

# A new species of *Laomedia* (Crustacea, Thalassinidea, Laomediidae) from Australia with notes on its ecology

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## ABSTRACT

*Laomedia barronensis* n.sp. from northern Queensland is compared with the sympatric *L. healyi* Yaldwyn et Wear, 1970 known from eastern and south-eastern Australia, and *L. astacina* de Haan, 1841 from Japanese, Korean and Chinese waters. *L. barronensis* differs from the two other described species of *Laomedia* in having antennular and antennal peduncles subequal in length, and in lacking both postocular spine and a spine below the *linea thalassinica*. The holotype and single known specimen of *L. barronensis*, an ovigerous female, was dug from above low tide level at a depth of about 1.5 m, in a moist *Sesarma* crab burrow system in the muddy banks of the Barron River, near Cairns, Queensland. That part of the burrow system would have been submerged at high tide.

## KEY WORDS

Crustacea,  
Decapoda,  
Thalassinidea,  
Laomediidae,  
taxonomy,  
*Laomedia*,  
Australia.

## RÉSUMÉ

*Laomedia barronensis* n.sp. du nord de Queensland est comparée à sa voisine géographique, *L. healyi* Yaldwyn et Wear, 1970 connue de l'est et du sud-est de l'Australie, et à *L. astacina* de Haan, 1841 récoltée au Japon, en Corée et en Chine. *L. barronensis* s'en distingue spécialement par les pédoncules antennulaire et antennaire à peu près de même longueur, et par l'absence à la fois de l'épine postoculaire et de l'épine postérieure à la ligne thalassinienne. L'holotype et unique spécimen connu de *L. barronensis*, une femelle ovigère, a été récolté au-dessus du niveau de marée basse, à 1,5 m de profondeur, dans un système de galeries humides de *Sesarma* sur les bords vaseux de la rivière Barron, près de Cairns, Queensland. Cette partie de la galerie aurait été submergée à marée haute.

## MOTS CLÉS

Crustacea,  
Decapoda,  
Thalassinidea,  
Laomediidae,  
taxonomie,  
*Laomedia*,  
Australie.

## INTRODUCTION

In 1972, one of the present authors (J. C. Y.) published a jointly authored description (Yaldwyn & Wear 1972) of an Australian species of *Laomedea*, *L. healyi* Yaldwyn *et* Wear, 1970, that had been named in a preliminary description two years previously. The type species of the genus, *Laomedea astacina* de Haan, 1841 is known from Japan, Korea (see Sakai 1962; Kim 1973) and also from China. The Chinese distribution is based on unpublished specimens from Hongkong in the Museum of New Zealand, collected by R. G. Wear, 1974. The only other species of *Laomedea* recognised in 1972 was an undescribed species from northern Queensland, represented by a single ovigerous female taken sympatrically with *L. healyi* and referred to as "*Laomedea* n.sp. (Barron River)" in Yaldwyn & Wear (1972: 126, 130, 137).

No further specimens of *Laomedea* n.sp. (Barron River) have been found or reported since 1972, despite careful checking, by author J. C. Y. The latest published reference to Australian *Laomedea* is by Poore & Griffin (1979) who recorded additional specimens of *L. healyi* from intertidal mangroves in Western Port, Victoria, thus establishing a known geographic range for *L. healyi* in eastern and south-eastern Australia, from Cairns in northern Queensland to Western Port, Victoria. No specimens of *Laomedea* were reported in a recent general account of thalassinideans from north-western Australia (Morgan 1990), and there are no published records of *Laomedea* from the Northern Territory, Western Australia or South Australia.

In 1996, author N. N.-H. contacted J. C. Y. to discuss the status of *Laomedea* n.sp. (Barron River) and to establish its relationship to a species of *Laomedea* which she had under study from Vietnam. Though the undescribed specimen from Barron River was found by N. N.-H. to be very similar to her undescribed material from Vietnam, she was convinced that they represented two distinct species. Thus, N. N.-H. & J. C. Y. join to describe in this paper *Laomedea barronensis* n.sp. from northern Queensland, the third known living species of *Laomedea*, still unfortunately represented by only

a single ovigerous female. This publication then clears the way for N. N.-H. to describe the fourth species of *Laomedea* in a later independent paper. It is included, as *Laomedea* sp. Vietnam, in table 1 and in the key to *Laomedea* species.

The material examined comes from the collections of the Australian Museum, Sydney (AM), Muséum national d'Histoire naturelle, Paris (MNHN), Rijksmuseum van Natuurlijke Historie, Leiden (RMNH), Senckenberg Museum, Frankfurt (SMF).

Measurements given (in mm) in the description are: carapace length (cl.) measured from the tip of the rostrum to the posterior border of the carapace; total length (tl.) from the tip of the rostrum to the posterior border of the telson.

***Laomedea barronensis* n.sp.**  
(Figs 1, 2)

*Laomedea* n.sp. Yaldwyn *et* Wear, 1972: 126, 130, 137.

**MATERIAL EXAMINED.** — **Australia.** Barron River, near Cairns, Queensland, from a *Sesarma* burrow systems in the muddy bank of a mangrove-lined stretch of the river, 16°55'S - 145°46'E, 25.XI.1963: holotype ovig. ♀, cl. 9.5 mm, tl. 29 mm (AM P. 18362); J. C. Yaldwyn coll.

**OTHER MATERIAL EXAMINED.** — **Australia.** Hen and Chicken Bay, Parramatta River, near Sydney, 27.IX.1935, *Laomedea healyi* Yaldwyn *et* Wear: paratype ♂, cl. 30 mm, tl. 85 mm (RMNH D 29868), Leg. M. E. Gray, Don Australian Museum P. 10725.

**Japan.** Tataru River, Fukuoka-ville (Kyushu North), 13.V.1961, *Laomedea astacina* de Haan: 1 ovig. ♀, cl. 21 mm, tl. 59 mm (MNHN-Th 432), K. Sakai coll. and leg. — Yoshino-gawa, Tokushima, 9.VIII.1991, K. Sakai coll., *Laomedea astacina* de Haan: 1 ♀, cl. 14.5 mm, tl. 39 mm (SMF 23135). — Estuary of the Tataru River, 12.V.1963, *Laomedea astacina* de Haan: 1 ♀, cl. 17 mm, tl. 45 mm, 1 ♂, cl. 15 mm, tl. 36 mm (RMNH D 20131), K. Sakai leg.

**DIAGNOSIS**

Rostrum triangular with approximately pointed tip and a pair of distal teeth, each lateral border with a single tooth, no postocular spine. Antennular and antennal peduncles subequal in length; antennal scale small, rounded. Pereopod 1 ischium and merus with spinules on lower margin, propodus slightly dilated distally

with spinules on upper margin and upper part of mesial surface; fixed finger and dactyl with large flattened teeth on proximal half of cutting edge

and small rounded teeth distally; dactyl bearing lateral and mesial longitudinal upper crests. Telson slightly longer than broad, without

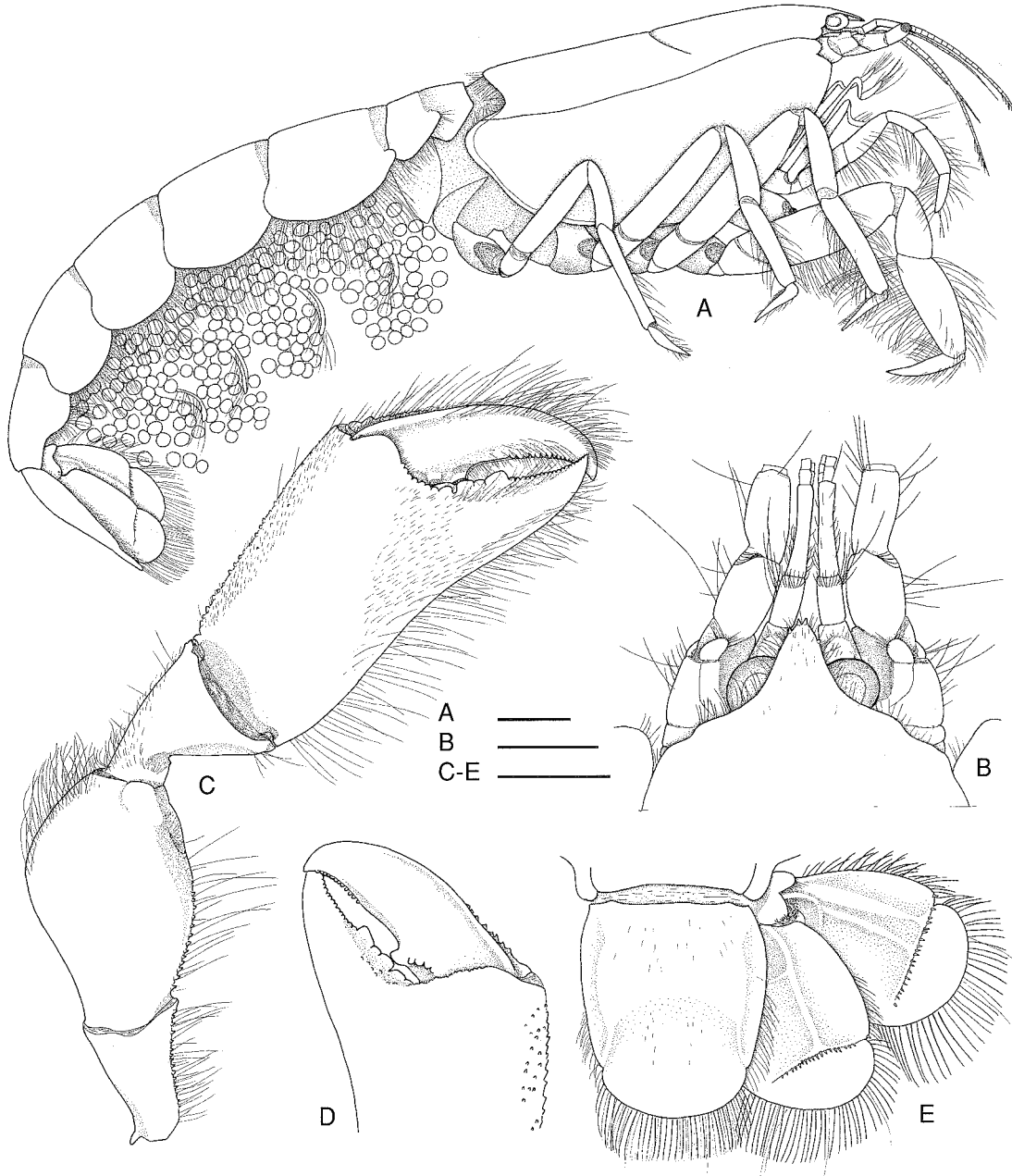


FIG 1. — *Laomedea barronensis* n.sp., holotype, ovig. ♀, tl. 29 mm. **A**, lateral view; **B**, anterior part of body, dorsal view; **C**, right pereopod 1, lateral view; **D**, distal part of same, mesial view; **E**, telson and uropods, dorsal view. Scale line: B, 1 mm; A, C-E, 2 mm.

median groove; lateral borders nearly parallel, with distal notch; posterior border convex, as wide at level of notch as at proximal margin.

#### DESCRIPTION

Carapace (Fig. 1A) rounded dorsally, *linea thalassinica* and cervical groove well defined; rostrum (Fig. 1B) triangular with pointed tip bearing a pair of distal teeth sitting side by side, each lateral border with a small tooth positioned unevenly on each side; no postocular spine. Abdominal somite 1 shortest, somites 2-6 subequal in length, with pleuron slightly produced posterolaterally. Telson (Fig. 1E) a little longer than wide, lateral borders weakly convex, approximately parallel, with a small notch near distal fourth, posterior border convex, proximal width subequal with width at notch level.

Eyes stalks (Fig. 1B) virtually absent, cornea now non pigmented (condition in life unknown). Antennular and antennal peduncles (Fig. 1B) subequal in length. Antennular peduncle with articles 1 and 3 subequal in length and about twice as long as article 2, outer flagellum longer than inner with distal aesthetascs. Antennal peduncle with L-shaped suture between articles 2 and 3 visible dorsally; articles 4 and 5 stout, approximately equal in length; both antennal flagella missing in holotype; antennal scale small, rounded, bearing a few short setae at tip.

All three maxillipeds (Fig. 1A) with long exopods consisting of peduncle and flagellum, the latter with slightly dilated distal half bearing setae. Maxilliped 3 with moderate, straight mesial toothed crest on ischium.

Pereopods 1 (Figs 1C, 2A) chelate, similar, subequal, left a little stouter, both with an upper proximal tooth on ischium, at articulation with basis; ischium less than half as long as merus bearing spinules on entire lower border, merus with spinules on proximal half of lower border only; carpus unarmed; propodus slightly dilated distally, with spinules and tubercles on dorsal border and upper part of mesial surface, an upper external convex extension at base of dactyl; cutting edge of fixed finger bearing a few small rounded teeth and four large flattened teeth on proximal half, small rounded teeth only on distal half; dactyl approximately 0.6 as long as propodus with

curved tip, pointed teeth on proximal half of upper border accompanied on external and mesial surface by a pair of upper longitudinal crests (Fig. 1C, D), cutting edge with one (slender pereopod, Fig. 1D) or two (stouter pereopod, Fig. 2A) prominent flattened teeth on proximal half, and small rounded teeth on distal third. Pereopod 2 (Fig. 2B) unarmed, merus and propodus each about 3 times as long as wide, upper and lower border of propodus nearly straight and tapering slightly distally. Pereopods 3 and 4 (Fig. 2C, D) both unarmed, each dactyl slender with a few corneous spinules on proximal upper border, proximal half of lower border finely pectinate. Pereopod 5 (Fig. 2E) simple, dactyl unarmed.

Pleopod 1 (Fig. 2F) uniramous in female holotype, with basis and articulated distal part. Pleopods 2-5 similar with lanceolate endopod and exopod of about same length. Eggs numerous, small, 0.35-0.45 mm in diameter, a few with dark eye spots.

Uropod (Fig. 1E) basis with 2-3 spinules on lower border of inner lobe; both endopod and exopod slightly longer than wide, posterior border rounded, suture bearing numerous pointed spinules.

#### TYPE LOCALITY AND COLLECTION INFORMATION

The holotype was collected by J. C. Y. on 25 November 1963, on the southern bank of the Barron River just north of Cairns, about 2 km down the river from the main road bridge and about 2 km inland from the river mouth. The river has quite extensive tidal rise and fall at this site with mangroves growing along suitable low sections of the river bank. There were a series of *Sesarma* crabs burrows with openings, at least 2.5 cm in diameter, at the top of a steep clay and mud bank down to the river. Specimens of *Sesarma* species responsible for these burrows are held in the Queensland Museum and in the Australian Museum.

The holotype of *L. barronensis* was collected by digging horizontally into the burrow system about 1.5 m down the river bank at low tide. It was a small, pale yellow ovigerous female with white chelae and orange-yellow eggs, found in a moist burrow but not in water. Also collected

from the cut open burrow systems were several smaller *Sesarma* specimens (Australian Museum collections). There is no doubt that the part of the burrow system in which the holotype of *L. barronensis* was found would have been submerged at high tide. On 27 November 1963, J. C. Y. again dug horizontally into the *Sesarma* burrow systems and caught a dark purplish-red specimen of *Laomedia healyi* (AM P. 18361, see Yaldwyn & Wear 1972: 131, 137) and a large

specimen of *Alpheus euphrosyne euphrosyne* de Man, 1897 (see Banner & Banner 1982: 232). *Uca* and *Metopograpsus* crab specimens were taken from mangroves within a few meters of the bank described above. Other collections from the *Sesarma* burrow systems at the same locality include an eleotrid fish, *Odonteleotris* sp. (AM IB. 6877) and specimens of *Alpheus e. euphrosyne*, taken by Bruce Campbell (30 August and 6 November 1963 respectively).

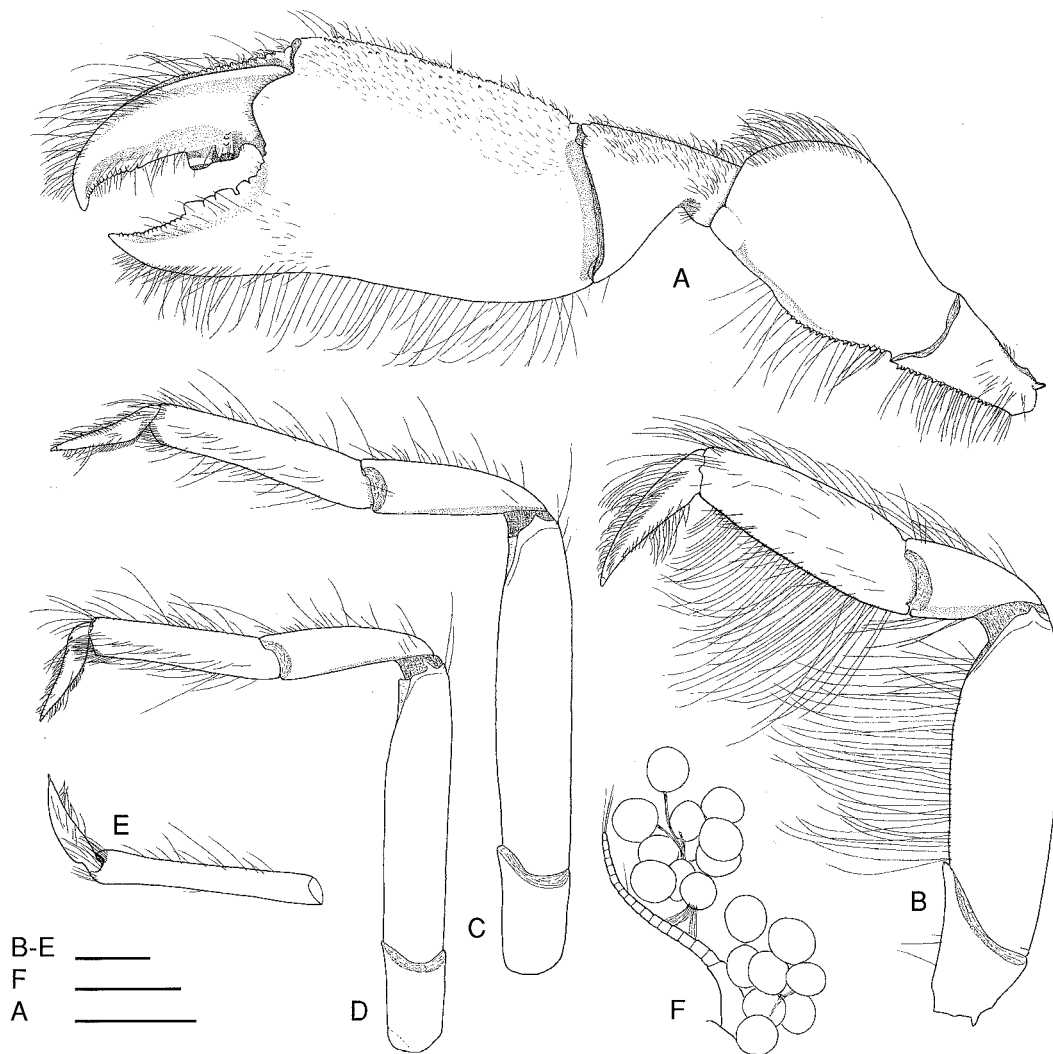


FIG. 2. — *Laomedia barronensis* n.sp., holotype, ovig. ♀, tl. 29 mm. **A, B, C, D**, left pereopod 1, 2, 3 and 4 respectively, lateral view; **E**, pereopod 5 propod and dactyl, lateral view; **F**, pleopod 1 bearing eggs. Scale line: B-F, 1 mm; A, 2 mm.

REMARKS

The holotype of *L. barronensis* has been compared to specimens of *L. astacina* from Japan, a paratype of *L. healyi* from Australia and the type specimens of *Laomedea* sp. from Vietnam. Details in this comparison are listed in table 1, partly adapted from Yaldwyn & Wear (1972). The new taxon can readily be separated from *Laomedea astacina* and *L. healyi* by having one

small tooth on both lateral borders of the rostrum, no postocular spine, no spine on anterolateral margin of carapace ventral to *linea thalassinica*, and antennular and antennal peduncles of about the same length. It is most closely related to *Laomedea* sp. from Vietnam. Distinguishing characters between the two will be given with the description of the latter species.

TABLE 1. — Main differences between *L. barronensis*, *L. sp.* Vietnam, *L. astacina* and *L. healyi*

Characters	<i>L. barronensis</i>	<i>L. sp. VN</i>	<i>L. astacina</i>	<i>L. healyi</i>
Rostrum	bluntly rounded	triangular	triangular	bluntly rounded
distal teeth	1 pair	single	1 pair	single
lateral teeth	1	absent	5-7	3-6
Postocular spine	absent	absent	present	present
Spine below <i>lin. thalassinica</i>	absent	absent	absent	present
Peduncle a1/ped. a2	approximately same length	approximately same length	shorter	shorter
Antennal scale	small, rounded	elongated	elongated	elongated
Pereopod 1				
upper carpus spines	absent	absent	present	absent
upp. propod border with ext. groove on dactylus	spinules	spinules	spines	denticles
Pereopod 2 propod				
approx. length/width	2.8	2.5	2	2
lower border	straight	straight	convex	convex
Telson median groove	absent	faint	absent	present
lateral spinules	absent	absent	absent	present

KEY TO THE KNOWN LIVING SPECIES OF *Laomedea*

(This key does not include the fossil species *L. praeastacina* Karasawa, 1989 from the Japanese Miocene)

1. Antennular peduncle shorter than antennal peduncle, one postocular spine ..... 3  
 — Antennular peduncle about as long as antennal peduncle, no postocular spine, no spine below *linea thalassinica* ..... 2
2. Rostrum with two distal, one lateral tooth ..... *L. barronensis*  
 — Rostrum with one distal tooth, lateral teeth absent ..... *Laomedea* sp. Vietnam
3. Rostrum triangular, two distal, 5-7 lateral teeth, no spine below *linea thalassinica*; no lateral spinules, no median groove on telson ..... *L. astacina*  
 — Rostrum bluntly rounded anteriorly, one distal, 3-6 lateral teeth, one spine below *linea thalassinica*; telson with both lateral spinules and median groove ..... *L. healyi*

## CORRECTION

Yaldwyn & Wear (1972: 137, 138, figs 13-20) described what they understood to be the first zoea larvae of *Laomedea astacina*, sent to them by Dr. K. Sakai from Japan, but suggested (1972: 140) that these larvae appeared to be closer to the first stage zoea of a member of the family Upogebiidae than to the known first stage zoea of the other laomediid genera *Jaxea* and *Naushonia*. Fukuda (1982) has now described the true first five zoeal stages of *Laomedea astacina* and pointed out (1982: 19) that Yaldwyn & Wear's supposed first stage zoea provided by Sakai "displays the characters of *Upogebia*". Present author J. C. Y. and R. G. Wear now recognise that their Japanese zoea, sent without confirming adult parent, must indeed be from a species of upogebiid inadvertently sent from Japan, incorrectly labelled as *L. astacina*.

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## REFERENCES

- Banner D. M. & Banner A. H. 1982. — The alpheid shrimp of Australia. Part III: the remaining alpheids, principally the genus *Alpheus*, and the family Ogyrididae. *Records Australian Museum* 34 (1): 1-357.
- Fukuda Y. 1982. — Zoeal stages of the Burrowing Mud Shrimp *Laomedea astacina* De Haan (Decapoda: Thalassinidea: Laomediididae) reared in the Laboratory. *Proceedings Japanese Society Systematic Zoology* 24: 19-31.
- Karasawa H. 1989. — Decapod crustaceans from the Miocene Mizunami Group, Central Japan. Part I. Superfamily Thalassinioidea, Leucosioidea and Grapsidoidea. *Bulletin Mizunami Fossil Museum* 16: 1-28.
- Kim Hoon Soo 1973. — *Illustrated Encyclopedia of Fauna and Flora of Korea*. Volume 14. Anomura Brachyura. Samhwa Publishing Company Ltd., 694 p.
- Morgan G. J. 1990. — A collection of Thalassinidea, Anomura and Brachyura (Crustacea: Decapoda) from the Kimberley Region of northwestern Australia. *Zoologische Verhandlungen* 265: 1-90.
- Poore G. C. B. & Griffin D. J. G. 1979. — The Thalassinidea (Crustacea: Decapoda) of Australia. *Records Australian Museum* 32 (6): 217-321.
- Sakai K. 1962. — Systematic studies on Thalassinidea. I. *Laomedea astacina* De Haan. *Publications Seto Marine Biological Laboratory* 10 (1): 27-34.
- Yaldwyn J. C. & Wear R. G. 1970. — Preliminary Description of a New Burrowing Mud-shrimp from Eastern Australia (Crustacea, Macrura Reptantia, Laomediididae). *Australian Zoologist* 15 (3): 384-385.
- 1972. — The Eastern Australian, burrowing mud-shrimp *Laomedea healyi* (Crustacea, Macrura Reptantia, Laomediididae) with notes on larvae of the genus *Laomedea*. *Australian Zoologist* 17 (2): 126-141.

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