

## Second Record of *Luciades agana* Kropp and Manning, 1996 (Crustacea, Decapoda, Cryptochiridae) from Tonga, South Pacific

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**Abstract** An ovigerous female of *Luciades agana* Kropp and Manning, 1996, from a submarine cave in Tonga is described and illustrated. It represents the second record of the species. The original description was based on a preovigerous female from Guam collected from depths of 128–137 m deep. The present ovigerous female agrees well with the holotype except for the relatively larger anteromesial tubercles on the eyestalk and smaller tubercles on the chelipedal palm. The present record substantially extends its geographical distribution east- and southwards and reduces its bathymetrical range to 34 m.

**Key words:** goal crab, Cryptochiridae, Tonga, new record.

### Introduction

The cryptochirid genus *Luciades* Kropp and Manning, 1996, was established for a single species, *Luciades agana* Kropp and Manning, 1996, which was described on the basis of a single preovigerous female specimen from East Agana Bay, Guam, at the depth of 128–137 m. *Luciades* is similar to *Neotroglocarcinus* Takeda and Tamura, 1980, and *Opecarcinus* Kropp and Manning, 1987, in the vase-shaped carapace, but can be distinguished from *Neotroglocarcinus* in having a complete medial suture on the sternite of the third ambulatory leg, and *Opecarcinus* in lacking a distal expansion on the merus of the first ambulatory leg.

During the research project entitled “Natural history of submarine cave organisms in Indo-Pacific” in 1996–1998, Dr. Tomoki Kase of the National Science Museum (now, National Museum of Nature and Science), Tokyo, conducted several zoological surveys of the submarine caves under the financial support from the Japanese government. On the basis of this mate-

rial, some interesting cavernicolous crabs have been recorded (Takeda, 1998, 2000). In this paper, we describe and illustrate *L. agana* obtained from submarine cave of Tonga for the second record of the species.

Measurements, given in millimeters (mm), are of the greatest carapace length (cl) and width (cw), respectively. The specimen examined is deposited in the National Museum of Nature and Science, Tsukuba (NSMT). The abbreviations P1–P5, cl and cw are used for pereopods 1–5, carapace length and carapace width, respectively.

### Taxonomy

Family Cryptochiridae Paul’son, 1875

*Luciades agana* Kropp and Manning, 1996

(Figs. 1, 2)

*Luciades agana* Kropp and Manning, 1996: 536, figs. 4, 5.

*Material examined.* One ovigerous female (cl 2.2 mm, cw 1.8 mm), NSMT-Cr 22311, Stn. HA-8, “Green Wall” diving site, North

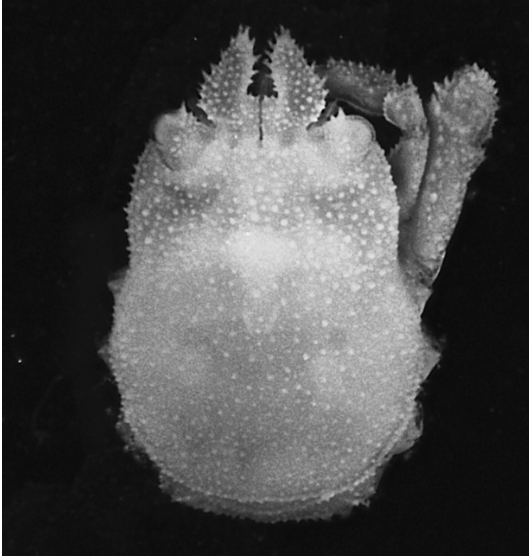


Fig. 1. *Luciadetes agana* Kropp and Manning, 1996. Ovigerous female (cl 2.2mm, cw 1.8mm), NSMT-Cr 22311.

Haano I., Ha'apai Group, Tonga (19°38.162'S, 174°17.790'W), 34m deep, coral sand, coll. S. Ohashi, H. Kinjo, G. Paulay, I. Hayami and T. Kase, 11 November 1996.

*Description.* Carapace (Figs. 1, 2A) 1.2 times longer than wide. Anterior third of carapace deflected, sharply set off from posterior carapace. Posterior two-thirds of carapace with shallow depression behind cardiac region. Carapace dorsal surface ornamented with various granules and conical tubercles, largest at anterior third, diminishing in size posteriorly. Anterolateral margins of carapace with small conical tubercles, anterolateral angle without prominent tubercle. Inner orbital angle without prominent tubercle, extending beyond apex of anterolateral angle. Frontal margin slightly concave, fringed with conical tubercles, lacking prominent lateral tubercle, width 0.4 that of carapace at anterolateral angle, latter 0.7 greatest carapace width. Orbit deep, broadly V-shaped, margin granulate. Pterygostomian region not separated from hepatic region.

Basal segment of antennular peduncle (Fig. 2A, B) well developed, lateral margin extending beyond inner orbital angle but not to cornea, with

angled lateral lobe. Dorsal surface tuberculated and granulated to different degrees, with several larger marginal tubercles. In ventral view, basal segment tapering anteriorly, length 1.7 times width; distal margin 1.3 times as long as lateral margin.

Most of eyestalk exposed from dorsal view. Cornea lateral in dorsal view, 0.5 length of stalk, laterally not extending beyond anterolateral angle of carapace. Peduncle with granules and tubercles distally, largest anteriorly.

External surface of ischium of third maxilliped (Fig. 2C) smooth, with some granules along distal 0.3 of lateral margin, anteromesial lobe strongly produced, extending to half length of propodus; lateral margin of merus granulated, mesial margin of internal surface (Fig. 2D) with 1 plumo-denticulate seta; exopod present.

Thoracic sternite 4 (Fig. 2E) with 14 granules. Sternite 5 smooth, without tubercles at laterally. Gonopore oval, lateral margin without anterior hood. Sternite 7 with longitudinal median groove.

Cheliped (P1) (Fig. 2F) small, 0.74 times as long as carapace; merus shorter than manus, dorsal and ventral margins tuberculate; outer surface of carpus tuberculate; palm height 0.6 length; dactylus subequal in length to dorsal margin of palm; cutting edges of fingers entire.

Merus of P2 (Fig. 2G) 2.0 times longer than high, with conical tubercles on dorsal and ventral margins, covered with granules and tubercles on distodorsal half of posterior surface; carpus with conical tubercles on outer margin, granulate on lateral half of posterior surface; propodus with conical tubercles on inner margin, tuberculate on posterior surface; dactylus smooth, incurved.

Merus of P5 (Fig. 2H) 1.7 times longer than high, with conical tubercles on dorsal and ventral margins, covered with granules and tubercles on dorsal half of posterior surface; carpus with conical tubercles on outer margin, sparsely granulate on lateral half of posterior surface; propodus with conical tubercles on inner margin and proximal half of outer margin; dactylus smooth, incurved.

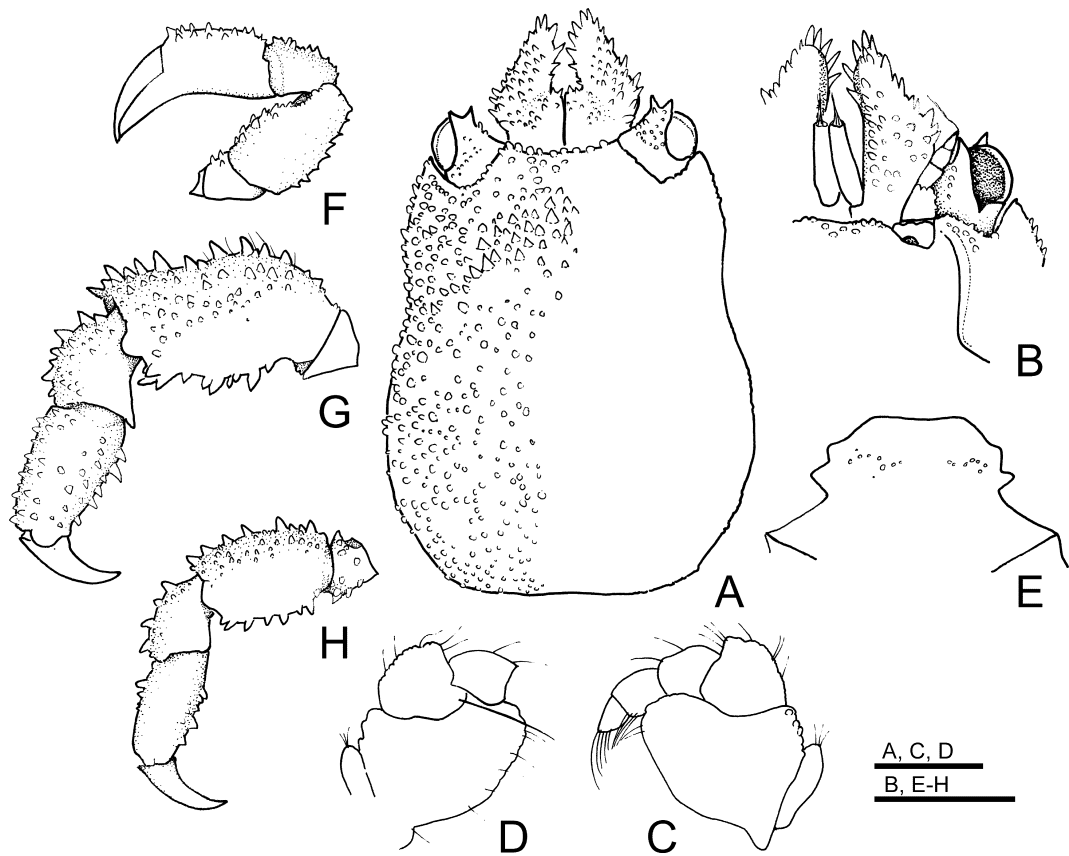


Fig. 2. *Luciades agana* Kropp and Manning, 1996. Ovipigerous female (cl 2.2 mm, cw 1.8 mm), NSMT-Cr 22311. — A, Carapace, dorsal view; B, antennule and orbit, ventral view; C, left third maxilliped, external view; D, same, propodus and dactylus omitted, internal view; E, anterior part of thoracic sternum, ventral view; F, left cheliped (P1), ventral view; G, left P2, posterior view; H, left P5, posterior view. Scales for A, B, E–H = 0.5 mm; scale for C, D = 0.25 mm.

Abdomen with 6 somites, not exceeding carapace width; somites 1–3 calcified, somites 4–6 poorly calcified, translucent; somite 1 very short, visible from dorsal view; somite 2 visible from dorsal view; somite 3 only visible from ventral view; somites 4–6 subequal length, somite 5 widest. Pleopods 1 and 4 lacking; pleopods 2 and 3 uniramous.

*Host.* The pavonid coral *Leptoseris papyracea* (Dana) (Kropp and Manning, 1996).

*Depth.* 34 m (present study), 128–137 m (Kropp and Manning, 1996).

*Distribution.* Guam (type locality, Kropp and Manning, 1996) and Tonga (present study).

*Remarks.* The present ovipigerous female speci-

men agrees well with the original account by Kropp and Manning (1996) even though it was described on a single previgigerous female specimen. The only difference is the relatively larger anteromesial tubercles on the eyestalk and smaller tubercles on the chelipedal palm, which are not significant at the species level. The present record substantially extends its geographical distribution east- and southwards, and the bathymetric range for the species is now shallower at 34 m.

Although the present specimen was found from substrate brushed out from the wall of submarine cave, this species is a symbiont of scleractinian coral. It seems likely that the host coral

attached to the wall of cave was damaged during brushing and the crab was removed in the process.

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