups of medial spines; obliquely truncated distally with about 11 short medial spines; exopod similar to that of second maxilliped; coxa robust, with a small rounded epipod bearing a sickle shaped process; small multilamellar arthrobranch present.

First four pereopods with well developed epipods and setobranchiae. First pereopod robust, extending slightly

beyond scaphocerite; chela robust, with fingers short and stout, slightly less than half palm length, acute, feebly subspatulate with medially situated cutting edges, gaping proximally, and acute tips; palm subcylindrical, slightly compressed and proximally swollen, about 2.3 times longer than deep; carpus short and stout, half length of chela, distally expanded, unarmed; merus slightly shorter than chela, about 4.0 times longer than wide, unarmed; ischium, basis and coxa stout, short and unarmed. Second pereopods subequal, long and slender, extending beyond scaphocerite by about one fifth of carpus; chela small, fingers slender, acute, equal to 0.8 of palm length, feebly subspatulate; palm about 1.5 times longer than deep; carpus slender, slightly longer than scaphocerite, with 16 articles, of which first and last are twice as long as others; merus slender, about 0.6 of carpus length, more robust, about 9.0 times longer than wide, biarticulate, with distal segment about 6.0 times longer than proximal, articulation rather oblique; ischium similarly robust, equal to 0.7 of merus, biarticulate, with articulation transverse, distal article equal to 0.33 of proximal, proximal article 4.4 times longer than wide, uniform, with 10 short curved serrulate setae along ventral border; basis normal, with five short spiniform setae distoventrally, without exopod; coxa normal. Third pereopod slender, extending beyond scaphocerite by one third of carpus; dactyl short and robust, compressed, about 3.0 times longer than deep; unguis slender, about 4.0 times longer than wide; corpus with stout distal accessory spine, two slender ventral spines, and two groups of lateral sensory setae; propod slender, 13 times longer than wide, uniform, with long slender distoventral spine and 9 smaller spines distributed along ventral margin; carpus about 0.3 of propod length, slender, unarmed; merus about 1.25 times propod, about 13 times longer than central width, with 5 robust spines along distal two thirds of ventrolateral border; ischium about 0.2 of merus; basis and coxa normal. Fourth and fifth pereopods similar; propods with 7 and 5 ventral spines respectively, fifth propod with four transverse groups of cleaning setae distally; meri decreasing in length posteriorly, fourth with four ventrolateral spines, fifth with two; coxa of fifth without epipod.

Endopod of first pleopod long and slender, tapering, about 6.5 times longer than wide, 0.6 of length of exopod, with short setae on medial and lateral margins. Appendix masculina of second pleopod 0.6 of length of appendix interna, corpus slender, 5.0 times longer than wide, with three similar distal spines subequal to length of corpus. Propodite of uropod with posterolateral angle acutely produced; exopod slightly exceeded by tip of telson; exopod 2.2 times longer than wide, lateral border very feebly convex, a short tooth posteriorly with a robust mobile spine medially and a small acute tooth; endopod shorter than exopod, 2.75 times longer than wide.

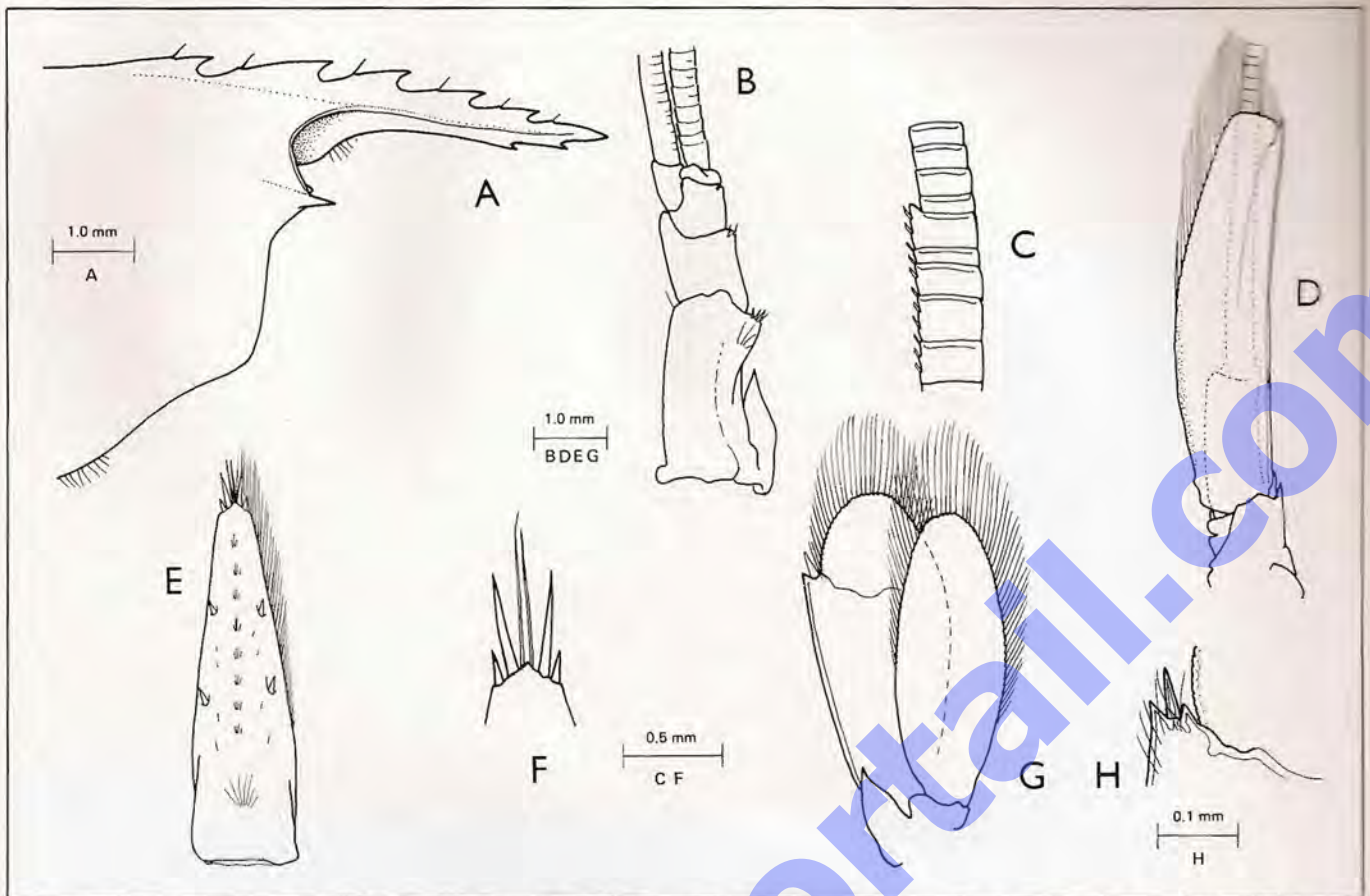


Fig. 3. - *Lysmata debelius* new species, holotype male, A, anterior carapace and rostrum. B, antennula. C, same, distal end of thickened part of upper flagellum. D, antenna. E, telson. F, same, posterior spines. G, uropod. H, same, exopod, posterolateral angle.

Lysmata debelius n. sp., mâle holotype. A, portion antérieure de la carapace et rostre. B, antennule. C, la même, extrémité distale de la portion épaissie du flagelle supérieur. D, antenne. E, telson. F, le même, épines postérieures. G, uropode. H, le même, angle latéro-postérieur de l'exopodite.

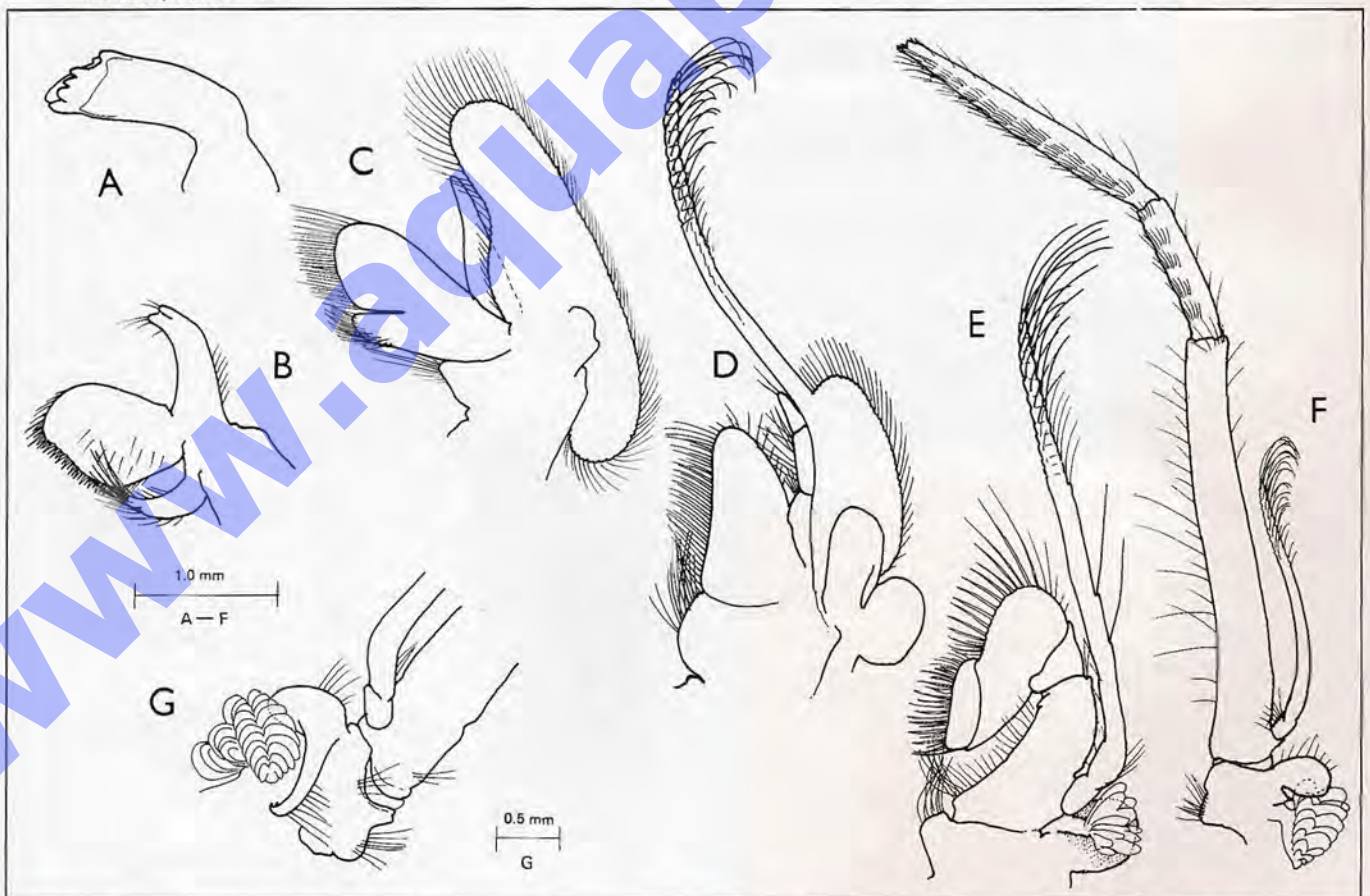


Fig. 4. - *Lysmata debelius* new species, holotype male. A, mandible, molar process. B, maxillula. C, maxilla. D, first maxilliped. E, second maxilliped. F, third maxilliped. G, same, coxa and basis, lateral aspect.

Lysmata debelius n. sp., mâle holotype. A, mandibule, processus molaire. B, maxillule. C, maxille. D, premier maxillipède. E, second maxillipède. F, troisième maxillipède. G, le même, coxa et basis, vue latérale.

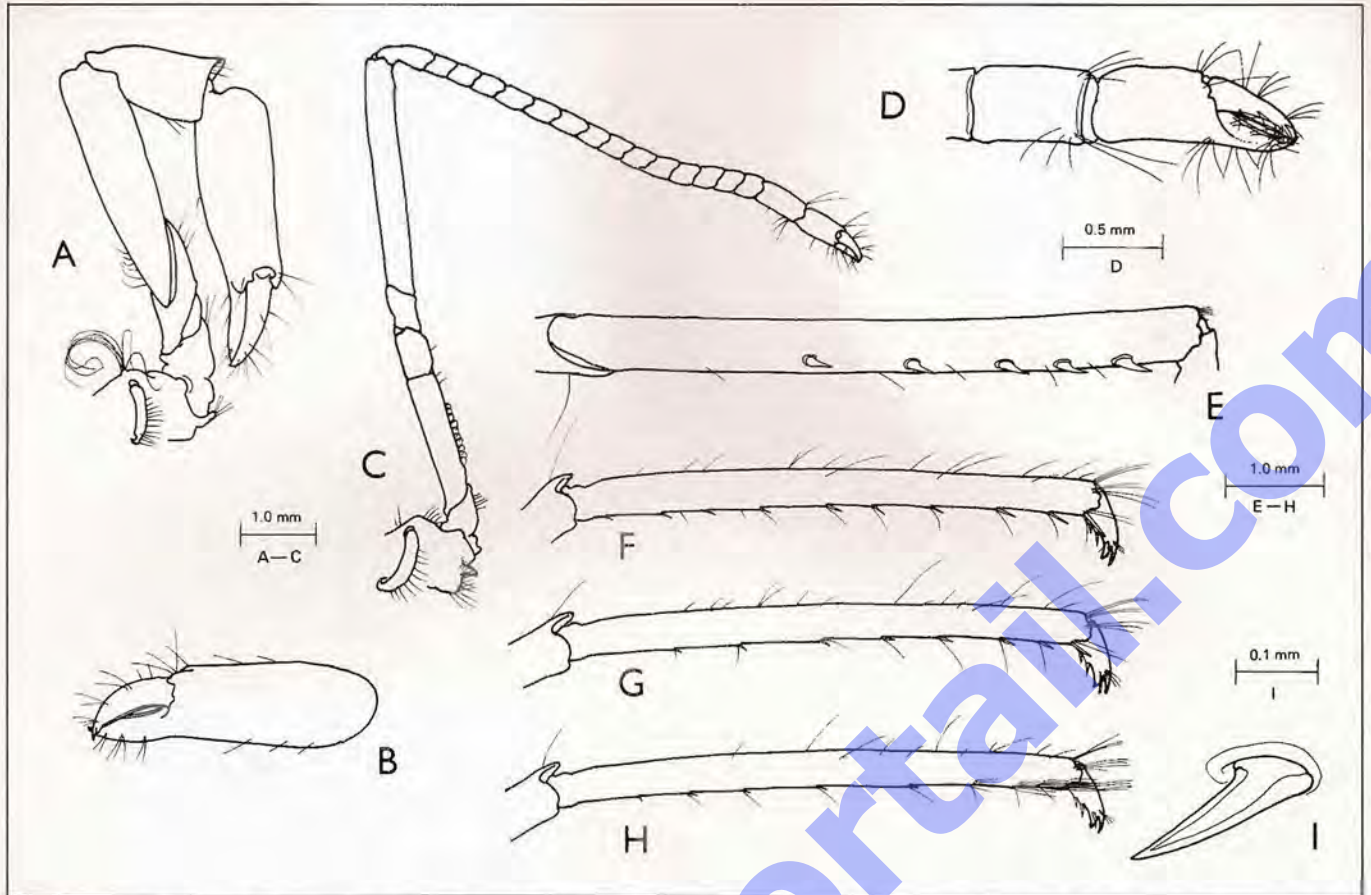


Fig. 5. - *Lysmata debelius* new species, holotype male. A, first pereiopod. B, same, chela. C, second pereiopod. D, same, chela and distal carpus. E, third pereiopod, merus. F, same, propod and dactyl. G, fourth pereiopod, propod and dactyl. H, fifth pereiopod, propod and dactyl. I, meral spine from third pereiopod.

Lysmata debelius n. sp., mâle holotype. A, premier péréiopode. B, le même, pince. C, second péréiopode. D, le même, pince et portion distale du carpe. E, troisième péréiopode, merus. F, le même, propode et dactyle. G, quatrième péréiopode, propode et dactyle. H, cinquième péréiopode, propode et dactyle. I, épine mérale du troisième péréiopode.

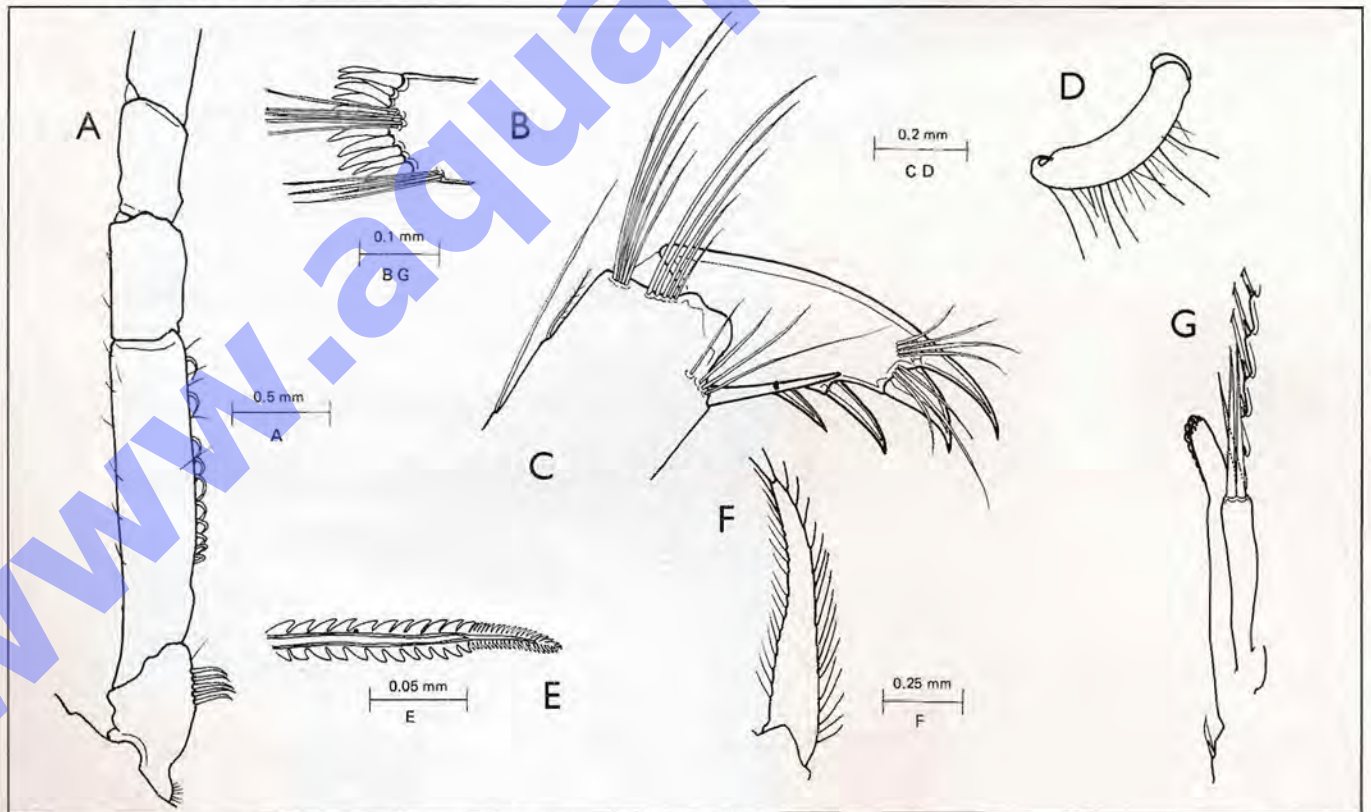


Fig. 6. - *Lysmata debelius* new species, holotype male. A, second pereiopod, ischio-meral joint. B, third maxilliped, terminal spines. C, dactyl of third pereiopod. D, epipod of fourth pereiopod. E, cleaning seta from distal propod of fifth pereiopod. F, endopod of first pleopod. G, appendices interna and masculina of second pleopod.

Lysmata debelius n. sp., mâle holotype. A, second péréiopode, articulation ischio-mérale. B, troisième maxillipède, épines terminales. C, dactyle du troisième péréiopode. D, epipodite du quatrième péréiopode. E, soie nettoyeuse de la région distale du propode du cinquième péréiopode. F, endopodite du premier pléopode. G, appendices interne et masculin du second pléopode.



Fig. 7. - *Lysmata debelius* new species, ventral side, aquarium specimen.
Lysmata debelius n. sp., face ventrale, spécimen d'aquarium.

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Fig. 8 et 9. - *Lysmata debelius* new species, lateral and frontal sides.
Lysmata debelius n. sp., vues latérale et frontale. Ikan



Fig. 10. - *Lysmata vittata* Stimpson.

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Colour. Body, including rostrum, antennal peduncles and caudal fan, a uniform deep scarlet red colour. Proximal portion of antennal flagella, mouthparts, pereiopods and pleopods a similar red except for the following parts which are a brilliant white; distal merus, propod and dactyl of ambulatory pereiopods, large circular white spots on epistome, dorsal carapace (submedian); anterior, central and posterior branchiostegite, with a small spot centrally between the four larger spots, and centrally on exopods of first four pleopods. Cornea black.

Distribution. The species has been reported by aquarium collectors from Sri Lanka, Bali, Indonesia and Philippine waters.

Bathymetric Range. Reported from collectors from 10-28 m.

Habitat. The habitat of the type specimen was described as a rocky area without live coral.

Behavior. The shrimps are normally found in pairs and will, under aquarium conditions, behave as fish cleaners.

Systematic Position

The systematics of the species of *Lysmata* leave many points in need of clarification (Monod, 1969) particularly as several species are still relatively poorly known. They have been, in general, separated into two groups (Kemp, 1914) with long and short rostra. *Lysmata debelius* would appear to fall in to the short rostrum group, with *L. vittata* Stimpson and *L. kukenthali* De Man, as its closest relatives among Indo-West Pacific species. It can readily be separated

from these and all others by the morphology of the ischium and merus of the second pereiopod. In all other species the ischium has several distal articles and the merus has many. *L. debelius*, with only two articles on each of those segments, is therefore unique in the genus *Lysmata* although it resembles closely all other species in its other morphological details.

Remarks

Although easily separable from all other *Lysmata* species by the morphology of the second pereiopod, *L. debelius* is most readily separated by its colour in life, which is quite unlike the only other colourful species, *L. amboinensis*. Most species of *Lysmata*, whose colour pattern has been recorded, are relatively inconspicuously marked, with narrow longitudinal red bands in various arrangements, e.g. *L. vittata*. An exception is *L. kukenthali*, which has broad transverse brown bands. It is remarkable how such a brightly coloured shrimp, apparently fairly common in shallow water in the Far East, can have remained unknown scientifically for so long.

Kemp (1914) divided *Hippolysmata*, subsequently merged with *Lysmata* (Kubo, 1951, Chace, 1972) into two groups with long and short rostra, a procedure recognised by Holthuis (1947) and Monod (1969). The colour patterns of most species have been recorded in varying amounts of detail and it is apparent that most species are relatively inconspicuously coloured but that the brightly coloured species occur in both groups, i.e., *L. amboinensis* in the group with long rostra and *L. debelius* in the group with a short rostrum.

Références

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RÉSUMÉ

Lysmata debelius, une nouvelle espèce de Crevette Hippolytide des Philippines

Une Crevette Hippolytide d'un rouge vif est importée depuis quelques années d'Extrême-Orient par les fournisseurs d'animaux d'aquarium. Bien connue des amateurs, sous le nom de Crevette cardinal (cardinal shrimp, Cardinals-garnele), cette espèce est distincte de toutes celles qui ont été décrites jusqu'ici. L'auteur est très reconnaissant à M. Helmut Debelius qui a attiré son attention sur cette Crevette, lui a fourni l'holotype, des photos sur le vivant et des informations sur la biologie.

Lysmata debelius n.sp.

Holotype. Polillo Island, Est de Luzon, Philippines, 28 m. 25 août 1981, H. Debelius leg.

Distribution. Connue aussi de Sri Lanka, Bali, Indonésie, d'où elle est exportée pour le commerce aquariophile, à des profondeurs de 10 à 30 m. Le type a été récolté dans une aire rocheuse, dépourvue de Madréporaires vivantes. Ces Crevettes se rencontrent par paire et, en aquarium, se comportent en déparasiteuses des Poissons.

Position systématique. La systématique des espèces de *Lysmata* comporte encore de nombreux points obscurs.

Elles ont été réparties, en général, en deux groupes caractérisés, l'un par un rostre long, l'autre par un rostre court ; *L. debelius* semble appartenir à ce dernier groupe avec *L. vittata* Stimpson et *L. kukenthali* De Man comme plus proches parents dans l'Indo-pacifique occidental.

Morphologiquement, cette espèce peut être facilement séparée de toutes les autres *Lysmata* par le second pereiopode, dont le merus et l'ischium sont biarticulés, sans autres segments supplémentaires, ce qui confère à *L. debelius* une position unique, bien que les autres caractères morphologiques la rapprochent étroitement de toutes les autres espèces du genre.

La couleur en vie est cependant le caractère distinctif le plus évident, d'autant qu'elle est très différente de celle de la seule autre espèce brillamment colorée, *L. amboinensis* (= *grabhami*) : corps écarlate à taches blanches, flagelle des antennes, apex du troisième maxillipède et propodes des pattes ambulatoires blancs.

Comme la plupart des espèces de *Lysmata* montrent une coloration peu voyante, il est remarquable qu'une espèce brillamment colorée se trouve dans chacun des deux groupes, celui à long rostre (*L. amboinensis*) et celui à rostre court (*L. debelius*).