

Two new species of *Carcinoplax* H. Milne Edwards, 1852, and *Pycnoplax* Castro, 2007, from the western Pacific, and a description of the female of *Thyraplax truncata* Castro, 2007 (Crustacea, Decapoda, Brachyura, Goneplacidae)

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ABSTRACT

Two new species belonging to the family Goneplacidae MacLeay, 1838 (Crustacea, Decapoda, Brachyura) are described from the western Pacific Ocean. The first belongs to *Carcinoplax* H. Milne Edwards, 1852, the second to *Pycnoplax* Castro, 2007. The new species of *Carcinoplax* is distinguished from the 18 known species of the genus by the morphologies of the first male pleopods and outer orbital and anterolateral teeth; the new species of *Pycnoplax* is distinguished from the five known species of the genus by the morphology of the first and second male pleopods and the granular carapace. A female specimen of a third goneplacid, *Thyraplax truncata* Castro, 2007, which was previously known only from male specimens, is also described. The characters of the two new species further confirm that in the Goneplacidae *s.s.* the morphology of the external reproductive structures rather than that of the carapace are far more reliable in showing phylogenetic relationships among supraspecific taxa.

KEY WORDS

Crustacea,
Decapoda,
Brachyura,
Goneplacidae,
western Pacific Ocean,
new species.

RÉSUMÉ

Deux nouvelles espèces de Carcinoplax H. Milne Edwards, 1852, et de Pycnoplax Castro, 2007, du Pacifique occidental, et description de la femelle de Thyraplax truncata Castro, 2007 (Crustacea, Decapoda, Brachyura, Goneplacidae).

Deux nouvelles espèces de Goneplacidae MacLeay, 1838 (Crustacea, Decapoda, Brachyura), de l'océan Pacifique occidental sont décrites. La première espèce appartenant au genre *Carcinoplax* H. Milne Edwards, 1852, la deuxième à *Pycnoplax* Castro, 2007. La nouvelle espèce de *Carcinoplax* peut être séparée des 18 espèces du genre par la morphologie du premier pléopode du mâle et les dents orbitales et antérolatérales de la carapace; la nouvelle espèce de *Pycnoplax* peut être séparée des cinq espèces du genre par la morphologie des premier et deuxième pléopodes du mâle et sa carapace granulaire. La femelle d'une troisième espèce de Goneplacidae, *Thyraplax truncata* Castro, 2007, connue seulement des spécimens mâles, est aussi décrite. Les caractères des deux nouvelles espèces confirment encore que dans les Goneplacidae *s.s.* la morphologie des structures génitales extérieures est plus fiable que les similarités de la carapace pour montrer les relations phylogénétiques entre les catégories supra spécifiques.

MOTS CLÉS

Crustacea,
Decapoda,
Brachyura,
Goneplacidae,
océan Pacifique
occidental,
espèces nouvelles.

INTRODUCTION

Material sorted out after the revision by Castro (2007) of the brachyuran family Goneplacidae MacLeay, 1838, and the examination of previously unidentified material deposited in the Muséum national d'Histoire naturelle, Paris, resulted in the discovery of two previously undescribed species belonging to *Carcinoplax* H. Milne Edwards, 1852, and *Pycnoplax* Castro, 2007, respectively, and one female specimen of *Thyraplax truncata* Castro, 2007, a species that was described from male specimens.

All three species treated here show the typical "carcinoplacine" carapace of *Carcinoplax*, quadrate in shape, with short orbits and short eye peduncles, which are shared with seven other goneplacid genera but that nevertheless differ among themselves in the morphologies of their G1, G2, and vulvae respectively (see Castro 2007). Male and female genital structures also differ among goneplacids that show a transversally elongated "goneplacine" carapace with long to particularly long orbits and eye peduncles, characters which are typified by *Goneplax* Leach, 1814, and eight other genera. The three "carcinoplacine" species being described here similarly show very different male and female genital structures, which warrant their inclusion in three separate genera of the Goneplacidae *s.s.* These findings again show that carapace similarities in goneplacids are misleading and unreliable in showing phylogenetic relationships among supraspecific taxa.

MATERIALS AND METHODS

Morphological terms follow the terminology used by Castro (2007). Pereopods are referred to by the abbreviations P1 (chelipeds) and P2 to P5 (ambulatory legs); the first and second pairs of male pleopods, or gonopods, by G1 and G2 respectively. The immobile skeletal element that partially covers the vulva is referred to as "sternal vulvar cover" rather than by "operculum", "vulvar operculum", or "vulvar cover". Carapace length (cl) was measured from the middle of the front to the middle of the posterior border of the carapace; carapace width (cw) across

the widest breadth of the carapace, including the teeth, at the level of the second anterolateral teeth. The length of the eye peduncle was measured along its dorsal surface from the proximal edge of the peduncle to the margin of the cornea, not including the thin extension of the peduncle along the surface of the cornea. The total length of the merus of the fifth pereopod (P5) was measured along the dorsal margin. In their descriptions, paired appendages (including the G1 and G2) and the vulvae, are referred to in the singular for simplicity.

The material examined is deposited in the Muséum national d'Histoire naturelle, Paris (MNHN) and the Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore (ZRC).

SYSTEMATICS

Superfamily GONEPLACOIDEA MacLeay, 1838

Family GONEPLACIDAE MacLeay, 1838

Genus *Carcinoplax* H. Milne Edwards, 1852

Carcinoplax uncinata n. sp.

(Fig. 1)

TYPE MATERIAL. — **New Caledonia.** LAGON NORD, stn 500, 19°04'S, 163°30'E, 225 m, 4.III.1985, ♂ holotype, cl 6.5 mm, cw 8.4 mm (MNHN-B30809). — Grand Récif Sud, stn 387, 22°39'S, 167°07'E, 225 m, 22.I.1985, 1 ♀ paratype, cl 6.5 mm, cw 8.5 mm (MNHN-B30829). **Solomon Is.** SALOMON 1, stn CP 1849, north of San Cristobal I., 10°28.2'S, 161°59.3'E, 230 m, 6.X.2001, 1 ♀ paratype, cl 10.2 mm (MNHN-B30810). BATHUS 2, stn DW 715, 22°39.42'S, 167°26.84'E, 202-277 m, 10.V.1993, 1 ♀ paratype, cl 7.7 mm, cw 10.0 mm (MNHN-B30838). — Stn DW 726, 22°47.30'S, 167°28.74'E, 241-260 m, 12.V.1993, 1 ♂ paratype, cl 5.6 mm, cw 6.8 mm; 1 ♀ paratype, cl 7.0 mm, cw 9.4 mm (ZRC 2008.1337).

TYPE LOCALITY. — Off the north coast of New Caledonia, 19°10'S, 163°35'E, 225 m.

OTHER MATERIAL EXAMINED. — **New Caledonia.** LAGON NORD, stn 516, 19°10'S, 163°35'E, 48 m, 5.III.1985, 1 ♀, cl 6.9 mm, cw 9.1 mm (MNHN-B30830). MUSORSTOM 5, stn 335, 20°03.24'S, 153°45.35'E, 315 m, 15.X.1986, 1 ♂, cl 6.1 mm, cw 7.7 mm (MNHN-B30831). — Stn 346, 19°39.77'S, 158°27.07'E, 245-

252 m, 17.X.1986, 1 pre-adult ♀, cl 5.6 mm, cw 7.4 mm, ? 1 pre-adult cl 3.1 mm, cw 3.8 mm (MNHN-B30832). — Stn 348, 19°36.00'S, 158°31.70'E, 260 m, 17.X.1986, 1 ♀, cl 6.9 mm, cw 8.9 mm (MNHN-B30833). — Stn 377, 19°48.60'S, 150°29.10'E, 260–270 m, 20.X.1986, 1 ♀, cl 6.9 mm, cw 8.9 mm (MNHN-B30834). BATHUS 2, stn DW 715, 22°39.42'S, 167°26.84'E, 202–277 m, 10.V.1993, 2 ♀♀, cl 7.1 mm, cw 9.1, cl 6.4 mm, cw 7.7 mm (MNHN-B30837). — Stn DW 726, 22°47.30'S, 167°28.74'E, 241–260 m, 12.V.1993, 1 ♂, cl 5.0 mm, cw 5.8 mm (MNHN-B30790). — Stn DW 727, 22°48.03'S, 167°29.03'E, 299–302 m, 12.V.1993, 1 ♀, cl 5.9 mm, cw 7.4, 1 pre-adult ♀, cl 5.0 mm, cw 6.2 mm (MNHN-B30835). — ? Stn DW 723, 22°50.21'S, 167°26.84'E, 430–433 m, 11.V.1993, 1 pre-adult ♀, cl 4.1 mm, cw 5.1 mm (MNHN-B30836).

ETYMOLOGY. — From *uncus*, Latin for “hook”, for the diagnostic shape of the first anterolateral teeth, which are separated from the outer orbital teeth by a deep, narrow, J-shaped gap.

DISTRIBUTION. — Western Pacific Ocean: Solomon Is and New Caledonia. Depth: 202–315 m. One specimen was collected from 48 m close to the type locality; a pre-adult of questionable identification from 430–433 m.

DESCRIPTION

Carapace (Fig. 1A) quadrate, slightly wider than long (1.3 as wide as long in male holotype). Carapace slightly convex, without clear indication of regions; dorsal surface smooth, microscopically granular (small granules along anterolateral borders in largest female paratype; MNHN-B30810); slight depression across cardiac region, slight elevations on each branchial region, giving appearance of 2 transversal carinae across carapace. Front lamellar, straight, not marked by median notch. Slight notch between front, inner edge of supraorbital border. Supraorbital borders sinuous, without notches (slight median notch in largest female paratype; MNHN-B30810), borders microscopically granular. Suborbital borders granular, each with short, blunt inner tooth not visible dorsally. Outer orbital angle with broad, rounded, anteriorly projecting, slightly asymmetrical, smooth tooth; deep, narrow, J-shaped gap between outer orbital, first anterolateral tooth; 2 smooth anterolateral teeth on each side of carapace; first (anteriormost) anterolateral tooth curved, hook-like, with variously acute tip, slightly dorsally projecting; second (posteriormost)

anterolateral tooth triangular, with acute tip, dorsally projecting; margin between anterolateral teeth nearly straight, granular. Posterolateral borders slightly arched. Posterior margin slightly arched, slightly longer than front, with scattered, short plumose setae.

Subhepatic, pterygostomial regions, pterygostomial crest slightly granular (larger granules in largest female paratype; MNHN-B30810). Third maxillipeds completely close buccal cavern; merus auricular. Anterior border of endostome well demarcated from buccal cavern, ridges faint but clearly defined. Particularly short tomentum on surface of thorax, abdomen (absent in largest female paratype); plumose setae along outer margin of thorax.

Eye peduncles (Fig. 1A) short (0.1 front width), dorsal surface granular, cornea slightly expanded distally. Orbits narrow, not expanded distally.

Chelipeds (P1) nearly equal in both males (right slightly thicker in holotype; Fig. 1A) and females, much thicker propodus in males; fingers slender in females, much longer than propodus (stouter in males), with blunt teeth, one-third to one-half distal portion of fingers dark brown. Outer surface with microscopic granules; few simple setae on carpus, patch of short plumose setae on inner (ventral) margin of propodus (absent in largest female paratype). Broad, curved, acute-tipped tooth on inner (ventral), proximal margin of carpus. Ambulatory legs (P2–P5) relatively short, distal end of P5 merus just reaching second anterolateral tooth when folded, articles unarmed; long as well as short, simple setae along margins of articles; long, simple setae along inner margin of P5 propodus. P5 dactylus long, slender, unarmed; length of P5 merus 0.4 cl.

Median sulcus present on thoracic sternites 7–8; sutures 4/5, 5/6, 6/7, 7/8 medially interrupted (Fig. 2E).

Male abdomen (Fig. 1B) narrowly triangular, with 6 freely-movable somites plus telson; telson slightly longer than wide. Abdominal-locking mechanism with medium-size button on edge of thoracic sternite 5 pairing with shallow socket on underside (ventral surface) of abdominal somite 6. Somite 3 covers space between P5 coxae, episternite 7, outer edge

of somite not fitting under episternite; somites 1, 2 as wide as somite 3, thoracic sternite 8 not visible when abdomen closed. Penis emerging from coxal gonopore, protected by episternite 7. G1 (Fig. 1C) long, slender, dorsoventrally flattened, straight, only slightly broadened proximally, small denticles on distal portion; truncated apex with slightly pointed outer margin. G2 (Fig. 1D) slender, not as long as G1, slightly curved flagellum slightly shorter than proximal part (peduncle), apex with 2 lateral spinules.

Female abdomen wide, fringed by long, plumose setae. Telson wider than long. Somites 2, 3 cover space between P5 coxae, small portion of thoracic sternite 8 visible when abdomen closed. Vulva of mature female (Fig. 2E) large, oblong, much expanded, extending from close to deflected suture 5/6 to close to deflected suture 6/7; membrane covers aperture, leaving narrow space open along anterior margin, sternal vulvar cover absent.

REMARKS

The new species shows all of the characters that are diagnostic of the 18 previously described species of *Carcinoplax*, most importantly the presence of a long, slender, dorsoventrally flattened G1 with a thin, truncated apex, a particularly large vulva that extends from suture 5/6 to suture 6/7, and which is covered by a soft membrane and not by a sternal vulvar cover (see Castro 2007: 623). Among its congeners, it is closest to *C. specularis* Rathbun, 1914, in the overall appearance of the carapace (see Guinot 1989: pl. 8, figs A, B; pl. 9, figs D, E, as *C. verdensis* Rathbun, 1914; pl. 8, figs E, F, as *C. polita* Guinot, 1989), the G1 and G2 (see Guinot 1989: fig. 34; fig. 37, as *C. polita* Guinot, 1989), and, in most specimens, the presence of a short tomentum on the surface of the thorax and abdomen. In *C. uncinata* n. sp., however, the outer orbital teeth are larger and with a more prominent anterior margin than in *C. specularis*, and there is a narrow, J-shaped gap between the outer orbital and the first anterolateral tooth, which is curved and hook-like. This is in contrast to *C. specularis*, where there is a wider, U-shaped gap between the outer orbital and first anterolateral teeth, and the tip of the first anterolateral tooth is not as

anteriorly advanced as in *C. uncinata*, and hence not noticeably hook-shaped (see Guinot 1989: fig. 25; fig. 22, as *C. verdensis*; fig. 24, as *C. polita*). There is also a patch of short plumose setae on the inner (ventral) margin of the cheliped propodus of *C. uncinata* n. sp. (but absent in the largest female paratype; MNHN-B30810), which is absent in *C. specularis*, and the cheliped fingers of females are visibly more slender in *C. uncinata* n. sp. than in *C. specularis*.

The general structure of the carapace (except the diagnostic shape of the outer orbital and anterolateral teeth), G1, G2, and vulva of the new species can be observed in other species of *Carcinoplax*, but there are important differences when contrasted with congeners. In *C. abyssicola* (Miers, 1886), the outer orbital margin is flat, nearly horizontal, and posteriorly inclined (see Miers 1886: pl. 19, fig. 2; Guinot 1989: fig. 38, pl. 9, figs A, B). In *C. cracens* Castro, 2007, the walking legs are much longer and slender than in the new species (see Castro 2007: fig. 3), a difference that also applies to *C. longipes* (Wood-Mason, 1891). In *C. inaequalis* (Yokoya, 1933), there are two conspicuous, wide horizontal ridges on the dorsal surface of carapace, the outer orbital teeth are only slightly inclined dorsally, and the anterolateral teeth are more straight and slender than in the new species. These characters are unfortunately not apparent in Yokoya's figure (Yokoya 1933: fig. 63) but are distinctively shown in the type material (see Castro 2007: 633).

There is some variation in the shape of the anterolateral teeth among individuals of the new species. The first and second teeth can be obtuse in some specimens but usually on only one side, the teeth on the opposite side being acute as in most specimens.

Carcinoplax uncinata n. sp. appears to be a small-size species, the largest of the 18 specimens examined being a female with a carapace length of only 10.2 mm (MNHN-B30810). In contrast, large-size species such as *C. longimana* (de Haan, 1833), carapace length may reach well over 50 mm (Guinot 1989). The new species raises the number of described species of *Carcinoplax*, the largest genus of the family Goneplacidae, to 19.

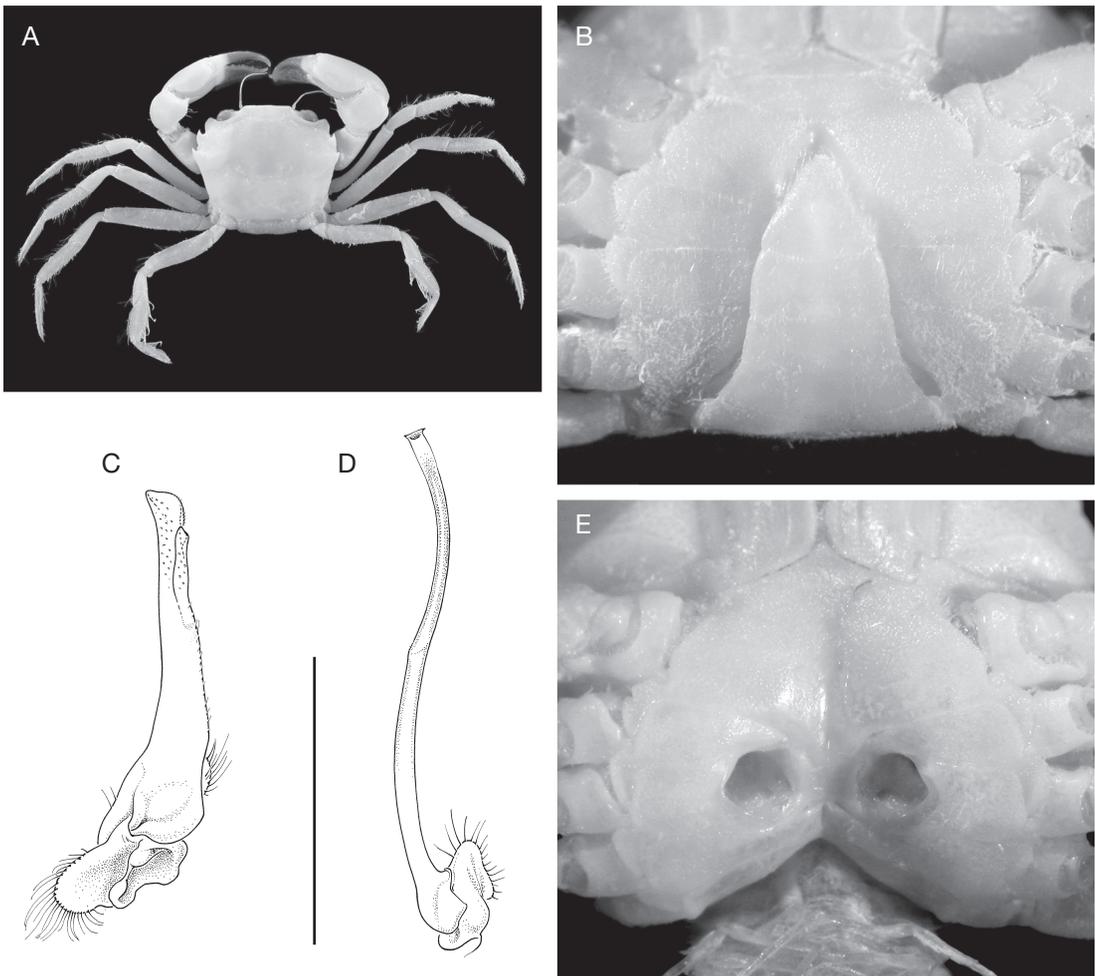


FIG. 1. — *Carcinoplax uncinata* n. sp.: **A-D**, ♂ holotype, cl 6.5 mm, cw 8.4 mm, off New Caledonia, LAGON NORD, stn 500 (MNHN-B30809); **A**, dorsal view; **B**, abdomen; **C**, left G1, dorsal view; **D**, left G2, ventral view; **E**, ♀ paratype, cl 7.7 mm, cw 10.0 mm, New Caledonia, BATHUS 2, stn DW 715 (MNHN-B30838), thoracic sternum and vulvae. Scale bar: C, D, 2.0 mm.

Genus *Pycnoplax* Castro, 2007

Pycnoplax aspera n. sp.

(Fig. 2)

TYPE MATERIAL. — **Loyalty Is.** MUSORSTOM 6, stn DW 406, 20°40.65'S, 167°06.80'E, 373 m, 15.II.1989, ♂ holotype, cl 6.0 mm, cw 7.4 mm (MNHN-B30805); 1 ♂ paratype, cl 6.7 mm, cw 8.2 mm, colour photograph (MNHN-B30806).

New Caledonia. 22°32.1'S, 166°26.1'E, 175-250 m, 6.VI.1979, 1 ovigerous ♀ paratype, cl 8.2 mm, cw 10.4 mm (MNHN-B30795).

SMIB 5, stn DW 98, Norfolk Ridge, 23°01.7'S, 168°16.1'E, 335 m, 14.IX.1989, 1 ♀ paratype, cl 4.9 mm, cw 6.5 mm (MNHN-B30803).

MUSORSTOM 4, stn 234, 22°15.4'S, 167°08.3'E, 350-365 m, 2.X.1985, 1 ♂ paratype, cl 5.3 mm, cw 6.5 mm (MNHN-B30804).

EBISCO, stn DW 2522, 22°46.0'S, 159°21.0'E, 310-318 m, 9.X.2005, 1 ♀ paratype cl 4.9 mm, cw 6.5 mm (MNHN-B30792); 1 ♂ paratype, cl 6.3 mm, cw 7.9 mm (ZRC 2008.1338).

Solomon Is. SALOMON 1, stn CP 1857, north of Guadalcanal I., 09°39.8'S, 160°48.6'E, 720-849 m, 7.X.2001, 1 ♂ paratype, cl 5.3 mm, cw 6.4 mm (MNHN-B30794).

Fiji. BORDAU 1, stn DW 1497, 18°44'S, 178°25'W, 335-350 m, 12.III.1999, 1 ♂ paratype, cl. 5.5 mm, cw 6.7 mm (MNHN-B30802).

TYPE LOCALITY. — Loyalty Is, 20°40.65'S, 167°06.80'E, 373 m.

OTHER MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2, stn CP 51, 14°00'S, 120°17'E, 170-187 m, 27.XI.1980, 1 ♀, cl 8.1 mm, cw 9.9 mm (MNHN-B30793).

New Caledonia. BATHUS 4, stn DW 887, 21°06.67'S, 164°27.62'E, 320-344 m, 2.VIII.1994, 1 ♀, cl 5.4 mm, cw 6.6 mm (MNHN-B30807). — Stn CP 946, 20°33.81'S, 164°58.35'E, 386-430 m, 10.VIII.1994, 1 ♂, cl 6.8 mm, cw 8.8 mm (MNHN-B30808).

EBISCO, stn DW 2520, 24°6.0'S, 159°41.0'E, 350-400 m, 8.X.2005, 1 ♂, cl 6.4 mm, cw 7.9 mm (MNHN-B30791).

Fiji. BORDAU 1, stn CP 1478, 20°50'S, 178°44'W, 386-396 m, 9.III.1999, 1 ♂, cl 4.3 mm, cw 5.3 mm, parasitised by *Sacculina* (MNHN-B30841).

ETYMOLOGY. — From *asper*, Latin for “rough”, in reference to the diagnostic coarse, granular surface of the chelipeds, eye peduncles, and, in the largest individuals, portions of the dorsal and ventral surface of the carapace.

DISTRIBUTION. — Western Pacific Ocean: Philippines, Solomon Is, New Caledonia, Loyalty Is, and Fiji. Depth: 170-849 m.

DESCRIPTION

Carapace (Fig. 2A) quadrate, slightly wider than long (1.2 as wide as long in male holotype). Carapace slightly convex, without clear indication of regions; dorsal surface granular (granules restricted to hepatic, anterior branchial regions in largest female paratypes); slight depression across cardiac region, giving appearance of two transversal carinae across carapace. Front lamellar, straight, not marked by median notch. Slight notch between front, inner edge of supraorbital border. Supraorbital borders sinuous, without notches, margins weakly granular. Suborbital borders granular, each with short, blunt inner tooth visible dorsally. Outer orbital angle with broad, rounded, anteriorly projecting, slightly asymmetrical, granular tooth; 2 weakly granular anterolateral teeth on each side of carapace; first (anteriormost) angular, straight outer margin, slightly dorsally projecting; second (posteriormost) anterolateral tooth acute, dorsally projecting; margin between anterolateral teeth nearly

straight, coarsely granular. Plumose setae on lateral margins of carapace; simple setae on posterior margin. Posterolateral borders arched, granular. Posterior margin nearly straight, slightly shorter than front.

Subhepatic, pterygostomial regions, pterygostomial crest with conspicuous, short, spherical granules. Third maxillipeds completely close buccal cavern; merus auricular, palp, merus with short, conspicuous granules. Anterior border of endostome well demarcated from buccal cavern, ridges faint but clearly defined.

Eye peduncles (Fig. 2A) short (0.1 front width), dorsal surface granular, cornea slightly expanded distally. Orbits narrow, not expanded distally.

Chelipeds (P1) nearly equal in males and females (chelipeds missing in two largest female specimens); fingers slender, crossing over in some specimens, longer than propodus, with blunt teeth, approximately half distal portion of fingers dark brown. Surface of dactylus, propodus with small, short granules (Fig. 2F); ventral surface, anterior margin of merus with large granules; simple setae on dactylus, propodus, merus. Broad, curved, acute-tipped tooth on inner (ventral), proximal margin of carpus. Ambulatory legs (P2-P5) relatively short, distal end of P5 merus not reaching second anterolateral tooth when folded; articles unarmed, with slightly granular margins, more conspicuous granules on inner (ventral) margins of P2-P5 meri; long, short, simple setae along margins of articles; scattered plumose setae on meri; long, simple setae along inner margin of P5 propodus. P5 dactylus long, slender, varying number of particularly small, slender teeth on distal end (0 to 7 on outer margin, 0 to 4 on inner margin; at least present on one margin); length of P5 merus 0.5 cl.

Median sulcus present on thoracic sternites 7-8; sutures 4/5, 5/6, 7/8 interrupted medially, 6/7 complete (Fig. 2E).

Male abdomen (Fig. 2B) narrowly triangular, with 6 freely-movable somites plus telson; telson slightly wider than long. Abdominal-locking mechanism with medium-size button on edge of thoracic sternite 5 pairing with shallow socket on underside (ventral surface) of abdominal somite 6. Somite 3 covers space between P5 coxae, episternite 7, outer edge of somite fitting under episternite; somites 1, 2 as wide as somite 3, small portion of thoracic sternite

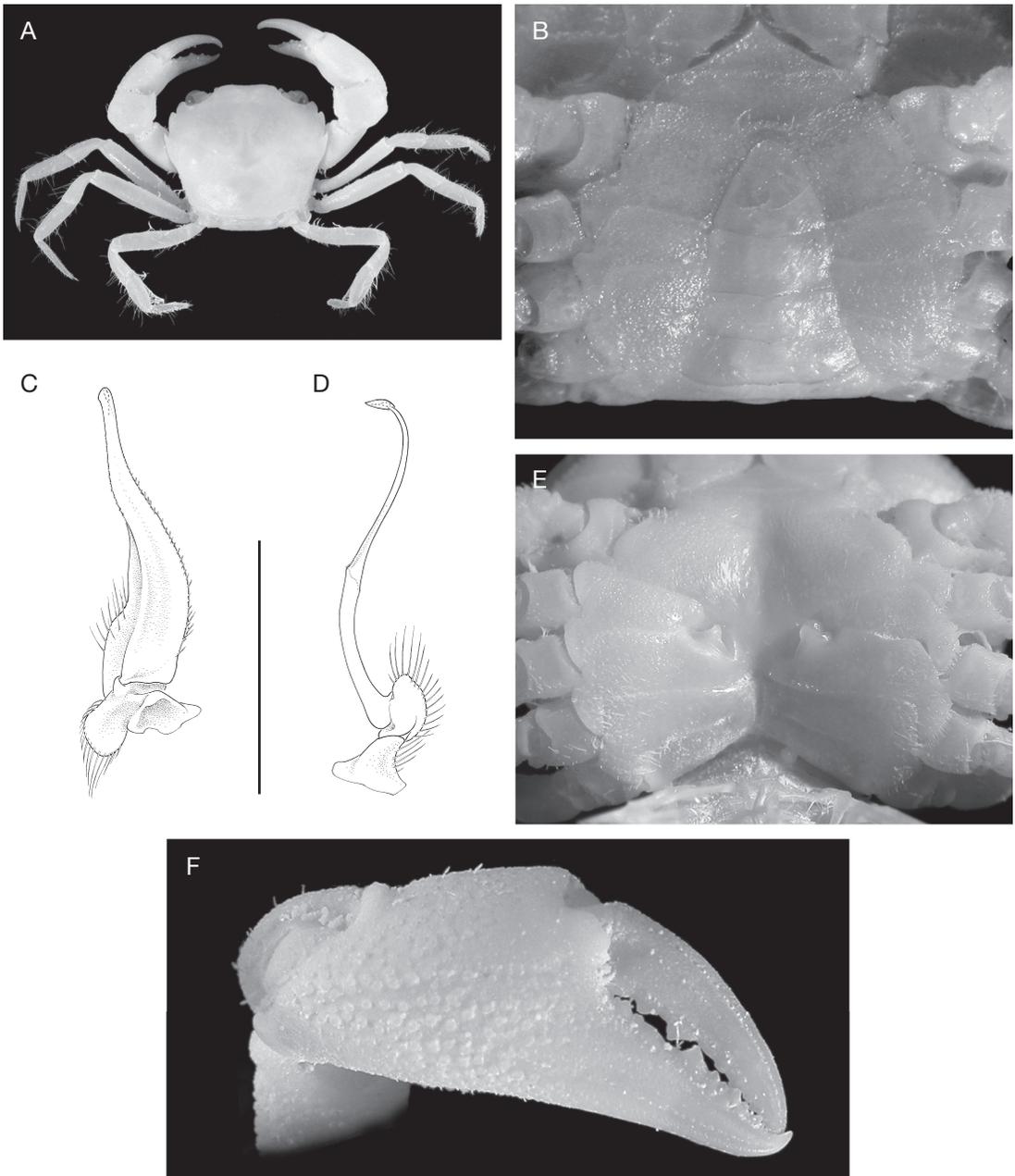


FIG. 2. — *Pycnoplax aspera* n. sp.: **A-D**, ♂ holotype, cl 6.0 mm, cw 7.4 mm, Loyalty Is, MUSORSTOM 6, stn DW 406 (MNHN-B30805); **A**, dorsal view; **B**, abdomen; **C**, left G1, dorsal view; **D**, left G2, ventral view; **E, F**, ♀ paratype, cl 8.2 mm, cw 10.4 mm, New Caledonia, (MNHN-B30795); **E**, thoracic sternum and vulvae; **F**, right cheliped (P1), dorsal view. Scale bar: C, D, 2.0 mm.

8 visible when abdomen closed. Penis emerging from coxal gonopore, protected by episternite 7. G1 (Fig. 2C) stout, sinuous, slightly bent in outer direction, spinous outer margin; slender, spinous, rounded apex. G2 (Fig. 2D) slender, slightly longer than G1, curved flagellum almost as long as proximal part (peduncle), row of spinules along proximal margin; expanded, leaf-like apex.

Female abdomen wide. Telson slightly wider than long. Somites 2, 3 cover space between P5 coxae, small portion of thoracic sternite 8 visible when abdomen closed. Vulva of mature female (Fig. 2E) oblong, extending from edge of suture 5/6 to markedly deflected suture 6/7; triangular, salient sternal vulvar cover on posterior margin of vulva.

Colour

A colour photograph (MNHN, Zoologie Arthropodes) of a male paratype (MNHN-B30806) shows an orange carapace with a few light-orange spots, mostly on the posterior half. The pereopods are orange with scattered light orange spots.

REMARKS

Pycnoplax aspera n. sp. shares with the five previously described species of *Pycnoplax* Castro, 2007 (*P. bispinosa* (Rathbun, 1914), *P. latifolia* Castro, 2000, *P. meridionalis* (Rathbun, 1923), *P. surugensis* (Rathbun, 1932), and *P. victoriensis* (Rathbun, 1923)) a stout G1 armed with spinules on its distal portion, a G2 with a flagellum that is slightly longer or almost as long as the proximal part (peduncle), and the presence of a sternal vulvar cover. Unique to *Pycnoplax* and the Goneplacidae s.s., however, is the expanded, foliaceous apex of its G2 (Fig. 2D). There are two terminal spinules on the apex of the G2 in four of the five previously described species of *Pycnoplax* (i.e. *P. latifolia*: Castro 2007: fig. 16D) or it is pointed as in *P. surugensis* (see Guinot 1989: fig. 31B, as *Carcinoplax surugensis*).

The new species is closest to *P. latifolia* Castro, 2007, which is known only from Japan, in the general morphology of the carapace. The dorsal surfaces of the carapace and chelipeds, however, are conspicuously granular in the new species (smooth in *P. latifolia*; Castro 2007: fig. 17), the G1 is sinuous and with a rounded apex (more straight, with bent distal portion, slender apex in *P. latifolia*; Castro 2007: fig.

16C), the G2 has an expanded, foliaceous tip (two spinules in *P. latifolia*; Castro 2007: fig. 16D), the vulva has a conspicuously salient, triangular sternal vulvar cover on its posterior margin (oblong, median sternal vulvar cover in *P. latifolia*), the P5 dactylus has small, distal teeth (smooth in *P. latifolia*), and the cheliped fingers are light in colour with dark-brown tips (fingers completely dark brown in *P. latifolia*; Castro 2007: fig. 17).

The carapace is superficially similar to that in some goneplacid genera, most particularly *Carcinoplax* H. Milne Edwards, 1852. The 19 known species of *Carcinoplax*, in contrast to *Pycnoplax*, have a slender and dorsoventrally flattened G1, the vulva is greatly expanded and lacks a sternal vulvar cover (Castro 2007: fig. 1), and the 6/7 thoracic suture is complete (see Castro 2007: 662). There are also differences in the G2 (the presence of proximal denticles on the distal part in *Pycnoplax*, absent in most species of *Carcinoplax*; distal part relatively longer than proximal portion in *Pycnoplax* than in *Carcinoplax*).

There are also some similarities in the general morphology of the denticulated G1 of the new species and the five species included in *Thyraplax* Castro, 2007. In *Thyraplax*, however, the G1 is slender with a pointed distal part, each arched anterolateral border of the carapace has one tooth plus a shallow lobe or carina (Fig. 3A), the posterolateral borders of the carapace are conspicuously longer than the anterolateral borders, and the P5 dactylus is carinated in most species.

Genus *Thyraplax* Castro, 2007

Thyraplax truncata Castro, 2007
(Fig. 3)

Thyraplax truncata Castro, 2007: 683, figs 25, 26. — Ahyong 2009: 66, fig. 1A-C.

MATERIAL EXAMINED. — New Caledonia. EBISCO, stn CP 2498, 24°45.0'S, 159°43.0'E, 367-536 m, 6.X.2005, 1 ♀, 7.2 mm, cw 9.7 mm (MNHN-B30794).

REMARKS

Thyraplax truncata, was described from five specimens, all males, which were collected from depths of 430-

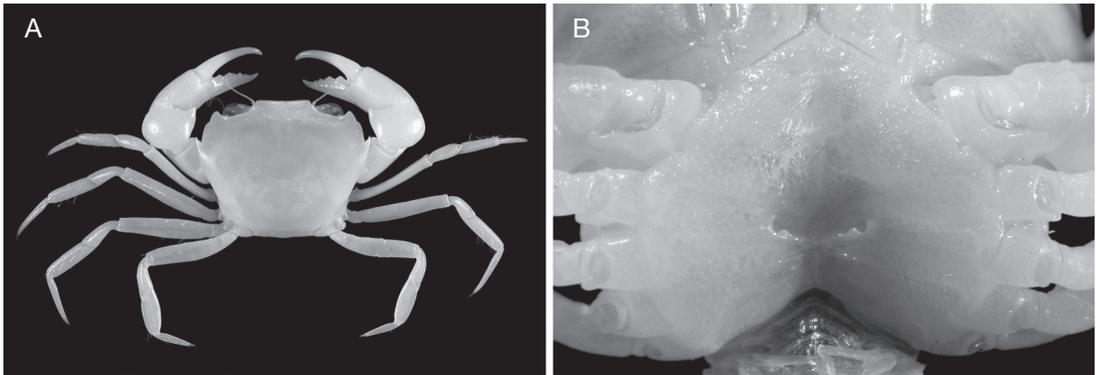


FIG. 3. — *Thyraplax truncata* Castro, 2007, ♀, cl 7.2, cw 9.7 mm, New Caledonia, EBISCO, stn CP 2498 (MNHN-B30794): **A**, dorsal view; **B**, thoracic sternum and vulvae.

500 m in New Caledonia and Fiji. Ah Yong (2009) subsequently recorded a female from the Kermadec Is., New Zealand. A second female specimen from New Caledonia now permits the description of the female. All characters related to the morphology of the carapace and pereopods (Fig. 3A) agree with those described for the males (Castro 2007: 683, figs 25A, 26). One exception is the dark-brown tip of the cheliped fingers, which extended slightly less in the female than in the five males previously studied.

DESCRIPTION OF THE FEMALE

Abdomen wide. Telson triangular, slightly wider than long. Somite 3 covers space between P5 coxae and episternites 7, somite 2 only slightly narrower than somite 3, thoracic sternite 8 not visible. Vulva (Fig. 3B) crescent-shaped, extending from edge of anteriorly deflected suture 5/6 to middle portion of thoracic sternite 6; small, triangular sternal vulvar cover on posterior margin of vulva, covering about third of aperture, soft membrane covering rest of aperture.

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