

**NOTES ON DEEP-SEA SPIDER CRABS OF THE GENUS *CYRTOMAIA* MIERS, 1886,  
FROM THE PHILIPPINES (CRUSTACEA: DECAPODA: BRACHYURA: MAJIDAE),  
WITH DESCRIPTION OF A NEW SPECIES**

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**ABSTRACT.** – New collections of deep-sea crabs from the Bohol Sea in Central Philippines have obtained a large series of specimens of the deep-sea spider crabs of the genus *Cyrtomaia* (Majidae), of which one is here recognised as new, *C. largoi*, new species. Three other species: *C. murrayi* Miers, 1886, *C. horrida* Rathbun, 1916, and *C. echinata* Rathbun, 1916, are all represented by an extensive series of specimens, allowing invaluable insights into their difficult taxonomy and ecology. One nominal subspecies, *Cyrtomaia horrida pilosa* Ihle & Ihle-Landenberg, 1931, is synonymised with *C. horrida*.

**KEY WORDS.** – Crustacea, Decapoda, Brachyura, Majidae, taxonomy, new species, Philippines.

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## INTRODUCTION

The Indo-West Pacific spider crabs of the genus *Cyrtomaia* Miers, 1886 (Majidae) occur only in the deep-sea, at depths below 200 m. Twenty-eight species were recognised until the present study (Table 1), although the taxonomy of several species has been problematic due to a lack of material. It has also been difficult at times to appreciate the degree of variation that may be present as even some well-known species are represented by only a few specimens.

For several years now, the second author, as part of a long-term collaborative exercise with the University of San Carlos (USC) in Cebu, the Philippines, has been examining material of many deep-sea species obtained by fishermen on the tiny island of Balicasag, near Panglao, in the Bohol Sea. The fishermen in this community use tangle nets on the steep rocky and reef slopes around the island, setting them at depths of 400 to 600 m. Although these techniques are mainly used to catch commercially valuable gastropods and bivalves for the lucrative shell-trade, many crabs are also incidentally caught (see McLay & Ng, 2005). These collections have already revealed a very rich diversity of rare and new decapod crustaceans (see Takeda & Manuel, 2000; Ng & Liao, 2002; Ng, 2003; Ng & Ho, 2003; Galil, 2003; Crosnier & Ng, 2004; McLay & Ng, 2004, 2005; Ng & McLay, 2005; Galil &

Takeda, 2004; Komatsu et al., 2005; Takeda & Manuel-Santos, 2007). Amongst this material is an extensive collection of majids of the genus *Cyrtomaia*. Between 2004 and 2005, the Muséum national d'Histoire naturelle in Paris and Raffles Museum of Biodiversity Research of the National University of Singapore, collaborated with the USC, Philippine National Museum in Manila, and Philippine Bureau of Fisheries and Aquaculture in undertaking two major expeditions; PANGLAO 2004, which sampled extensively around the islands of Panglao and Balicasag up to depths of 200 m (Bouchet & Ng, 2004); and PANGLAO 2005, which was a deep sea-cruise across the Bohol and Sulu Seas between 100 and 2,400 m deep (Richer de Forges et al., 2005). These expeditions obtained a wealth of malacological and decapod crustacean material, including an excellent series of *Cyrtomaia* specimens.

The present paper reports on the *Cyrtomaia* material collected by these Philippine explorations. Although there are only four species, and only one is new, the documentation of the material is important. This is because the three known species (two of which were described from the Philippines) are all generally regarded as rare to very rare, being very poorly-represented in collections. The extensive material of these three species allows a much better understanding of their taxonomy and ecology.

List 1. List of *Cyrtomaia* species (names in square parenthesis indicate original genus)

1. *Cyrtomaia balssi* Ihle & Ihle-Landenberg, 1931
2. *Cyrtomaia bicornis* Ihle & Ihle-Landenberg, 1931
3. *Cyrtomaia cornuta* Richer de Forges & Guinot, 1983
4. *Cyrtomaia coriolisi* Richer de Forges & Guinot, 1983
5. *Cyrtomaia curviceros* Bouvier, 1915
6. *Cyrtomaia danieli* Zarenkov, 1990
7. *Cyrtomaia echinata* Rathbun, 1916
8. *Cyrtomaia ericina* Guinot & Richer de Forges, 1982
9. *Cyrtomaia furici* Richer de Forges & Guinot, 1983
10. *Cyrtomaia gaillardii* Guinot & Richer de Forges, 1982
11. *Cyrtomaia goodridgei* MacArdle, 1900
12. *Cyrtomaia granulosa* Guinot & Richer de Forges, 1982
13. *Cyrtomaia griffini* Richer de Forges & Guinot, 1990
14. *Cyrtomaia guillei* Guinot, 1985
15. *Cyrtomaia hispida* (Borradaile, 1916) [*Echinomaia*]
16. *Cyrtomaia horrida* Rathbun, 1916  
= *Cyrtomaia horrida pilosa* Ihle & Ihle-Landenberg, 1931
17. *Cyrtomaia ihlei* Guinot & Richer de Forges, 1982
18. *Cyrtomaia intermedia* Sakai, 1939
19. *Cyrtomaia lamellata* Rathbun, 1906
20. *Cyrtomaia largoi*, new species
21. *Cyrtomaia maccullochi* Rathbun, 1918
22. *Cyrtomaia micronesica* Richer de Forges & Ng, 2007
23. *Cyrtomaia murrayi* Miers, 1886
24. *Cyrtomaia owstoni* Terazaki, 1903  
= *Cyrtomaia horrida japonica* Balss, 1924  
= *Cyrtomaia septemspinosa* Rathbun, 1932
25. *Cyrtomaia platyceros* Doflein, 1904
26. *Cyrtomaia platypes* Yokoya, 1933
27. *Cyrtomaia smithi* Rathbun, 1893
28. *Cyrtomaia suhmii* Miers, 1886
29. *Cyrtomaia tenuipedunculata* Ihle & Ihle-Landenberg, 1931

Specimens are deposited in the Crustacean Collection of the National Museum of the Philippines (NMCR); Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research, National University of Singapore; and Muséum national d'Histoire naturelle (MNHN), Paris. The terminology used essentially follows that by Griffin & Tranter (1986). The abbreviations G1 and G2 refer to the male first and second pleopods respectively; while the P2–P4 refer to the first to fourth ambulatory legs respectively. The measurements provided, in millimetres (mm), are of the carapace length (cl) and width (cw) respectively.

## TAXONOMY

### MAJIDAE Samouelle, 1819

#### SUBFAMILY INACHINAE MacLeay, 1838

#### *Cyrtomaia* Miers, 1886

*Cyrtomaia* Miers, 1886 (type species *Cyrtomaia murrayi* Miers, 1886, subsequent designation by Guinot & Richer de Forges, 1982b; gender feminine)

*Echinomaia* Borradaile, 1916 (type species *Echinomaia hispida* Borradaile, 1916, by monotypy; gender feminine)

**Remarks.** – The genus *Cyrtomaia* Miers, 1886, was established for *C. murrayi* Miers, 1886, from Indonesia (type species selected by Guinot & Richer de Forges, 1982b). Guinot & Richer de Forges (1982a, b) partially reviewed the genus and recognized a total of 21 species. Griffin & Tranter (1986), however, disagreed with the validity of some of the characters proposed by Guinot & Richer de Forges (1982a, b), arguing that there was more extensive variation than was previously recognized (especially for taxa for which there was little material), and recognized just 17 species. Guinot & Richer de Forges (1986), utilizing the extensive material from the MUSORSTOM II Expedition, disagreed with some of Griffin & Tranter's arguments, and added more discussion on the validity of the various species. Richer de Forges & Guinot (1988, 1990) and Richer de Forges & Ng (2007) subsequently described more species. We also do not completely agree with all the points raised by Griffin & Tranter (1986) because some of the differences reported cannot be explained by normal variation. Until a complete revision of the genus can be done, we recognise all of the nominal species for which the described characters are

distinct. Therefore, we here recognise 29 species (Table 1). All occur in the upper bathyal zone, at 200 to 1,000 m depth.

***Cyrtomaia murrayi* Miers, 1886**

(Fig. 1A, B)

*Cyrtomaia murrayi* Miers, 1886: 15. (See Guinot & Richer de Forges, 1986: 115; Ng & Huang, 1997: 269; for complete synonymy).

**Material examined.** – **Philippines:** Bohol Sea, Balicasag Island, collected with tangle nets by fishermen – Jul.2003: 3 males (29.2 × 35.4 mm, 23.3 × 27.5 mm, 22.7 × 25.8 mm), 1 ovigerous female (27.3 × 32.4 mm) (ZRC 2007.0021); 28 Nov.2001: 4 males, 3 females, 8 ovigerous females (ZRC 2001.0620); 28 Nov.2001: 3 males, 3 ovigerous females (MNHN, ex-ZRC 2001.0620); Jun.2002: 4 males (27.9 × 32.8 mm, 22.5 × 26.4 mm, 22.8 × 27.1 mm, 17.4 × 20.3 mm), 1 ovigerous female (23.7 × 27.4 mm) (NMCR); 2 Mar.2004: 2 males (23.6 × 28.4 mm, 21.4 × 25.2 mm) (ZRC 2007.0022); Balicasag Island, coll. PANGLAO 2004 Expedition: 31 May 2004, station P3, ca. 100 m, 9°31.1'N 123°41.5'E: 1 female (25.7 × 31.4 mm) (photographed) (ZRC 2007.0024); Jul.2004, station P3, ca. 100 m, 9°31.1'N 123°41.5'E, coll. PANGLAO 2004 Expedition: 1 broken specimen (photographed) (ZRC 2007.0025); Mar.2004: 2 ovigerous females, 2 juvenile males (ZRC 2007.0071); Nov.2003: 3 males, 9 females (8 ovigerous) (ZRC 2007.0062); Nov.2003: 1 male (ZRC 2007.0063); Nov.2003, coll. J. Arbasto: 1 male, 1 female (ZRC 2007.0064); Jan.2004: 3 males, 1 female, 2 ovigerous females (ZRC 2007.0069); Jan.2004: 1 juvenile female (ZRC 2007.0070); 28 May 2004: 2 males, 1 ovigerous female (ZRC 2007.0072); 29 May 2004: 1 female (ZRC 2007.0073); May 2004: 1 juvenile male (ZRC 2007.0074); 29 Aug.2004: 4 males, 2 ovigerous females (ZRC 2007.0082); station P3, ca. 100 m, tangle nets from local fishermen, 9°31.1'N 123°41.5'E, 23 Jun.2004: 1 ovigerous female (ZRC 2007.0076); station P3, ca. 100 m, tangle nets from local fishermen, 9°31.1'N 123°41.5'E, 6 Jul.2004: 1 male, 1 ovigerous female (ZRC 2007.0079); station P3, ca. 100 m, tangle nets from local fishermen, 9°31.1'N 123°41.5'E, 2 Jul.2004: 2 males (ZRC 2007.0078); station P3, ca. 100 m, tangle nets from local fishermen, 9°31.1'N 123°41.5'E, 2 Jul. 2004: 1 ovigerous female (ZRC 2007.0080); 2004–2005: Balicasag: 1 ovigerous female (ZRC 2007.0084). Bohol Sea, coll. PANGLAO 2004 Expedition: Maribohoc Bay, 100–300m, coll. J. Arbasto, Nov.2003–4 Apr.2004: 2 males, 2 females (1 ovigerous) (ZRC 2007.0065); Nov.2003–Apr.2004: 3 males, 4 females (3 ovigerous) (ZRC 2007.0066); Nov.2003–Apr.2004: 1 male (ZRC 2007.0067); Nov.2003–Apr. 2004: 2 males (ZRC 2007.0068); north coast of Bohol, coll. J. Arbasto, Jul.2004 – May 2005: 1 ovigerous female (21.4 × 26.4 mm) (ZRC 2007.0023); May 2004 (2 males, 1 ovigerous female) (MNHN); Panglao Island, Bolod, station T2, 152 m, coarse sand, 09°32.4'N 123°47.8'E, 31 May 2004: 1 juvenile female (ZRC 2007.0075); Pamilacan Island; station P5; ca. 100 m; tangle nets from local fishermen; 9°30.0'N 123°54.6'E, 3 Jun.2004: 1 male, 2 females (ZRC 2007.0081); Panglao Island, off San Isidro, station T10, 117–124m, 9°33. 8'N 123°49.6'E, mud and fine sand, 15 Jun.2004 station: 1 male (11.6 × 13.2mm) (photographed) (ZRC 2007.0026); Cortes, station T25, 160–210 m, fine sand and mud, 9°41.1'N 123°49.3'E, 24 Jun. 2004: 1 juvenile female (ZRC 2007.0077). Bohol and Sulu Seas, coll. PANGLAO 2005 Expedition – station CP2344, 128–155 m, 9°28.4'N 123°50.1'E, 23 May 2005: 1 female (22.0 × 26.4 mm); 1 juvenile (12.2 × 13.6 mm) (ZRC 2007.0027); station DW2346, 261–280 m, 9°28.4'N 123°54.5'E, 24 May 2005: 1 ovigerous female (24.7 × 28.5 mm) (ZRC 2007.0028); station CP2380, 163–271 m, 8°41.3'N 123°17.8'E, 28 May 2005: 1 male broken (28.7 × 35.5 mm) (ZRC

2007.0029); station CP2409, 257–269 m, 9°44.8'N 123°44.8'E, 1 Jun.2005: 1 ovigerous female (27.9 × 32.2 mm), 1 male (17.9 × 22.0 mm), 1 juvenile (11.4 × 13.2 mm) (ZRC 2007.0030); station CP2376, 189–219 m, 8°40.7'N 123°16.1'E, 28 May 2005: 1 juvenile (ZRC 2007.0085); station CP2386; 2,120–2,149 m; 8°49.3'N 123°01.9'E, 29 May 2005: 1 male (ZRC 2007.0083).

**Colour.** – Pink-orange with pink stripes on the legs (Fig. 1A, B).

**Remarks.** – *Cyrtomaia murrayi* Miers, 1886, was originally described from the Challenger Expedition in Indonesia but has since been reported from the Philippines, Taiwan and Japan (Sakai, 1976; Guinot & Richer de Forges, 1986; Ng & Huang, 1997). However, each these reports list few specimens examined and the species is generally regarded as rare. In the Philippines, this species is common on the steeper slopes of Balicasag Island where it was caught in tangle nets, at depths estimated at between 200 and 400 m. It was also caught by trawling during the PANGLAO 2005 expedition from 128–280 m, but as in all previous reports that relied on similarly trawled material, only several specimens were obtained.

We believe that one of the reasons for its apparent rarity is that *C. murrayi* normally prefers the steeper parts of the sea bottom where trawling and/or dredging is more difficult or impossible. As such, trawls collect only a few specimens. The tangle nets laid on the steep surfaces on the other hand, obtain large numbers, suggesting that this is their preferred habitat.

***Cyrtomaia horrida* Rathbun, 1916**

(Figs. 1C, 2)

*Cyrtomaia horrida* Rathbun, 1916: 532; Estampador, 1937: 550. Bennett, 1964: 30; Griffin, 1976: 188.

*Cyrtomaja horrida* – Balss, 1924: 23; Serène & Lohavanijaya, 1973: 46; Griffin & Brown, 1976: 253.

*Cyrtomaia horrida typica* – Ihle & Ihle-Landenberg, 1931: 155.

*Cyrtomaia horrida* subsp. *pilosa* Ihle & Ihle-Landenberg, 1931: 154. *Cyrtomaia pilosa* – Guinot & Richer de Forges, 1982b: 45.

**Material examined.** – **Philippines:** Balicasag Island, collected with tangle nets by fishermen, 200–500 m: Jul.2003: 1 male (48.5 × 54.9 mm), 1 female (42.5 × 46.2 mm) (ZRC 2007.0031); 28 Nov.2001: 2 males (43.9 × 50.4 mm, 44.2 × 49.1 mm), 1 female (40.8 × 44.6 mm) (ZRC 2001.0619); Jun.2002: 2 males (42.1 × 46.6 mm, 43.5 × 47.6 mm) (ZRC 2007.0032); coll. J. Arbasto, 2004–2005: 1 male (ZRC 2007.0060); 2004–2005: 2 males; 2 females (ZRC 2007.0059); Mar.2004: 3 females (ZRC 2007.0052). Balicasag Island, coll. local fishermen for PANGLAO 2004 Expedition: 2 males, 2 females (ZRC 2007.0057); 29 May 2004: 1 female (photographed) (ZRC 2007.0056); station PNI, 29 May 2004: 1 male (photographed) (ZRC 2007.0055); Mar.2004: 1 female (ZRC 2007.0053); 28 May 2004: 3 males 1 ovigerous females (ZRC 2007.0054); Feb.2004: 1 female (ZRC 2007.0051); Nov.2003: 1 female, 1 ovigerous female (ZRC 2007.0049). Maribohoc Bay: 100–300m, coll. J. Arbasto, Nov.2003–4 Apr.2004: 2 males, 2 ovigerous females (ZRC 2007.0050); station P2, 150m, 9°39.0'N 123°43.8'E, coll. J. Arbasto, 19 Jun.2004: 3 males (ZRC 2007.0058). North coast of Panglao, Bohol Sea, coll. J. Arbasto: 4 males (47.9

× 54.5 mm, 44.8 × 51.0 mm, 48.9 × 56.9 mm, 54.4 × 60.8 mm), 1 female (43.8 × 49.4 mm) (NMCR); 80–140 m, Jul.2004–May 2005: 5 males (50.3 × 57.1 mm, 48.8 × 57.2 mm, 47.5 × 53.1 mm, 50.6 × 57.4 mm, 55.8 × 63.5 mm) (ZRC 2007.0033); Jul.2004–May 2005: 3 males (43.4 × 48.8 mm, 47.1 × 53.8 mm, 48.3 × 53.2 mm, 1 ovigerous female (45.0 × 51.1 mm), 1 juvenile (30.5 × 32.7 mm) (MNHN). Bohol and Sulu Seas, coll. PANGLAO 2005 Expedition: station CP2332, 270–396 m, 9°41.2'N 123°47.3'E, 22 May 2005: 1 male (23.4 × 25.4 mm) (ZRC 2007.0034); station CP2359, 513–476 m, 8°52.3'N 123°34.7'E, 26 May 2005: 1 male (21.4 × 24.0 mm) (photographed), 1 juvenile male (ZRC 2007.0035); station

CP2360, 357–364 m, 8°48.9'N 123°37.6'E, 26 May 2005: 1 ovigerous female (45.7 × 50.6 mm), 1 juvenile (ZRC 2007.0036); station CP2381, 275–280 m, 8°43.3'N 123°19.0'E, 28 May 2005: 1 ovigerous females (44.3 × 47.4 mm) (ZRC 2007.0037); station CP2392, 400–436 m, 9°29.0'N 123°41.1'E, 30 May 2005: 1 ovigerous female (44.2 × 50.0 mm), 1 juvenile female (ZRC 2007.0038); CP 2394, 566–787m, 9°28.6'N 123°40.0'E, 30 May 2005: 1 male (38.9 × 42.5 mm) (ZRC 2007.0039); station CP2405, 453–470m, 9°37.9'N 123°44.9'E, 1 Jun.2005: 1 ovigerous female (44.1 × 49.5 mm), 1 female (19.9 × 22 mm), 4 juveniles (14.1 × 14.5 mm, 15.7 × 16.6 mm, 14.5 × 14.5 mm, 14.1 × 15.8 mm) (ZRC

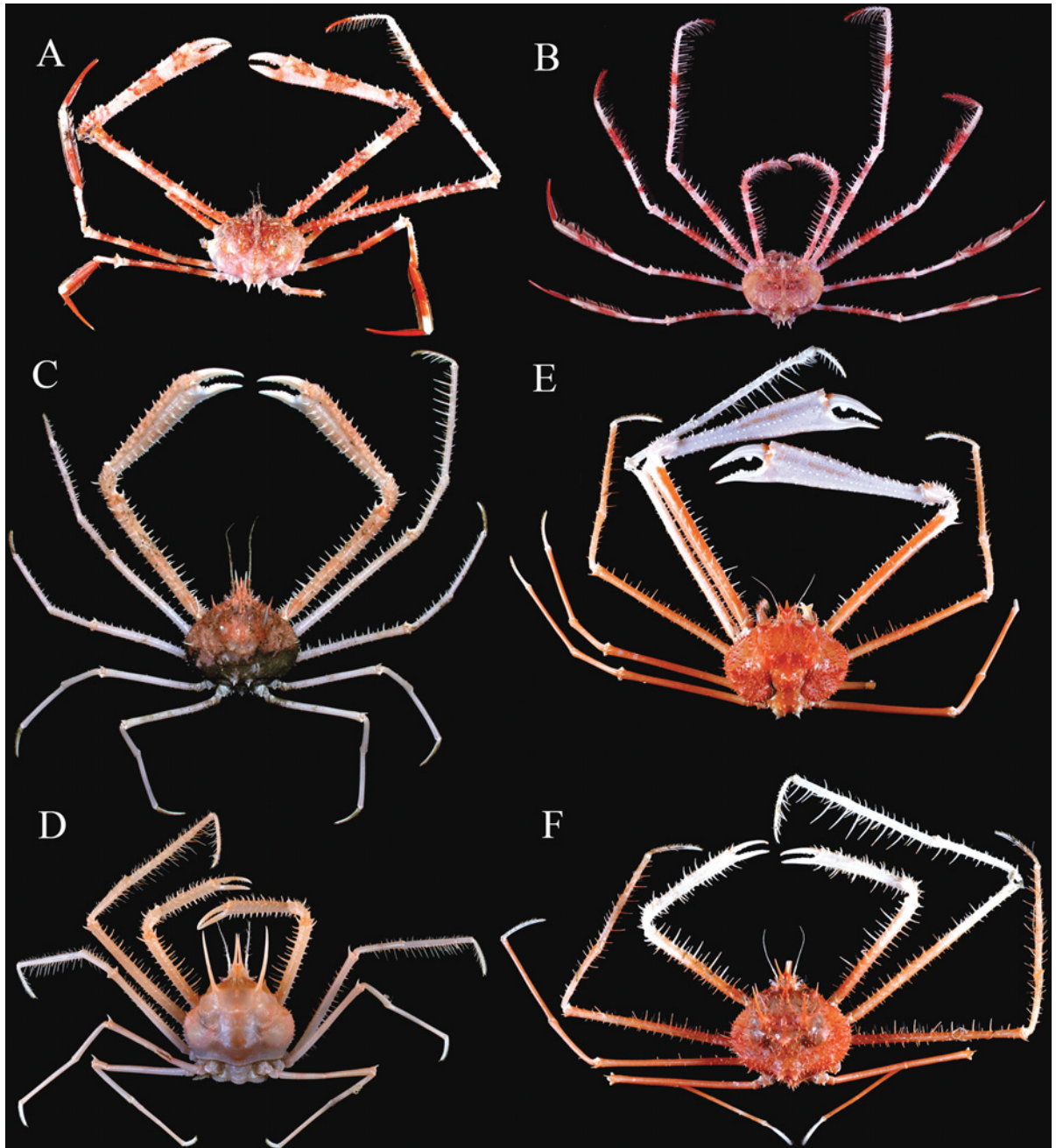


Fig. 1. Colours in life: A, *Cyrtomaia murrayi*, male (28.7 × 35.5 mm) (ZRC 2007.0029); B, *Cyrtomaia murrayi*, female (25.7 × 31.4 mm) (ZRC 2007.0024); C, *Cyrtomaia horrida*, male (43.9 × 50.4 mm) (ZRC 2001.0619); D, *Cyrtomaia largoi*, new species, female holotype (29.9 × 32.8 mm) (NMCR); E, *Cyrtomaia echinata*, A, male (67.9 × 74.1 mm) (NMCR); F, female (55.2 × 57.7 mm) (ZRC 2007.0042).



2007.0040); station CP2358, 569–583 m, 8°52.1'N 123°37.1'E, 26 May 2005: 1 juvenile (ZRC 2007.0086); station CP2360; 357–372 m, 8°48.9'N 123°37.6'E, 26 May 2005: 1 juvenile, 1 juvenile female (ZRC 2007.0061); station CP2397, 642–669 m, 9°34.9'N 123°41.7'E, 31 May 2005, 1 juvenile (ZRC 2007.0087); station CP2343, 273–302 m, 9°27.4'N 123°49.4'E, 23 May 2005: 1 male (44.8 × 48.1 mm), 1 ovigerous female (44.3 × 48.1 mm) (MNHN).

**Colour.** – The carapace and chelipeds are mostly a pale pinkish-orange, with the fingers white. The ambulatory legs are generally whiter but with a faint pinkish tinge (Fig. 1C). In life, they are generally dirty and muddy and these colours are not apparent.

**Remarks.** – *Cyrtomaia horrida* was described from the Philippines by Rathbun in 1916. In 1931, Ihle & Ihle-Landenberg, described a new subspecies, *Cyrtomaia horrida* subspecies *pilosa*, on the basis of a young female specimen

from the Kei Islands (Indonesia) which was more setose than the nominate form. In their revision of the genus *Cyrtomaia*, Guinot & Richer de Forges (1982) elevated with a doubt, this subspecies to the species level, i.e., *Cyrtomaia pilosa*. The large series of specimens from the Philippines has helped us resolve this uncertainty with Ihle & Ihle-Landenberg's taxon. There is indeed some variation in the pilosity, with adult females generally appearing somewhat more pilose than their male counterparts. This is clearly a sexually dimorphic character (Fig. 2A, C vs. Fig. 2D, F). We therefore synonymise *Cyrtomaia horrida* subspecies *pilosa* Ihle & Ihle-Landenberg, 1931, under *Cyrtomaia horrida* Rathbun, 1916, as has been suggested by Griffin (1976).

On the basis of published literature, *C. horrida* is a relatively rare species and all reports that include fresh material rarely cite more than one or two specimens (Griffin, 1976). Prior

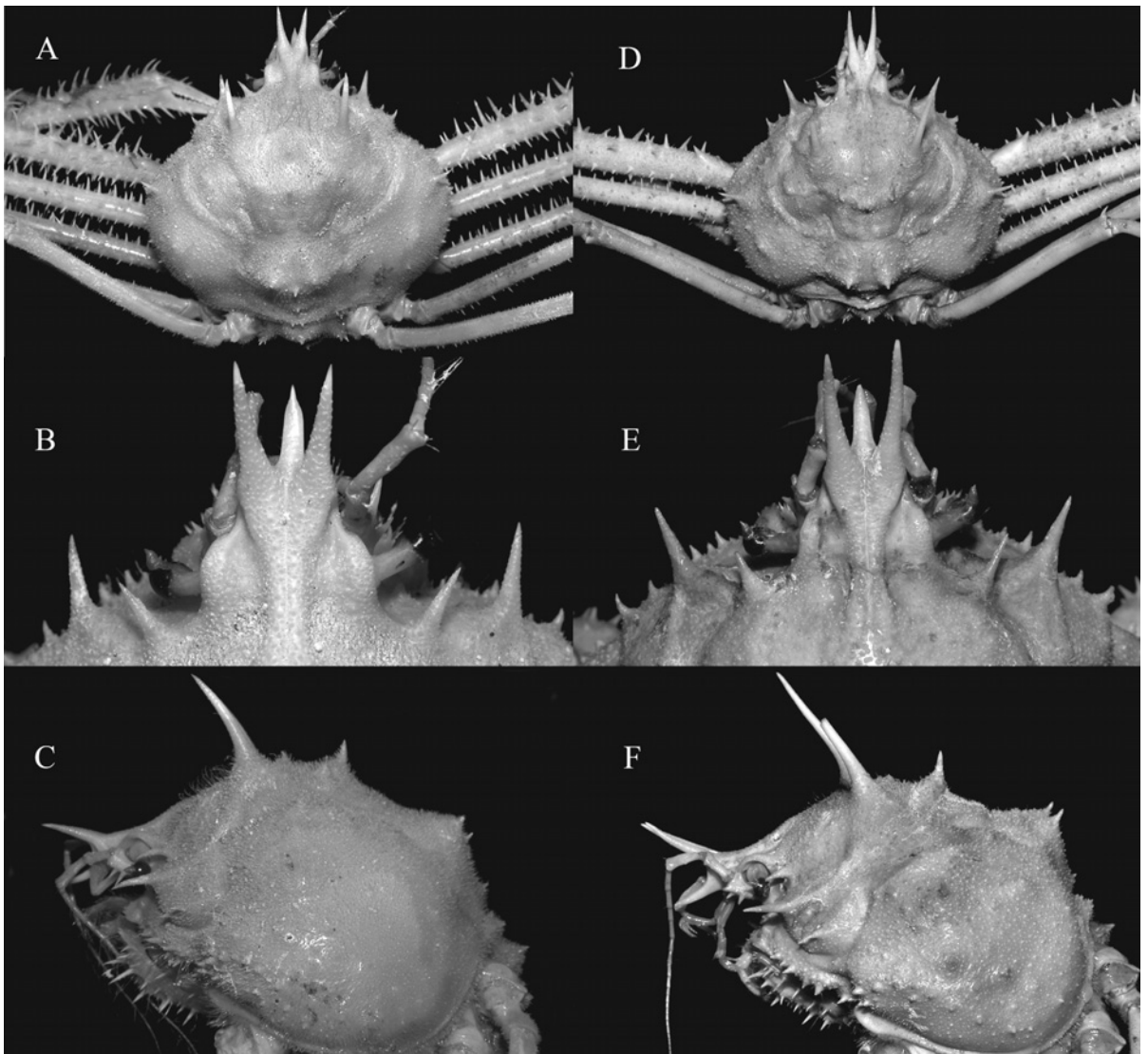


Fig. 2. *Cyrtomaia horrida*: A–C, female (40.8 × 44.6 mm) (ZRC 2001.0619); D–F, male (44.2 × 49.1 mm) (ZRC 2001.0619); A, D, dorsal view; B, E, anterior part of carapace showing rostrum; C, F, lateral view of carapace.

to this study, the species was represented only by fewer than 10 specimens in museums. In the PANGLAO 2005 cruises, 22 specimens were obtained (some trawled from close to relatively steep slopes), living between 273 and 787 m depth. However, from the steep slopes of Balicasag and immediately adjacent areas, we have on hand another 23 specimens, all obtained by tangle nets. This number does not tell the whole story. The second author has seen several dozen specimens between 2000 and 2004, and of these, only a few good specimens were retained for study. Not all the material could be kept because the fishermen at Balicasag sell the large and impressive looking specimens of *C. horrida* as curios. Mounted specimens for prepared for sale by drying them in the sun after soaking them in formalin. In fact, many are also exported to countries like the U.S.A. and Russia for this purpose. However, all the material (12 specimens) from subsequent years from one fisherman whom we hired, J. Arbasto, was kept.

***Cyrtomaia echinata* Rathbun, 1916**

(Figs. 1E, F, 3)

*Cyrtomaia echinata* Rathbun, 1916: 533. (See Guinot & Richer de Forges, 1986: 120 for complete synonymy)

**Material examined.** – **Philippines:** Balicasag Island, collected with tangle nets by fishermen, 200–500 m: 2 Mar.2004: 1 male (67.3 × 75.3 mm) (ZRC 2007.0041). Bohol Sea, coll. PANGLAO 2005 Expedition – station CP 2350, 738–798 m, 9°31.4'N 124°00.6'E, 24 May 2005: 1 female (55.2 × 57.7 mm) (photographed) (ZRC 2007.0042); station CP2356, 1756–1764 m, 9°20.9'N 124°08.74'E, 25 May 2005: 1 ovigerous female (51.1 × 61.7 mm) (ZRC 2007.0043); station CP2384, 613–647 m, 8°46.2'N 123°16.1'E, 29 May 2005: 1 female (21.3 × 22.8 mm), 5 juveniles (ZRC 2007.0044); station CP2388, 762–767 m, 9°26.9'N 123°34.5'E, 30 May 2005: 1 male (65.8 × 70.0 mm), 1 juvenile female (23.9 × 26.0 mm) (MNHN), 1 ovigerous female (57.3 × 62.4 mm), 1 juvenile male (10.6 × 10.7 mm), 1 juvenile male (11.3 × 11.5 mm) (ZRC 2007.0045); station CP2389, 782–784 m, 9°27.9'N 123°38.4'E, 30 May 2005: 1 male (49.5 × 53.0 mm) (NMCR); station CP2390, 613–627 m, 9°27.4'N 123°43.1'E, 30 May 2005: 1 female (53.7 × 59.2 mm) (MNHN); station CP 2396, 467–609 m, 9°37.1'N 123°44.5'E, 31 May 2005: 1 male (67.9 × 74.1 mm) (photographed) (NMCR); station CP2398, 731–741 m, 9°32.6'N 123°40.5'E, 31 May 2005: 1 male (65.1 × 72.7 mm), 4 juveniles (ZRC 2007.0046); station CP2336, 757–760 m, 9°32.2'N 123°39.3'E, 22 May 2005: 1 juvenile (ZRC 2007.0088); CP2341, 544–712 m, 9°24.5'N 123°49.7'E, 23 May 2005: 1 juvenile (ZRC 2007.0089).

**Colour.** – The general body colour of the dorsal surfaces is a bright orangeish-red, although the distal half of the cheliped and P2 are white (Fig. 1E, F). The dactyli of the ambulatory legs are also white.

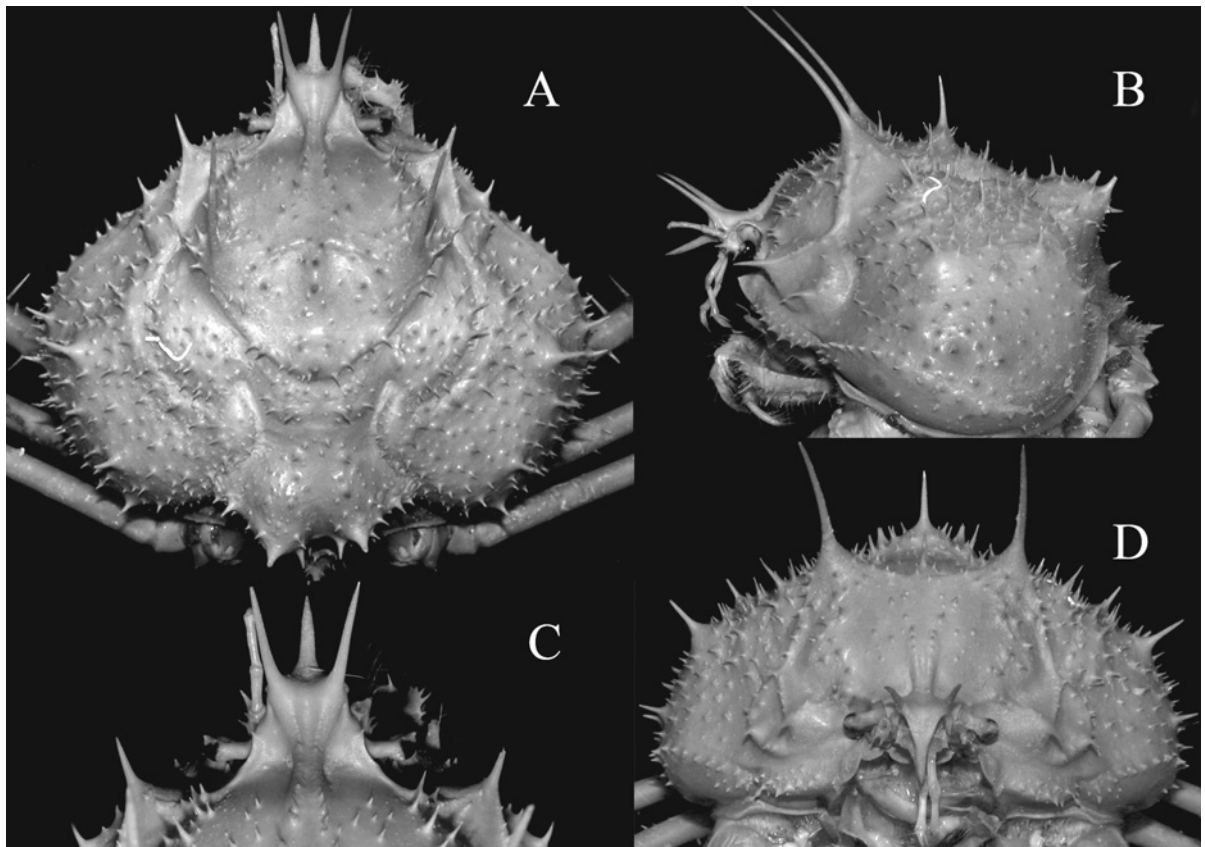


Fig. 3. *Cyrtomaia echinata*, male (67.3 × 75.3 mm) (ZRC 2007.0041): A, dorsal view; B, lateral view of carapace; C, anterior view of carapace showing rostrum; D, frontal view of carapace.

**Remarks.** – Rathbun (1916) described this species on the basis of one specimen from the Philippines. Prior to this study, very few specimens were mentioned: 13 specimens from the ALBATROSS Expedition studied by Griffin (1976), the material reported by Guinot & Richer de Forges (1982b: 47, infrapaginal note) which was collected by the 1980 MUSORSTOM Expedition to the Philippines. Our surveys show that this species is in fact, not uncommon in Philippines, with 21 specimens obtained during the PANGLAO 2005 cruise, from between 613 and 1,764 m depths. One specimen was also obtained in tangle nets off Balicasag which was set unusually deep (local fishermen, pers. comm.). *Cyrtomaia echinata*, however, clearly prefers deeper waters compared to other species, and this may explain its apparent rarity. Whether it is more common on steep slopes cannot be ascertained as only one specimen from tangle nets was obtained, but since the fishermen rarely lay these nets deeper than 600 m, little else can be said.

***Cyrtomaia largoi*, new species**  
(Figs. 1D, 4–6)

**Material examined.** – **Philippines:** Bohol Sea, coll. PANGLAO 2005 Expedition, station CP2359, 437–443 m, 8°49.9'N 123°34.9'E, 26 May 2005: 1 female holotype (29.9 × 32.8 mm) (NMCR), 1 male paratype (26.5 × 28.5 mm) (ZRC 2007.0047), 1 female paratype (19.4 × 21.1 mm) (MNHN); 1 broken specimen (16.6 × 20.0 mm), 22 juveniles (ZRC 2007.0048).

**Description.** – A medium size species (adult female 29.9 × 32.8 mm). Dorsal surface of carapace finely granulated, with few small spines with the exception of 2 very long, slender, curved, subparallel protogastric spines. Pseudorostral spines long, about 4 times rostral length, parallel, in contact along proximal third. Supraorbital border unarmed except for 1 small intercalated granule. Number of spines on following regions as follow: 1 short post-ocular spine; 1 short anterobranchial spine; 1 very short hepatic spine; 1 gastric

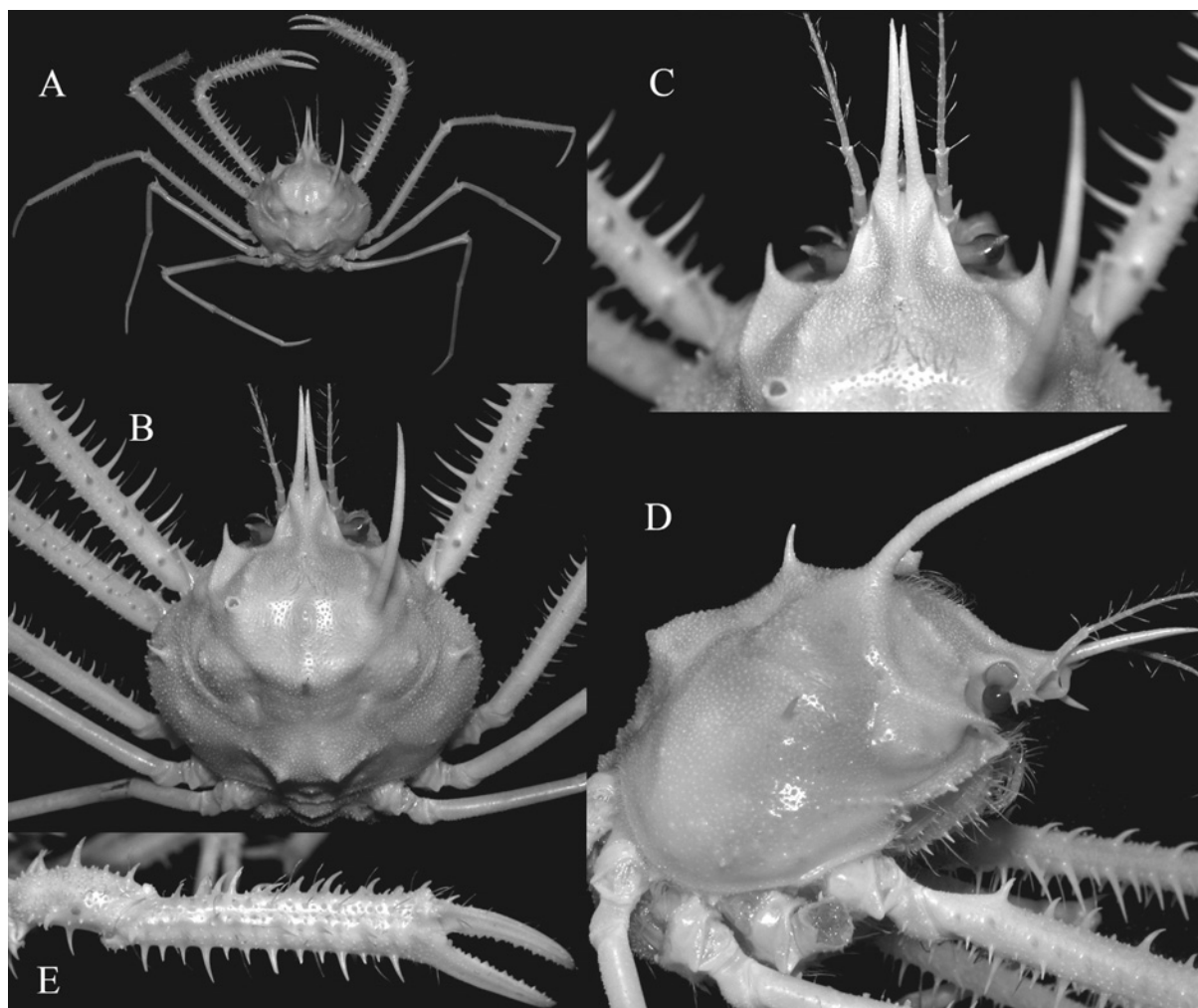


Fig. 4. *Cyrtomaia largoi*, new species, female holotype (29.9 × 32.8 mm) (NMCR). A, general dorsal view; B, dorsal view; C, anterior view of carapace showing rostrum; D, lateral view of carapace; E, dorsal surface of right cheliped.



spine. Cardiac region swollen, with 2 short blunt spines. Basal antennal article with 2 long, 2 short spines; following articles slender, cylindrical.

Cheliped relatively short, slender, very spinous. Merus with 4 rows of spines, 11 long spines on interior lower border, 12 spines on outer lower border, 7 spines on inner upper border, 9 shorter spinules on outer upper border; with a long distal spine. Carpus slightly curved bearing 8 spines. Propodus with 5 rows of spines, not all equal length. Dactylus thin, with 1 proximal spine.

P2 spinous on all articles; merus with 3 rows of spines, 1 very strong, curved distal spine; carpus long, cylindrical with 2 rows of spines; propodus long, laterally flattened, with 2 rows of spines; dactylus curved, setose. P3 spinous throughout length. P4 thin, slender, unarmed except for 1 strong distal spine on merus. P5 same length as P4 but relatively more slender.

Gonopod 1 as figured (Fig. 6)

Variation: On juvenile specimens, pseudorostral spines are proportionately shorter, not subparallel; protogastric spines already longest, only weakly divergent.

**Colour.** – The fresh specimens are pinkish-orange in general (Fig. 6). The anterior part of the body, the chelae and the P2

are somewhat more orange. The ambulatory legs P3, P4, P5 are also pinkish-orange.

**Etymology.** – Dedicated to Professor Danilo Largo from the San Carlos University in Cebu City, who helped organize the 2004 Panglao Expedition and who has been instrumental in getting that study operational.

**Remarks.** – *Cyrtomaia largoi*, new species, belongs to the group of *Cyrtomaia* species with long protogastric spines but without intermediate ocular and preocular spines, which includes *C. suhmi*, *C. curviceros* and *C. maccullochi*. However, *C. largoi* is easily distinguished from these three species by its peculiar subparallel pseudorostral spines.

*Cyrtomaia suhmi* Miers, 1886, was described on the basis of only a young male (21.0 × 28.0 mm) and had been completely crushed, with broken pseudorostral spines, without ambulatory legs and with only one cheliped. As far as we can compare with such poor material, the pseudorostral spines of *C. suhmi* appear to be divergent (not subparallel) and the cheliped less spinous compared to *C. largoi*. The disposition of the spines on the basal antennal article is also different between *C. suhmi* and *C. largoi*, being three in the former and four in the latter. As Guinot & Richer de Forges (1982 b) and Richer de Forges & Guinot (1988) have previously highlighted, *C. suhmi* could well be just the young form of *C. curviceros* Bouvier, 1915, which is known only from larger

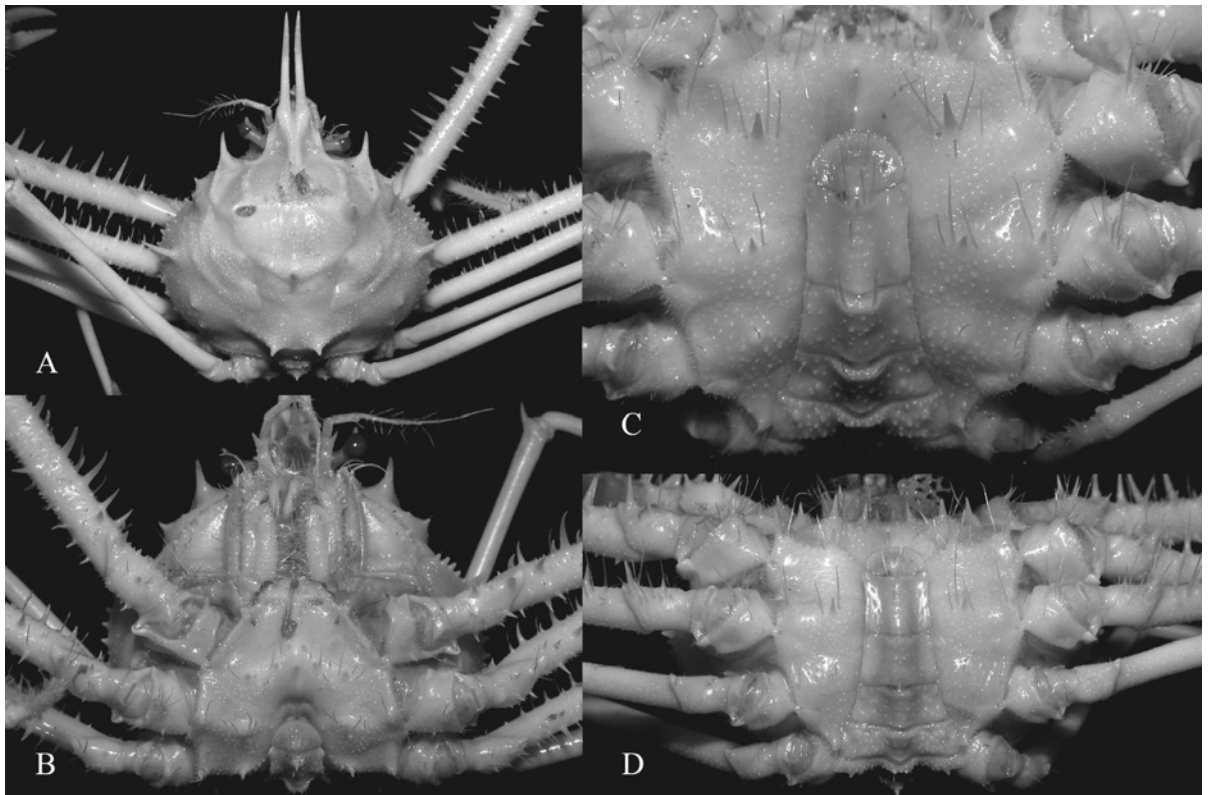


Fig. 5. *Cyrtomaia largoi*, new species, male paratype (26.5 × 28.5 mm) (ZRC 2007.0047). A, dorsal view of carapace; B, ventral view of carapace showing sternum; C, ventral posterior part of carapace; D, posterior part of abdomen.



specimens (see also Ng & Huang, 1997). Certainly all the differences highlighted above between *C. suhmi* and *C. largoi* are also applicable to *C. curviceros*. As regards *C. maccullochi* Rathbun, 1918, from southern Australia, this is a proportionately much larger species (cw ca. 38 mm versus 30 mm in *C. largoi*), and characteristically differs in possessing proportionately much shorter and divergent pseudorostral spines.

The habitat of *Cyrtomaia largoi* appears to be rather special. The station where all the specimens were collected, CP 2359, was full of hexactinellid glass sponges.

DISCUSSION

The three more common species of *Cyrtomaia* in the Philippines appear to have different bathymetric preferences:

*C. murrayi*, 125–280 m; *C. horrida*, 273–787 m; and *C. echinata*, 613–1,764 m. On the basis of the collecting data, *C. murrayi* and *C. horrida* seem to prefer steeper parts of the sea bottom which can neither be dredged nor trawled. The few specimens collected by trawls or dredges in the past probably indicate that these two species seldom live on level substrates which are more accessible to sampling efforts. *Cyrtomaia echinata*, on the other hand, appears to prefer more level habitats. The new species, *C. largoi*, occurs at an intermediate depth, 437–443 m, on a level substrate, but was found only in a habitat covered with glass sponges.

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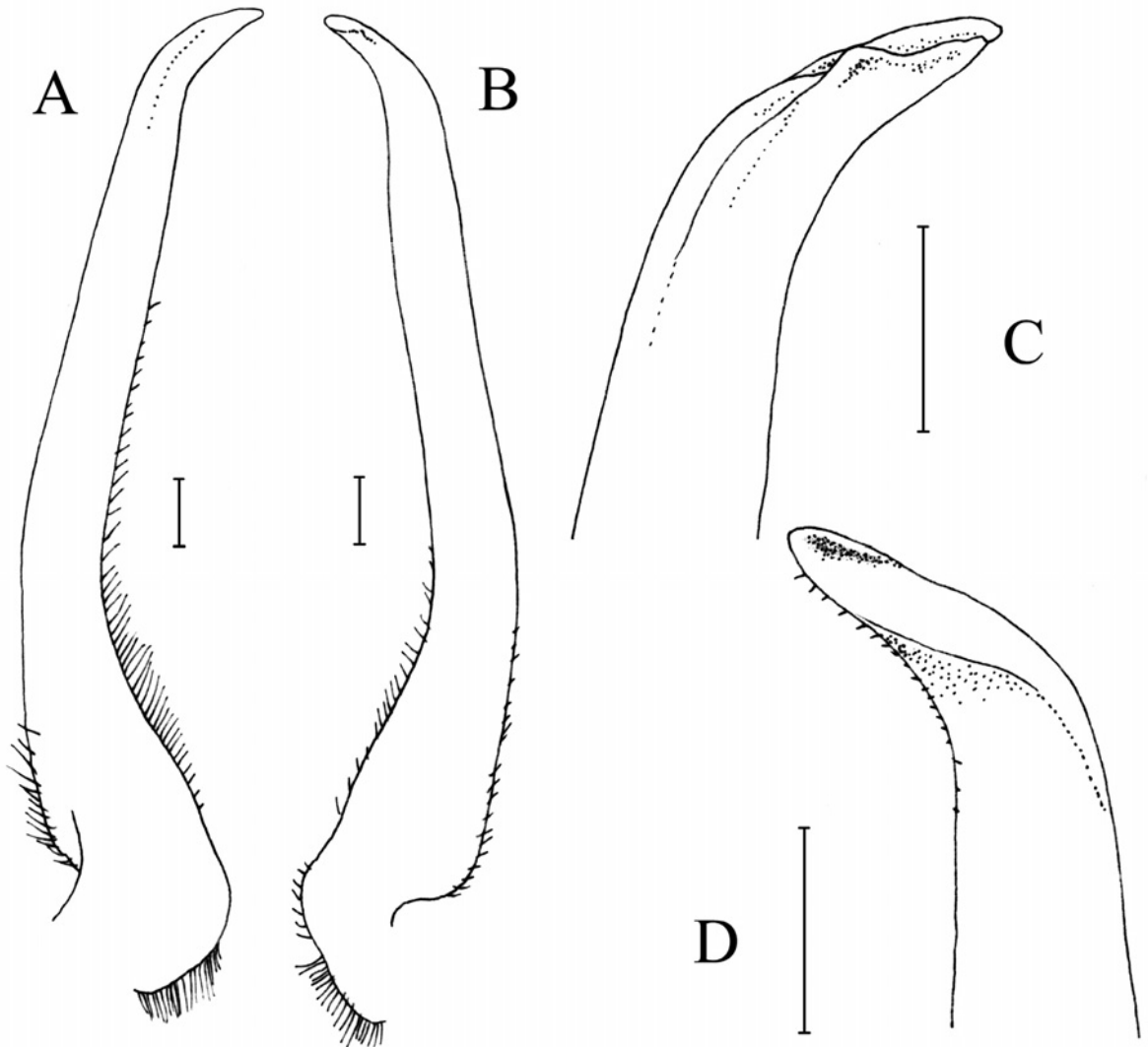


Fig. 6. G1 of *Cyrtomaia largoi*, new species, male paratype (26.5 × 28.5 mm) (ZRC 2007.0047). A: dorsal view; B: ventral view; C: apical detail, dorsal view; D: apical detail, ventral view. Scale bars = 1 mm.

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### LITERATURE CITED

- Balss, H., 1924. Die Oxyrhynchen und Schlussteil (Geographische Übersicht der Decapoden Japans). Ostasiatische Decapoden, V. *Archiv für Naturgeschichte*, **90**(A5): 20–84.
- Bennett, E. W., 1964. The Marine Fauna of New Zealand: Crustacea Brachyura. Bulletin of New Zealand Department of scientific and industrial Research, **153**(22): 1–120.
- Borradaile, L. A., 1916. Crustacea. Part I. Decapoda. In: British Antarctic (“Terra Nova”) Expedition, 1910. *Natural History Report, Zoology*, **3**(2): 75–110.
- Bouchet, P. & P. K. L. Ng, 2004. *Panglao Marine Biodiversity Project, May–July 2004*. Unpublished Expedition Report, Singapore. 12 pp.
- Bouvier, E. L., 1915. Décapodes Mareurs (Reptantia) et stomatopodes recueillis à l’île Maurice par M. Paul Carié. *Bulletin Scientifique de la France et de la Belgique*, (7)**48**(3): 178–318, Figs. 1–42, Pls. 4–7.
- Crosnier, A. & P. K. L. Ng, 2004. Remarques sur le genre *Intesia* (Crustacea, Decapoda, Brachyura, Goneplacidae) et description de deux espèces nouvelles. *Zoosystema*, **26**(2): 263–277.
- Estampador, E. P., 1937. A check list of Philippine crustacean decapods. *Philippine Journal of Science*, **62**(4): 465–559.
- Galil, B. S., 2003. Contribution to the knowledge of Leucosiidae II. Contribution to the knowledge of Leucosiidae II. *Euclosia* gen. nov. (Crustacea: Brachyura). *Zoologische Mededelingen*, **77**(20): 331–347.
- Galil, B. & M. Takeda, 2004. On a collection of *Mursia* (Crustacea, Decapoda, Brachyura, Calappidae) from Balicasag Island, Philippines. *Bulletin of the National Science Museum*, (A)**30**(1): 23–35.
- Griffin, D. J. G., 1976. Spider crabs of the family Majidae (Crustacea: Brachyura) from the Philippine Islands. *Journal of Natural History*, **10**: 179–222.
- Griffin, D. J. G. & H. A. Tranter, 1986. The Decapoda Brachyura of the Siboga Expedition. Part VIII. Majidae, *Siboga-Expedition*, **39**(c<sup>4</sup>): 1–335, 22 pls.
- Guinot, D. & B. Richer de Forges, 1982a. Nouvelles récoltes des genres *Cyrtomaia* Miers et *Pleistacantha* Miers (Crustacea, Decapoda, Brachyura). *Bulletin du Muséum national d’Histoire naturelle*, Paris, (3)**4A**(4), 1981 (1982): 1087–1124.
- Guinot, D. & B. Richer de Forges, 1982b. Révision du genre Indo-Pacifique *Cyrtomaia* Miers, 1886: Campagnes océanographiques du «Challenger», de l’«Albatross», du «Siboga» et du «Vauban» (Crustacea, Decapoda, Brachyura). *Annales de l’Institut Océanographique*, **58**(1) 1982: 5–87.
- Guinot, D. & B. Richer de Forges, 1986. Crustacés Décapodes: Majidae (genres *Platymaia*, *Cyrtomaia*, *Pleistacantha*, *Sphenocarcinus* et *Naxioides*). In: Résultats des Campagnes MUSORSTOM 1 et 2. Tome 2, *Mémoires du Muséum national d’Histoire naturelle*, Paris, série A, 1985 (1986) Zoologie, **133**: 83–178.
- Ihle, J. E. W. & M. E. Ihle-Landenberg, 1931. Über einige Tiefsee-Brachyuren der Siboga-Expedition aus der Gruppe der Oxyrhyncha. *Zoologischer Anzeiger*, **93**(5–6): 147–163.
- Komatsu, H., M. R. Manuel & M. Takeda, 2005. A small collection of leucosiid crabs (Crustacea: Decapoda; Brachyura) from Balicasag Island, Bohol, Philippines. *Species Diversity*, **10**: 105–123.
- MacLeay, W. S., 1838. On the Brachyurous Decapod Crustacea. Brought from the Cape by Dr. Smith. In: A. Smith, *Illustrations of the Zoology of South Africa; consisting chiefly of figures and descriptions of the objects of natural history collected during an expedition into the interior of South Africa, in the years 1834, 1835, and 1836; fitted out by ‘The Cape of Good Hope Association for Exploring Central Africa’: together with a summary of African Zoology, and an inquiry into the geographical ranges of species in that quarter of the globe, Published under the Authority of the Lords Commissioners of Her Majesty’s Treasury, Invertebratae*: [1849] 53–71, Pls. 2, 3. (Smith, Elder & Co., London).
- McLay, C. L. & P. K. L. Ng, 2004. A taxonomic revision of the genus *Paradynomene* Sakai, 1963 (Crustacea: Decapoda: Brachyura: Dynomenidae). *Zootaxa*, **657**: 1–24.
- McLay, C. L. & P. K. L. Ng, 2005. On a collection of Dromiidae and Dynomenidae from the Philippines, with description of a new species of *Hirsutodynomene* McLay, 1999 (Crustacea: Decapoda: Brachyura). *Zootaxa*, **1029**: 1–30.
- Miers, E. J., 1886. Report on the Brachyura collected by H.M.S. Challenger during the years 1873–76. In: *Report on the scientific results of the voyage of H.M.S. Challenger during the years 1873–76, Zoology*, 17(49): i–xii, 1–362, Pls. 1–29.
- Ng, P. K. L., 2003. New species and new records of box crabs (*Calappa*) (Crustacea: Decapoda: Brachyura: Calappidae) from the Philippines. *Journal of the National Taiwan Museum*, **55**: 41–60.
- Ng, P. K. L. & P.-H. Ho, 2003. *Mathildella rubra*, a new species of deep-water carcinoplacine crab (Decapoda, Brachyura) from the Philippines. *Crustaceana*, **76**(3): 333–342.
- Ng, P. K. L. & J. F. Huang, 1997. Unrecorded crabs (Crustacea: Decapoda: Brachyura) from Taiwan and Tungsha Islands, with description of a new genus and species of Xanthidae. *Zoological Studies*, **36**(4): 261–276.
- Ng, P. K. L. & L. Liao, 2002. On a new species of *Euryozius* Miers, 1886 (Crustacea: Decapoda: Brachyura: Pseudoziidae) from the Philippines, with notes on the taxonomy of the genus. *Proceedings of the Biological Society of Washington*, **115**(3): 585–593.
- Ng, P. K. L. & C. L. McLay, 2005. *Dicranodromia danielae*, a new species of homolodromiid crab from the Philippines (Crustacea: Decapoda: Brachyura). *Zootaxa*, **1029**: 39–46.
- Paulay, G., R. Kropp, P. K. L. Ng & L. G. Eldredge, 2003. The crustaceans and pycnogonids of the Mariana Islands. *Micronesica*, **35–36**: 456–513.
- Rathbun, M. J. 1916. New species of crabs of the families Inachidae and Parthenopidae. (Scientific results of the Philippine cruise of the fisheries steamer Albatross, 1907–1910. (No.34). *Proceedings of the U.S. National Museum*, **50**: 527–559.
- Rathbun, M. J., 1918. Report on the spider crabs. Report on the crabs obtained by the F.I.S. “Endeavour” on the coasts of Queensland, New South Wales, Victoria, South Australia and Tasmania. In: *Biological results of the fishing experiments carried on by the F.I.S. “Endeavour,” 1909–14*, **5**(1): 1–29, Pls. 1–15.

- Richer de Forges, B. & D. Guinot, 1988. Description de trois espèces de *Cyrtomaia* Miers, 1886, de Nouvelle Calédonie et des îles Chesterfield (Crustacea, Decapoda, Brachyura). *Bulletin du Muséum national d'Histoire naturelle*, Paris, 1988, **10**(4)A(1): 39–55.
- Richer de Forges, B. & D. Guinot, 1990. A new *Cyrtomaia*, *C. griffini*, from Australia (Crustacea: Decapoda: Brachyura). *Memoirs of the Queensland Museum*, **28**: 523–530.
- Richer de Forges, B. & P. K. L. Ng, 2007. On a new species of *Cyrtomaia* Miers, 1886 (Crustacea: Decapoda: Brachyura: Majidae) from Micronesia. *Zootaxa*, **1409**: 61–67.
- Richer de Forges, B., P. K. L. Ng, S. H. Tan, P. Bouchet & N. Saguil, 2005. *PANGLAO 2005: Deep-water Fauna of the Bohol Sea*. Unpublished Expedition Report and Summary, Singapore. 28 pp.
- Sakai, T., 1976. *Crabs of Japan and the Adjacent Seas*. Kodansha Ltd., Tokyo. In three volumes: i–xxix, 1–773 (English Text). 1–461 (Japanese Text). 1–16, Pls. 1–251 (Plates).
- Samouelle, G., 1819. *The Entomologist's Useful Compendium, or an Introduction to the Knowledge of the British Insects*. Thomas Boys, London. 496 pp.
- Serène, R. & P. Lohavanijaya, 1973. The Brachyura (Crustacea: Decapoda) collected by the NAGA Expedition, including a review of the Homolidae. *Naga Report, Scientific Results of Marine Investigation of the South China Sea and the Gulf of Thailand 1959–1961*, **4**(4): 1–186, Pls. 1–21.
- Takeda, M. & M. R. Manuel, 2000. Taxonomic accounts of some rare crabs new to the Philippines. In: K. Matsuura (ed.), *Proceedings of the First and Second Symposia on Collection Building and Natural History Studies in Asia. National Science Museum Monographs*, **18**: 149–162.
- Takeda, M. & M. R. Manuel-Santos, 2007. Crabs from Balicasag Island, Bohol, the Philippines: Dromidae, Dynomenidae, Homolidae, Raninidae, Dorippidae, and Calappidae. *Memoirs of the National Science Museum*, Tokyo, 2006, **44**: 84–104.