

## Unrecorded Crabs (Crustacea: Decapoda: Brachyura) from Taiwan and Tungsha Islands, with Description of a New Genus and Species of Xanthidae

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**Peter K. L. Ng and Jung-Fu 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. The taxonomy of 20 species of brachyuran crabs representing 8 families from Taiwan and the Tungsha Islands (Prattas Islands) are reported. Of these, 16 are new records for this area: *Paromola japonica* Parisi, 1915, *P. macrochira* Sakai, 1961, *Latreillopsis bispinosa* Henderson, 1888 (Homolidae); *Arcania elongata* (Yokoya, 1933), *Heteronucia laminata* (Doflein, 1904) (Leucosiidae); *Izanami curtispina* (Sakai, 1961) (Calappidae); *Heikea arachnoides* (Manning and Holthuis, 1986), *Ethusa sexdentata* (Stimpson, 1858) (Dorippidae); *Platymaia bartschi* Rathbun, 1916, *Cyrtomaia curvicerus* Bouvier, 1915, *C. murrayi* Miers, 1886 (Majidae); *Cancer nadaensis* Sakai, 1969 (Cancridae); *Zalasia sakaii* Balss, 1938, *Forestia scabra* (Odhner, 1925), *Etisus splendidus* Rathbun, 1906 (Xanthidae); and *Ommatocarcinus pulcher* (Barnard, 1950) (Goneplacidae). The taxonomy of 3 other species: *Matuta victor* (Fabricius, 1781), *Ashtoret maculata* (Miers, 1877) (Calappidae), and *Platymaia remifera* Rathbun, 1916 (Majidae) is clarified. One new genus and 1 new species (*Pulchratis reticulatus*) of Xanthidae are also described.

**Key words:** Taxonomy, New taxa, Marine crabs, Pratas Islands.

At present, some 330 species of brachyuran crabs are known from Taiwan (cf. Stimpson 1907, Maki and Tsuchiya 1923, Miyake 1938, Horikawa 1940, Kamita 1941, Lin 1949, Wu et al. 1962, Chang 1963 1986 1988, Sakai 1976, Yu 1979, Hwang and Yu 1980, Wang and Chen 1981, Wang 1984, Fukui et al. 1989, Huang et al. 1989 1990 1992, Shih et al. 1991, Ng and Wang 1994, Ng et al. 1994, Shy et al. 1994, Ng and Chuang 1996, unpubl. data). Recent collections of marine crabs from various inshore ports in Taiwan have obtained a large number of species, most of which are new records for the island and/or are of taxonomic interest.

The present note serves to report on some of the more interesting new records or species for Taiwan. A new genus and species of Xanthidae is also described. Specimens examined are deposited in the National Taiwan Ocean University (NTOU), Keelung, Taiwan; and Zoological Reference Collec-

tion (ZRC), National University of Singapore. Measurements provided are of the carapace widths and lengths respectively. The abbreviations G1 and G2 are used for the male 1st and 2nd pleopods respectively.

### Family Homolidae

#### *Paromola japonica* Parisi, 1915 (Fig. 1A)

*Material examined:* 1 male (90.2 by 113.3 mm), 1 female (84.5 by 107.9 mm) (ZRC 1995.640), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, Jun. 1993. 1 female (74.4 by 62.5 mm, to tip of spines) (ZRC 1997.379), port at Nanfangau, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400

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m depth), coll. P. K. L. Ng, 6 Aug. 1996. 1 female (52.7 by 77.0 mm) (NTOU 9003-02-24), 1 female (47.1 by 61.5 mm) (ZRC 1995.596), Tungsha Islands, South China Sea, deep waters (about 600 m depth), coll. D.-A. Lee, 22 Feb. 1990.

**Remarks:** This species is a new record for Taiwan and the Tungsha Islands. The specimens on hand agree well with the description and figures of *Paromola japonica* provided by Guinot and Richer de Forges (1995). The species has been previously reported only from Japan and Hawaii. *P. japonica* appears to be relatively common in Taiwan, with specimens sold at fishports as souvenirs. The present female specimens are slightly atypical in that both pseudorostral horns lack a lateral spine. There are, however, indications that a spine was present in each pseudorostral horn as there is a small chip where each accessory spine should be. The smallest female examined, a female (47.1 by 61.5 mm) (ZRC 1995.596) from the Tungsha Islands, was already mature.

**Color and ecology:** Guinot and Richer de Forges (1995) record that, according to the literature, the species occurs at depth from 80 to 450 m. This concurs with the present data. The color in life is orangish/reddish-brown to dull red overall, with the spines slightly darker.

***Paromola macrochira* Sakai, 1961**

(Fig. 1B, C)

**Material examined:** 1 male (126.5 by 112.8 mm) (NTOU 9101-01-34), port at Nanfangau, Ilan County, northeastern Taiwan, commercial inshore trawler, deep waters (300-500 m depth), coll. J.-F. Huang, 21 Dec. 1990. 1 male (153.4 by 123.1 mm) (ZRC 1997.380), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, Jun. 1993. 1 female (NTOU8910-28-01), 2 females (101.3 by 129.2 mm, 92.7 by 106.8 mm) (ZRC 1995.647), Tungsha Islands, South China Sea, coll. D.-A. Lee, 28 Oct. 1989.

**Remarks:** This large species was previously known only from Japan. The present specimens from Taiwan agree well with the types and with subsequent descriptions by Guinot and Richer de Forges (1995). In the present specimens, the tubercles on the posterior margin of the merus of the 1st to 3rd ambulatory legs sometimes extend to 2/3 to 3/4 the length of the segment (from the proximal end) and may be quite sharp. The posterior margins of the last ambulatory merus, however, are unarmed, although there may be a few small granules on the

proximal part.

**Color and ecology:** Guinot and Richer de Forges (1995) note that *Paromola macrochira* occurs at depths between 150 and 250 m, which agrees with the data on the present specimen. In life, *P. macrochira* is a uniform yellowish-brown with dirty-white legs, to reddish-brown overall.

***Latreillopsis bispinosa* Henderson, 1888**

(Fig. 1D)

**Material examined:** 1 male (17.0 by 12.8 mm) (NTOU 8412-01-01), port at Shindakang, Kaohsiung County, southwestern Taiwan, commercial inshore trawler, deep waters (100-200 m depth), coll. J.-F. Huang, 1 Dec. 1984. 1 female (16.9 by 11.5 mm, to tip of spines) (ZRC 1997.381), port at Tungkang, Pingtung County, southern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 5 Aug. 1996.

**Remarks:** *Latreillopsis bispinosa* has been reliably reported only from the Philippines and Makassar Straits (see Guinot and Richer de Forges 1995), the present record for Taiwan being new. Guinot and Richer de Forges (1995) also recognized a variety they called "forme *trispinosa*" from the Philippines and Makassar Straits, but the present specimens agree better with the typical form of *L. bispinosa*.

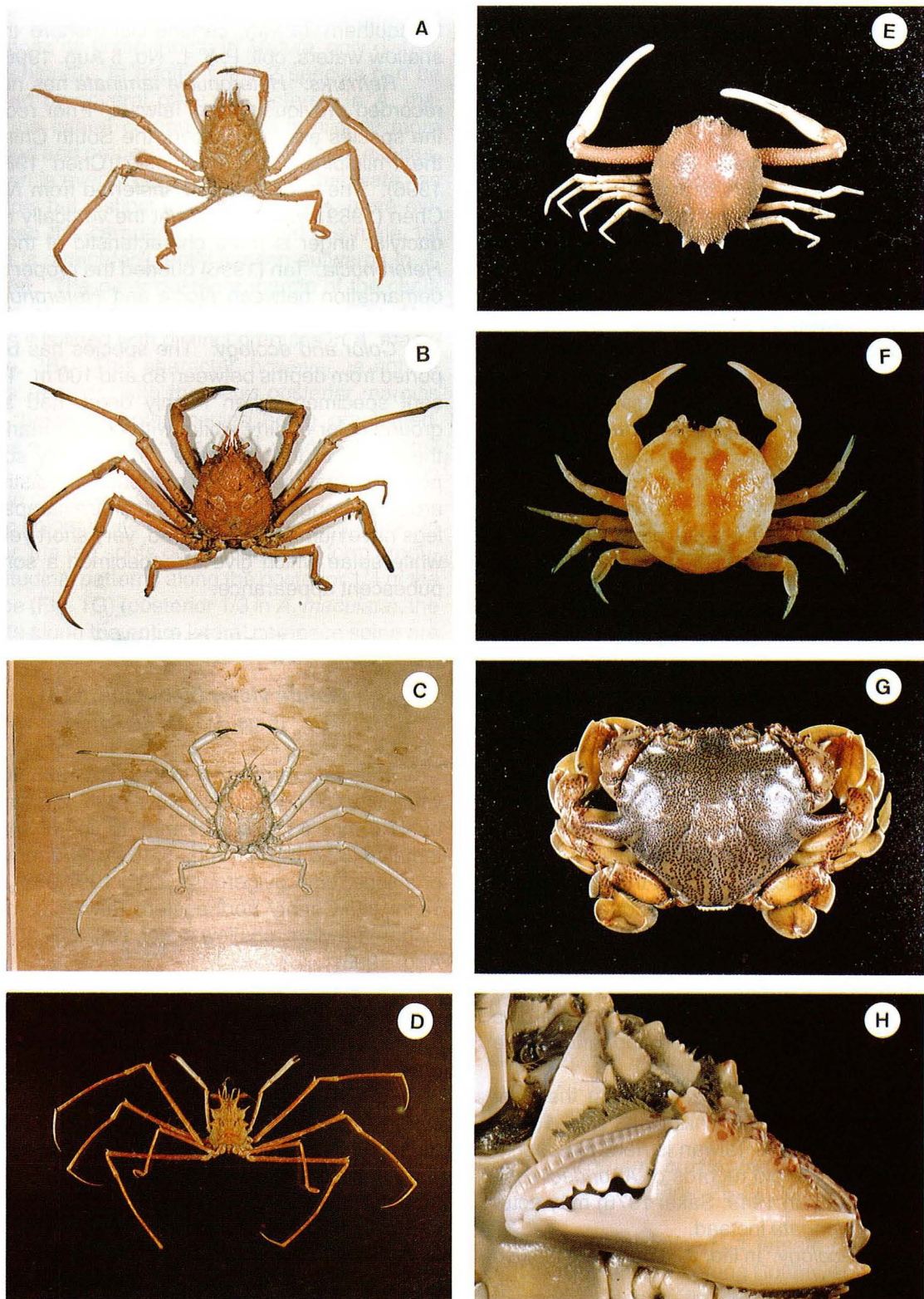
**Color and ecology:** The specimen, when fresh, was a uniform reddish-brown overall, with the legs having scattered white patches which gives them a somewhat banded appearance.

**Family Leucosiidae**

***Arcania elongata* (Yokoya, 1933)**

(Fig. 1E)

**Material examined:** 1 female (29.9 by 33.0 mm) (ovigerous) (NTOU 8910-06-28), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. J.-F. Huang, 18 Oct. 1989. 1 male (16.4 by 18.5 mm), 1 female (ZRC 1997.382), port at Tungkang, Pingtung County, southern Taiwan, commercial inshore trawlers, shallow waters, coll. P. K. L. Ng, 5 Aug. 1996. 1 male (22.5 by 26.5 mm), 1 female (30.0 by 33.3 mm) (ZRC 1997.383), Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. C.-C. Lin, 20 Nov. 1987. 1 female (27.2 by 28.1 mm) (ZRC 1997.384), port at Nanfangau, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow waters, coll. P. K. L. Ng, 6 Aug. 1996. 1 female (ZRC 1997.385), port at Tachi, Ilan



**Fig. 1.** **A:** *Paromola japonica*, female, 52.7 by 77.0 mm. **B and C:** *Paromola macrochira*. B, male, 126.5 by 112.8 mm; C, female, 101.3 by 129.2 mm. **D:** *Latreillopsis bispinosa*, male, 17.0 by 12.8 mm. **E:** *Arcania elongata*, ovigerous female, 29.9 by 33.0 mm. **F:** *Heteronucia laminata*, female, 14.4 by 15.0 mm. **G and H:** *Matuta victor*, male, 61.2 by 41.1 mm. G, carapace; H, chela.

County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. P. K. L. Ng, 3-4 Aug. 1996. 1 male (NTOU 8410-10-01), port at Penghu Island, western Taiwan, commercial inshore trawler, shallow water, coll. J.-F. Huang, 10 Oct. 1984.

*Remarks:* *Arcania elongata* is closely resembles *A. undecimspinosa* de Haan, 1841, and has been regarded as its subspecies by some authors (e.g., Sakai 1976). The differences between the 2 taxa, however, seem to be quite constant, and both have been reported to occur together in the same area (see Sakai 1976). The main character which serves to easily differentiate them is the shape of the carapace. In *A. undecimspinosa*, the carapace is clearly rounded whereas in *A. elongata*, the carapace is more pyriform, being distinctly longer than broad (see Sakai 1976, Dai and Yang 1991, Tan 1996). Tan (1996) has also noted that while *A. undecimspinosa* possesses a frontal margin which is covered with a pavement of flat granules, the front of *A. elongata* is lined with coarse granules instead. The distal part of the male 1st pleopod of *A. elongata* is also distinctly curved, a feature apparently unique in this genus (Tan 1996).

Specimens in the ZRC from Pingtung County are represented by both species, a male (19.4 by 20.1 mm, ZRC) of *Arcania undecimspinosa*, and a male and female of *A. elongata*. It is worth noting that the present male of *A. elongata* (16.4 by 18.5 mm), although slightly smaller than that of *A. undecimspinosa* (19.4 by 20.1 mm), is still immature, with its male 1st pleopod poorly developed. The rostral and subhepatic spines of *A. elongata* in all the specimens on hand are relatively shorter than those of *A. undecimspinosa*. In addition, the rounder carapace shape of *A. undecimspinosa* is mainly due to the branchial regions being distinctly more inflated, causing the posterolateral margins to bulge outwards. In *A. elongata*, the posterolateral margins are less arcuate, with the species appearing more pyriform.

*A. elongata* has been reported from the East China Sea, Japan, and the Philippines (Tan 1996). Report of its presence in Taiwan is new, although it is possible that some old records of *A. undecimspinosa* from Taiwan (Lin 1949, Sakai 1976) may actually refer to *A. elongata* instead.

*Color and ecology:* In life, *A. elongata* is pinkish red overall.

#### ***Heteronucia laminata* (Doflein, 1904)**

(Fig. 1F)

*Material examined:* 1 female (14.4 by 15.0 mm)

(ZRC 1997.387), port at Tungkuang, Pingtung County, southern Taiwan, commercial inshore trawlers, shallow waters, coll. P. K. L. Ng, 5 Aug. 1996.

*Remarks:* *Heteronucia laminata* has not been recorded previously from Taiwan. Prior records of the species are from Japan, the South China Sea, the Philippines, and Indonesia (Chen 1989, Tan 1996). The species was transferred from *Nucia* by Chen (1989) who argued that the vertically opening dactylar finger is more characteristic of the genus *Heteronucia*. Tan (1996) queried the proper generic demarcation between *Nucia* and *Heteronucia*, but provisionally retained *H. laminata* in *Heteronucia*.

*Color and ecology:* The species has been reported from depths between 85 and 100 m. The present specimen, when freshly dead, had a background color of dirty white, with orange markings in the center of the carapace. The evenly scattered pearl-like granules on the carapace are distinct and are pale orange to yellow. The entire carapace and legs have numerous scattered, very short yellowish-white setae which give the specimen a somewhat pubescent appearance.

### **Family Calappidae**

#### ***Matuta victor* (Fabricius, 1781)**

(Figs. 1G, H, 2A, B)

*Material examined:* 1 male (ZRC 1995.600), Taiwan, coll. C. H. Wang, 22 Nov. 1985. 2 males (73.8 by 47.0 mm, 61.2 by 41.1 mm, to tips of spines), 2 females (52.5 by 34.1 mm, 52.5 by 34.0 mm, to tips of spines, both ovigerous) (ZRC 1997.388), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. P. K. L. Ng, 3-4 Aug. 1996.

*Remarks:* The taxonomy of the genus *Matuta* was clarified recently by Galil and Clark (1994) and they split it into 4 genera. They also clarified the confused taxonomy of *Matuta lunaris* (Forsk., 1775) and *M. banksi* Leach, 1817, recognizing both to be synonyms and showing that most of the older records of these species were mixed. It thus seems likely that at least part of the old records of *M. lunaris* and/or *M. banksi* from Taiwan (see Lin 1949) belong to *M. victor* and/or *Ashtoret maculata*.

Although *M. victor* and *A. maculata* closely resemble each other superficially, they can easily be separated by the condition of the 3rd ambulatory carpus (unicarinate in *Matuta*, bicarinate in *Ashtoret*), the structure of the midpalmar ridge (on the manus) [oblique to lower (posterior) margin in *Matuta* (Fig. 1H) but parallel in *Ashtoret* (Fig. 3B)], and the degree

of milling of the dactylar ridge in the male (strongly milled along its entire length in *Matuta*, only distally so in *Ashtoret*). In addition, the 2 species can be separated by several other characters. In *A. maculata*, the lateral carapace spine is slightly more developed and proportionately longer, the mesogastric region is evenly gently convex (*A. maculata* has a very low but distinct longitudinal ridge, more evident when the carapace is dry), and the male 1st pleopod is straighter (gently curving outwards in *A. maculata*). The outer posterior margin of the chela in males of *M. victor* is almost smooth (Fig. 1H), whereas it is lined with distinct granules in *A. maculata* (Fig. 3B). This character, however, is not reliable for females, with the outer posterior margins of the chelae of both species being granulated. From the available specimens, *M. victor* also seems to be a larger species, reaching sizes exceeding 60 mm in carapace width.

The colors in life of the 2 species also differ. In *M. victor*, the red spots on the carapace form irregular longitudinal patterns along the posterior 1/4 of the carapace (Fig. 1G) (posterior 1/3 in *A. maculata*), the red spots along the entire lateral carapace spine are

scattered (forming transverse patterns in *A. maculata* with a red band lining the margins, Fig. 3A), and the dactylar finger is yellow, with the proximal part sometimes slightly reddish (pale red throughout finger in *A. maculata*).

*M. victor* is one of the most common species of matutines in the region, and has been reported from all over the Indo-West Pacific (Galil and Clark 1994). The male 1st pleopod of *M. victor* is refigured here. The shape of the distal part of the male 1st pleopod in this species is quite distinctive (Fig. 2A, B), and evident on all the Taiwanese male specimens examined. The figure of the male 1st pleopod by Galil and Clark (1994) shows a more evenly rounded distal part.

**Color and ecology.** The background color of the carapace of fresh specimens was dirty yellow to light brown, with numerous scattered small reddish-brown spots, those on the posterior half of the carapace often coalescing to form patchy patterns. This species normally prefers shallow waters (including intertidal areas) where it burrows into soft sand (Ng unpubl. data).

#### ***Ashtoret maculata* (Miers, 1877)**

(Figs. 2C, D, 3A, B)

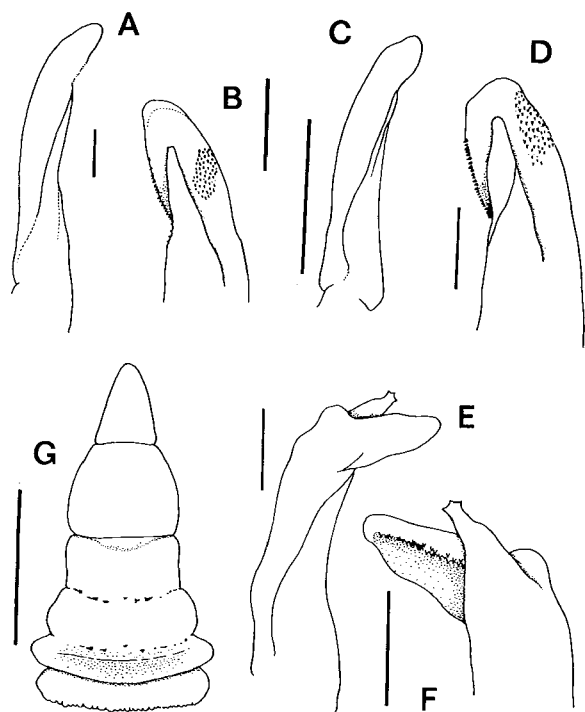
**Material examined:** 1 male (43.9 by 26.7 mm, to tips of spines), 2 females (41.5 by 26.8 mm, 39.7 by 25.6 mm, to tips of spines) (ZRC 1997.389), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. P. K. L. Ng, 3-4 Aug. 1996. 1 male, 1 female (ZRC 1995.616), Kaohsiung port, coll. C. H. Wang, no date.

**Remarks:** *Ashtoret maculata* appears to be a relatively uncommon species and has been reliably reported only from Tahiti, Australia, and Indonesia (Galil and Clark 1994). It seems likely that many older records of "*Matuta lunaris*" might have also included *A. maculata*. The differences between these 2 very similar-looking species have been discussed earlier under *M. victor*.

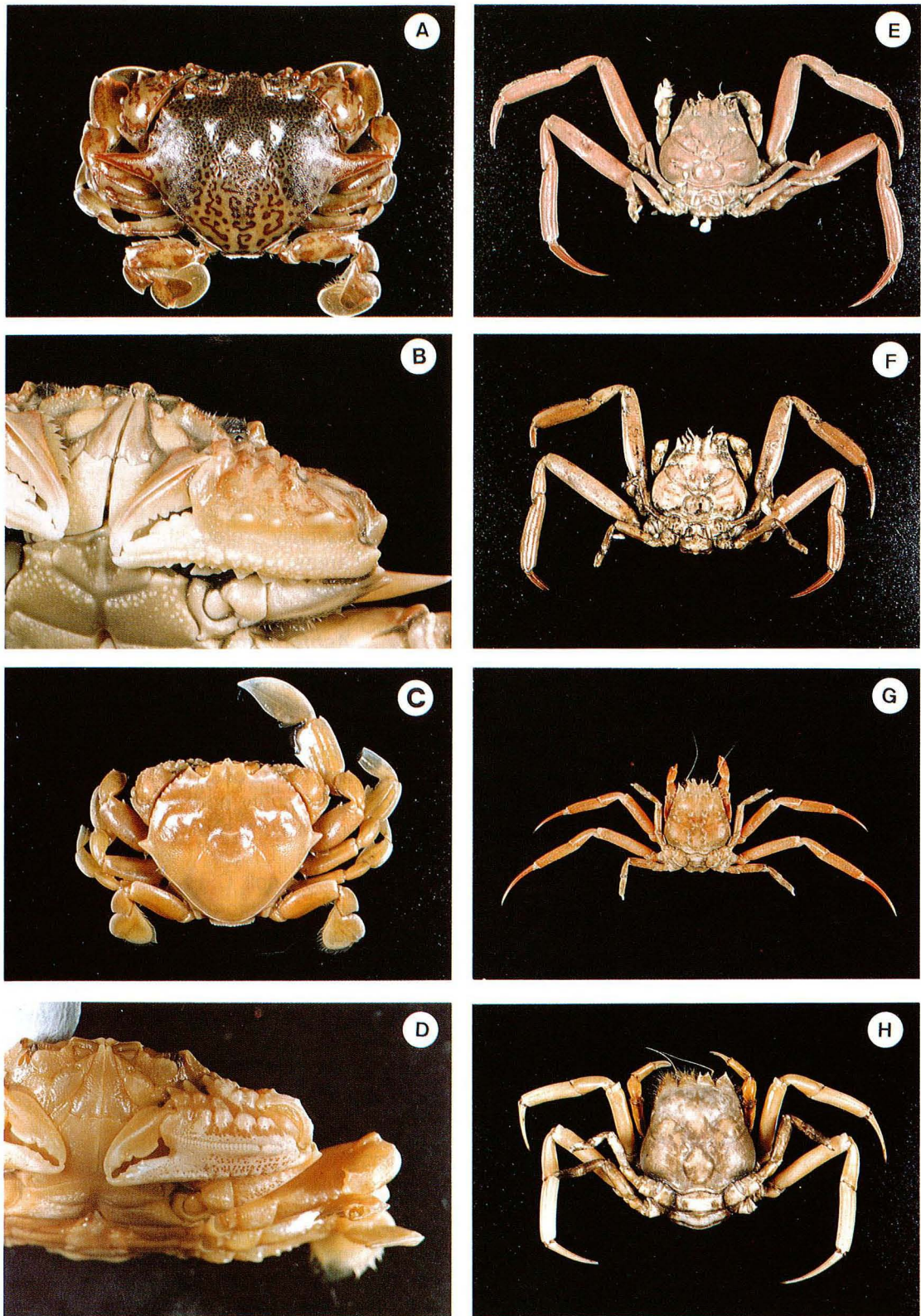
#### ***Izanami curtispina* (Sakai, 1961)**

(Figs. 2E-G, 3C, D)

**Material examined:** 1 female (ZRC 1997.390), port at Tungkang, Pingtung County, southern Taiwan, commercial inshore trawlers, shallow waters, coll. P. K. L. Ng, 5 Aug. 1996. 2 males (26.2 by 23.1 mm, 22.3 by 19.0 mm), 12 females (largest 23.9 by 21.0 mm ovigerous) (ZRC 1997.391), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. P. K. L. Ng, Jun. 1993.



**Fig. 2.** A and B: *Matuta victor*, male, 61.2 by 41.1 mm; C and D: *Ashtoret maculata*, male, 43.9 by 26.7 mm; E-G: *Izanami curtispina*, male, 26.2 by 23.1 mm. A, C, E, left G1 (ventral view); B, D, F, distal part of left G1 (dorsal view); G, male abdominal segments 2-6 and telson.



**Fig. 3.** **A and B:** *Ashtoret maculata*, male, 43.9 by 26.7 mm. **A**, carapace; **B**, chela. **C and D:** *Izanami curtispina*, male, 26.2 by 23.1 mm. **C**, overall carapace; **D**, chela. (decolorized) **E:** *Heikea arachnoides*, male, 23.7 by 21.3 mm. **F:** *H. japonica*, male, 22.4 by 20.2 mm. **G and H:** *Ethusa sexdentata*. **G**, male, 15.0 by 19.3 mm; **H**, female, 27.3 by 28.5 mm.

*Remarks:* *Izanami curtispina* has been previously reported from Japan, the South China Sea, the Arafura Sea, and Madagascar. Report of its presence in Taiwan, although new, is not unexpected. The male abdomen and male 1st pleopod are figured here (Figs. 2E-G) to supplement the description and figures in Galil and Clark (1994). The strongly convex lateral margin of the 6th male abdominal segment and the broad fold on the distal part of the G1 are characteristic of this species.

### Family Dorippidae

#### *Heikea arachnoides* (Manning and Holthuis, 1986) (Figs. 3E, 4A)

*Material examined:* 1 male (23.7 by 21.3 mm) (ZRC 1997.392), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, shallow water, coll. P. K. L. Ng, 3-4 Aug. 1996.

*Remarks:* *Heikea arachnoides* was described on the basis of 3 males from the Inland Sea of Japan (Manning and Holthuis 1986) and has not been reported since. *H. arachnoides* is very close to *H. japonica* (von Siebold, 1824), except that the merus of its 2nd ambulatory leg is proportionately more slender and elongate (Manning and Holthuis 1986, Holthuis and Manning 1990). The present specimen of *H. arachnoides* (Fig. 3E), collected at the same time as specimens of *H. japonica* [3 males (largest 22.4 by 20.2 mm), 2 females] (Fig. 3F), fits Manning and Holthuis' (1986) descriptions and figures closely. It is only the 2nd time this species has been reported, and again, only a male is represented. Comparing the present specimen of *H. arachnoides* with *H. japonica*, the 2 species can also be separated by other features. In addition to the more elongate 2nd ambulatory meri (and propodi and dactyli), *H. arachnoides* also differs in having proportionately longer 3rd ambulatory meri, propodi, and dactyli

(Fig. 3E vs. 3F). The male 1st pleopods of the 2 species are remarkably similar, with that of *H. arachnoides* slightly differing only in having the distal flap somewhat longer than the subdistal process (Fig. 4A vs. 4B).

*H. japonica* is a well-known and relatively widely distributed species (Holthuis and Manning 1990), and has been recorded from Taiwan before (Lin 1949). Whether any of the old records also represent *H. arachnoides* cannot be ascertained.

*Color and ecology:* The carapace and legs were a dirty brown when the specimens were alive. The chelae were white.

#### *Ethusa sexdentata* (Stimpson, 1858) (Fig. 3G, H)

*Material examined:* 1 male (15.0 by 19.3 mm) (NTOU 78-11-13), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. J.-F. Huang, 13 Nov. 1989. 1 female (27.3 by 28.5 mm) (ZRC 1997.393), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 3-4 Aug. 1996.

*Remarks:* *Ethusa sexdentata* has been reported from many localities in the South and East China Seas, Japan, the Philippines, Indonesia, and Andamans (see Chen 1993) and a report of its presence in Taiwan is thus not surprising. The present specimen is very large but agrees very well with the figures of Sakai (1976), Chen (1993), and Nagai (1995). The type of *E. sexdentata* from figures by Stimpson (1907) and the specimen illustrated by Chen (1986) have much more slender and spiniform external orbital angles which gives the carapace a rather different appearance. These differences may be due to size or age, their specimens being relatively small. *E. andamanica*, described by Alcock (1894), regarded as a junior objective synonym of *E. sexdentata* (see Chen 1986), matches the present specimen in all important aspects (see figure in Alcock and Anderson 1895).

*Color and ecology:* The carapace of the fresh specimen are yellowish brown, the setae along the front being yellowish. The first 2 pairs of ambulatory legs are a pale dirty yellow; the chelae being white. *E. sexdentata* has been reported from a wide range of depths from 30 to 550 m (Chen 1993).

### Family Majidae

#### *Platymaia bartschi* Rathbun, 1916 (Fig. 5A, B)

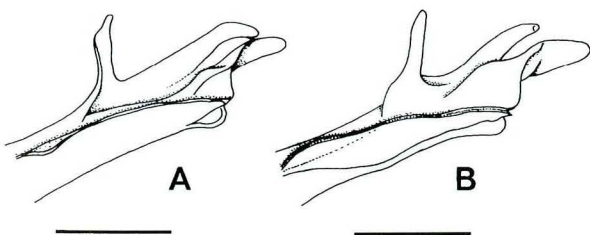
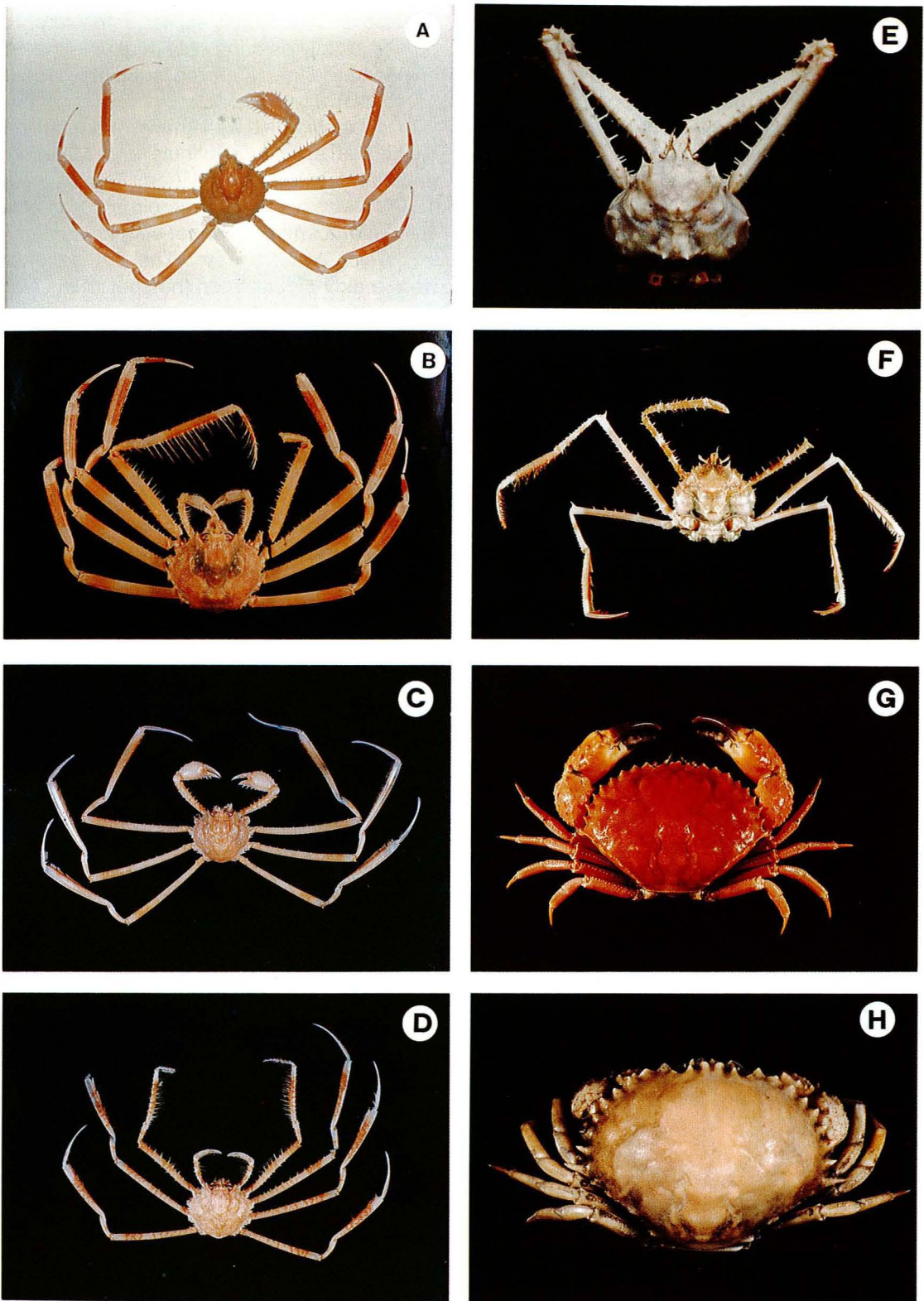


Fig. 4. Distal part of left G1s. **A:** *Heikea arachnoides*, male, 23.7 by 21.3 mm; **B:** *H. japonica*, male, 22.4 by 20.2 mm.



**Fig. 5. A and B:** *Platymaia bartschi*. A, male, 77.6 by 84.4 mm; B, female, 69.4 by 70.0 mm. **C and D:** *Platymaia remifera*. C, Male, 32.4 by 33.4 mm; D, female, 25.8 by 24.1 mm. **E:** *Cyrtomaia curviceros*, male, 71.0 by 68.0 mm (decolorized). **F:** *Cyrtomaia murrayi*, ovigerous female, 29.7 by 26.5 mm. **G and H:** *Cancer nadaensis*. G, male, 76.5 by 54.6 mm; H, female, 54.0 by 36.3 mm.



**Material examined:** 1 female (69.4 by 70.0 mm) (NTOU 9106-05-31), Tungsha Islands, South China Sea, coll. D. A. Lee, 18 Jun. 1991. 1 female (68.5 by 70.1 mm) (ZRC 1997.394), Tungsha Islands, South China Sea, coll. D. A. Lee, 30 Oct. 1989. 1 male (77.6 by 84.4 mm) (NTOU 9002-22-01), Tungsha Islands, South China Sea, 600 m depth, coll. D. A. Lee, 1990.

**Remarks:** *Platymaia bartschi* is a well-known species but has not been reported before from Taiwan. It is also known from the Philippines, Hong Kong, and Japan (Guinot and Richer de Forges 1986). Its presence in the Tungsha Islands thus can be expected. It is one of the largest of the *Platymaia* species. Although large specimens of *P. bartschi* are distinctive, young ones might be confused with *P. remifera*. *P. bartschi* can, however, easily be separated by use of features of the carapace (especially the gastric regions) being more strongly inflated and the rostrum and pseudorostrum appearing subparallel when viewed from the side (strongly divergent in *P. remifera*).

#### ***Platymaia remifera* Rathbun, 1916**

(Fig. 5C, D)

**Material examined:** 2 male, 1 female (ZRC 1995.578); 1 female (ovigerous) (ZRC 1995.582), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-700 m depth), coll. P. K. L. Ng, Jun. 1993. 4 males (largest 45.0 by 44.6 mm), 4 females (ZRC 1997.404), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 3-4 Aug. 1996. 1 male (32.4 by 33.4 mm), 1 female (25.8 by 24.1 mm) (NTOU 9703-09-01), port at Tungkang, Pingtung County, southern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. J. -F. Huang, 9 Mar. 1997.

**Remarks:** *Platymaia remifera* is perhaps the most common species of *Platymaia* in northern Taiwanese waters but it has not been reported from Taiwan before. The features of the present specimens match the detailed redescription and figures in Guinot and Richer de Forges (1986) very well. The species has been widely reported in Chinese seas and the Philippines (Guinot and Richer de Forges 1986).

#### ***Cyrtomaia curviceros* Bouvier, 1915**

(Figs. 5E, 6A-C)

**Material examined:** 1 male (71.0 by 68.0 mm) (ZRC 1995.642), Tungsha Islands, South China

Sea, coll. D. A. Lee, 30 Oct. 1989.

**Remarks:** The large male specimen of *Cyrtomaia curviceros* on hand agrees well with the redescription and figures of this species by Guinot and Richer de Forges (1986). The species closely resembles to *C. suhmi* Miers, 1886, but Guinot and Richer de Forges (1986) distinguished *C. curviceros* by noting that its supraorbital margin is smooth (a distinct granule present in *C. suhmi*) and by the presence of distinct spines on the anteroexternal angle of the merus of the 3rd maxilliped. From the figure of the male 1st pleopod of *C. suhmi* provided in Guinot and Richer de Forges (1986), that of *C. curviceros* also seems to differ in having the distal part less strongly curved (Fig. 6).

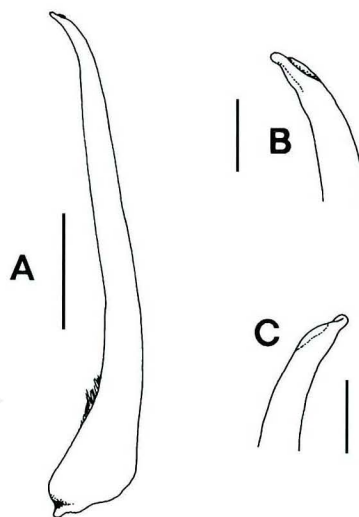
*C. curviceros* has previously been reliably reported only from Japan (Guinot and Richer de Forges 1986).

**Color and ecology:** The specimen was yellow-orange when fresh.

#### ***Cyrtomaia murrayi* Miers, 1886**

(Fig. 5F)

**Material examined:** 1 female (29.7 by 26.5 mm) (ovigerous) (NTOU 9212-02-28), port at Nangfangau, Ilan County, northeastern Taiwan, commercial inshore trawler, deep waters (300-500 m depth), coll. J.-F. Huang, 9 Dec. 1992. 2 males (larger 23.4 by 20.2 mm) (ZRC 1997.397), port at Tungkang, Pingtung County, southern Taiwan, commercial in-



**Fig. 6.** *Cyrtomaia curviceros*, male, 71.0 by 68.0 mm. **A:** left G1 (ventral view); **B:** distal part of left G1 (ventral view); **C:** distal part of left G1 (dorsal view).

shore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 5 Aug. 1996.

**Remarks:** *Cyrtomaia murrayi* was described from the Kei Islands, and has been reported from Japan, the Philippines, and perhaps East Africa (see Guinot and Richer de Forges 1986). The present record of this species from Taiwan is thus not surprising.

**Color and ecology:** The present specimens were red and white when fresh.

### Family Cancridae

#### *Cancer nadaensis* Sakai, 1969

(Figs. 5G, H, 7A-E)

**Material examined:** 1 male (76.5 by 54.6 mm) (NTOU 8603-12-03), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. J.-F. Huang, 23 Mar. 1986. 1 male (76.6 by 54.1 mm) (NTOU 9104-10-01), port at Nangfangau, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (300-500 m depth), coll. J.-F. Huang, 10 Apr. 1991. 1 male (75.1 by 53.8 mm), 1 female (54.0 by 36.3 mm) (ZRC 1997.398), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 3-4 Aug. 1996.

**Remarks:** This species has been previously reported only from its type locality at Kii (Sakai 1969) and Hayama (Sakai 1983) in Japan. Its presence in Taiwan represents a new record. The present male specimen is much larger than the Japanese specimens, but it agrees in all main aspects with the descriptions and figures of the species by Sakai (1969 1976 1983) and Nations (1975). The carapace of *Cancer nadaensis* is very smooth and convex, much more so than the other *Cancer* species known thus far from East Asia. Sakai (1969 1976) noted that there were small granules along the lateral parts of the carapace, but in the present specimens, they are hardly discernible. The male abdomen and gonopods of this species are figured for the 1st time (Fig. 7).

The present female specimen agrees well with the Japanese specimens. The larger male specimen, however, differs from the female in having the regions of the carapace that are more distinct, with deeper grooves; the spines on the dorsal margins of the ambulatory carpi and meri are very well developed and sharp (smaller and weaker in the female); the anterior projection of the basal antennal segment (as viewed dorsally) is proportionately longer and

more spiniform, and the median frontal tooth is at least twice as long as the lateral ones (Fig. 5G, H).

**Color and ecology:** The specimens, when fresh, were a uniform bright scarlet overall, with the chelipeds having a yellow-orange color.

### Family Xanthidae

#### *Zalasia sakaii* Balss, 1938

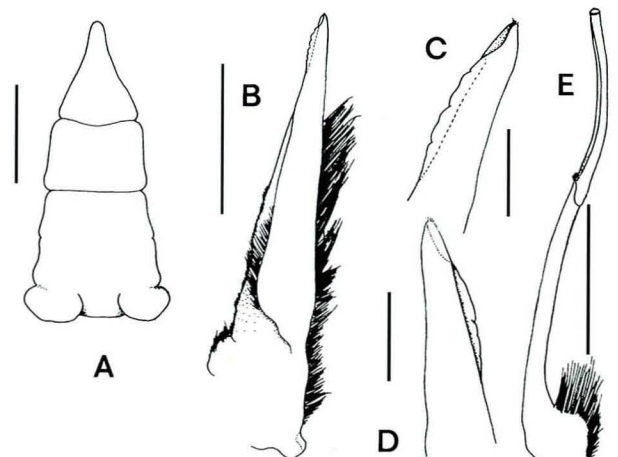
(Fig. 8A)

**Material examined:** 1 male (27.0 by 23.9 mm) (ZRC 1997.399), Mitou, Kaohsiung County, southwestern Taiwan, coll. J.-F. Huang, 7 Jun. 1992.

**Remarks:** This characteristic species has been reported from Singapore (type locality) and Japan (Guinot 1979), and the present specimen is a new record for Taiwan. The present specimen agrees closely with the detailed account of the species provided in Guinot (1979). The genus name reverts back to *Zalasia* as the better-known name, *Trichia* De Haan, is preoccupied by older ones (Holthuis 1996).

Lin (1949) reported an unidentified species of *Zalasia* from "Tingch'ieting" (a village of Kaohsiung County) in Taiwan, but whether his specimen is *Z. sakaii* cannot be determined. Chang (1963) reported *Z. dromaieformis* de Haan, from the Pescadores (now known as Penghu Islands) off the west coast of Taiwan, and the 1st author has seen a specimen of this species from Taiwan in the Taiwan Museum (Taipei).

**Color and ecology:** The setae of *Z. sakaii* are



**Fig. 7.** *Cancer nadaensis*, male, 75.1 by 53.8 mm. **A:** male abdominal segments 3-6 and telson; **B:** left G1 (ventral view); **C:** distal part of left G1 (ventral view); **D:** distal part of left G1 (dorsal view); **E:** left G2.

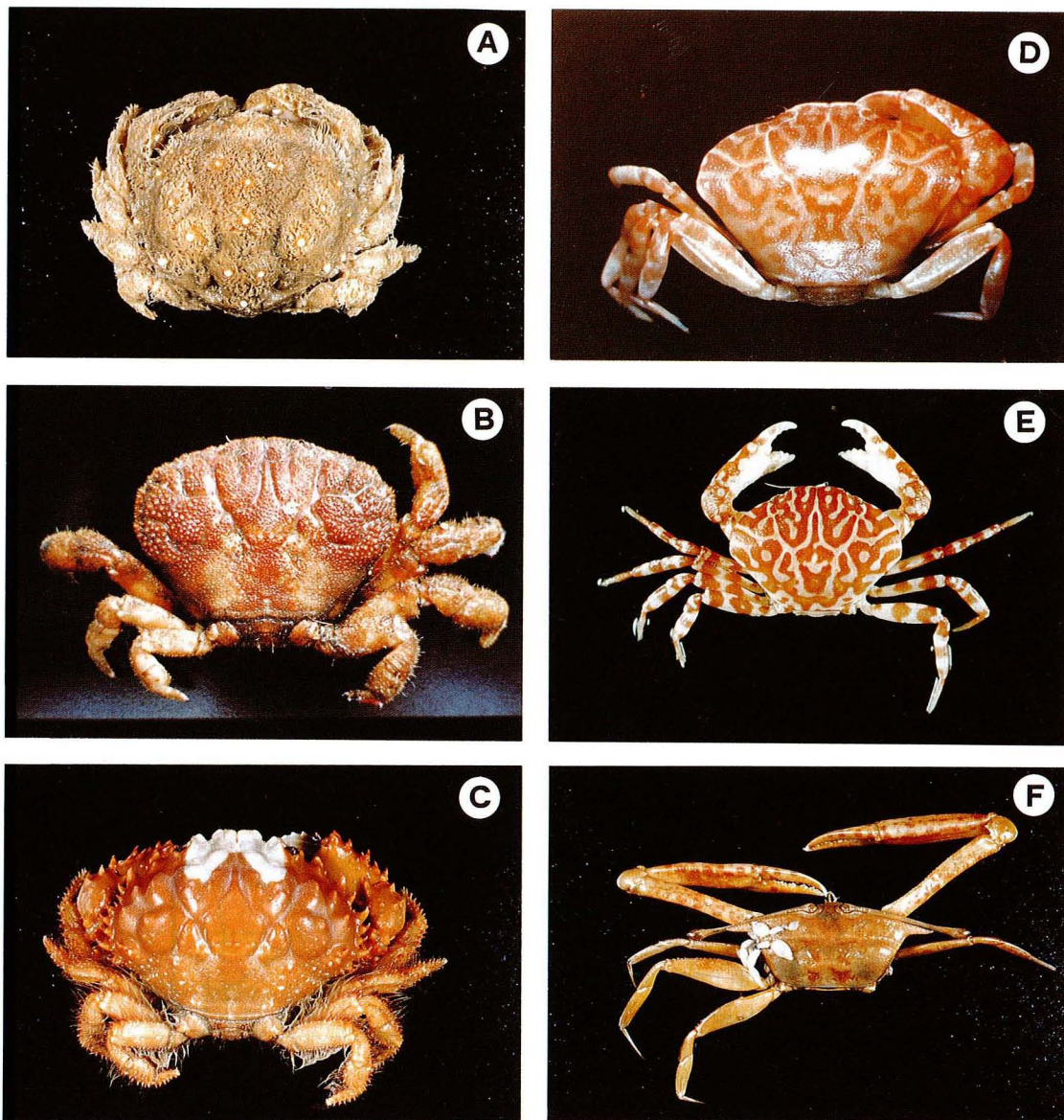
brown when fresh, with the exposed large granules whitish to orangish. Notes on the biology of *Zalasia* (as *Trichia*) have been provided by Ng and Chia (1995) and Ng (1996).

***Forestia scabra* (Odhner, 1925)**  
(Fig. 8B)

*Material examined:* 3 males (largest 34.8 by 23.9 mm) (ZRC 1997.400), port at Nangfangau, Ilan

County, northeastern Taiwan, commercial inshore trawlers, shallow waters, coll. P. K. L. Ng, 6 Aug. 1996.

*Remarks:* *Forestia scabra* has been previously reported from Australia, Malaysia, Singapore, and Vietnam (see Guinot 1976). Its presence in northeastern Taiwan represents a substantial range extension northwards. This species is easily distinguished in having the longitudinal groove on its 2M



**Fig. 8.** **A:** *Zalasia sakaii*, male, 27.0 by 23.9 mm. **B:** *Forestia scabra*, male, 34.8 by 24.3 mm. **C:** *Etisia splendida*, male, 44.7 by 30.7 mm. **D and E:** *Pulcratis reticulatus* gen. et sp. nov. **D,** holotype male, 15.1 by 10.6 mm; **E,** paratype female 13.7 by 10.0 mm. **F:** *Ommatocarcinus pulcher*, male, 32.8 by 13.7 mm.

carapace region extending beyond half the length of the region and a male 1st pleopod in which the tip is upcurved.

*Color and ecology.* When fresh, the specimens were uniform reddish-brown.

***Etisus splendidus* Rathbun, 1906**

(Figs. 8C, 9A-D)

*Material examined:* 1 male (44.7 by 30.7 mm) (ZRC 1997.401), Lanyu (Orchid Island), south-eastern Taiwan, coll. H. C. Liu, 21-22 Mar. 1996.

*Remarks:* The present specimen of *Etisus splendidus* from southern Taiwan, a new record for the island, has very distinctive color markings, the frontal region as well as the distal part of the fingers being white, the rest of the carapace being orangish-red. The specimen on hand, however, differs from a prior description of *E. splendidus* (see Serene 1984) in that its carapace is proportionately less broad, the carpus of the cheliped is strongly spinulated, the posterobranchial regions are covered with scattered sharp tubercles, and the distal part of the male 1st pleopod is less produced. These differences may be associated with its relatively small size, and as such, the specimen is tentatively referred to *E. splendidus*.

*E. splendidus* has a very wide Indo-West Pacific distribution occurring from Hawaii (type locality) to the Red Sea.

*Color and ecology.* The present specimen was collected from a coral reef during low tide.

***Pulcratis* gen. nov.**

*Type species:* *Pulcratis reticulatus* sp. nov. by present designation.

*Diagnosis:* Carapace oval, regions poorly defined; dorsal surface smooth; background white, reticulated with orange lines in life; front low, divided into 2 lobes by narrow fissure; anterolateral margin strongly arcuate, divided into 4 very low, rounded lobes (including external orbital angle), each demarcated by short fissure; posterolateral margins almost straight. Distal part of ocular peduncle with numerous granules. Chelipeds smooth to slightly punctate; dorsal margin of palm with transverse foliaceous crest which is broadest proximally; inner margin of carpus with well-developed lamelliform tooth; dorsal and ventral margins of merus strongly cristate. Ambulatory legs with dorsal margin of merus and carpus, and dorsal and ventral margins of propodus distinctly cristate. Thoracic sternites 1 and 2 completely fused; male abdominal cavity reaching imaginary line connecting proximal part of chelipedal

coxae. Male abdominal segments 3-5 completely fused without trace of sutures; segment 1 slightly broader than segment 2.

*Etymology:* The name is arbitrarily derived from the Latin for pretty (*pulchra*), alluding to the colorful markings of the type species. The gender is masculine.

*Remarks:* *Pulcratis* gen. nov. seems to be closest to *Paratergatis* Sakai, 1965 (type and only known species *P. longimanus* Sakai, 1965), with regards to the general carapace morphology. *Pulcratis* can easily be distinguished, however, by several important generic characters. In *Pulcratis*, the eye-stalk is armed with numerous sharp granules (absent in *Paratergatis*), the anterior margin of the manus has a broad, transverse foliaceous crest (absent in *Paratergatis*), the inner transverse margin of the carpus of the cheliped is armed with a broad lamelliform tooth (vs. a simple triangular, subconical tooth in *Paratergatis*), the posterior margin of the merus of the cheliped has a distinct crest (absent in *Paratergatis*), the ambulatory legs are relatively stout, the anterior margin being armed with a prominent crest (vs. slender, elongate legs with dorsal margin of merus only slightly cristate in *Paratergatis*), the male telson is acutely triangular in shape with the lateral margins much longer than the proximal margin (triangular in *Paratergatis*, with the lateral margins subequal in length to the proximal margin), segments 3-5 are completely fused with no trace of sutures (lateral part of sutures still visible in *Paratergatis*), G1 is more slender, possessing a subdistal projection (G1 stout and margins entire in *Paratergatis*), and the 2nd female abdominal segment is distinctly less broad than the 3rd segment (subequal in width in *Paratergatis*) (cf. Sakai

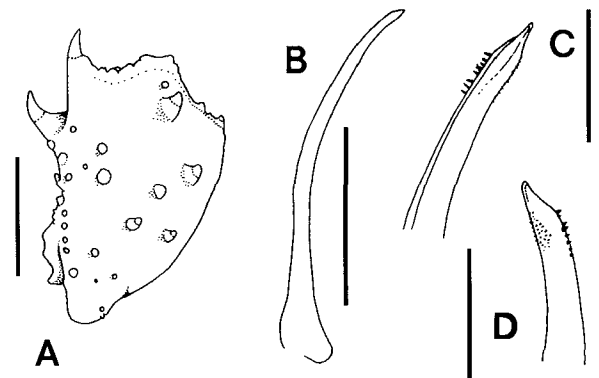


Fig. 9. *Etisus splendidus*, male, 44.7 by 30.7 mm. A: right chelipedal carpus; B: left G1 (ventral view); C: distal part of left G1 (ventral view); D: distal part of left G1 (dorsal view).

1965a,b 1976, Serene 1984).

The features of *Pulcratis* easily place it in the subfamily Zosiminae (sensu Serene 1984).

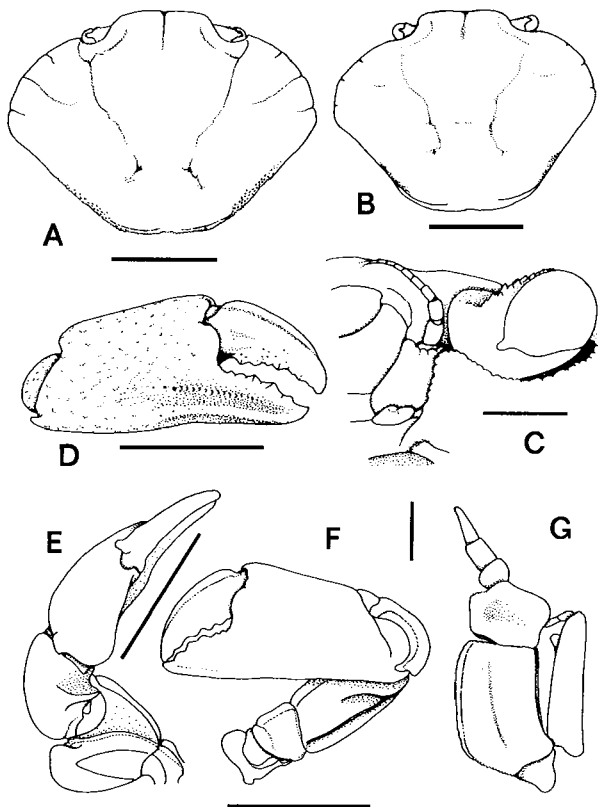
***Pulcratis reticulatus* sp. nov.**

(Figs. 8D, E, 10A-G, 11A-I)

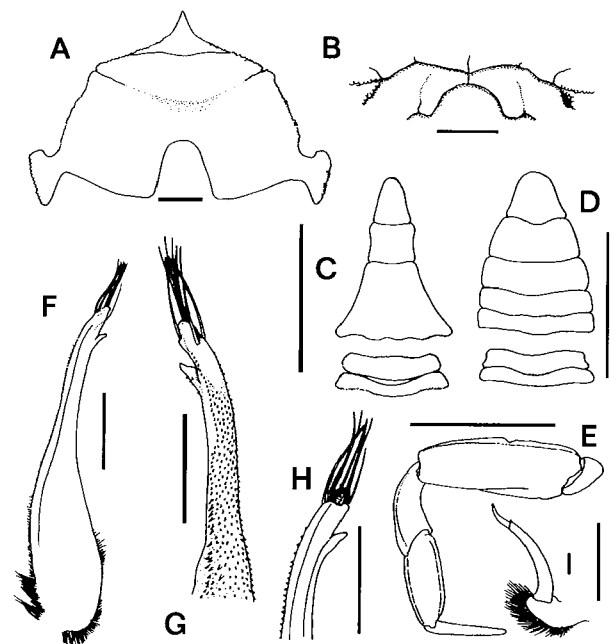
**Material examined:** Holotype male (15.1 by 10.6 mm) (NTOU 9608-04-01), port at Tungking, Pingtung County, southern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. S.-H. Lai, 4 Aug. 1996. Paratype females [13.8 by 10.2 mm (ovigerous), 13.7 by 10.0 mm] (ZRC 1997.402), port at Tungking, Pingtung County, southern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 5 Aug. 1996.

**Description:** Carapace oval, broader than long (proportionately broader in males); regions poorly defined, cervical groove narrow, gastric grooves indistinct or incomplete; dorsal surfaces smooth (sometimes appearing slightly punctate), without

setae or pubescence; front low, margin gently convex from dorsal view; separated into 2 broad lobes by narrow fissure, no trace of lateral lobes; supra- and infraorbital margins finely granular; anterolateral margin gradually joins supraorbital margin, strongly arcuate, divided into 4 very low, rounded lobes (including external orbital angle), each lobe demarcated by short but distinct fissure; antero- and posterolateral margins sharply demarcated; posterolateral margins gently concave to almost straight, lined with numerous small, rounded granules; posterior margin of carapace distinctly sinuous, lined with small, rounded granules. Eyes well developed, filling entire orbit; distal part of ocular peduncle with numerous distinct granules. Basal antennal segment large, rectangular, movable, completely filling orbital hiatus; antennal segments 3-5 progressively smaller. Antennular fossa broadly ovate, antennules folding transversely. Merus of 3rd maxilliped subrectangular, broader than long, with shallow submedian depression; ischium with submedian oblique sulcus, inner margin gently crenulated or granulated; exopod stout, tip almost reaching upper edge of merus, inner margin with subdistal triangular projection, flagellum well developed. Posterior margin of epistome separated into 4 broad lobes by short fissures



**Fig. 10.** *Pulcratis reticulatus* gen. et sp. nov. **A, D:** holotype male, 15.1 by 10.6 mm; **B, C, E-G:** paratype female, 13.7 by 10.0 mm. **A, B:** carapaces; **C:** frontal region showing orbits and antenna; **D:** male chela; **E:** dorsolateral view of left female cheliped; **F:** frontal view of left female cheliped; **G:** left third maxilliped.



**Fig. 11.** *Pulcratis reticulatus* gen. et sp. nov. **A, C, F-I:** holotype male, 15.1 by 10.6 mm; **B, D, E:** paratype female, 13.7 by 10.0 mm. **A:** anterior thoracic sternites; **B:** posterior margin of epistome and endostome; **C:** male abdomen; **D:** female abdomen; **E:** left fourth ambulatory leg; **F:** left G1 (ventral view); **G:** left G1 (dorsal view); **H:** distal part of left G1 (ventral view); **I:** left G2.

(median one longest); no endostomial ridges discernible.

Surfaces of chelipeds glabrous, smooth to slightly punctate; outer surface of male chela finely punctate, with low ridge on subventral margin which continues into pollex; outer surface of female chela almost smooth; fingers shorter than palm, dorsal margin of dactylus with distinct crest, cutting edges each with several prismatic cutting teeth and several denticles; dorsal margin of palm with well-developed transverse foliaceous crest which is broadest proximally; inner margin of carpus with well-developed lamelliform tooth which appresses on broadest part of transverse crest on palm; dorsal and ventral margins of merus with well-developed, entire crest. Ambulatory legs relatively short, 2 pair longest; merus with distinct crest on dorsal margin, crest on ventral margin developed only proximally; carpus with low dorsal crest; propodus with low dorsal and ventral crests; dactylus styliform, tip slightly spoon-shaped; margins lined with scattered long setae but otherwise unarmed.

Anterior thoracic sternum smooth; sternites 1 and 2 completely fused; distinct suture present between sternites 2 and 3; suture between sternites 3 and 4 medially interrupted with only lateral parts distinct, median part depressed; lateral margins of sternites 2-4 finely granulated; male abdominal cavity reaching imaginary line connecting proximal part of chelipedal coxae. Male abdominal segments 3-5 completely fused without trace of sutures, lateral margins gently concave, proximal margin approximately twice the length of distal margin; segment 1 slightly broader than segment 2; segment 6 squarish, lateral margins gently concave; telson acutely triangular, lateral margins gently convex, tip rounded. Female abdomen oval; segments 3-6 progressively longer, lateral margins convex; telson triangular, lateral margins gently concave.

G1 gently curving outwards; with distinct elongate process on inner subdistal margin; dorsal surface with numerous short, sharp granules which extend well below half length of G1; tip rounded, with 7 long setae. G2 short, sinuous; distal segment about 1/3 length of basal segment, gently upcurved.

**Etymology:** The species is named after the reticulated pattern of orange lines on its carapace.

**Remarks:** Other than the generic features noted earlier, *Pulcratis reticulatus* sp. nov. also differs from *Paratergatis longimanus* Sakai, 1965, in having the carapace proportionately less broad. The colors of the 2 species also differ markedly. In *P. longimanus*, the carapace is marked by a pattern of red spots (Sakai 1965b), whereas in *P. reticulatus*, the

markings are made up of a mixture of lines and spots forming a reticulate pattern overall (Fig. 8D, E). *P. longimanus* has been reported from Japan and South Africa (Sakai 1965a, Kensley 1969, Serene 1984).

One of the paratype females is ovigerous, although only a few eggs are left. Its abdomen, however, is only oval, not broadly rounded. The other non-ovigerous paratype female has the same abdominal shape.

**Color and ecology:** The background color of the carapace and appendages was white, the distinctive patterns on the carapace being bright orange when the specimens are fresh. Nothing is known about the ecology of this species. All the specimens were collected from trays of a trash fish and crustacean trawler from relatively deep waters off southern Taiwan. Some deep-water crabs collected together with *Pulcratis reticulatus* include *Latreillopsis bispinosa* (Homolidae) and *Cyrtomaia murrayi* (Majidae). The distinctive colors and patterns, as well as the simple, unarmed and slightly spoon-tipped ambulatory dactyli also suggest that *P. reticulatus* may be a symbiont on a large invertebrate like an echinoderm.

## Family Goneplacidae

### *Ommatocarcinus pulcher* (Barnard, 1950)

(Fig. 8F)

**Material examined:** 1 male (24.6 by 10.9 mm) (NTOU 9608-04-01), port at Tungkuang, Pingtung County, southern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. S. H. Lai, 4 Aug. 1996. 1 male (32.8 by 13.7 mm) (ZRC 1997.403), port at Tachi, Ilan County, northeastern Taiwan, commercial inshore trawlers, deep waters (100-400 m depth), coll. P. K. L. Ng, 3-4 Aug. 1996.

**Remarks:** *Ommatocarcinus pulcher* is a characteristic species and is easily separated from its congener, *O. macgillivrayi*, by its proportionately much longer eyestalks (which extend well beyond the tip of the external orbital tooth) and its gently curving male 1st pleopod (see Dai and Yang 1991). *O. pulcher* was described from South Africa and has been reported from Hainan Island, China (Dai and Yang 1991). The species is an interesting new record for Taiwan.

**Color and ecology:** The carapace of the fresh specimen was yellowish brown with numerous reddish-brown spots, the chelipeds being reddish-brown.

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and C. H. Wang (Taiwan Museum) for their hospitality and for arranging the collection trips during his visits to Taiwan. T. Y. Chan also took many of the photographs of the fresh specimens while C. H. Wang gave us easy access to the collections in the Taiwan Museum. H. C. Liu (National Chin Hwa University) and S. H. Lai (National Sun Yat-sen University) kindly provided us several interesting specimens for our study. Other photographs are by S. H. Tan (National Singapore University). The last author would like to thank the National Science Council, ROC. for financial support (grant number NSC 86-2313-B-022-003-A16).

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## 臺灣及東沙群島新記錄之蟹類及扇蟹科一新屬新種之記述

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本文報導產於臺灣及東沙群島的蟹類共八科二十種，其中十六種為二地之新記錄種，即：人面蟹科的日本擬人面蟹 (*Paromola japonica*)、巨螯擬人面蟹 (*P. macrochira*)、雙刺仿蛛形蟹 (*Latreillopsis bispinosa*)；玉面蟹科的長形栗殼蟹 (*Arcania elongata*)、細板異核果蟹 (*Heteronucia laminata*)；饅頭蟹科的短刺伊氏蟹 (*Izanami curtispina*)；關公蟹科的蛛形關公蟹 (*Heikea arachnoides*)、六齒四額蟹 (*Ethusa sexdentata*)；蜘蛛蟹科的大扁蛛蟹 (*Platymaia bartschi*)、彎角刺蛛蟹 (*Cyrtomaia curviceros*)、莫氏刺蛛蟹 (*C. murrayi*)；黃道蟹科的日灘黃道蟹 (*Cancer nadaensis*)；扇蟹科的酒井渣氏蟹 (*Zalasia sakaii*)、粗糙福斯蟹 (*Forestia scabra*)、閃爍滑面蟹 (*Etisus splendidus*)及長腳蟹科的美麗長眼柄蟹 (*Ommatocarcinus pulcher*)。另外三種臺灣的蟹類，即：饅頭蟹科的頑強黎明蟹 (*Matuta victor*)、繁點紋腕蟹 (*Ashtoret maculata*)及蜘蛛蟹科的多槳扁蛛蟹 (*Platymaia remifera*)，則與近親種類就形態上之差異相互比較，以提供種的識別。本文中並發表一新屬一新種，即：扇蟹科的網紋麗蟹。

**關鍵詞：**分類，新分類單元，新記錄，海洋蟹類。

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