

## THE EUXANTHINE CRABS (CRUSTACEA: BRACHYURA: XANTHIDAE) OF THE PHILIPPINES

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**ABSTRACT.** – Several marine expeditions have been conducted in the Philippine Archipelago since the early part of the 19<sup>th</sup> century, and have documented the rich diversity of crustaceans collected from these islands. In addition, the recently concluded PANGLAO 2004 and 2005 expeditions to the central Philippines, and the AURORA 2007 expedition to the northeastern Philippines have yielded a diverse array of shallow and deep-water marine animals, particularly brachyuran crustaceans. The family Xanthidae is among the best represented of these brachyurans. As part of a continuing effort to fully document the Brachyura of the Philippines, we report here the occurrence of 25 species belonging to the subfamily Euxanthinae (Brachyura: Xanthidae), with two recently described new genera, five recently described new species and six new country records.

**KEY WORDS.** – Philippines, Brachyura, Xanthidae, Euxanthinae, Bohol, Panglao, Balicasag.

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### INTRODUCTION

The Brachyura of the Philippines is still not well known. Estampador (1937) provided a checklist of the decapod crustaceans from the Philippines based on collections of the University of the Philippines and the then Bureau of Science, and also on the reports resulting from surveys such as the U.S. Exploring Expedition (1838-1842), the Samarang expedition (1843–1846), the Challenger expedition (1873–1876) and the Siboga expedition (1899-1900). There were 55 families, 195 genera and 507 species included in this checklist. This was followed by an updated and more comprehensive listing after the Second World War (Estampador, 1959). About 58 families, 207 genera and 522 species were listed in this revised checklist. Of these, there were 307 brachyuran species, with 45 species in the Xanthidae sensu lato. Due to the major changes in brachyuran systematics since these checklists were published, there is a need to re-examine the species listed therein. Unfortunately, many of the specimens referred to in these two checklists were lost, as Estampador (1959: 1, 3) states, “The collections of both the University of the Philippines and the then Bureau of Science were completely destroyed during World War II, along with the scientific libraries in these two institutions.”, and furthermore, “Though the specimens of the University and the then Bureau

of Science are no longer in existence the collector’s numbers are retained in the revised list for purposes of record with reference to geographical distribution and for materials that were given as exchange with foreign workers. Dr. Cowles, former head of the Department of Zoology, had made such negotiation.” If any of Estampador’s xanthoid specimens appearing in the list survived, none have been found as yet, despite repeated efforts by the authors and others.

Other workers have composed similar lists based on collections made by private collectors (Ward, 1941), the Albatross expedition (Griffin, 1976; Garth & Kim, 1983; Tan, 1996), the MUSORSTOM expeditions (Serène & Vadon, 1981; Moosa, 1981; Goeke, 1985) and the Pele Sulu Sea expedition (Serène & Umali, 1972). Ward (1941) reported on the Brachyura collected in 1936 and 1937 from and around the Davao Gulf, southern Philippines. He listed 148 species, with 1 new genus, 15 new species and 2 new subspecies described. Griffin (1976) listed 63 species of spider crabs from the Philippines, 53 of which were collected by the US steamer Albatross from 1908 to 1910. Garth & Kim (1983) listed a total of 60 species of the Xanthidae sensu lato and described three new genera, 13 new species and one new subspecies. Tan (1996) reported on the leucosiid crabs from the same expedition, recording 36 species in 17 genera and

describing one new species. Serène & Umali (1972) recorded 22 species (four new) from the Philippines, collected mostly by the Pele Sulu Sea expedition in 1964, among which there were five xanthid species, mostly Euxanthinae. Serène & Vadon (1981) provided a tentative list of the Brachyura collected by the MUSORSTOM I expedition to the waters around southern and southwestern Luzon. They reported 155 species, excluding Portunidae, many of which were only the second known records for the species or new records for the Philippines. They also described one new genus, two new species and one new subspecies, all within Xanthidae. Subsequent workers on this considerable collection dealt with specific families such as the Portunidae (Moosa, 1981), Dorippidae (Chen, 1985), Majidae (Guinot & Richer de Forges, 1985), Raninidae (Goeke, 1985), and Dromiidae (McLay, 1993), adding more species.

Recently, research on the decapod crustaceans in the Philippines experienced a resurgence after several discoveries were made in the island of Balicasag, in the Bohol Sea. Rare and interesting species (e.g. Takeda & Manuel, 2000; Komatsu et al., 2005; Takeda & Manuel-Santos, 2007) and many new genera and species (e.g. Ng & Liao, 2002; Ng, 2003; Ng & Ho, 2003; Ng & McLay, 2005; McLay & Ng, 2005; Castro, 2007; Manuel-Santos & Ng, 2007; Ng & Manuel-Santos, 2007; Richer de Forges & Ng, 2007a, b, c) were being collected by local fishermen using tangle nets, along with the targeted mollusc species for the shell trade. Material from Balicasag has contributed considerably to the elucidation of the taxonomy of various brachyuran groups (see Crosnier, 2002; McLay & Ng, 2004; Castro, 2007; Ng & Manuel-Santos, 2007). For an account of the crustacean collections from Balicasag Island, see Ng et al. (2009).

In recent years, the collections of the two PANGLAO expeditions conducted in 2004 and 2005 in the central Philippines (see Bouchet et al., 2009; Richer de Forges et al., 2009) have yielded many new taxa, some with wide-ranging implications on the taxonomy of their affiliated groups. For the Xanthidae in these collections, relatively more work has been done on the Euxanthinae and this has resulted in the description of two new genera and five new species (Mendoza & Ng, 2008a, b). The AURORA 2007 expedition, which was conducted along the eastern coast of Luzon, particularly the provinces of Aurora and Quezon, also yielded an interesting array of marine benthic fauna, and work has barely just begun on this collection. The primary aim of this paper is to record all the euxanthine crabs that have been described and/or recorded from the Philippines to date. This paper is intended to eventually contribute to a complete checklist of the brachyuran crustaceans of the Philippines in the near future.

## MATERIALS & METHODS

In the most recent expeditions to the Philippines, each sampling station has an alphanumeric code, wherein the letter prefix denotes the sampling method utilized. For PANGLAO 2004 stations, B = coral brushing, L = “lumun-lumun” nets,

M = intertidal hand-picking, P = tangle nets, R = hand-collecting by SCUBA diver, and T = trawling (see description of methods in Bouchet et al., 2009). For PANGLAO 2005 and AURORA 2007 stations, CP = beam trawl and DW = Warén dredge (see description of methods in Richer de Forges et al., 2009). All measurements of the material examined are expressed as carapace width by carapace length, in millimeters. The following contractions are used: coll. = collected by; purch. = purchased by; Stn. = station; and Is. = Island. The synonymies listed herein are only the names used for species collected from the Philippines as they were written in the original reports or publications. The specimens in this report are deposited in the following museums: the Crustacean Reference Collection of National Museum of the Philippines, Manila (NMCR), Muséum national d’Histoire naturelle, Paris (MNHN), Kanagawa Prefectural Museum of Natural History, Odawara (KPMNH), National Science Museum, Tokyo (NSMT), and the Zoological Reference Collection of the Raffles Museum of Biodiversity Research, Singapore (ZRC). A list of the euxanthine crabs found in the Philippines, with geographic references and historical records is provided in Table 1. The system of classification follows that of Ng et al. (2008).

## TAXONOMY

### Xanthidae MacLeay, 1838

### Euxanthinae Alcock, 1898

### *Alainodaeus* Davie, 1993

### *Alainodaeus filipinus* Mendoza & Ng, 2008

*Alainodaeus filipinus* Mendoza & Ng, 2008a: 55, Figs. 1–4.

**Material examined.** – Holotype male, 16.5 × 12.0 mm (NMCR-27161), Balicasag Is., 100–500 m, from fishermen with tangle nets, coll. P. K. L. Ng, 2 Mar.2004; paratypes: 1 male, 8.8 × 6.4 mm (ZRC 2008.0895), from fishermen with tangle nets, 100–500 m, Balicasag Is., coll. P. K. L. Ng, Dec.2000; 1 male, with bopyrid isopod in branchial chamber, 21.8 × 15.0 mm (ZRC 2008.0896), tangle net, 100–300 m, Maribohoc Bay, Bohol, coll. J. Arbasto, between Nov.2003 to Apr.2004; 1 female, 11.2 × 8.2 mm (ZRC 2008.0897), from fishermen with tangle nets, 100–500 m, Balicasag Is., coll. P. K. L. Ng, Mar.2004; 1 female, 11.1 × 8.0 mm (ZRC 2008.0898), from fishermen with tangle nets, 50–500 m, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 14 Jun.2004; 1 male, 15.5 × 10.8 mm, 1 female, 13.0 × 8.9 mm (ZRC 2008.0899), Stn. DW2402, off Balicasag Is., 101–118 m, 9°30.8'N 123°41.5'E, coll. MV DA-BFAR, PANGLAO 2005 Cruise, 31 May 2005.

**Remarks.** – This species was recently described from Balicasag Island (Mendoza & Ng, 2008a). It represents a remarkable range expansion for *Alainodaeus*, being found in the northernmost and westernmost extent of the known range of this genus. It is known only from the central Philippines thus far.

Table 1. List of euxanthine crabs from the Philippines, with geographic references and historical records. Species names preceded by an asterisk (\*) are new country records.

Species	Record from Philippines
<i>Alainodaeus filipinus</i> Mendoza & Ng, 2008	Balicasag Is., Bohol Sea (Mendoza & Ng, 2008a)
<i>Cranaothus deforgesi</i> Ng, 1993	Maluso Bay, Basilan Is., Sulu Sea (Serène & Umali, 1972); Panglao & Balicasag Is., Bohol Sea (this paper)
<i>Crosnierius carinatus</i> Serène & Vadon, 1981	off Lubang Is., South China Sea (Serène & Vadon, 1981); Bohol Sea & eastern coast of Luzon, Philippine Sea, off Batangas coast, South China Sea (this paper)
* <i>Epistocavea mururoa</i> Davie, 1993	Panglao & Balicasag Is., Bohol Sea (this paper)
<i>Euxanthus exsculptus</i> (Herbst, 1790)	Philippines (no specific locality) (White, 1847); Davao Gulf (Ward, 1941); Catanduanes Is., Philippine Sea (Guinot-Dumortier, 1960); Luzon Is. (Batangas, Cagayan & Sorsogon), Lubang Is., Mindoro Is., Panay Is., Samar Is., Sibuyan Is. (this paper)
<i>Euxanthus herdmani</i> Laurie, 1906	Camiguin Is., Bohol Sea (Garth & Kim, 1983); Puerto Galera, Mindoro Is., South China Sea (Serène, 1984); Panglao Is., Bohol Sea (this paper)
<i>Euxanthus huonii</i> (Hombron & Jacquinot, 1846)	Philippines (no specific locality) (Miers, 1884); Panglao Is., Bohol Sea (this paper)
<i>Guinotellus melvillensis</i> Serène, 1971	Cape Melville, Balabac Is., Sulu Sea (Serène, 1971; Serène & Umali, 1972); Balabac Is., Cuyo Is., Sibutu Is., Sulu Sea & Batangas, South China Sea (Mendoza et al., 2009)
* <i>Hepatoporus orientalis</i> (Sakai, 1935)	Off Batangas coast, South China Sea (this paper)
<i>Hepatoporus pumex</i> Mendoza & Ng, 2008	Panglao Is., Bohol Sea (Mendoza & Ng, 2008b)
* <i>Hypocolpus abbotti</i> (Rathbun, 1894)	Panglao & Balicasag Is., Bohol Sea (this paper)
<i>Hypocolpus haanii</i> Rathbun, 1909	Jolo Is., Sulu Sea (Buitendijk, 1960); Panglao & Balicasag Is., Bohol Sea (this paper)
<i>Hypocolpus kurodai</i> Takeda, 1980	Marinduque Is., Sibuyan Sea (Takeda & Manuel, 2000)
<i>Ladomedaeus fungillus</i> Manuel-Santos & Ng, 2007	Panglao & Balicasag Is., Bohol Sea (Manuel-Santos & Ng, 2007); Bohol Sea & eastern coast of Luzon, Philippine Sea (this paper)
<i>Medaeops granulosus</i> (Haswell, 1882)	Quezon, Palawan Is., South China Sea (Serène & Umali, 1972); off Lubang Is., South China Sea (Serène & Vadon, 1981); Manigo-nigo Is., Iloilo, Visayan Sea (this paper)
<i>Medaeus elegans</i> A. Milne-Edwards, 1867	Pearl Bank, Sulu Archipelago (Serène & Umali, 1972)
<i>Miersiella cavifrons</i> Takeda, 1989	off Lubang Is., South China Sea (Serène & Vadon, 1981); Bohol Sea, (this paper)
* <i>Miersiella haswelli</i> (Miers, 1886)	Balicasag Is., Bohol Sea (this paper)
<i>Paramedaeus globosus</i> Serène & Vadon, 1981	off Lubang Is., South China Sea (Serène & Vadon, 1981); Bohol Sea (this paper)
<i>Paramedaeus simplex</i> (A. Milne Edwards, 1873)	Batangas, South China Sea (Serène & Umali, 1972); Panglao Is., Bohol Sea (this paper)
* <i>Paraxanthodes cumatodes</i> (MacGilchrist, 1905)	Panglao Is., Bohol Sea (this paper)
* <i>Paraxanthodes obtusidens</i> (Sakai, 1965)	Balicasag Is., Bohol Sea & eastern coast of Luzon, Philippine Sea (this paper)
<i>Rizalthus anconis</i> Mendoza & Ng, 2008	Panglao Is., Bohol Sea (Mendoza & Ng, 2008b)
<i>Visayax estampadori</i> Mendoza & Ng, 2008	Panglao Is., Bohol Sea (Mendoza & Ng, 2008b)
<i>Visayax osteodictyon</i> Mendoza & Ng, 2008	Panglao Is., Bohol Sea (Mendoza & Ng, 2008b)

*Cranaothus* Ng, 1993

*Cranaothus deforgesii* Ng, 1993

(Fig. 1A)

*Paramedaeus noelensis* – Serène & Umali, 1972: 68, Pl. 7 Figs. 7–9, not *Medaeus noelensis* Ward, 1934.

**Material examined.** – 1 male, 7.5 × 5.3 mm (NMCR-1521), Stn. D1, 25 fathoms (46 m), Maluso Bay, Basilan Is., coll. Pele-Sulu Sea Expedition, 15 Feb.1964; 1 male, 5.2 × 3.8 mm, 1 female, 4.4 × 3.2 mm (ZRC 2008.1363), Stn. B3, base of reef slope, 8 m,

9°33.5'N 123°48.6'E, Arco Point, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 31 May 2004; 2 males, 4.7 × 3.6 mm to 4.9 × 3.7 mm (ZRC 2008.1364), 1 male, 5.9 × 4.3 mm (MNHN-B30703), Stn. B9, caves in reef wall, 8–10 m, 9°33.1'N 123°44.0'E, Napaling, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 08 Jun.2004; 1 male, 8.0 × 5.5 mm (ZRC 2008.1365), Stn. R59, coral patches and platform with thin layer of sand, 2–20 m, 9°36.1'N 123°44.9'E, Momo Beach, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 22 Jun.2004; 1 male, 5.4 × 3.8 mm, 1 female, 6.0 × 4.3 mm (ZRC 2008.1366), 1 male, 5.7 × 4.0 mm (MNHN-B30702), Stn. S5, rock and coral patches with brown algae, 2–4 m, 9°37.1'N 123°46.1'E, Napaling,

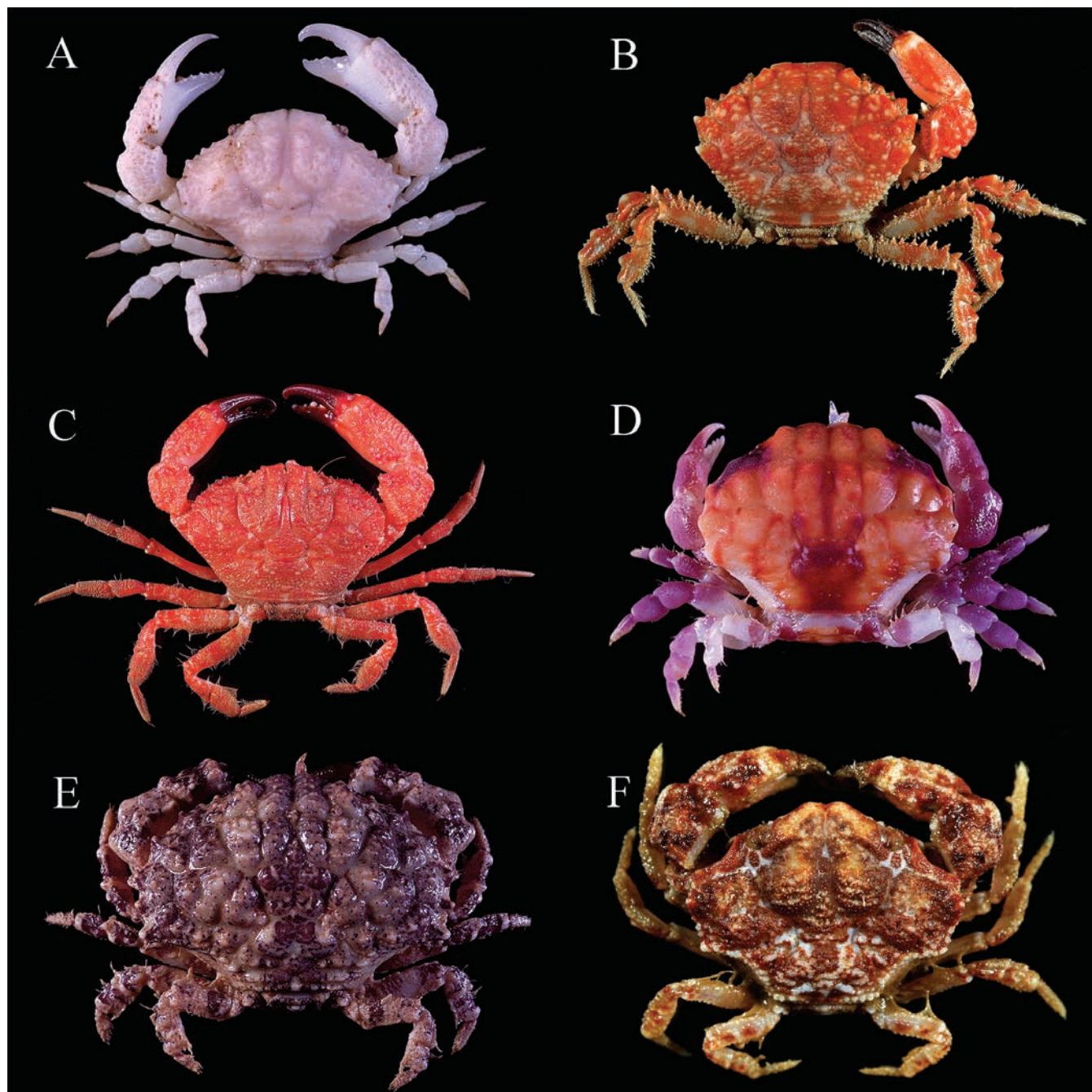


Fig. 1. Live colouration of euxanthine crabs from the Philippines: A, *Cranaothus deforgesii* Ng, 1993, male (8.0 × 5.9 mm) (R59, Panglao Is., ZRC 2008.1365); B, *Crosnierius carinatus* Serène & Vadon, 1981, female (15.6 × 11.8 mm) (CP2737, eastern coast of Luzon, ZRC 2008.1370); C, *Epistocavea mururoa* Davie, 1993, male (33.2 × 23.5 mm) (L36, Panglao Is., ZRC 2008.1371); D, *Euxanthus herdmani* Laurie, 1906, male (10.0 by 7.6 mm) (S32, Panglao Is., NMCR-27334); E) *Euxanthus huonii* (Hombron & Jacquinet, 1846), male (31.9 × 21.9 mm) (M17, Panglao Is., ZRC 2008.1376); F, *Hepatorporus orientalis* (Sakai, 1935) male (8.1 × 6.0 mm) (CP2862, off Batangas coast, ZRC 2008.1379).

Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 8 Jun.2004; 2 females, 4.7 × 4.3 mm to 6.5 × 4.7 mm (NMCR-27331), Stn. S10, coral plateau with fine sand covering rocks, 6–14 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 11 Jun.2004; 2 males, 5.0 × 3.5 mm to 7.1 × 5.0 mm (NMCR-27330), Stn. S22, hard bottom covered with sand, 15–20 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 21 Jun.2004; 1 male, 5.8 × 4.2 mm (ZRC 2008.1367), Stn. S32, hard plateau with sand covering rocks, 2–3 m, 9°35.8'N 123°44.6'E, Looc, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 28 Jun.2004.

**Remarks.** – This species was erroneously reported from the Philippines by Serène & Umali (1972) as *Paramedaeus noelensis* (Ward, 1934). Remarking on the illustrations they provided, Ng (1993) stated that their specimen was not conspecific with *Paramedaeus noelensis*, but was actually *Cranaothus deforgesii*, a new genus and new species he was describing from Chesterfield Island in the Coral Sea. This was confirmed by Mendoza & Ng (2008b) when they examined the specimen in question in the NMCR.

The present specimens have a few minor differences with the holotype as figured in Ng (1993). The front of the holotype is more produced beyond the orbits, and its lobes are more divergent, resulting in a deeper, V-shaped, medial incision; and the vermicular ridges are also more pronounced. Attempts were made to locate the holotype deposited and catalogued in the MNHN but these were not successful and it could not be located (R. Cleva, pers. comm.). The Philippine specimen reported from Basilan Island by Serène & Umali (1972) is more similar to the holotype, particularly in the condition of the frontal lobes which are also more produced and divergent. However, the condition of the G1 of the different male specimens examined did not differ significantly and the observed differences are regarded as intra-specific.

### *Crosnierius* Serène & Vadon, 1981

#### *Crosnierius carinatus* Serène & Vadon, 1981

(Fig. 1B)

*Crosnierius carinatus* Serène & Vadon, 1981: 131, Figs. 1, 2c, d, Pl. 3 Fig. C.

**Material examined.** – 1 male, 19.5 × 15.0 mm (NMCR-27332), Stn. CP2349, off Pamilacan Is., 219–240 m, 9°31.6'N 123°55.7'E, Bohol Sea, coll. MV DA-BFAR, PANGLAO 2005 Deep-Sea Cruise, 24 May 2005; 1 female, 12.1 × 9.2 mm (ZRC 2008.1368), Stn. CP2348, off Pamilacan Is., 196–216 m, 9°29.6'N 123°52.5'E, Bohol Sea, coll. MV DA-BFAR, PANGLAO 2005 Deep-Sea Cruise, 24 May 2005; 1 female, 12.3 × 9.4 mm (ZRC 2008.1369), 1 male, 12.7 × 9.8 mm, 1 female, 10.9 × 8.6 mm (MNHN-B30701), Stn. CP2407, Maribojoc Bay, 256–258 m, 9°41.3'N 123°48.5'E, Bohol Sea, coll. MV DA-BFAR, PANGLAO 2005 Deep-Sea Cruise, 01 Jun.2005; 1 female, 15.6 × 11.8 mm (ZRC 2008.1370), Stn. CP 2737, 269–272 m, 16°01.91'N 121°59.23'E, off the eastern coast of Luzon, coll. MV DA-BFAR, AURORA 2007 Deep-Sea Cruise, 01 Jun.2007.

**Comparative material.** – *Crosnierius gracilipes* Ng & Chen, 2005: Holotype male, 9.1 × 7.0 mm (ZRC 2005.0015), Stn. 6080, South China Sea, near Hong Kong, coll. 2 Apr.1959.

**Remarks.** – The genus *Crosnierius* contains two species, *C. carinatus*, the type species, and *C. gracilipes* Ng & Chen, 2005, which is known only by the male holotype, collected near Hong Kong in the South China Sea. *Crosnierius carinatus* is thus far known only from the Philippines, with this report being only the second record for this species since it was first described. The recently collected Philippine specimens agree well with the description and figures of Serène & Vadon (1981). The largest male in this series (19.5 × 15.0 mm) is considerably larger than the male holotype (13.0 × 9.0 mm). In life, the carapace and pereopods are a uniform reddish-orange, sometimes with whitish mottling on the central portions of the carapace and on the meri of the ambulatory legs, especially in female specimens. Ng & Chen (2005) commented that they could not locate the type specimens in the MNHN. A fresh search by the authors as well as the collections manager was also unsuccessful (R. Cleva, pers. comm.).

In their comparison of *Crosnierius gracilipes* with illustrations of the holotype of *C. carinatus*, Ng & Chen (2005) noted the following differences: 1) the ambulatory legs (last ambulatory leg, P5) are longer and more slender in *C. gracilipes* than in *C. carinatus*, particularly with regard to the merus and propodus; 2) the spines on the anterior margin of the merus of P5 are more widely spaced apart in *C. gracilipes*; 3) the anterolateral teeth are lower in *C. gracilipes*; and 4) the dilated median part of the G1 is subequal in length to the spinulated distal one-third in *C. gracilipes* (vs. distinctly shorter in *C. carinatus*). We compared the holotype of *C. gracilipes* with similarly sized *C. carinatus* specimens at hand and made the following observations. The ambulatory legs of *C. gracilipes* are slightly longer and more slender than those of *C. carinatus*, with the merus of P5 extending past the tip of the last anterolateral tooth when the leg is folded against the posterolateral carapace margin. In *C. carinatus* the distal tip of the merus just touches the tip of the last anterolateral tooth, in smaller specimens, or does not reach the tip, in the case of larger specimens. The teeth on the anterior edge of P5 are indeed spaced more widely apart in *C. gracilipes* due to their smaller size. In *C. carinatus*, these are larger and longer. Also, the spinulose terminal portion of the G1 is also relatively shorter in *C. gracilipes*. However, we do not agree with Ng & Chen's (2005) assessment that the anterolateral teeth are lower and that the propodus of P5 is longer in *C. gracilipes*, these resulting from the manner in which the holotype of *C. carinatus* was photographed, making the structures appear different. Aside from the differences between *C. gracilipes* and *C. carinatus* mentioned by Ng & Chen (2005), the following were also noted: 1) the dorso-external surface of the cheliped carpus is smooth and inflated in *C. gracilipes* (vs. eroded in *C. carinatus*); 2) the external surface of the palm in both chelipeds is smooth in *C. gracilipes* (vs. external surface with an additional, weak, irregular keel near the upper margin in *C. carinatus*); and 3) there is no distinct keel on the dorsal surface of the carpus

of the ambulatory legs in *C. gracilipes* (vs. present in *C. carinatus*). As such, we continue to recognize *C. gracilipes* as distinct from *C. carinatus*.

### *Epistocavea* Davie, 1993

#### *Epistocavea mururoa* Davie, 1993

(Figs. 1C, 4A, B)

**Material examined.** – 1 male, 21.5 × 15.5 mm (ZRC 2001.0657), Balicasag Is., 50–500 m, coll. local fishermen with tangle nets, 28 Nov.2001; 5 males, 21.4 × 17.4 mm to 31.1 × 22.1 mm, 3 females, 21.3 × 16.4 mm to 26.3 by 18.4 mm (NMCR-27333), Balicasag Is., 50–500 m, coll. local fishermen with tangle nets, Mar.2004; 1 male, 33.2 × 23.5 mm (ZRC 2008.1371), Stn. L36, 9°36.7'N 123°45.8'E, Looc, Panglao Is., 85–90 m, coll. PANGLAO 2004 Expedition, 21 Jun.2004; 1 male, 30.2 × 21.4 mm (MNHN-B31886), Stn. L40, 9°37.3'N 123°46.5'E, Tangnan, Panglao Is., 100–120 m, coll. PANGLAO 2004 Expedition, 24 Jun.2004; 1 male, 15.2 × 11.6 mm, 1 female, 17.1 × 12.9 mm (ZRC 2008.1372), Stn. L44, 9°30.8'N 123°41.0'E, Balicasag Is., 85–100 m, coll. PANGLAO 2004 Expedition, 03 Jul.2004; 1 female, 23.0 × 16.3 mm (MNHN-B31887), 1 female, 26.1 × 18.9 mm (ZRC 2008.1373), Stn. L45, 9°36.6'N 123°45.4'E, Bingag, Panglao Is., 80–90 m, coll. PANGLAO 2004 Expedition, 03 Jul.2004; 1 female, 25.1 × 17.8 mm (ZRC 2008.1374), Stn. P2, 9°36.6'N 123°45.4'E, Maribohoc Bay, Bohol Is., 400 m, coll. PANGLAO 2004 Expedition, 30 May 2004.

**Remarks.** – The monotypic genus *Epistocavea* was established for a unique crab, several of which were collected by traps set in deep water (100–240 m) in French Polynesia. The present Philippine specimens agree well with Davie's (1993) excellent description and illustrations of *E. mururoa*, and there is no doubt that they are conspecific. It is interesting to note that all the Philippine specimens were collected either by tangle net or by "lumun-lumun" (see Bouchet et al., 2009; Ng et al., 2009, for a description of these methods) and not by any other method employed during the PANGLAO expeditions. This is only the second time that *E. mururoa* has been reported since it was described. Moreover, the record from the Philippines represents a remarkable range extension by over 9,600 km to the west. The live colouration of adults and juveniles is uniformly dull reddish-orange on the carapace and pereopods, with very small patches of yellow or white especially on the ambulatory legs. Some paler orange forms have been observed as well. The fingers of the chela in both male and female crabs are coloured dark brown throughout their length.

### *Euxanthus* Dana, 1851

#### *Euxanthus exsculptus* (Herbst, 1790)

*Atergatis melissa* – White, 1847: 14.

*Euxanthus punctatus* – Ward, 1941: 2.

*Euxanthus exsculptus* – Guinot-Dumortier, 1960: 170.

**Material examined.** – 3 males, 60.2 × 37.6 mm to 62.1 × 38.9 mm, 4 females, 40.7 × 25.9 mm to 70.2 × 44.9 mm (NMCR-452), San Julian, Samar, coll. J. Hang, Nov.1958; 1 female, 50.0 × 32.3 mm

(NMCR-453), Calatagan, Batangas, coll. G. Alcasid & G. Edaño, 17-20 Nov.1958; 5 males, 39.5 × 25.4 mm to 54.3 × 34.2 mm, 3 females, 37.6 × 24.2 mm to 40.7 × 26.4 mm (NMCR-568), Barrio Rizal, Gubat, Sorsogon, coll. B. Reyes, 4 May 1959; 1 female, 39.8 × 26.0 mm (NMCR-963), Lubang Is., coll. E.A. Engao, 13-17 May 1961; 1 male, 44.4 × 28.7 mm (ZRC 1970.1.7.9), Puerto Galera, Mindoro, coll. R. Serène, 15 Feb.1966; 1 female, 51.4 × 34.2 mm (ZRC 1973.10.30.37), Puerto Galera, Mindoro, Philippines, coll. V. P. Marula, 22 Jun.1971; 3 males, 37.5 × 24.2 mm to 55.4 × 35.7 mm, 1 ovig. female, 50.5 × 32.5 mm (NMCR-1714), littoral zone at low tide, under rocks, corals & near sargassum, Palo Bandera, Calatagan, Batangas, coll. P.C. Gonzales et al., 16 Dec.1971; 3 males, 45.6 × 29.5 mm to 58.6 × 37.0 mm, 1 female, 54.3 × 35.2 mm (NMCR-4642), Casing, Silom, Magdiwang, Sibuyan Is., coll. P.C. Gonzales et al, Mar.1972; 1 juv. male, 12.5 × 8.5 mm (NMCR-8910), dead coral, 4 m, Bugtung Bato, Ibabay, Aklan, coll. M.R. Manuel, Aug.1986; 1 male, 27.0 × 17.1 mm (ZRC 2008.1375), rocky/sandy intertidal, with coral rubble and patches of seagrass, near lighthouse, 18°24.029'N 122°07.580'E, Barangay Racat, Santa Ana, Cagayan, coll. J. C. E. Mendoza & T. Naruse, 22 Apr.2007.

**Remarks.** – This species is common in rocky intertidal areas, and is easily one of the most commonly encountered species in the Philippines. *Euxanthus exsculptus* is known to occur throughout most of the Indo-West Pacific, from the Bay of Bengal, Indian Ocean to the Tuamotu Archipelago in the southwestern Pacific (Guinot-Dumortier, 1960).

### *Euxanthus herdmani* Laurie, 1906

(Fig. 1D)

*Euxanthus herdmani* – Garth & Kim, 1983: 669; Serène, 1984: 85, Pl. 11 Fig. D.

**Material examined.** – 1 male, 10.0 × 7.6 mm (NMCR-27334), Stn. S32, 9°35.8'N 123°44.6'E, Looc, Panglao Is., 2–3 m, coll. PANGLAO 2004 Expedition, 28 Jun.2004.

**Remarks.** – This is a rarely reported species and the single male specimen agrees well with the original description and figure as well as those in Serène (1984). The carapace is orange, with blotches of dark brown on the supraorbital region and portions of the first and second anterolateral teeth. The cardiac and medial intestinal regions are brownish-orange. The posterolateral concavity for the coadaptation of ambulatory legs is white. The meri of the chelipeds and P2–P4 are generally white, the carpi, propodi, and dactyli are pinkish-purple. In P5, only the proximal portions of the merus and dactylus are pinkish-purple, with the rest being white. *Euxanthus herdmani* has previously been recorded from Camiguin Island, in the Philippines (Garth & Kim, 1983), as well as Sri Lanka and Seychelles, in the western Indian Ocean (Guinot-Dumortier, 1960; Serène, 1984).

### *Euxanthus huonii* (Hombron & Jacquinot, 1846)

(Fig. 1E)

*Euxanthus sculptilis* – Miers, 1884: 204.

**Material examined.** – 1 male, 31.9 × 21.9 mm (ZRC 2008.1376), Stn. M17, 9°33.4'N 123°43.0'E, Pontod Islet, Panglao Is., 0–1 m,

coll. PANGLAO 2004 Expedition, 09 Jun.2004; 1 female, 19.0 × 13.2 mm (ZRC 2008.1377), Stn. S7, 9°38.5'N 123°49.2'E, Sungcolan Bay, Panglao Is., 1–4 m, coll. PANGLAO 2004 Expedition, 09 Jun.2004; 1 female, 23.6 × 16.3 mm (ZRC 2008.1378), Stn. S18, 9°35.7'N 123°44.4'E, Looc, Panglao Is., 0–2 m, coll. PANGLAO 2004 Expedition, 18 Jun.2004.

**Remarks.** – This is a common species throughout the Indo-West Pacific region, from the Red Sea and the Persian Gulf to Tahiti, though it has not been recorded from Japan or the southwest Indian Ocean (Guinot-Dumortier, 1960). The live specimens are drab in colour, with a splotchy mix of light and dark browns as well as gray in some specimens, which probably help the crab camouflage itself in the intertidal and shallow subtidal areas where it lives.

### *Guinotellus Serène, 1971*

#### *Guinotellus melvillensis Serène, 1971*

*Guinotellus melvillensis* Serène, 1971: 905, Pl. 2 Fig. A; Serène & Umali, 1972: 60, Pl. 6 Figs. 1–6; Mendoza et al., 2009: 43, Figs. 1–5.

**Material examined.** – Male holotype, 14.0 × 12.0 mm (MNHN-B8363), 13–42 fathoms (24–77 m), off Cape Melville, Balabac Strait, coll. A. F. Umali, Pele Expedition, Sulu Sea, 9 Mar.1964; 2 males, 46.2 × 37.7 mm, 35.3 × 29.6 mm, 1 female, 43.4 × 36.4 mm (MNHN-B8356), 1 male, 39.1 × 32.7 mm, 1 female, 38.1 × 33.4 mm (MNHN-B20292), 4°31'N 119°22'E, Sibutu Is., Sulu Archipelago, coll. B. R. Wilson, Pele Expedition, Sulu Sea, 25 Feb.1964; 1 male, 51.0 × 41.2 mm, 1 female, 44.0 × 39.2 mm (NMCR-5427), 1 male, 42.0 × 35.0 mm, 1 female, 37.0 × 33.0 mm (NMCR-8867), 3 males, 37.0 × 32.0 mm to 41.0 × 35.0 mm (NMCR-5435), Putic Is., Cuyo Is. Group, coll. P. C. Gonzales, V. Palpal-latoc, R. Rivera, P. Castaneda & J. Tahil, 6 Jul.–17 Aug.1975; 1 male, 36.0 × 32.0 mm (NMCR-5423), Calubcub II, San Juan, Batangas Province, Philippines, coll. R. Garcia & R. Rivera, March 1976.

**Remarks.** – This rare and unusual species has been recorded only from the Philippines thus far. Mendoza et al. (2009) provide a redescription of this species, based on adult characters, as the holotype (cf. Serène, 1971; Serène & Umali, 1972) is a juvenile male.

### *Hepatoporus Serène, 1984*

#### *Hepatoporus orientalis* (Sakai, 1935)

(Fig. 1F)

**Material examined.** – 1 male, 8.1 × 6.0 mm (ZRC 2008.1379), Stn. CP2862, 124–101 m, off western coast of Batangas, South China Sea, coll. MV DA-BFAR, 23 Mar.2008.

**Comparative material.** – Holotype male, 8.6 × 6.5 mm (KPM-NH0107080), between Ito City and Hatsushima Islet, Sagami Bay, Japan, coll. T. Sakai, 1932.

**Remarks.** – This species was originally described from Sagami Bay in Japan, and has subsequently been reported

from Amakusa and the East China Sea (Sakai, 1935, 1976). This is the first time this species is recorded from the Philippines.

### *Hepatoporus pumex* Mendoza & Ng, 2008

*Hepatoporus pumex* Mendoza & Ng, 2008b: 398, Figs. 7, 8, 9D.

**Material examined.** – Male holotype, 8.0 × 5.7 mm (NMCR-27510), Stn. B11, coral rubble, 2–4 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 11 Jun.2004. Paratypes: 1 male, 4.0 × 3.0 mm (ZRC 2008.0221), Stn. S28, reef wall with small caves, 28–32 m, 9°37.2'N 123°46.4'E, Napaling, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 24 Jun.2004; 1 male, 3.8 × 2.7 mm (ZRC 2008.0222), Stn. S10, coral plateau with fine sand covering rocks, 6–14 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 11 Jun.2004.

**Remarks.** – This species was recently described by Mendoza & Ng (2008b), and is known only from the central Philippines.

### *Hypocolpus Rathbun, 1897*

#### *Hypocolpus abbotti* (Rathbun, 1894)

(Fig. 3A, B)

**Material examined.** – 2 males, 46.3 × 32.5 mm, 51.1 × 36.0 mm, 1 female, 45.0 × 30.8 mm (ZRC 2001.0469), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, Dec.2000; 1 male, 42.4 × 29.1 mm (ZRC 2001.0673), Balicasag Is., 50–500 m, coll. local fishermen with tangle nets, 28 Nov.2001; 1 male, 48.7 × 34.4 mm (NMCR-27335), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, 02 Mar.2004; 1 male, 41.6 × 28.7 mm (MNHN-B31888), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, 29 May 2004; 1 male, 39.1 × 27.1 mm (NMCR-27336), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, May 2004; 1 female, 7.9 × 5.8 mm (NMCR-27337), Stn. B19, reef slope with cave, 17 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 21 Jun.2004.

**Remarks.** – This species is easily differentiated from other species of *Hypocolpus* by its densely setose carapace and the morphology of the subhepatic cavity, which is divided by two subparallel crests. All the adult specimens were collected in tangle nets. This species was first described from Aldabra Island in the Indian Ocean (Rathbun, 1894), and has also been reported from nearby Madagascar (Guinot-Dumortier, 1960; Serène, 1984). In the western Pacific, it has been found in Amami-Oshima in southern Japan (Takeda, 1972) and Taiwan (Ho et al., 2000). This is the first record of *Hypocolpus abbotti* in the Philippines.

*Hypocolpus haanii* Rathbun, 1909  
(Figs. 2A, 3C, D)

*Hypocolpus granulatus* – Buitendijk, 1960: 308.

**Material examined.** – 1 male, 25.1 × 17.7 mm (NMCR-27338), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, 02 Mar.2004; 1 male, 49.5 × 34.5 mm (NMCR-27339), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, 29 May 2004; 1 male, 6.2 × 4.2 mm (ZRC 2008.1380), Stn. B5, reef slope with overhangs, 4 m, 9°35.2'N 123°50.4'E, Biking, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 02 Jun.2004; 1 male,

4.0 × 2.9 mm (ZRC 2008.1381), Stn. B6, coral patches, 12–14 m, 9°31.1'N 123°41.3'E, Black Forest, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 04 Jun.2004; 1 male, 4.1 × 3.1 mm, 2 females, 11.5 × 7.9 mm to 11.8 × 8.0 mm (ZRC 2008.1382), Stn. B8, subtidal reef platform, 3 m, 9°37.1'N 123°46.1'E, Napaling, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 07 Jun.2004; 1 male, 11.5 × 8.0 mm (ZRC 2008.1383), Stn. B11, coral rubble, 2–4 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 11 Jun.2004; 1 male, 7.6 × 5.4 mm, 1 female, 7.1 × 4.9 mm (ZRC 2008.1384), Stn. B19, reef slope with cave, 17 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 21 Jun.2004;

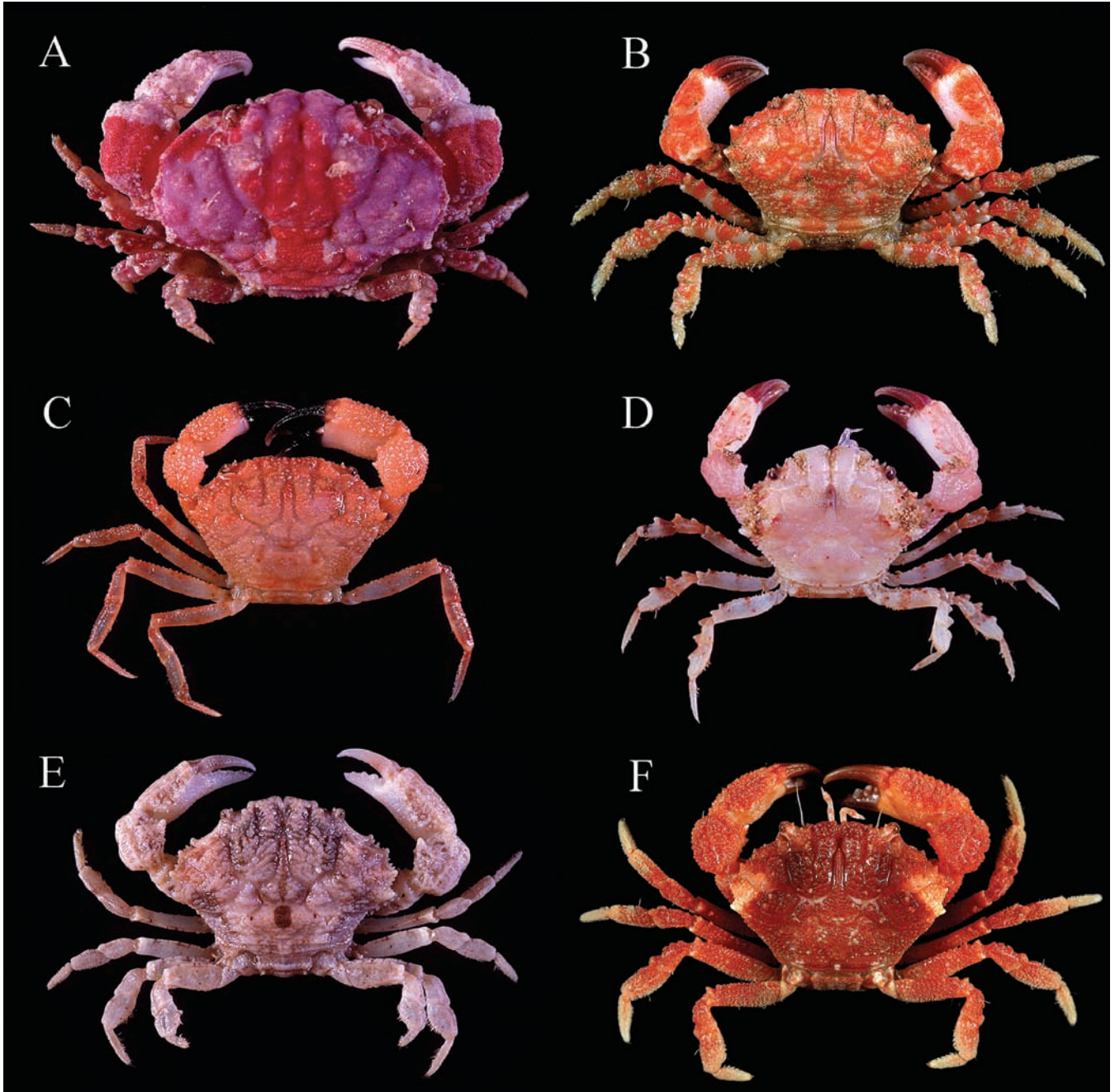


Fig. 2. Live colouration of euxanthine crabs from the Philippines: A, *Hypocolpus haanii* Rathbun, 1909, male juv., (11.5 × 8.0 mm) (B11, Pamilacan Is., ZRC 2008.1383); B, *Ladomedaeus fungillus* Manuel-Santos & Ng, 2007, male juv. (9.7 × 7.0 mm) (CP2708, ZRC 2008.1389); C, *Miersiella cavifrons* Takeda, 1989, male (9.8 × 6.6 mm) (L36, Panglao Is., ZRC 2008.1391); D, *Paramedaeus globosus* Serène & Vadon, 1981, male (6.0 × 4.6 mm) (T36, Cervera Shoal, MNHN-B31891); E, *Paramedaeus simplex* (A. Milne-Edwards, 1873), female (9.7 × 6.8 mm) (S7, Panglao Is., NMCR-27356); F, *Paraxanthodes obtusidens* (Sakai, 1965), male (18.6 × 13.0 mm) (CP2747, ZRC 2008.1410).



1 male, 5.2 × 3.7 mm (ZRC 2008.1385), Stn. B22, rubble on mixed bottom, 15–20 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 24 Jun.2004; 1 male, 8.2 × 5.8 mm (ZRC 2008.1386), Stn. B24, floor of cave, 38 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 25 Jun.2004; 1 female, 17.6 × 11.6 mm (ZRC 2008.1387), Stn. B37, floor of cave, with corals and sponges, 19–20 m, 9°30.9'N 123°40.8'E, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 02 Jul.2004; 1 male, 6.1 × 4.1 mm (ZRC 2008.1388), Stn. S10, coral plateau with fine sand covering rocks, 6–14 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 11 Jun.2004.

**Remarks.** – This is one of the most common euxanthine species to be collected from the Bohol Sea. The live colouration of the juvenile form is noted here: the carapace is basically rosy pink, with splotches of red or purple; the chelipeds are similarly hued but lighter and more mottled, the inner surface of the palm and carpus is white, and the fingers are a light brown, becoming even lighter at the tips; the ambulatory legs are a mottled brown and white. Many of the specimens collected are juveniles, and these were collected by coral brushing or vacuum suctioning. All of the adults were collected by tangle net. *Hypocolpus haanii* has been reported previously from Japan and Thailand (Guinot-Dumortier, 1960).

#### *Hypocolpus kurodai* Takeda, 1980

(Fig. 3E, F)

*Hypocolpus kurodai* – Takeda & Manuel, 2000: 153, Fig. 3D, E.

**Material examined.** – 1 male, 21.0 × 13.5 mm (NMCR-6609), Kasili, Santa Cruz, Marinduque, coll. J. Cabrera, R. Garcia & R. Velarde, 21 Aug.1979.

**Remarks.** – This little-known species has only been recorded from Japan (type locality) and the Philippines. The specimen reported here is the same one recorded by Takeda & Manuel (2000) in their report on some rare Philippine crabs.

#### *Ladomedaeus Števcíć*, 2005

##### *Ladomedaeus fungillus* Manuel-Santos & Ng, 2007

(Fig. 2B)

*Ladomedaeus fungillus* Manuel-Santos & Ng, 2007: 181, Figs. 3–5.

**Material examined.** – 2 males, 17.1 × 11.8 mm to 17.8 × 12.5 mm (NMCR-27341), Stn. P4, local fishermen with tangle nets, ca. 100 m, 9°31.1'N 123°41.5'E, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 31 May 2004; 1 female, 8.6 × 6.1 mm (NMCR-27342), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, Feb.2004; 2 males, 11.0 × 8.2 mm to 11.1 × 7.9 mm, 2 females, 10.2 × 7.0 mm to 11.7 × 8.2 mm (NMCR-27343), Stn. CP2380, Dipolog Bay, 150–163 m, 8°41.3'N 123°17.8'E, Bohol/Sulu seas sill, coll. MV DA-BFAR, PANGLAO 2005 Deep-Sea Cruise, 28 May 2005; 1 male, 12.7 × 9.1 mm (NMCR-27344), Stn. CP2381, Dipolog Bay, 259–280 m, 8°43.3'N 123°19.0'E, Bohol/Sulu seas sill, coll. by MV DA-BFAR, PANGLAO 2005 Deep-Sea

Cruise, 28 May 2005; 1 male, 9.7 × 7.0 mm (ZRC 2008.1390), Stn. CP2708, 309 m, 15°07.61'N 121°36.95'E, off the eastern coast of Luzon, coll. MV DA-BFAR, AURORA 2007 Deep-Sea Cruise, 28 May 2007.

**Remarks.** – *Ladomedaeus Števcíć*, 2005, was established for an unusual species of *Medaeus*, *M. serratus* Sakai, 1965, from Japan. A second species, *L. fungillus* from the Philippines, was described by Manuel-Santos & Ng (2007) based on material collected from the islands of Balicasag and Panglao. Material reported here are those that have not been listed by Manuel-Santos & Ng (2007). Live specimens are basically reddish-orange, with juveniles having a mottling of white on the carapace and chelipeds, and a more-or-less regular banded pattern of white and orange on the ambulatory legs. The fingers of the chela are brown to black throughout their entire length, but not extending into the palm. This species is known only from the Philippines.

#### *Medaeops* Guinot, 1967

##### *Medaeops granulosus* (Haswell, 1882)

(Fig. 4G)

*Medaeops granulosus* – Serène & Umali, 1972: 65, Pl. 7: Figs. 1, 2; Serène & Vadon, 1981: 122.

**Material examined.** – 1 male, 12.0 × 8.5 mm, 2 females, 12.5 × 9.0 mm, 13.0 × 9.5 mm (NMCR-9705), among dead coral, 2 m, Manigo-nigo Is., Carles, Iloilo, coll. V. G. Bautista, May 1989.

**Remarks.** – This species is apparently restricted to the western Pacific and eastern Indian oceans, particularly Australia (type locality), the eastern coast of China, and Japan (Guinot, 1967a). It has also been recorded from Korea, Singapore and Taiwan, (Buitendijk, 1950; Kim & Kim, 1982; Ng et al., 2001). In the Philippines, it has been previously recorded from Quezon, Palawan Island (Serène & Umali, 1972) and Lubang Island, off the southwestern coast of Luzon (Serène & Vadon, 1981). Records of *Medaeops granulosus* elsewhere, e.g. the Persian Gulf, the Red Sea, Mauritius, India and South Africa (cf. Stephensen, 1945; Barnard, 1950; Michel, 1964) should be considered as those for a similar species, *Medaeops neglectus* (Balss, 1922) (see Guinot, 1967a; Serène, 1984).

#### *Medaeus* Dana, 1851

##### *Medaeus elegans* A. Milne-Edwards, 1867

*Medaeus elegans* – Serène & Umali, 1972: 63, Pl. 6 Figs. 7–10.

**Material examined.** – 1 male, 13.9 × 11.0 mm, 1 ovig. female, 13.9 by 10.0 mm (ZRC 1973.10.31.102–103), Stn. D7, 10 fathoms (18 m), Pearl Bank, Sulu Sea, coll. A. F. Umali, Pele-Sulu Sea Expedition, 15 Feb.1964.

**Remarks.** – This species was described from New Caledonia (A. Milne-Edwards, 1867) and has been reported from Hawaii (Edmondson, 1925, 1962; Guinot, 1967a). Serène & Umali,

(1972) reported one male and one ovigerous female from Pearl Bank in the Sulu archipelago, collected during the Pele Sulu Sea Expedition. There have been no other reports of this species from the Philippines since. The taxonomy of this species will pose problems. The authors have noted key differences between the New Caledonian (type), Hawaiian and Philippine specimens (unpublished data), and it is likely that *Medaeus elegans*, as presently known, is actually a species complex. Although Serène & Umali (1972) make detailed comparisons between their Philippine material and other specimens recorded elsewhere, including the type, they were based on published text and figures and not on the actual specimens themselves. In any case, their identification of the

Philippine material as “*Medaeus elegans*” is provisionally followed pending further revisions.

***Miersiella* Guinot, 1967**

***Miersiella cavifrons* Takeda, 1989**

(Fig. 2C)

*Miersiella haswelli* – Serène & Vadon, 1981: 134, Pl. 3 Fig. B, not *Medaeus haswelli* Miers, 1886.

**Material examined.** – 1 male, 8.5 × 6.0 mm (NMCR-27345), Balicasag Island, 50–200 m, coll. local fishermen with tangle nets,

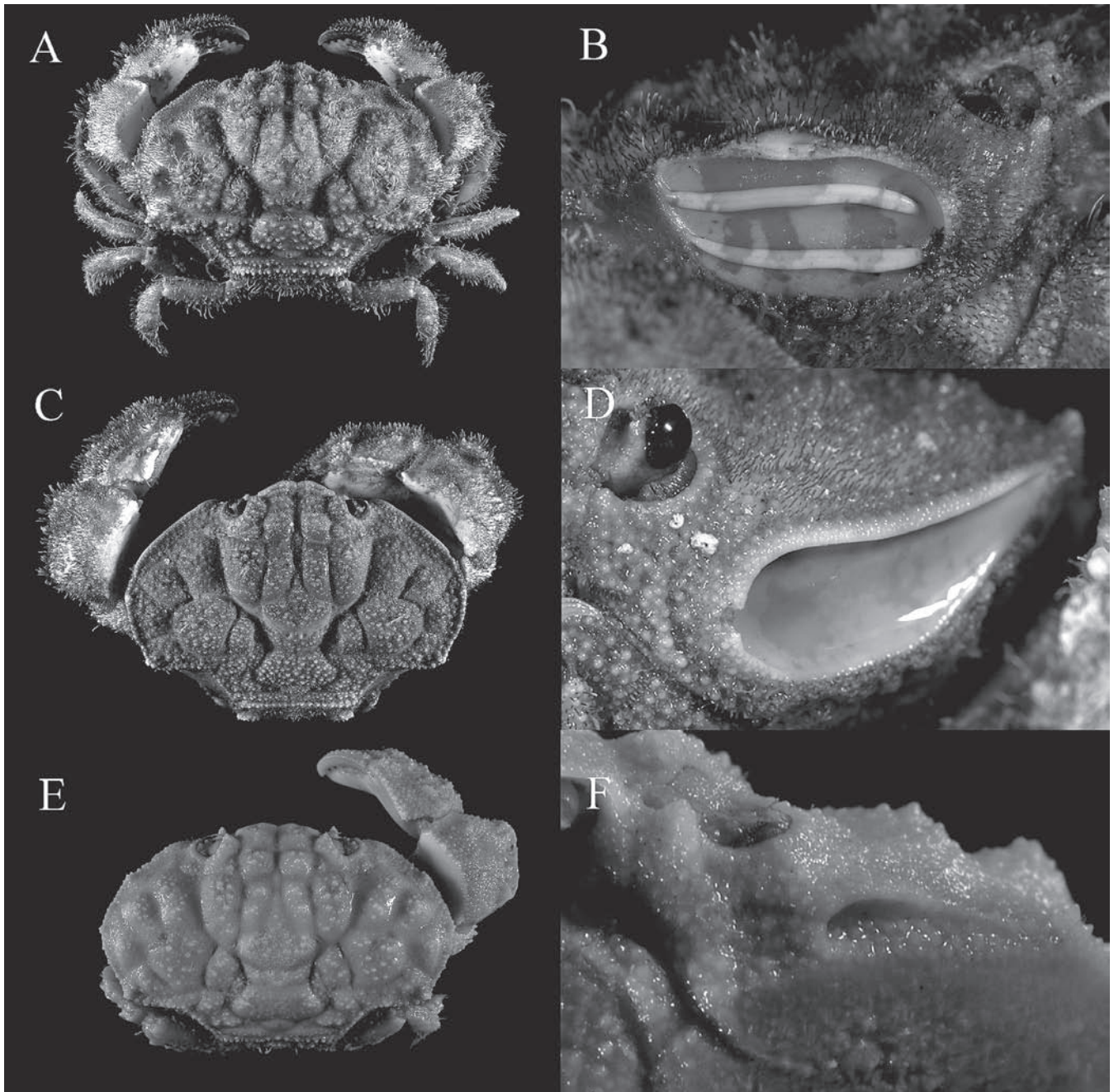


Fig. 3. *Hypocolpus abbotti* (Rathbun, 1894), male, (41.6 by 28.7 mm) (Balicasag Is., MNHN-B31888): A, dorsal view; B, fronto-lateral view of subhepatic cavity; *Hypocolpus haanii* Rathbun, 1909, male (49.5 × 34.5 mm) (Balicasag Is., NMCR-27339); C, dorsal view; D, fronto-lateral view of subhepatic cavity; *Hypocolpus kurodai* Takeda, 1980, male (21.0 × 13.5 mm) (Marinduque, NMCR-6609); E, dorsal view; F, fronto-lateral view of subhepatic cavity.

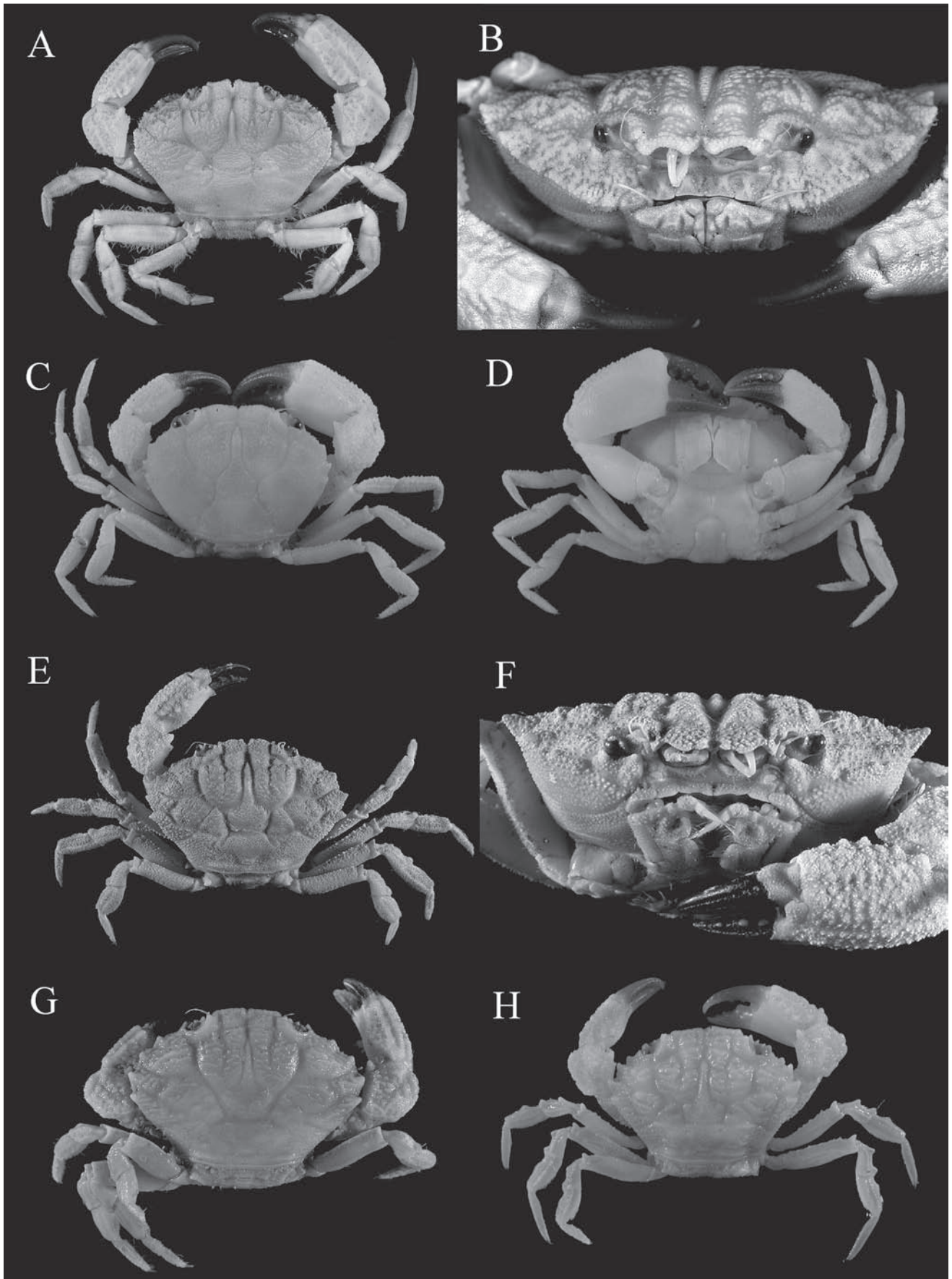


Fig. 4. *Epistocavea mururoa* Davie, 1993, male (33.2 × 23.5 mm) (L36, ZRC 2008.1371): A, dorsal view; B, frontal view; *Miersiella haswelli* (Miers, 1886), male (7.4 × 5.5 mm) (CP2343, Pamilacan Is., ZRC 2008.1400); C, dorsal view; D, ventral view; *Paraxanthodes obtusidens* (Sakai, 1965), female (30.1 × 20.3 mm) (Balicasag Is., NMCR-27357); E, dorsal view; F, frontal view; G, *Medaeps granulatus* (Haswell, 1882), female (12.5 × 9.0 mm) (Iloilo, NMCR-9705); H, *Paraxanthodes cumatodes* (MacGilchrist, 1905), male (5.7 × 4.1 mm) (T1, Panglao Is., ZRC 2008.1409).

Apr.2004; 1 male, 6.9 × 4.7 mm (NMCR-27346), Stn. B12, reef slope, 24–27 m, 9°35.6'N 123°43.2'E, Doljo Point, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 14 Jun.2004; 1 male, 4.0 × 2.7 mm (NMCR-27347), Stn. B16, coral rubble on sand and gravel, 20 m, 9°37.6'N 123°47.3'E, Bingag, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 17 Jun.2004; 1 male, 9.8 × 6.6 mm (ZRC 2008.1391), Stn. L36, 85–90 m, 9°36.7'N 123°45.8'E, Looc, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 21 Jun.2004; 3 females, 5.8 × 4.0 mm to 6.4 × 4.4 mm (NMCR-27348), Stn. L40, 100–120 m, 9°37.3'N 123°46.5'E, Tangnan, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 24 Jun.2004; 3 females, 4.7 × 3.3 mm to 6.6 × 4.6 mm (ZRC 2008.1392), Stn L41, 90–100 m, 9°31.3'N 123°41.2'E, in front of PTA compound, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 1 Jul.2004; 4 males, 3.6 × 2.4 mm to 9.3 × 6.5 mm, 7 females, 3.4 × 2.6 mm to 7.1 × 4.6 mm (MNHN-B30704), Stn. L42, 80–90 m, 9°31.2'N 123°40.7'E, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 02 Jul.2004; 1 female, 5.4 × 3.8 mm (ZRC 2008.1393), Stn. L44, 85–100 m, 9°30.8'N 123°41.0'E, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 3 Jul.2004; 1 male, 8.0 × 5.6 mm (NMCR-27349), Stn. L46, 90–110 m, 9°30.9'N 123°41.2'E, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 4 Jul.2004; 1 male, 4.1 × 3.0 mm, 4 females, 3.4 × 2.5 mm to 6.1 × 4.2 mm (NMCR-27350), Stn. P1, 90–200 m, 9°36.1'N 123°45.0'E, Maribohoc Bay, Bohol Is., coll. PANGLAO 2004 Marine Biodiversity Project, 30 May 2004; 1 male, 4.2 × 3.0 mm, 1 female, 3.5 × 2.7 mm (ZRC 2008.1394), Stn. P2, 400 m, 9°39.0'N 123°43.8'E, Maribohoc Bay, Bohol Is., coll. PANGLAO 2004 Marine Biodiversity Project, 30 May 2004; 1 male, 6.7 × 4.8 mm (ZRC 2008.1395), Stn. T1, mud and many sponges, 83–102 m, 9°32.4'N 123°47.3'E, Bolod, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 30 May 2004; 2 males, 6.9 × 4.7 mm, 7.0 × 4.9 mm, 2 females, 5.5 × 3.8 mm, 5.7 × 3.9 mm (ZRC 2008.1396), Stn. T11, sponges and muddy sand, 78–95 m, 9°40.9'N 123°50.0'E, Maribohoc Bay, Bohol Is., coll. PANGLAO 2004 Marine Biodiversity Project, 16 Jun.2004; 2 males, 6.6 × 4.6 mm, 7.8 × 5.5 mm, 1 female, 5.1 × 3.5 mm, 1 juv., 2.6 × 2.0 mm (ZRC 2008.1397), Stn. T13, with sponges, 90–100 m, 9°40.5'N 123°49.5'E, Maribohoc Bay, Bohol Is., coll. PANGLAO 2004 Marine Biodiversity Project, 17 Jun.2004; 2 males, 6.1 × 4.3 mm, 7.5 × 5.3 mm, 2 females, 4.7 × 3.4 mm, 5.1 × 3.5 mm, 1 juv., 3.2 × 2.1 mm (ZRC 2008.1398), Stn. T38, sponge bed, 80–140 m, 9°32.3'N 123°42.3'E, Balicasag Is., coll. PANGLAO 2004 Marine Biodiversity Project, 4 Jul.2004; 2 males, 8.0 × 5.4 mm, 8.2 × 5.6 mm, 1 juv., 2.3 × 1.9 mm (ZRC 2008.1399), Stn. T41, 110–112 m, 9°29.7'N 123°50.2'E, Cervera Shoal, west of Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 6 Jul.2004.

**Comparative material.** – Holotype female, 8.7 × 5.7 mm (NSMT-Cr 9723), Stn. 20, coarse sand & shell, 45 m, west side of Nominoura, Oshima Passage, Amami-Oshima, southwestern Japan coll. M Takeda, 6 Aug.1988; paratype male, 5.4 × 3.8 mm (NSMT-Cr 9724), 40–70 m, off Kushimoto, Kii Peninsula, central Japan, coll. S. Nagai, 5 Sep.1979.

**Remarks.** – This species was first reported from the Philippines by Serène & Vadon (1981) as *Miersiella haswelli* (Miers, 1886). However, the figures they provided did not agree with the known description of *Miersiella haswelli*, particularly in the form of the first two anterolateral teeth (larger, distally spiniform and curved anteriorly vs. smaller, broadly triangular in *Miersiella haswelli*), the ambulatory legs (longer and more slender vs. shorter and stouter in *Miersiella haswelli*), and the G1 (longer and more slender, and with a different terminal conformation) (cf. Guinot, 1967a: 359–362,

Figs. 17–20; Serène & Vadon, 1981: 134, Figs. 2g–i, 3, Pl. 3). Takeda (1989: 162, Figs. 12–13) described a new species, *Miersiella cavifrons*, from one male and one female specimen collected in the Ryukyu Islands and Kii Peninsula in Japan. He, however, made no mention of the report of Serène & Vadon (1981). The present collection agrees well with the illustrations provided by Takeda (1989) and Serène & Vadon (1981). In the current series of specimens, the G1 of the adult males resembles that seen in Serène & Vadon (1981), more than in Takeda (1989), but this can be attributed to the fact that Takeda's male paratype is still immature and the G1 has not yet developed fully. Comparison of the Philippine specimens with the male paratype and female holotype from Japan confirms this. As such, *M. cavifrons* is now known from southwestern Japan (Ryukyu Islands) and the Philippines (South China Sea and Bohol Sea). This species is one of the most abundant euxanthine crabs to be collected from the Bohol Sea.

#### *Miersiella haswelli* (Miers, 1886)

(Fig. 4C, D)

**Material Examined.** – 1 male, 7.4 × 5.5 mm, 2 females, 5.6 × 4.1 mm to 6.4 × 4.6 mm (ZRC 2008.1400), Stn. CP2343, off Pamilacan Is., 273–356 m, 9°27.4'N 123°49.4'E, Bohol Sea, coll. MV DA-BFAR, PANGLAO 2005 Deep-Sea Cruise, 23 May 2005; 1 male (damaged), 5.0 × 3.7 mm (ZRC 2008.1401), Stn. DW2376, off Aligbay Is., 189–219 m, 8°40.7'N 123°16.1'E, Bohol/Sulu seas sill, coll. MV DA-BFAR, PANGLAO 2005 Deep-Sea Cruise, 28 May 2005.

**Remarks.** – This species was described from New South Wales, eastern Australia as *Medaeus haswelli* Miers, 1886. Guinot (1967a) established a new genus, *Miersiella*, and designated it as the type species. The present specimens agree well with the illustrations provided by Miers (1886: 117, Pl. XI, Fig. 2) and Guinot (1967a: 359–362, Figs. 17–20). *Miersiella haswelli* has been erroneously reported from the Philippines by Serène & Vadon (1981), but their specimens are actually *Miersiella cavifrons* (see earlier **Remarks**). Therefore, this report is in fact the first record of *Miersiella haswelli* from the Philippines. The species has previously been recorded from Christmas Island in the Indian Ocean, and Japan, New Caledonia, the Loyalty Islands, Norfolk Ridge, Wallis Island, Waterwitch Bank and Kermadec Island, in the Western Pacific (Davie, 1997; Takeda & Weber, 2006; Ahyong, 2008).

#### *Paramedaeus* Guinot, 1967

##### *Paramedaeus globosus* Serène & Vadon, 1981

(Fig. 2D)

*Paramedaeus planifrons globosus* Serène & Vadon, 1981: 130, Pl. 3 Fig. A.

**Material examined.** – 1 male, 3.2 × 2.6 mm (ZRC 2008.1402), Stn. P2, local fishermen with tangle nets, 400 m, 9°39.0'N 123°43.8'E, Maribojoc Bay, Bohol Is., coll. PANGLAO 2004

Marine Biodiversity Project, 30 May 2004; 1 male, 8.9 × 6.6 mm (NMCR-27351), 5 males, 3.1 × 2.5 mm to 5.6 × 4.3 mm, 7 females, 3.3 × 2.6 mm to 7.2 × 5.4 mm, 4 juv., 2.4 × 2.1 mm to 3.2 × 2.5 mm (ZRC 2008.1403), Stn. T1, mud and many sponges, 83–102 m, 9°32.4'N 123°47.3'E, Bolod, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 30 May 2004; 1 male, 9.2 × 6.8 mm (MNHN-B30705), 2 males, 5.5 × 4.3 mm to 7.7 × 5.9 mm, 3 females, 4.7 × 3.6 to 7.4 × 5.6 mm (ZRC 2008.1404), Stn. T2, coarse sand, 152 m, 9°32.4'N 123°47.8'E, Bolod, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 31 May 2004; 7 males, 4.1 × 3.1 mm to 5.8 × 4.6 mm, 5 females, 3.9 × 3.0 mm to 5.4 × 4.2 mm, 1 juv., 2.5 × 2.1 mm (NMCR-27352), Stn. T4, many large sponges, 82 m, 9°33.0'N 123°48.5'E, Bolod, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 01 Jun.2004; 1 male, 4.4 × 3.4 mm, 2 females, 5.7 × 4.3 mm to 8.1 × 6.1 mm (ZRC 2008.1405), Stn. T5, coarse muddy sand, 84–87 m, 9°35.3'N 123°52.2'E, west of Baclayon, Bohol Is., coll. PANGLAO 2004 Marine Biodiversity Project, 02 Jul.2004; 12 males, 4.3 × 3.3 mm to 6.2 × 4.9 mm, 4 females, 4.5 × 3.4 mm to 5.5 × 4.2 mm, 1 ovig. female, 4.6 × 3.5 mm (ZRC 2008.1406), Stn. T9, fine sand with seagrass, 97–120 m, 9°33.5'9°33.9'N 123°49.5'/123°50.5'E, off San Isidro, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 14 Jun.2004; 1 female, 5.9 × 4.5 mm (NMCR-27353), Stn. T10, mud and fine sand, 117–124 m, 9°33.4'9°33.8'N 123°49.6'/123°51.5'E, off San Isidro, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 15 Jun.2004; 1 male, 6.1 × 4.7 mm (ZRC 2008.1407), Stn. T19, mud, 10–26 m, 9°42.2'N 123°50.8'E, Cortes, Bohol Is., coll. PANGLAO 2004 Biodiversity Project, 20 Jun.2004; 1 male, 5.9 × 4.6 mm (NMCR-27354), Stn. T28, muddy sand, 80 m, 9°35.0'N 123°51.4'E, Biking-Catarman, Panglao Is., coll. PANGLAO 2004 Biodiversity Project, 01 Jul.2004; 1 male, 7.4 × 5.2 mm, 1 female, 4.7 × 3.4 mm (MNHN-B30706), Stn. T29, mud, 77–84 m, 9°34.5'N 123°50.6'E, Biking, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 01 Jul.2004; 2 males, 4.2 × 3.2 mm to 6.0 × 4.6 mm (MNHN-B31891), Stn. T36, sand bed with echinoderms, 95–128 m, 9°29.3'N 123°51.5'E, Cervera Shoal, west of Pamilacan Is., coll. PANGLAO 2004 Biodiversity Project, 04 July 2004; 2 females, 3.3 × 2.6 mm to 5.8 × 4.6 mm (MNHN-B31892), Stn. T41, 110–112 m, 9°29.7'N 123°50.2'E, Cervera Shoal, west of Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 06 July 2004.

**Remarks.** – This species was first collected in the Philippines by the MUSORSTOM I expedition and described as a new subspecies of *Paramedaeus planifrons* Sakai, 1965, by Serène & Vadon (1981) and then subsequently elevated to full species rank by Davie (1997). The holotype in MNHN cannot be located (R. Cleva, pers. comm.) and there are no paratypes. This species is one of the most abundant euxanthines collected from the Bohol Sea. It is found in a variety of habitats, but more commonly in muddy to sandy substrate, and often found where there are sponges and echinoderms. Individuals are quite variable in their live colour patterns, though the carapace and pereopods are basically white, with patches of light or dark brown, yellow- or reddish-orange. The fingers of the chelae are dark brown throughout their length, though not extending into the palm. Outside the Philippines, *Paramedaeus globosus* has also been collected from New Caledonia and the Loyalty Islands (Davie, 1997).

***Paramedaeus simplex* (A. Milne-Edwards, 1873)**

(Fig. 2E)

*Paramedaeus simplex* – Serène & Umali, 1972: 67, Pl. 7 Figs. 3–4.

**Material examined.** – 1 male, 14 × 9.0 mm (ZRC 1965.8.4.1), Batangas, coll. P. Palarca, 25 Apr.1963; 2 juv., 3.9 × 3.0 to 4.1 × 3.0 (NMCR-27355), Stn. B14, coral rubble, 2–4 m, 9°38.5'N 123°49.2'E, Sungcolan Bay, Panglao Is., coll. by Panglao Marine Biodiversity Project, 16 Jun.2004; 1 male, 9.0 × 6.2 mm, 1 ovig. female, 11.1 × 7.8 mm, 1 juv., 4.7 × 3.4 mm (ZRC 2008.1408), Stn. B18, blocks dispersed among seagrass, 3–5 m, 9°38.5'N 123°49.7'E, Sungcolan Bay, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 20 Jun.2004; 1 female, 9.7 × 6.8 mm (NMCR-27356), Stn. S7, sand with seagrass, 1–4 m, 9°38.5'N 123°49.2'E, Sungcolan Bay, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 09 Jun.2004.

**Remarks.** – This species was described from Madagascar (A. Milne-Edwards, 1873) and has been reported from various localities in the Indian Ocean (Ward, 1942; Guinot, 1967a; Serène, 1984) and in the Pacific Ocean (De Man, 1902; Rathbun, 1906; Edmonson, 1925; Takeda, 1972, 1976; Ng & Clark, 2002). This species has been previously reported from the Philippines by Serène & Umali (1972), based on a single male collected from Batangas. It is interesting to note that all of the specimens reported in this paper, one of them ovigerous, are much smaller than this male specimen (carapace, 14.0 × 9.0 mm). Ng & Clark (2002) remarked on the differences in size at maturity of the specimens found in Hawaii, Guam, New Caledonia and the Philippines and suggested that *Paramedaeus simplex* may be a species complex. The present material also indicates that a revision of this species is clearly necessary.

***Paraxanthodes* Guinot, 1967**

***Paraxanthodes cumatodes* (MacGilchrist, 1905)**

(Fig. 4H)

**Material examined.** – 1 male, 5.7 × 4.1 mm (ZRC 2008.1409), Stn. T1, mud and many sponges, 83–102 m, 9°32.4'N 123°47.3'E, Bolod, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 30 May 2004.

**Remarks.** – This species was first placed in *Xanthodes* Dana, 1852, by MacGilchrist (1905), but was later transferred to a new genus, *Paraxanthodes*, by Guinot (1967b) together with *Paraxanthodes obtusidens* (Sakai, 1965). It has been reported from the Red Sea and the Persian Gulf (Guinot, 1976b), and also from New Caledonia in the Pacific (Davie, 1997). The present specimen agrees with the illustrations provided by MacGilchrist (1905) and Guinot (1967b). This is the first record of this species in the Philippines. Davie (1997) argued that *Paraxanthodes* is closely allied to the genera *Alainodaeus*, *Medaeus*, *Medaeops*, *Paramedaeus* and *Monodaeus* and forms a monophyletic grouping with these based on the condition of the carapace, sternum, male abdomen and the anterior portion of the carapace anterolateral margin. For this reason, he included *Paraxanthodes* in the

Euxanthinae. Ng et al. (2008) also noted that like other euxanthine genera, *Paraxanthodes* possesses a strongly differentiated basal tooth on the dactylus of the major chela. Consequently, *Paraxanthodes* is provisionally placed in Euxanthinae.

***Paraxanthodes obtusidens* (Sakai, 1965)**

(Figs. 2F, 4E, F)

**Material examined.** – 1 male, 31.5 × 22.2 mm, 1 female, 30.1 × 20.3 mm (NMCR-27357), Balicasag Is., 50–200 m, coll. local fishermen with tangle nets, purch. P. K. L. Ng, 25 Oct.2003; 1 male, 18.6 × 13.0 mm (ZRC 2008.1410), Stn. CP2747, 118–124 m, 15°55.53'N 121°42.12'E, off the eastern coast of Luzon, coll. MV DA-BFAR, AURORA 2007 Deep-Sea Cruise, 2 Jun.2007.

**Remarks.** – This species was first assigned to *Micropanope* by Sakai (1965), but was later transferred to a new genus, *Paraxanthodes*, by Guinot (1967b), wherein she designated it as the type species. The Philippine material agrees well with the illustrations provided by Sakai (1965a: 103, Figs. 2c, 3e, f) and Guinot (1967b: 723–726, Figs. 51a, b, 59). The live colouration is as follows; the carapace and chelipeds and ambulatory legs are deep reddish-orange, with lighter areas of yellowish-white immediately surrounding the third and fourth anterolateral teeth. There are small patches of white particularly in the cardiac region and in the grooves between the bases of 2M and 3M. The fingers of the chela are dark brown all throughout their length, but not extending to the palm. Other than the type locality (Sagami Bay, Japan), it has also been recorded from Muroto-zaki, Kii Nagashima, Kii Minabe, and Tosa Bay, all in Japan (Yokoya, 1933; Sakai, 1965b, 1976), and also from the South China Sea (Guinot, 1967b). This is the first record of this species in the Philippines.

***Rizalthus* Mendoza & Ng, 2008**

***Rizalthus anconis* Mendoza & Ng, 2008**

*Rizalthus anconis* Mendoza & Ng, 2008b: 387, Figs. 1, 2, 9A.

**Material examined.** – Holotype male, 12.5 × 7.9 mm (NMCR-27507), Stn. R30, reef slope with black coral, 15–37 m, 9°37.1'N 123°46.1'E, Napaling, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 8 Jun.2004; paratypes – 2 females, 7.8 × 4.5 mm to 11.2 × 7.3 mm (MNHN-B30700), 1 ovigerous female, 12.7 × 8.1 mm (ZRC 2008.0215), Stn. B39, reef wall with small caves, 17–25 m, 9°32.8'N 123°42.1'E, Pontod Lagoon 1, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 2 Jul.2004; 1 male, 4.2 × 2.7 mm (ZRC 2008.0216), Stn. B10, reef wall with small caves, 3–14 m, 9°36.5'N 123°45.6'E, Momo Beach, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 10 Jun.2004; 1 female, 7.0 × 4.3 mm (ZRC 2008.0217), Stn. B17, reef wall with small caves, 3–21 m, 9°37.5'N 123°46.9'E Bingag, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 19 Jun.2004.

**Remarks.** – This is the type species of the monotypic genus *Rizalthus*, recently described by Mendoza & Ng (2008b), and known only from the central Philippines.

***Visayax* Mendoza & Ng, 2008**

***Visayax estampadori* Mendoza & Ng, 2008**

*Visayax estampadori* Mendoza & Ng, 2008b: 395, Figs. 5, 6, 9C.

**Material examined.** – Holotype male, 6.7 × 4.6 mm (NMCR-27509), Stn. B17, reef wall with small caves, 3–21 m, 9°37.5'N 123°46.9'E, Bingag, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 19 Jun.2004; paratype male, 4.5 × 3.3 mm (ZRC 2008.0220), Stn. B21, reef wall with small caves, 20–21 m, 9°37.2'N 123°46.4'E, Napaling, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 24 Jun.2004.

**Remarks.** – This species was recently described by Mendoza & Ng (2008b), and is known only from the central Philippines.

***Visayax osteodictyon* Mendoza & Ng, 2008**

*Visayax osteodictyon* Mendoza & Ng, 2008b: 392, Figs. 3, 4, 9B.

**Material examined.** – Holotype male, 6.3 × 4.3 mm (NMCR-27508), Stn. S22, hard ground covered with sand, 15–22 m, 9°29.4'N 123°56.0'E, Pamilacan Is., coll. PANGLAO 2004 Marine Biodiversity Project, 21 Jun.2004; paratypes – 1 male, 2.3 × 1.7 mm (ZRC 2008.0218), Stn. B17, reef wall with small caves, 3–21 m, 9°37.5'N 123°46.9'E Bingag, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 19 Jun.2004; 1 male, 3.3 × 2.2 mm, 1 female, 3.4 by 2.3 mm (ZRC 2008.0219), Stn. B39, reef wall with small caves, 17–25 m, 9°32.8'N 123°42.1'E, Pontod Lagoon 1, Panglao Is., coll. PANGLAO 2004 Marine Biodiversity Project, 2 Jul.2004.

**Remarks.** – This is the type species of *Visayax*, recently described by Mendoza & Ng (2008b). It is known only from the central Philippines.

**GENERAL DISCUSSION**

As a result of the present review, there are now 25 species of Euxanthinae, distributed among 16 genera, known from the Philippines (Table 1). Six of these, *Epistocavea mururoa*, *Hepatoporus orientalis*, *Hypocolpus abbotti*, *Miersiella haswelli*, *Paraxanthodes cumatodes* and *Paraxanthodes obtusidens*, are new records for the country. While most of these have been recorded from the Western Pacific or Southeast Asia, there are some that represent a remarkable range extension (i.e. *Alainodaeus* and *Epistocavea mururoa*). One species, *Crosnierius carinatus*, is here reported only for the second time from the Philippines and has not been found elsewhere. Many of the species listed here were collected from the Panglao-Balicasag area, in the Bohol Sea, which, together with recent studies on other crab groups – Dromiidae and Dynomenidae (McLay & Ng, 2004, 2005); Homolodromiidae (Ng & McLay, 2005); Homolidae (Takeda & Manuel-Santos, 2007; Richer de Forges & Ng, 2007b); Calappidae (Ng, 2002); Leucosiidae (Komatsu et al., 2005; Galil & Ng, 2007); Hymenosomatidae (Naruse et al., 2008) – gives credence

to the claim that this area is species-rich for marine fauna, particularly (but not limited to) brachyurans.

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