

ON A NEW SPECIES OF CAVERNICOLOUS *NEOLIOMERA*  
(CRUSTACEA: DECAPODA: BRACHYURA: XANTHIDAE)  
FROM CHRISTMAS ISLAND AND RYUKYUS, JAPAN

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**ABSTRACT.** - A new species of cave-dwelling xanthid crab of the subfamily Liomerinae, *Neoliomera cerasinus*, is described from marine caves in Christmas Island (Indian Ocean) and Ryukyus (Japan). The species, the largest known in the genus, is characterised by its very broad carapace, entire anterolateral margin without emarginations or lobes, very granular carapace and appendages, elongate ambulatory dactyli and structure of the male first gonopod.

**KEY WORDS.** - Crustacea, Xanthidae, *Neoliomera*, Christmas Island, Ryukyus, new species.

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INTRODUCTION

In early 2000, through the kindness of Ms. Lisa Kirkendale, the author received an interesting specimen of a cavernicolous crab from Christmas Island in the Indian Ocean which had been obtained by marine cave-explorers. The specimen proved to belong to a new species of *Neoliomera* Odhner, 1925 (Xanthidae: Liomerinae). In mid-2001, the author obtained a specimen of another cavernicolous *Neoliomera* from a marine cave in the Ryukyus in Japan, through the kindness of Mr. Yoshihisa Fujita. While the Ryukyu specimen is larger than the Christmas Island one and has a slightly smoother carapace; there are no major characters that can differentiate them; and despite their very disjunct distributions, both are clearly conspecific.

The present paper serves to describe this new species of cave-dwelling *Neoliomera*, which is also the largest species of the genus known thus far. The abbreviations G1 and G2 are used for the male first and second pleopods respectively. Measurements provided, in millimeters, are of the carapace width and length respectively. Specimens are deposited in the Western Australian Museum (WAM), Perth, Australia; and Zoological Reference Collection (ZRC), Raffles Museum of Biodiversity Research, National University of Singapore.

TAXONOMIC ACCOUNT

FAMILY XANTHIDAE MACLEAY, 1838 (SENSU  
GUINOT, 1978)

SUBFAMILY LIOMERINAE SAKAI, 1976  
(SENSU SERÈNE, 1984)

*Neoliomera* Odhner, 1925

*Neoliomera cerasinus*, new species  
(Figs. 1-5)

**Material examined.** - Holotype-male (32.0 by 19.2 mm) (WAM), subterranean cavern, on sand, 5-10 m depth, 10 m deep into cave, Thunder Dome Cave, Christmas Island, Indian Ocean, coll. L. Kirkendale, 1 Dec.1999.

Other - Male (39.2 by 24.1 mm) (ZRC), underwater limestone cave, 35 m depth, coll. T. Kawamoto, 1 Oct.1999.

**Description of holotype male.** - Carapace regions very poorly defined; grooves separating gastric and branchial regions very shallow but just discernible; shallow but visible Y-shaped groove separating poorly defined epigastric regions; dorsal surface covered with numerous evenly spaced small rounded granules, those on median parts lower and relatively smaller; pterygostomial, suborbital and sub-branchial regions covered with same pattern of granules. Front produced beyond orbits; bilobed, truncate lobes separated by shallow but distinct cleft; margin

gently convex, hardly deflexed downwards. Orbits very small; cornea relatively small but pigmented; ocular peduncle with granules of various sizes. Supraorbital margin granular; external orbital angle marked by slightly larger rounded granule. Infraorbital margin granular, without prominent teeth, spines or large tubercles. Anterolateral margin strongly convex; lined with numerous sharp and rounded granules of various sizes, those on anterior two-thirds tend to be larger, with 3 large evenly-spaced granules on posterior one-third; widest point of carapace denoted by last large lateral granule, just before beginning of strongly concave posterolateral margin. Posterior margin of carapace gently convex, with transverse subparallel ridge of closely set granules just before margin. Antennules folding transversely. Antennal flagellum short, passes through orbital hiatus, just reaching to outer edge of orbit; basal segment subrectangular, relatively large. Surface of epistome medially depressed transversely; posterior margin almost straight from frontal view, with median part slightly dilated, with small but distinct median cleft. Endostome without discernible ridges.

Outer surface of third maxilliped gently granulose, granules smaller than those on adjacent regions. Ischium subrectangular, median oblique sulcus submedian, distinct. Merus quadrate, anteroexternal margin angular but rounded, not distinctly produced, median part gently depressed. Exopod relatively stout proximally, distal part almost reaching to anterior edge of merus, flagellum long.

Thoracic sternum relatively broad, entire surface covered with rounded granules of varying sizes; sternites 1 and 2 fused, not clearly separated but with indistinct row of granules demarcating segments; suture between sternites 3 and 4 deep, complete; suture between sternites 3 and 4 only visible laterally, median part represented only by gently transverse depression. Gonopore coxal.

Chelipeds symmetrical. Outer and inner surfaces of merus, carpus and chelae covered with numerous rounded granules of varying sizes, those on dorsal margins generally larger. Carpus rounded, inner distal angle with 2 distinct teeth. Merus without distinct spines or teeth. Fingers shorter than palm, outer surface of each finger with 2-3 longitudinal grooves, cutting margins with several well developed teeth, tip curved, inner surface excavated, subspatuliform in form, inner surface with 2 main tufts of long, stiff simple setae on each finger. Dactylus completely pigmented dark brown with tip

lighter coloured. Pollex pigmented dark brown except for light-coloured tip, pigmentation reaching into palm some distance on both inner and outer surfaces before dilating into well developed patch.

Ambulatory legs not prominently elongate; second pair longest. Margins of all segments with scattered long and short simple, translucent setae which partially obscures margins. Margins and submarginal outer surfaces not cristate, with numerous granules; those on dorsal margin uneven in size, of varying sharpness, margin appears serrated, those on ventral margins and submarginal surfaces more rounded; outer surface with small granules. Outer surface of carpus and propodus finely granular; margins not strongly granular or serrate. Dactylus long, subequal in length to propodus, styliform, unarmed, with corneous distal tip. Dactylo-propodal lock well developed.

Abdomen with segments 3-5 completely fused, sutures separating segments not discernible, lateral margins gently concave; segments 1-3 trapezoidal, segment 6 broader than long, lateral margins gently concave; telson triangular, lateral margins almost straight, tip rounded; surface of telson and segments 5 and 6 microscopically granular, appearing almost smooth to naked eye, segment 4 weakly granulated proximally, segments 1-3 prominently granular.

G1 long, broadly C-shaped; distal part gently curving outwards, not prominently elongate, gently tapering; dorsal margin with numerous long plumose setae. G2 short, with very short distal segment and junction between segments dilated into spatuliform structure.

**Variation.** – The specimen from Japan is larger than the holotype, but agrees in most characters. The granules on the median part of the carapace and appendages, however, tend to be lower or more eroded, but this is probably age-related. There are no significant differences, with even their G1s almost identical in form.

**Colour.** – The holotype was described as red in life (L. Kirkendale, pers. comm.). The Japanese specimen, which was photographed when still fresh, is bright red in life (Fig. 1).

**Etymology.** – The species name is derived from the Latin "cerasinus" for cherry coloured. The name is used as a noun in apposition.

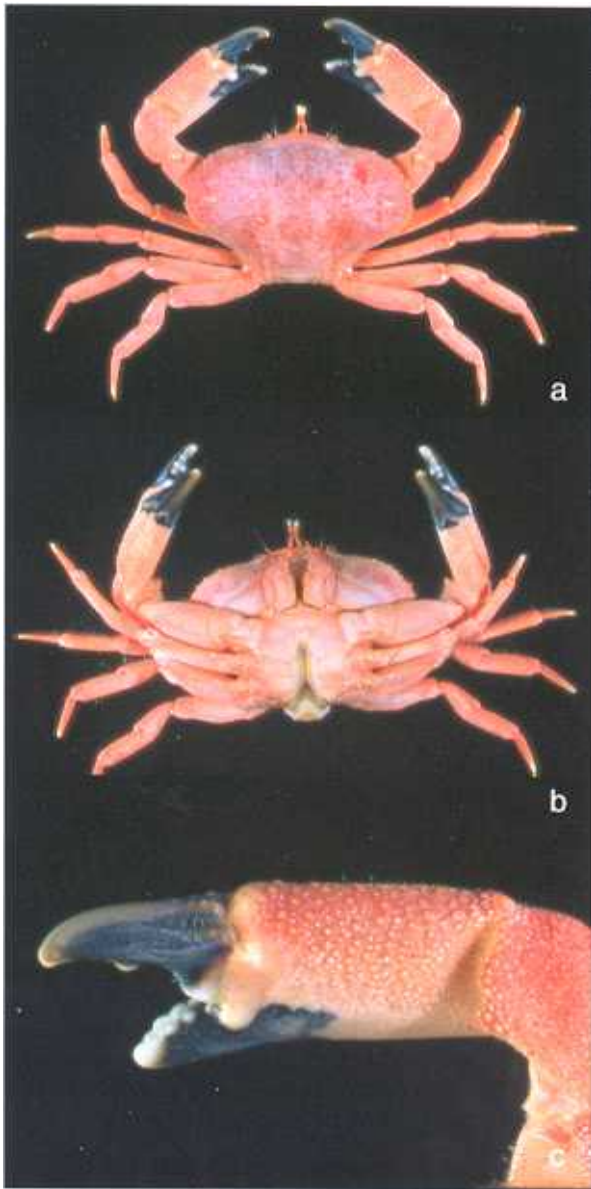


Fig. 1. *Neoliomera cerasinus*, new species, colour in life, male (39.2 by 24.1 mm) (ZRC). a, dorsal view; b, ventral view; c, inner surface of chela. Photograph courtesy of Y. Fujita.

**Remarks.** – The subfamily Liomerinae currently contains six genera - *Actites* Lanchester, 1901, *Bruciana* Serène, 1977, *Liomera* Dana, 1851, *Meriola* Davie, 1992, *Neoliomera* Odhner, 1925, and *Paraliomera* Rathbun, 1930 (see Serène, 1984), with 53 recognised species (unpublished data). *Neoliomera* Odhner, 1925 (type species *Zozymus pubescens* H. Milne Edwards, 1834), is the second largest genus in the subfamily, with 15 recognised species, viz. *N. demani* Forest & Guinot, 1961, *N. insularis* (Adams and White, 1849), *N. intermedia* Odhner, 1925, *N. lippa*

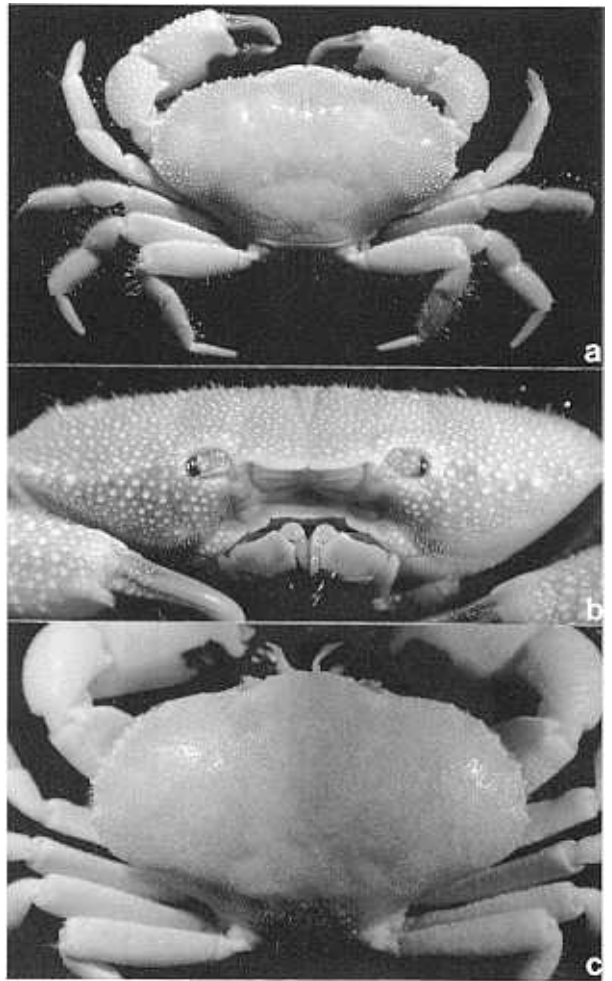


Fig. 2. *Neoliomera cerasinus*, new species. a, b, holotype male (32.0 by 19.2 mm) (WAM), Christmas Island; c, male (39.2 by 24.1 mm) (ZRC). a, overall view; b, c, carapaces.

(Nobili, 1905), *N. nobilii* Odhner, 1925, *N. ovata* Tweedie, 1950, *N. praetexta* (Rathbun, 1906), *N. pubescens* (H. Milne Edwards, 1834), *N. richtersi* (De Man, 1889), *N. richteroides* Sakai, 1965, *N. sabaeva* (Nobili, 1905), *N. striata* Buitendijk, 1941, *N. sundaica* (De Man, 1888), *N. themisto* (De Man, 1889) and *N. variolosa* (A. Milne Edwards, 1873) (see Odhner, 1925; Tweedie, 1950; Serène, 1984; Davie, 1992).

Of the species that have very broad carapaces (width to length ratio greater than 1.60), poorly defined carapace regions, do not have any clearly defined anterolateral lobes or teeth, and do not have the frontal and anterolateral margins emarginated as a rim, *Neoliomera cerasinus*, new species, is perhaps closest to *N. nobilii* Odhner, 1925. *Neoliomera cerasinus*, however, can easily be distinguished from *N. nobilii*, in that its carapace is proportionately broader, the widest point of the

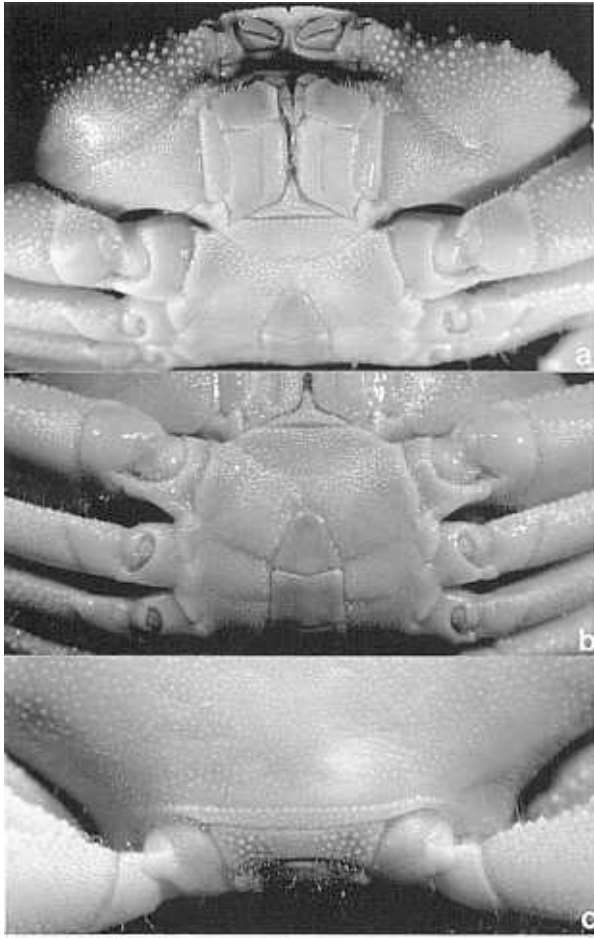


Fig. 3. *Neoliomera cerasinus*, new species, holotype male (32.0 by 19.2 mm) (WAM), Christmas Island. a, posterior part of carapace; b, third maxillipeds, antennules and antennae; c, anterior part of thoracic sternum.

carapace is at the junction of the antero- and posterolateral margins (vs. well before the junction), more produced and somewhat more acute front, proportionately smaller orbits, more granular posterior carapace surfaces and posterior carapace margin, the carpus of the cheliped has two well developed spines (vs. two low teeth), relatively shorter cheliped fingers, proportionately longer ambulatory meri, relatively much longer ambulatory dactyli, and the distalmost part of the G1 is relatively short (vs. prominently elongate), with the dorsal margin lined with numerous long setose setae (vs. glabrous) (cf. Odhner, 1925: pl. 2 fig. 9; Serène, 1984: Fig. 29, pl. 9B). In any case, *N. nobilii* is only known from the Red Sea thus far.

One species not considered by Serène (1984) in his account is *N. ovata* Tweedie, 1950, described from Pulau Aor (Peninsular Malaysia) in the

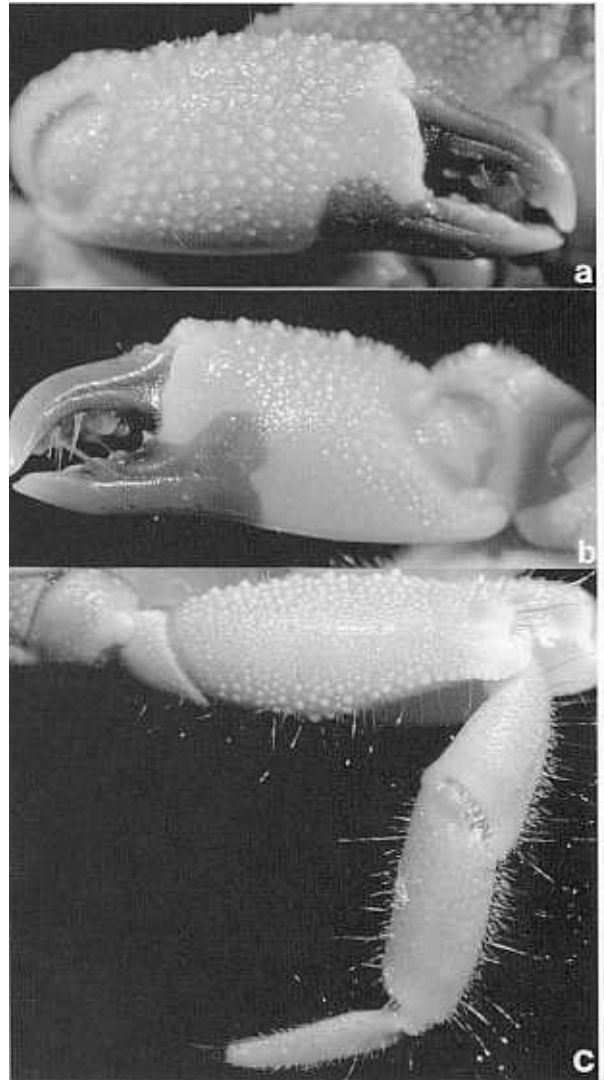


Fig. 4. *Neoliomera cerasinus*, new species, holotype male (32.0 by 19.2 mm) (WAM), Christmas Island. a, right chela (outer view); b, right chela (inner view); c, right last ambulatory leg.

South China Sea. This species, however, has two low but distinct lobes on the anterolateral margin and its carapace is much smoother (cf. Tweedie, 1950: 90, Fig. 3).

Both specimens of *N. cerasinus* were obtained from inside marine caves. The species, however, does not have any special adaptations to a cavernicolous lifestyle, other than perhaps the orbits are relatively smaller than other congeners, although it is still not as reduced as that in troglobites (obligate cavernicoles). The life colours, a bright red, also suggests that it is not an obligate cave-dwelling species.

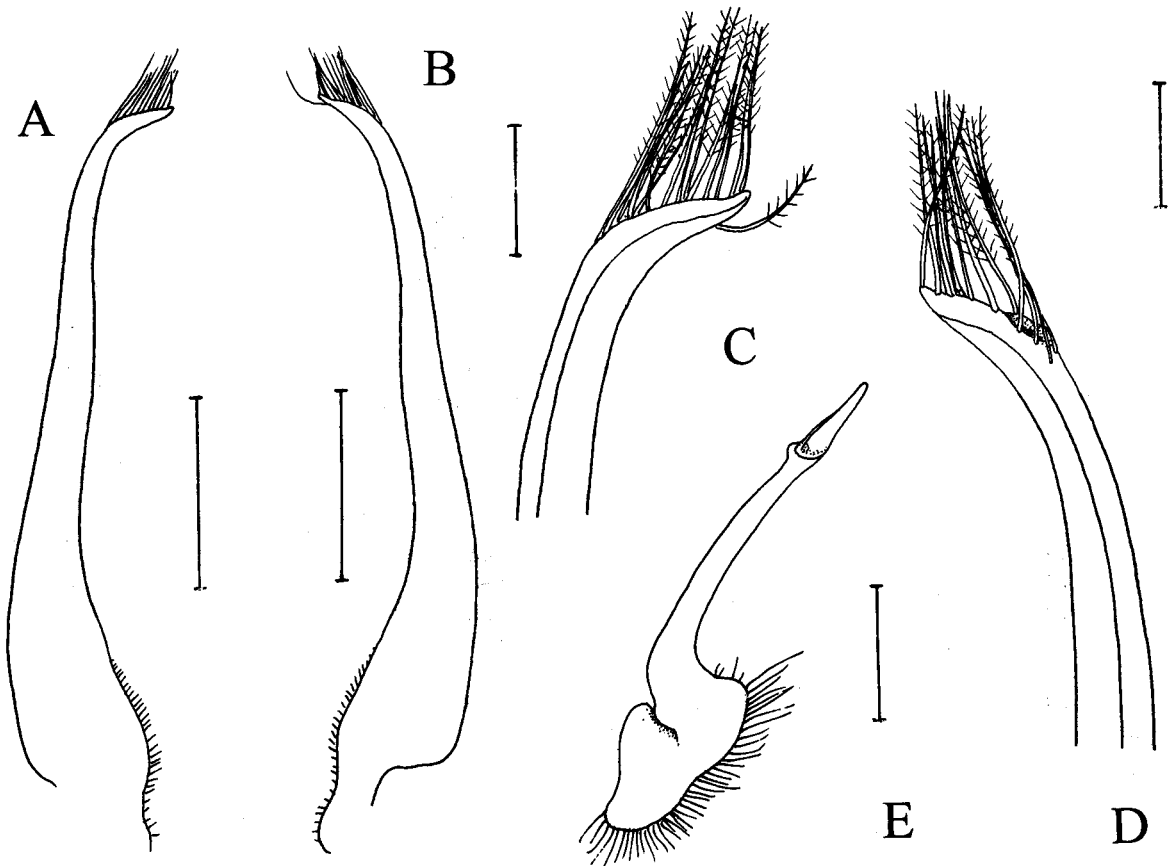


Fig. 5. *Neoliomera cerasinus*, new species, holotype male (32.0 by 19.2 mm) (WAM), Christmas Island. A-D, left G1; E, left G2. Scales: A, B = 2.0 mm; C-E = 0.5mm.

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