Senckenbergiana maritima | 30 | (3/6) | 223–227 | Frankfurt am Main, 27. 7. 2000

Lysmata splendida sp. nov., a New Species of Shrimp from the Maldives (Crustacea: Decapoda: Hippolytidae)

RUDOLF N. BURUKOVSKY

With 4 Text-Figures

Abstract

[BURUKOVSKY, R. N. (2000): *Lysmata splendida* sp. nov., a new species of shrimp from the Maldives (Crustacea: Decapoda: Hippolytidae). – Senckenbergiana marit., **30** (3/6): 223–227, 4 figs.; Frankfurt a. M.]

A new species of hippolytid shrimp, *Lysmata splendida*, from the Maldives (Ari-Atoll) is described. This species can be separated from its closest relative, *L. debelius* BRUCE, 1981, by the acute pterygostomial angles of the carapace, the lower spine number on the merus of pereopods 3–5 and by its colouration (the greater number of white spots on carapace and their presence on the abdomen).

Introduction

While identifying a collection of shrimps of the family Hippolytidae stored in the Crustacean Section of the Forschungsinstitut Senckenberg (Frankfurt a. M.), three specimens of the genus *Lysmata* were discovered that belong to a new species. Two of these shrimps were sent to Senckenberg in 1989 by HERWARTH VOIGTMANN, the well-known SCUBA-diver and photographer, who lives in the Maldives; the third specimen was caught in 1990 by HELMUT DEBELIUS (Frankfurt a. M.), one of the authors of the splendid marine animal guide-books (BAENSCH & DEBELIUS 1992; DEBELIUS 1999). A description of the new species is given below. The holotype and paratypes are stored in the Crustacean Section of the Forschungsinstitut Senckenberg (Frankfurt a. M.) (SMF).

Lysmata splendida sp. nov.

Figs. 1–3

Holotype: 1 FFF (SMF 22629) [without eggs on pleopods, post-orbital carapace length 10 mm] Maldives, Ari-Atoll, inner reef Maayafushi, in caverns on the reef roof wall, 6–35 m, 20. VIII. 1989, coll. H. VOIGTMANN.

Paratypes: 1 FFF (SMF 22630) [without eggs on pleopods, post-orbital carapace length 13–14 mm with traces of damage received during its life] same data as holotype. – 1 FFF (SMF 22631) [without eggs on pleopods, post-orbital carapace length 9 mm] Maldives, Ari-Atoll, 11 m, 30. V. 1990, coll. H. DEBELIUS.

Description: Cuticle rigid. Body slightly compressed, carapace lacking sculpture, with thin, short and soft setae (Fig. 1). Rostrum (Fig. 2a) straight, slender, extending to almost distal part of second segment of antennular peduncle, less than half length of carapace; upper border with five teeth: three on rostral process, fourth over posterior orbital margin and fifth on anterior third of postorbital portion of carapace. Rostrum with lower border armed with two closely spaced subdistal teeth; dorsal carina extending to carapace, gradually fading and disappearing about half distance between orbits and posterior

Author's address:
Dr. RUDOLF N. BURUKOVSKY, Atlantic Research Institute of Fisheries and Oceanography (AtlantNIRO), Kaliningrad, Russia.

border of carapace. Ventral rostral plate not developed. No spines on carapace except the strong antennular ones, but pterygostomial angles tapering, and forming clearly discernible pterygostomial denticles. In one paratype (SMF 22630) left pterygostomial angle of carapace not acute.

Abdomen (Fig. 1) entirely smooth and rounded. Distal edge of third segment evenly curved, not projecting, pleura of first three segments broadly rounded, fourth and fifth acutely produced posteriorly. Acute spines on ventrodistolateral angles of sixth segment. Telson (Fig. 2h–j) wide at base, becoming acute terminally, about 1.8 times length of sixth segment, with dorsolateral depression, armed with two pairs of dorsolateral spines [in one paratype (SMF 22630)] one spine only (Fig. 2j)], but telson of this specimen damaged.

Eye short and stout with black cornea.

Antennular peduncle robust; proximal segment equal in length to intermediate and distal segments together; spines absent; stylocerite about 2/3 size of that of proximal segment; upper flagellum uniramous with 17–18 proximal segments broadened, provided with about 35 groups of aesthetascs. Both flagella of similar length, not exceeding body length (as does flagellum of second antenna); scaphocerite 3.0 times longer than wide equalling about half carapace length, extending for 1/6 of its length beyond antennular peduncles (Fig. 2g).

Mandibles robust and relatively short. Endopod of third maxilliped extending beyond scaphocerite by 2/3 of its length.

First four pairs of pereiopods with epipodites. First pereiopod robust, thicker than others, extending beyond scaphocerite by 2/3 of chela length. Palm twice as long as fingers, feebly compressed at its plane, widest proximally. Chela 3.0 times longer than wide, chelae on both sides almost equal; however, in one paratype (SMF 22630) chela of left pereiopod nearly 1.5 times longer than right, probably this was caused by damage in life. Fingers of chelae slender, slightly curved, touching each other along entire length when closed.

Second pereiopods (Fig. 2c) subequal, long, slender, extending beyond scaphocerite by length of chela plus 5–6 distal segments of carpus. In holotype, carpus with 14 articles on right pereiopod, and 15 articles on left ; in one paratype (SMF 22630) with 18 articles on both pereiopods, in the other paratype (SMF 22631) with 15 (right) and 16 (left), sizes of secondary articles of carpus similar to one another. Merus biarticulate, proximal article equal to 1/6 of merus length. Ischium biarticulate, distal article 0.25 times length of whole ischium.

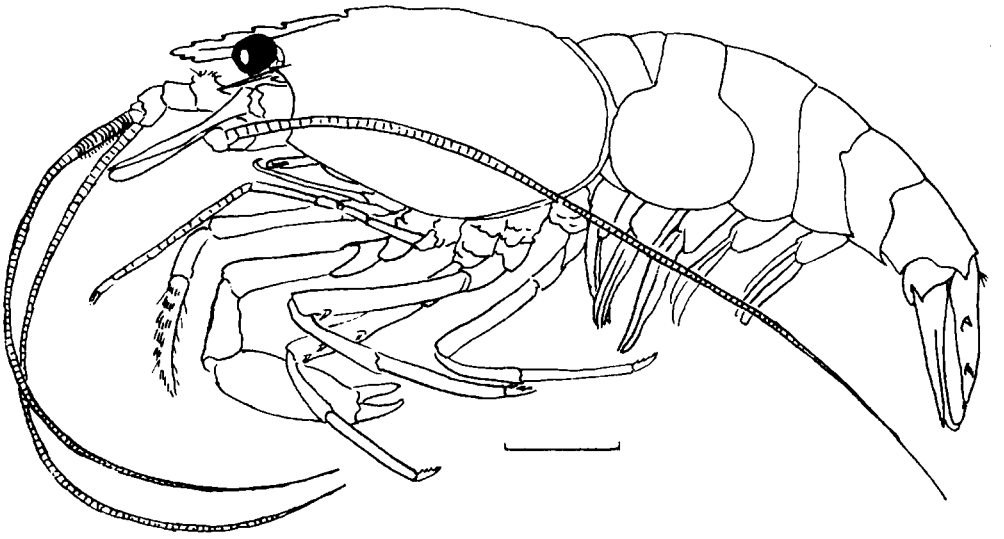

Fig. 1. *Lysmata splendida* sp. nov., holotype female (SMF 22629). – Scale 5 mm.

Third to fifth pereiopods similar in shape (Fig. 2c–f), though third pereiopods a little stronger than others [in one paratype (SMF 22630) left third pereiopod thinnest and weakest, probably caused by damage during life]. Third pereiopods extending beyond distal carapace edge by 2/3 of propodus length. Meri of third to fifth pereiopods armed with variable number of movable spines, left pereiopods of holotype bear on third, fourth and fifth pereiopods, respectively, 3, 1 and 0 spines, right pereiopods unarmed; one paratype (SMF 22630), has pereiopods of left side unarmed, merus of right third pereiopod with 3 spines, and merus of both right fourth and fifth pereiopods with 1 spine (Fig. 2c–e); other paratype (SMF 22631) has both left and right third pereiopods armed with 3 spines, fourth left pereiopod with 3 spines, fourth right with 1 spine, both fifth pereiopods with 1 spine near distal end.

Colouration (Fig. 3): Body, including rostrum, antennal peduncles and caudal fin, uniformly deep red ("colour of arterial blood"). Proximal portion of antennal flagella, mouthparts, first and second pereiopods, proximal portion of third to fifth pereiopods and pleopods of the same colour. Distal part of merus, carpus, propodus and dactylus of third to fifth pereiopods and distal part of both antennal flagella, bright white; large white circular spots scattered on carapace arranged in three transverse bands in frontal, middle and posterior part of carapace. Frontal band with 3 spots on each side of body: one opposite the pterygostomial spine, one at the level of the

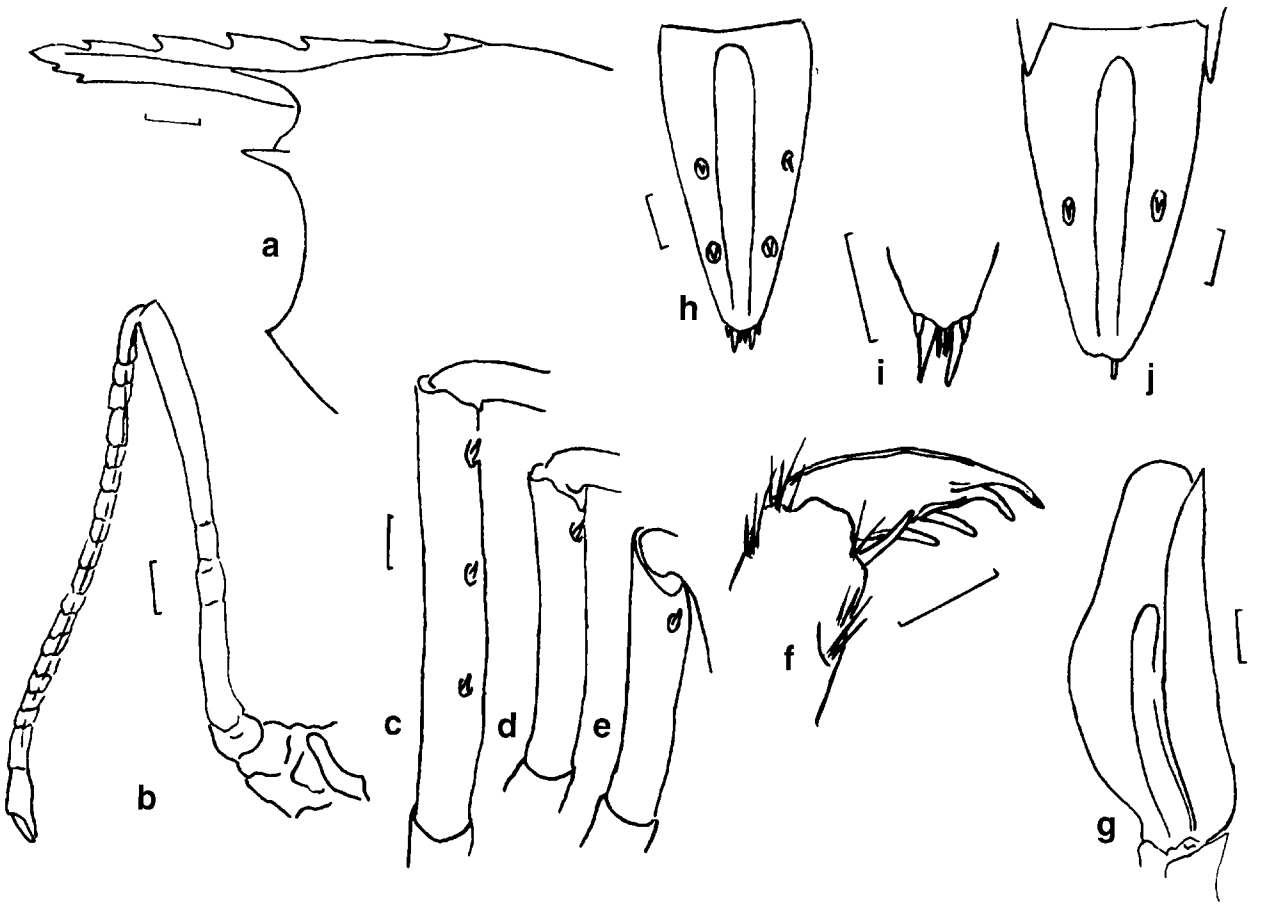

Fig. 2. *Lysmata splendida* sp. nov. a–i: holotype (SMF 22629); j: paratype (SMF 22630). – a: anterior part of carapace and rostrum; b: second pereiopod; c: third pereiopod, merus; d: fourth pereiopod, merus; e: fifth pereiopod, merus; f: dactyl of third pereiopod; g: scaphocerite; h: telson; i: same, posterior spines; j: telson of paratype. – Scale: a–e 1 mm; f–j 0.5 mm.

antennal spine, and one below the second post-rostral spine. The second band in the middle part of the carapace contains 3 spots on each side of the body. In the posterior band there are only 2 spots on each side. The abdomen has a large white spot on both sides of the proximal part of the pleura of the second segment; a smaller spot situated on the third segment. In one specimen there were also spots on the fourth segment. A white band is present alongside the upper surface of scaphocerite.

Distribution: The species has only been reported from the type locality (Ari-Atoll, Maldives).

Bathymetric range: 6–35 m.

Habitat: The holotype was collected from cavities in a vertical wall of the outer reef. The paratype collected by H. DEBELIUS was taken in 10–15m among a dense field of *Acropora* and *Pocillopora*.

Systematic position: Among the species of *Lysmata* (KEMP, 1914; HOLTHUIS, 1947; BRUCE, 1983), this new species is closest to *L. debelius* BRUCE, 1983 (Fig. 4). Both species are unusual in having the merus and ischium being formed by only two articles in contrast to all other species of *Lysmata,* where the ischium has several articles and the merus many. The closeness to *L. debelius* is revealed by a similar colouration pattern consisting of a combination of a deep scarlet red background with scattered brilliant white spots. Of both the holotype and paratype of the present new species photographs were taken in their natural environment and published in the Guide-Book of BAENSCH & DEBELIUS (1992: 465) where they were misidentified as *L. debelius*. These authors noticed that the Maldive shrimps possess spots on the abdomen, whereas in *L. debelius* from the Philippines and Indonesia there are 6 white spots only on the carapace. Both species have also been figured in DEBELIUS (1999: 107).

There are clear morphological differences, too. The new species differs from *L. debelius* BRUCE, 1983, by rounded anteroinferior lower carapace edges, by the presence of clearly expressed pterygostomial spines (or acute lower frontal angles of carapace), by shorter pereiopods, and by the armature of the merus of the third to fifth pereiopods: in spite of the variability in spine number, in the new species there are no more than 3 spines on the third pereiopods (in *L. debelius* 5), 1–3 spines on fourth pereiopods (in *L . debelius* 4), and 0–1 spine on the fifth ones (in *L. debelius* 2). Moreover the new species has a slightly wider scaphocerite (3 times as long as wide in contrast to 4 times as long as wide in *L. debelius),* and following the figure of BRUCE (1983), it appears that the telson base is wider in the new species.

Etymology: The species name reflects the really splendid (= *splendida*) colouration of this shrimp.

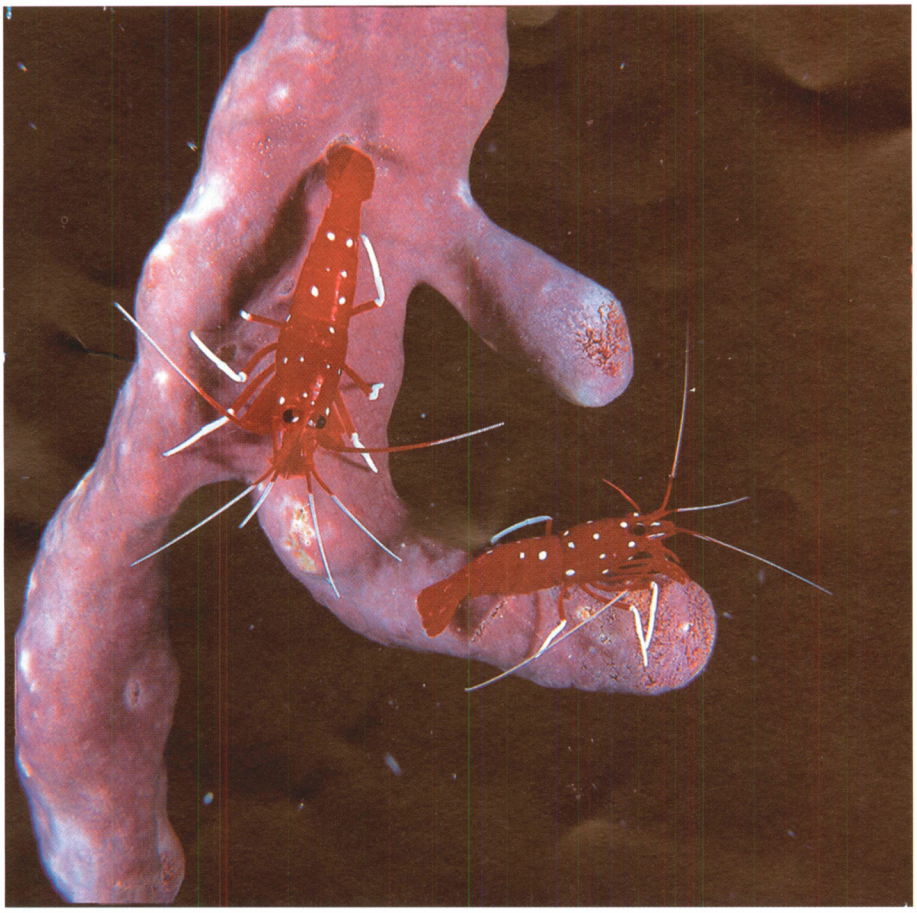

Fig. 3. *Lysmata splendida* sp. nov., life colouration. – White dots present on abdomen (photograph: H. VOIGTMANN, IKAN).

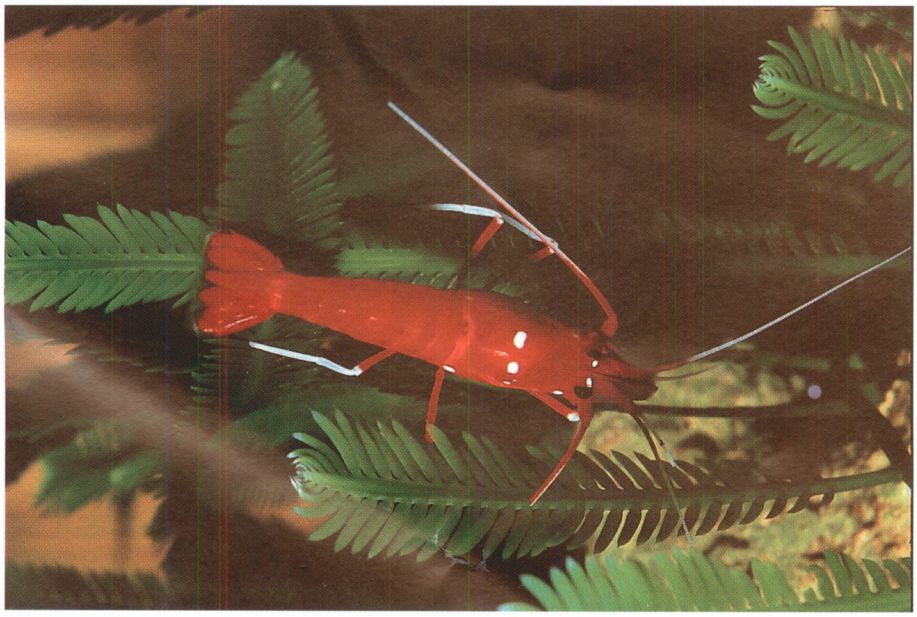

Fig. 4. *Lysmata debelius* BRUCE 1983, life colouration. – White dots do not extend on abdomen (photograph: H. DEBELIUS, IKAN).

Acknowledgements

I want to thank the German Academic Service of Scientific Personnel Exchange (DAAD, Bonn), who provided funding to allow me to work for two months in the Senckenberg Research Institute (Frankfurt a. M.). I am very grateful to Dr. M. TÜRKAY, head of the Crustacean Section of Senckenberg and to his collaborators for providing excellent conditions in which to work and for the many useful discussions during these two months. Finally, I am thankful to Mr. H. DEBELIUS for providing colour photographs of these shrimps in their natural environment, and for information about them.

References

BAENSCH, H. A. & DEBELIUS, H. (1992): Meerwasser-Atlas. – 1216 pp.; Melle, Germany (Mergus Vlg.).

BRUCE, A. J. (1983): *Lysmata debelius*, new species, a new hippolytid shrimp from the Phillipines. – Rev. franç. Aquariol. [for 1982], **9** (4): 115–120, figs. 1–6.

DEBELIUS, H. (1999): Crustacea Guide of the World. – 321 pp.; Frankfurt a. M. (IKAN-Unterwasserarchiv).

HOLTHUIS, L. B. (1947): The Decapoda of the Siboga Expedition, Part IX. The Hippolytidae and Rhynchocinetidae collected by the Siboga and Snellius Expeditions with remarks on other species. – Siboga Exped. Monogr., **39a** (8): 1–100, figs. 1–15.

KEMP, S. (1914): Notes on Crustacea Decapoda in the Indian Museum. V. Hippolytidae. – Rec. ind. Mus., **10** (2): 81–129, fig. 1, pls. 1–7.

Submitted: 17 January 2000
Reviewed: 14 February 2000
Accepted: 11 March 2000

Verzeichnis der meereskundlichen Veröffentlichungen „Senckenberg am Meer“ 1998/99

Nr. 488 WEHRMANN, A. (1998): Modern cool-water carbonates on a coastal platform of northern Britanny, France: carbonate production in macrophytic systems and sedimentary dynamics of bioclastic facies. – Senckenbergiana marit., **28** (4/6): 151-166, 12 Abb., 1 Tab.; Frankfurt a. M.

Nr. 489 REINECK, H.-E. & WUNDERLICH, F. (1998): Lamination and laminated rhythmites in water-laid sands. – Senckenbergiana marit., **28** (4/6): 227-235, 13 Abb.; Frankfurt a. M.

Nr. 490 REINECK, H.-E. (1999): Maßstäbliches und Maßstäbe, nebst Größen in der Natur sowie abgebildete Höhen und Tiefen. – Natur u. Mus., **129** (5): 157-162, 8 Abb.; Frankfurt a. M.

Nr. 491 WEHRMANN, A. (1999): Long-term survival of epibenthic *Cerasteoderma edule* (L.) in bivalve clusters on backbarrier tidal flats, North Sea. – Senckenbergiana marit., **30** (1/2): 47-61, 12 Abb., 3 Tab., 1 Anh.; Frankfurt a. M.