Stomatopoda collected primarily by the Philippine AURORA expedition (Crustacea, Squilloidea)

Shane T. **Ahyong**

Australian Museum, 6 College St., Sydney, NSW 2010, Australia
shane.ahyong@austmus.gov.au

ABSTRACT

Stomatopod Crustacea of the superfamily Squilloidea collected primarily by the Philippine AURORA expedition are reported. One family, nine genera and 15 species are reported, of which one genus and two species are new to science. The new genus, *Triasquilla* n. gen., comprising two new species, belongs to the "*Meiosquilla*" group within Squillidae and is most closely allied to *Schmittius* Manning, 1972, from the eastern Pacific and *Squilloides* Manning, 1968, from the Indo-West Pacific. *Anchisquilla fasciaticauda* Liu & Wang, 1998, *Cloridina chlorida* (Brooks, 1886), *Harpiosquilla sinensis* Liu & Wang, 1998, *Neclorida miersi* (Manning, 1968) and *Quollastria ornata* (Manning, 1971) are reported from the Philippines for the first time. The study is supplemented by additional material of the new species described herein collected from various Indo-West Pacific localities by other deep-sea expeditions to the Philippines, Solomon Islands, New Caledonia, Vanuatu, Fiji, Tonga and Western Australia.

RÉSUMÉ

Les stomatopodes principalement collectés lors de l'expédition AURORA au large des Philippines.

Les crustacés Stomatopodes de la super-famille Squilloidea reportés dans cette étude ont été principalement collectés lors de l'expédition AURORA qui s'est déroulée au large des Philippines. Une Famille, neuf genres et quinze espèces sont décrits ici dont un genre et deux espèces nouvelles pour la science. Le nouveau genre *Triasquilla* n. gen., comprenant deux nouvelles espèces appartient au groupe "*Meiosquilla*" à l'intérieur de la famille des Squillidae et est plus étroitement lié au genre *Schmittius* Manning, 1972, décrit de l'Est-Pacifique et au genre *Squilloides* Manning, 1968 de l'Indo-Ouest Pacifique. *Anchisquilla fasciaticauda* Liu & Wang, 1998, *Cloridina chlorida* (Brooks, 1886), *Harpiosquilla sinensis* Liu & Wang, 1998, *Neclorida miersi* (Manning, 1968) and *Quollastria ornata* (Manning, 1971) sont reportés de la zone Philippines pour la première fois. Cette étude est supplémentée par d'autres spécimens additionnels appartenant aux nouvelles espèces décrites ici qui ont été collectés dans de nombreuses localités dans l'Indo-Ouest Pacifique lors d'expéditions menées aux Philippines, îles Salomon, Nouvelle-Calédonie, Vanuatu, Fiji, Tonga et Ouest-Australie.

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INTRODUCTION

During May-June 2007, a joint Philippine-French-Singaporean-Taiwanese expedition, AURORA, made extensive benthic collections off the east coast of Luzon, the Philippines. The mantis shrimps (Stomatopoda) collected by the AURORA expedition included species from the superfamilies Eurysquilloidea, Gonodactyloidea, Lysiosquilloidea and Squilloidea. The first three superfamilies were reported by Ahyong (2010), comprising three families, five genera and six species of which one was new to science. The present study, based on the fourth superfamily, Squilloidea, completes the study of the AURORA Stomatopoda. One family, nine genera and 15 species are reported, of which one genus and two species are new to science. The study is supplemented by additional material of the new species described herein collected from various Indo-West Pacific localities by other deep-sea expeditions to the Philippines (PANGLAO 2005), Solomon Islands (SALOMON 1), New Caledonia (BATHUS 4), Vanuatu (MUSORSTOM 8, SANTO), Fiji (BORDAU 1, MUSORSTOM 10), Tonga (BORDAU 2) and Western Australia (SS 0507).

MATERIALS AND METHODS

Terminology and size descriptors follow Ahyong (2001, 2012a). Total length (tl) is measured along the dorsal midline from the tip of the rostral plate to apices of the submedian teeth of the telson. Carapace length (cl) is measured along the dorsal midline and excludes the rostral plate. The corneal index is given as 100 cl/cornea width. Specimens are deposited in the Muséum national d'Histoire naturelle, Paris (MNHN); Raffles Museum of Biodiversity Research, National University of Singapore (ZRC); Crustacean Collection of the Philippine National Museum, Manila (NMCR); Australian Museum, Sydney (AM); Museum Victoria, Melbourne (NMV); Natural History Museum, London (formerly British Museum of Natural History, BMNH); Chinese Academy of Sciences, Institute of Oceanology, Qingdao (CAS); National Museum of Natural History, Smithsonian Institution, Washington, D. C. (USNM); and Zoological Museum, Amsterdam (ZMA).

SYSTEMATIC PART

Superfamily SQUILLOIDEA Latreille, 1802
Family SQUILLIDAE Latreille, 1802

Genus ***ANCHISQUILLA*** Manning, 1968

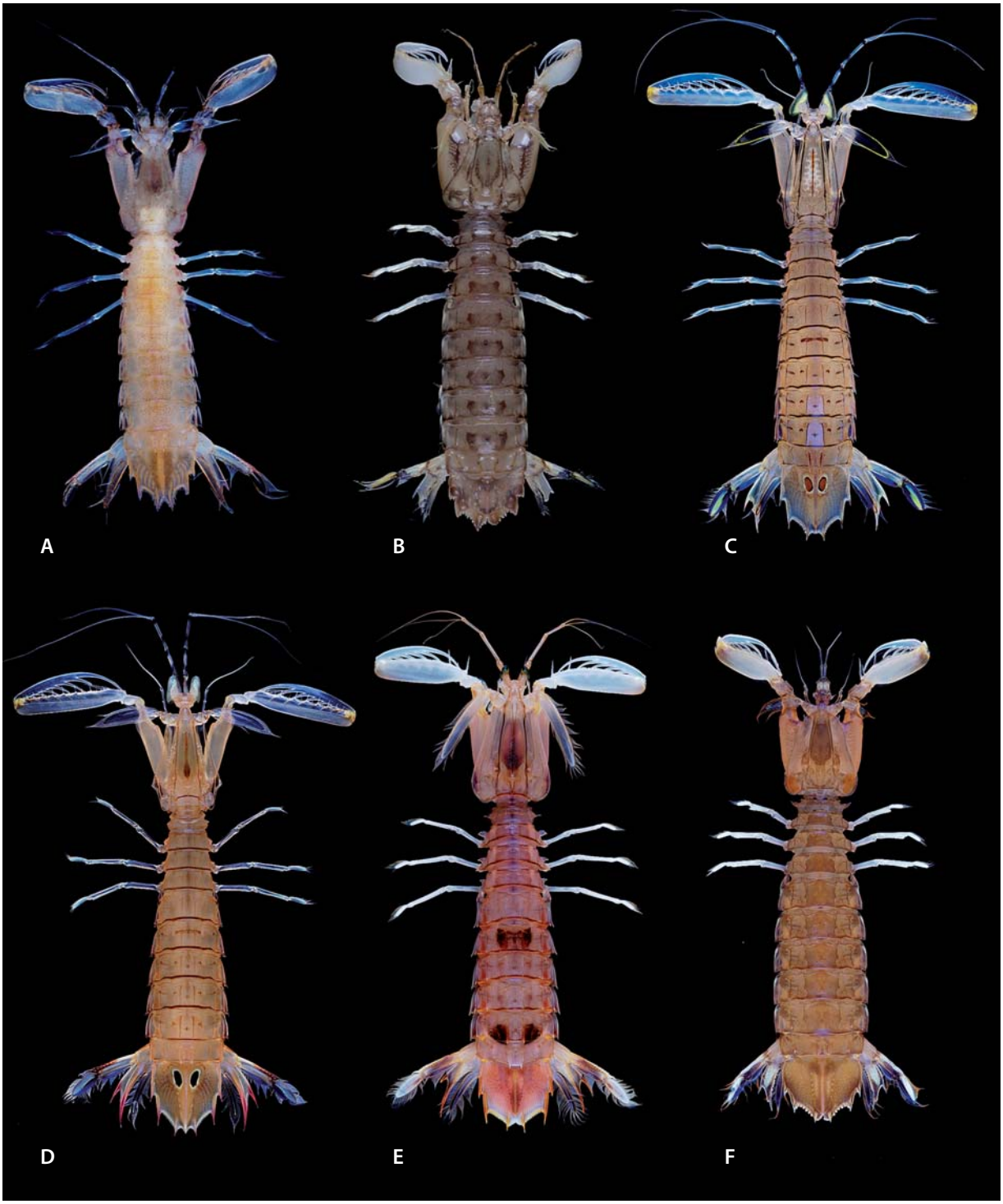
Anchisquilla fasciaticauda Liu & Wang, 1998

Figure 1A

Anchisquilla fasciaticauda Liu & Wang, 1998: 588-590, 593-594, fig. 1 (type locality: South China Sea, 17°00'N, 109°30'E). — Wang & Liu, 2008: 657.

TYPE MATERIAL — Holotype, South China Sea, off Xisha Islands, 17°00'N, 109°30'E, 121.5 m, 22.11.1959, female tl 43 mm (CAS Q86B-17). Paratypes, South China Sea. 17°00'N, 109°00'E, off Xisha Islands, 113 m, 20.11.1959, male tl 42 mm (CAS Q77B-19). – 21°45'N, 115°00', 85 m, 12.12.959, female tl 40 mm (CAS S150B-23).

FIGURE 1
A, *Anchisqilla fasciaticauda* Liu & Wang, 1998, male (tl 47 mm) ZRC 2008.0286, Philippines, AURORA stn CC 2746, 182-220 m. **B**, *Cloridina chlorida* (Brooks, 1886), male (tl 65 mm) ZRC, Philippines, AURORA stn CP 2653, 76-82.7 m. **C**, *Harpiosquilla annandalei* (Kemp, 1911), female (tl 110 mm) ZRC, Philippines, AURORA stn CP 2762, 65-66 m. **D**, *H. sinensis* Liu & Wang, 1998, male (tl 141 mm) ZRC 2008.0309, Philippines, AURORA stn CC 2723, 147-164 m. **E**, *Kempina mikado* (Kemp & Chopra, 1921), female (tl 68 mm) ZRC 2008.0306, Philippines, AURORA stn CC 2746, 182-220 m. **F**, *Lenisquilla lata* (Brooks, 1886), female (tl 118 mm) ZRC 2008.0278, Philippines, AURORA stn CP 2717, 311 m. (Photographs T.-Y. Chan).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MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP 2665, 15°52.76'N, 121°42.71'E, 123-125 m, 21.05.2007, 2 males tl 23, 41 mm (ZRC 2008.0285). – stn CC 2746, 15°39.45'N 121°41.40'E, 182-220 m, 02.06.2007, 1 male tl 47 mm (ZRC 2008.0286). – stn CP 2761, 15°54.56'N, 121°38.48'E, 79-82 m, 04.06.2007, 1 male tl 29 mm (ZRC 2008.0287). **Nansha**. 17°45'N, 110°00'E, 105 m, no date, 1 male tl 46 mm, 1 female tl 38 mm (ZRC).

DISTRIBUTION — Presently known from the South China Sea off China and the Philippines; 44-220 m (Liu & Wang 1998; present study).

COLOUR — In life (Figure 1A), overall pale yellow-brown, with scattered brown chromatophores giving a finely speckled appearance, especially axially. Uropod translucent white, with dark endopod and distal exopod segment; outer movable spines of proximal exopod segment clear pink-red. Raptorial claw merus with fine brown speckling, dull maroon distal and ventral highlights; capus, propodus and dactylus translucent with scattered brown speckling.

REMARKS — The present specimens of *A. fasciaticauda* are the first to be reported since the species was first described (Liu & Wang 1998), and illustrate the colour in life for the first time (Figure 1A). The specimens agree well with the type material and extend the known range to the Philippines. Abdominal carinae are spined as follows: submedian 6, intermediate (2) 3-6, lateral 1-6, marginal 1-5. Telson denticles: submedian 4-5, intermediate 7-9, lateral 1. The inner margin of the uropodal protopod is armed with 7 or 8 spines and the outer margin of the proximal segment of the uropodal exopod is armed with 9 movable spines.

Genus ***CLORIDINA*** Manning, 1995

Cloridina chlorida (Brooks, 1886)

Figure 1B

Squilla chlorida Brooks, 1886: 21, 40, pl. 2-figs 1-5 (type locality: Amboina, Indonesia, 3°43'S, 128°12'E).
Clorida chlorida – Manning, 1968: 5-8, fig. 1.
Cloridina chlorida – Manning, 1995: 24, 192. — Ahyong, 2001: 232-233, fig. 113; 2012b: 245. — Wang & Liu, 2008: 658.

TYPE MATERIAL — Holotype, Indonesia, Amboina, CHALLENGER, 3°43'S, 128°12'E, 27 m, damaged male cl 7.3 mm (BMNH 1894.10.16.11).

MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP 2653, 16°06.500'N 121°59.747'E, 76-82.7 m, 20.05.2007, 1 male tl 65 mm (ZRC 2008.0292), 13 males tl 40-58 mm, 14 females tl 35-53 mm (ZRC 2008.0282). – stn CP 2654, 16°04.74'N 121°57.498'E, 98.4-107 m, 20.05.2007, 2 males tl 41, 44 mm (ZRC 2008.0283), 1 male tl 44 mm (AM P90248), 4 males tl 42-51 mm, 5 females tl 44-53 mm (ZRC 2009.0333). – stn DW 2739, 16°05.219'N, 121°56.76'E, 93.3-95.6 m, 01.06.2007, 1 female tl 50 mm (NMCR).

DISTRIBUTION — Madagascar to northern Australia, Indonesia, Thailand, Vietnam, Japan and now the Philippines; 27-107 m.

COLOUR — In life (Figure 1B), overall dull, olive-brown, with medial block-like pattern on thoracic and abdominal somites. Carapace with brown mottling, and dark margins and grooves. Telson carinae and base on median carina dark brown. Raptorial claw merus with dark brown dorsal mottling; propodus and dactylus white. Uropodal protopod translucent white with brown highlights; endopod translucent white, darkening distally; exopod proximal segment with blackish distal half extending onto inner half of distal segment; outer half of distal segment dull yellow.

REMARKS — *Cloridina chlorida* is figured in colour for the first time (Figure 1B). The abdominal spination (submedian 6, intermediate (4) 5-6, lateral 4-6, marginal 5) is within the documented range (Ahyong 2001); the postanal keel is absent or granular (female, tl 50 mm, stn DW 2739). The species was recently recorded from southern Japan (Ahyong 2012b) and is here recorded from the Philippines for the first time.

Cloridina verrucosa (Hansen, 1926)

Squilla verrucosa Hansen, 1926: 3, pl. 1-figs 1a-d (type locality: Lesser Sunda Islands, Indonesia, 8°27'S, 122°54.5'E).
Squilla merguiensis Tiwari & Biswas, 1952: 350, fig. 1a (type locality: 6.4 km north of Kabusa Island, Mergui Archipelago, Andaman Sea).
Clorida merguiensis – Moosa, 1986: 400.
Clorida verrucosa – Manning, 1968: 5; 1976: 8-10, fig. 4; 1991: 10, figs 10, 11.
Cloridina verrrucosa – Manning, 1995: 24, 195, fig. 24, 120. — Moosa, 1998: 440. — Ahyong, 2001: 239-241, fig. 118. — Ahyong *et al.*, 2008: 90, 91, figs 68, 69. — Wang & Liu, 2008: 658.

TYPE MATERIAL — Lectotype, Indonesia, Lesser Sunda Islands, Siboga, stn 306, 8°27'S, 122°54.5'E, 247 m, 08.02.1900, male tl 45 mm (ZMA 102908).

MATERIAL EXAMINED —The type material (see above). **Philippines**. AURORA: stn CP 2665, 15°52.76'N, 121°42.71'E, 123-125 m, 21.05.2007, 1 male tl 36 mm (ZRC 2008.0295). – stn CP 2712, 15°20.99'N, 121°29.73'E, 139-140 m, 28.05.2007, 1 male tl 47 mm (ZRC 2008.0299).

COLOUR — Overall, evenly speckled with small brown-green chromatophores. Intermediate and lateral carinae of abdomen light brown. Telson primary teeth light brown. Raptorial claw dactylus and propodus white; merus mottled brown-green. Pereopods and uropods translucent white. Uropodal exopod with inner distal half of proximal segment and inner half of distal segment diffuse black (after Ahyong *et al.* 2008).

DISTRIBUTION — Andaman Sea to Australia, Indonesia, Malaysia, the Gulf of Thailand, Vietnam, New Caledonia, the Philippines and Taiwan; 23-159 m (Ahyong 2001; Ahyong *et al.* 2008; Wang & Liu 2008).

REMARKS — The specimens conform well to the lectotype and published accounts (Manning 1976; Ahyong 2001; Ahyong *et al.* 2008). The postanal carina is present, the mandibular palp is 2-segmented, and abdominal carinae spined as follows: submedian 6, intermediate (2) 3-6, lateral (2) 3-6, marginal 2-5.

Genus ***HARPIOSQUILLA*** Holthuis, 1964

Harpiosquilla annandalei (Kemp, 1911)

Figure 1C

Squilla annandalei Kemp, 1911: 99 (type locality: Gulf of Martaban, Burma, 14°48'N, 95°52'E).
Harpiosquilla annandalei – Manning, 1969: 5-9, pl. 27-figs 1-3; 1995: 23, 148-153, figs 87a, c, 88d, 89a, 90b-e, 91d, 92f, 94d. — Garcia, 1978: 237; 1980: 25, figs 132; 1981: 12, 13. — Moosa, 1998: 432. — Ahyong, 2001: 257, fig. 125. — Ahyong *et al.*, 2008: 105-107, figs 79-81. — Wang & Liu, 2008: 658.

TYPE MATERIAL — Not examined.

MATERIAL EXAMINED — **Philippines**. AURORA: stn CP 2762, 15°52.92'N, 121°36.83'E, 65-66 m, 04.06.2007, 2 males tl 82, 98 mm (ZRC), 1 female tl 110 mm (ZRC). – stn CP 2764, 15°50.47'N, 121°35.31'E, 45-48 m, 04.06.2007, 1 male tl 107 mm (ZRC). – stn CP 2722, 14°24.45'N, 121°47.90'E, 291-338 m, 29.05.2007, 1 female tl 95 mm (NMCR).

DISTRIBUTION — Western Indian Ocean to Australia, Vietnam, the Philippines, Taiwan and Japan; 7-338 m (Garcia 1981; present study).

COLOUR — Overall dorsal colour dull tan (Figure 1C), with scattered chromatophores over dorsal surface. Carapace grooves and carinae dark brown. Thoracic and abdominal somites with submedian carinae and posterior margin dark brown. Abdominal somite 2 with medial, black transverse bar. Abdominal somites 1 and 3-5 with traces of broken transverse bar. Telson with pair of dark brown eye-spots surrounded by white margin. Uropodal protopod translucent white; endopod translucent white with black margins; exopod with proximal segment black on inner half; distal segment black with yellow midline.

REMARKS — *Harpiosquilla annandalei* was first recorded from the Philippines by Garcia (1978); colouration is similar to that reported by Ahyong *et al.* (2008) for Taiwanese specimens.

Harpiosquilla sinensis Liu & Wang, 1998

Figure 1D

Harpiosquilla sinensis Liu & Wang, 1998 (published November): 590-592, 594-596, fig. 2. (type locality: Nansha, South China Sea, 5°13.32'N, 108°53.06'S) – Ahyong, 2001: 263-264, fig. 128. — Ahyong *et al*., 2008: 119-121, figs 94-96. — Wang & Liu, 2008: 658.

Harpiosquilla ocellata Ahyong, Chan & Liao, 1998 (published December): 929-935, figs. 1a-g, 2a, b (type locality: Tungkang (=Donggang), Pintung County, south-west Taiwan).

TYPE MATERIAL — Holotype, South China Sea, Nansha, 5°13.32'N, 108°53.06'S, 106 m, 04.05.1993, female tl 161 mm (CAS 93NS17-4). Paratypes, South China Sea, Nansha, 4°53.84'N, 110°29.61'E, 116 m, 16.05.1993, 3 males tl 196-220 mm (CAS 93NS53-4).

MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CC 2723, 14°26.29'N, 121°48.24'E, 147-164 m, 29.05.2007, 1 male tl 141 mm (ZRC 2008.0309).

DISTRIBUTION — Eastern Australia, the Nansha islands, Taiwan, and now the Philippines; 63-250 m (Ahyong *et al.* 2008).

COLOUR — Overall light golden-brown with dark dorsal carinae and dark somite margins. Thoracic and abdominal somites with submedian carinae and posterior margin dark brown. Abdominal somite 2 with medial, black transverse bar. Abdominal somites 3-5 with traces of broken transverse bar. Telson median carina purplish; anteriorly with pair of large black-brown 'ocelli' with white outline. Uropodal protopod with reddish primary spines; endopod translucent white with black margins; exopod distal segment black on inner half.

REMARKS — The Philippine specimen agrees well with type material and published accounts (Liu & Wang 1998; Ahyong 2001; Ahyong *et al.* 2008). The intermediate carinae of thoracic somites 6-8 are posteriorly armed. Abdominal spination is as follows: submedian 6, intermediate 1-6, lateral 1-6, marginal 1-5.

Genus ***KEMPELLA*** Low & Ahyong, 2010

Kempella mikado (Kemp & Chopra, 1921)

Figure 1E

Squilla mikado Kemp & Chopra, 1921: 301, fig. 2 (type locality: Misaki, Japan).
Squilla zanzibarica Chopra, 1939: 143-148, figs. 2, 4 (type locality: off Zanzibar, 5°38'54"S, 39°15'42"E to 5°40'18"S, 39°17'36"E).
Kempina mikado – Manning, 1978: 40, fig. 23a-c; 1991: 14; 1995: 24, 208. — Moosa, 1986: 400-402, fig. 10; 1998: 443. — Ahyong, 2001: 267, 268, fig. 130. — Wang & Liu, 2008: 659.
Kempella mikado – Low & Ahyong, 2010: 68.

TYPE MATERIAL — Not examined.

MATERIAL EXAMINED — Philippines. AURORA: stn CC 2746, 15°39.45'N 121°41.40'E, 182-220 m, 02.06.2007, 1 male tl 178 mm (ZRC), 1 female tl 68 mm (ZRC 2008.0306).

DISTRIBUTION — Western Indian Ocean to Australia and New Caledonia, Vietnam, the Philippines, Taiwan and Japan; 30-804 m (Ahyong *et al.* 2008).

COLOUR — Overall dorsal colour light brown (Figure 1E). Carapace grooves and posterior margin on thoracic and abdominal somites dark brown. Carapace with orange posteromedian margin. Abdominal somite 2 with dark brown mid-dorsal patch. Abdominal somite 5 with pair of distinct tan to dark brown patches. Telson carinae infused with pale orange. Uropodal protopod with orangish primary spines; endopod black-brown, paler proximally; exopod with dark brown proximal segment extending onto distal segment proximally.

REMARKS — The specimens agree well with Ahyong (2001) and Ahyong *et al.* (2008); abdominal spination (submedian 5-6, intermediate (1) 2-6, lateral 1-6, marginal 1-5) is within the reported range. *Kempina* Manning, 1978, with *Squilla mikado* Kemp & Chopra, 1921, as type species, is preoccupied and was recently replaced by *Kempella* Low & Ahyong, 2010.

Genus ***LENISQUILLA*** Manning, 1977

Lenisquilla lata (Brooks, 1886)

Figure 1F

Squilla lata Brooks, 1886: 21, 34-37, pl. 1-figs. 1-3 (type locality: Arafura Sea, 08°56'S, 136°05'E). — Kemp, 1913: 3, 10, 21, 37, pl. 2-fig. 24.
Squilloides latus spinosus Blumstein, 1970: 223, figs. 4, 5 (type locality: Gulf of Tonkin, 17°48'N, 109°32'E).
Squilloides espinosus Blumstein, 1974: 121, fig. 7 (type locality: Gulf of Tonkin, 18°00'N, 109°32'E).
Lenisquilla pentadactyla Moosa, 1991: 205-207, fig. 14 (type locality: New Caledonia, 20°46.8'S, 165°17.3'E).
Lenisquilla spinosa – Moosa, 1986: 403, 404.
Lenisquilla lata – Manning, 1991: 10, 11, fig. 12; 1995: 24, 209. — Moosa, 1998: 444. — Ahyong, 2001: 269, fig. 131. — Ahyong *et al.* 2008: 128, 129, figs 101-103. — Wang & Liu, 2008: 659.

TYPE MATERIAL — Lectotype, Arafura Sea, 8°56'S, 136°05'E, 90 m, male tl 74 mm (BMNH 94.10.16.8). Paralectotype, collected with lectotype, female tl 75 mm (BMNH 94.10.16.9).

MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP 2655, 16°02.455'N, 121°54.770'E, 189-233 m, 20.05.2007, 1 male tl 69 mm (ZRC 2008.0281). – stn CP 2661, 15°66.523'N, 121°62.768'E, 160-167 m, 21.05.2007, 1 male tl 58 mm (ZRC 2008.0272). – stn CP 2665, 15°52.76'N, 121°42.71'E, 21.05.2007, 1 female tl 83 mm (ZRC 2008.0277). – stn CP 2666, 15°56.35'N, 121°43.67'E, 184-199 m, 21.05.2007, 1 male tl 59 mm (ZRC 2008.0279). – stn CP 2710, 15°14.14'N, 121°33.13'E, 206-216 m, 28.05.2007, 1 female tl 49 mm (ZRC 2008.0271). – stn CP 2711, 15°18.21'N, 121°32.32'E, 184-207 m, 28.03.2007, 2 females tl 51, 53 mm (ZRC 2008.0275). – stn CP 2716, 14°32.14'E, 121°40.80'N, 298-356 m, 29.05.2007, 1 juvenile male tl 27 mm (ZRC 2008.0274). – stn CP2717, 14°28.94'N, 121°43.13'E, 311 m, 29.05.2007, 1 female tl 118 mm (ZRC 2008.0278). – stn CP 2719, 14°27.84'N, 121°47.90'E, 155-204 m, 29.05.2007, 1 male tl 85 mm (ZRC). – stn CP 2720, 14°25.30'N, 121°7.70'E, 256-301 m, 29.05.2007, 1 female tl 107 mm (ZRC 2008.0291). – stn CP 2721, 14°24.66'N, 121°46.07'E, 367-340 m, 29.05.2007, 2 females tl 109, 111 mm (ZRC 2008.0297). – stn CC 2746, 15°39.45'N 121°41.40'E, 182-220 m, 02.06.2007, 5 males tl 58-85 mm, 3 females tl 40-81 mm (ZRC 2008.0308). – stn CP 2748, 15°54.89'N, 121°44.81'E, 231-249 m, 02.06.2007, 1 female tl 44 m (ZRC 2008.0273). – stn CP 2760, 15°55.74'N, 121°40.53'E, 98-100 m, 04.06.2007, 1 female tl 61 mm (ZRC 2008.0280).

DISTRIBUTION — Western Indian Ocean to Australia, New Caledonia, the South China Sea, Taiwan and Japan; 45-356 m (Ahyong *et al.* 2008; present study).

COLOUR — Overall pale brown (Figure 1F). Merus and carpus of raptorial claw pale brown; propodus white, with diffuse yellow-brown distal end; dactylus white. Pereopods white. Uropodal protopod white with translucent primary spines; endopod black-brown, paler proximally; exopod with black-brown proximal segment extending onto inner half of distal segment.

REMARKS — The specimens agree well with the most recent revision of the species and variation is within the documented range (Ahyong 2001). The raptorial claws are armed with five or six (usually six) teeth on the dactylus; abdominal spination is as follows: submedian 6, intermediate (3) 4-6, lateral (1-3) 4-6, marginal (1-3) 4-5. The juvenile male (tl 27 mm, ZRC 2008.0274) has six teeth on the dactylus of the raptorial claw and fixed submedian teeth on the telson as in adults, and abdominal spination: submedian 6, intermediate 4-6, lateral 4-6, marginal 3-5. This juvenile differs from adults in having rudimentary instead of well-developed anterolateral spines and a blunt instead of sharp lateral process on thoracic somite 5.

Genus ***NECLORIDA*** Manning, 1995

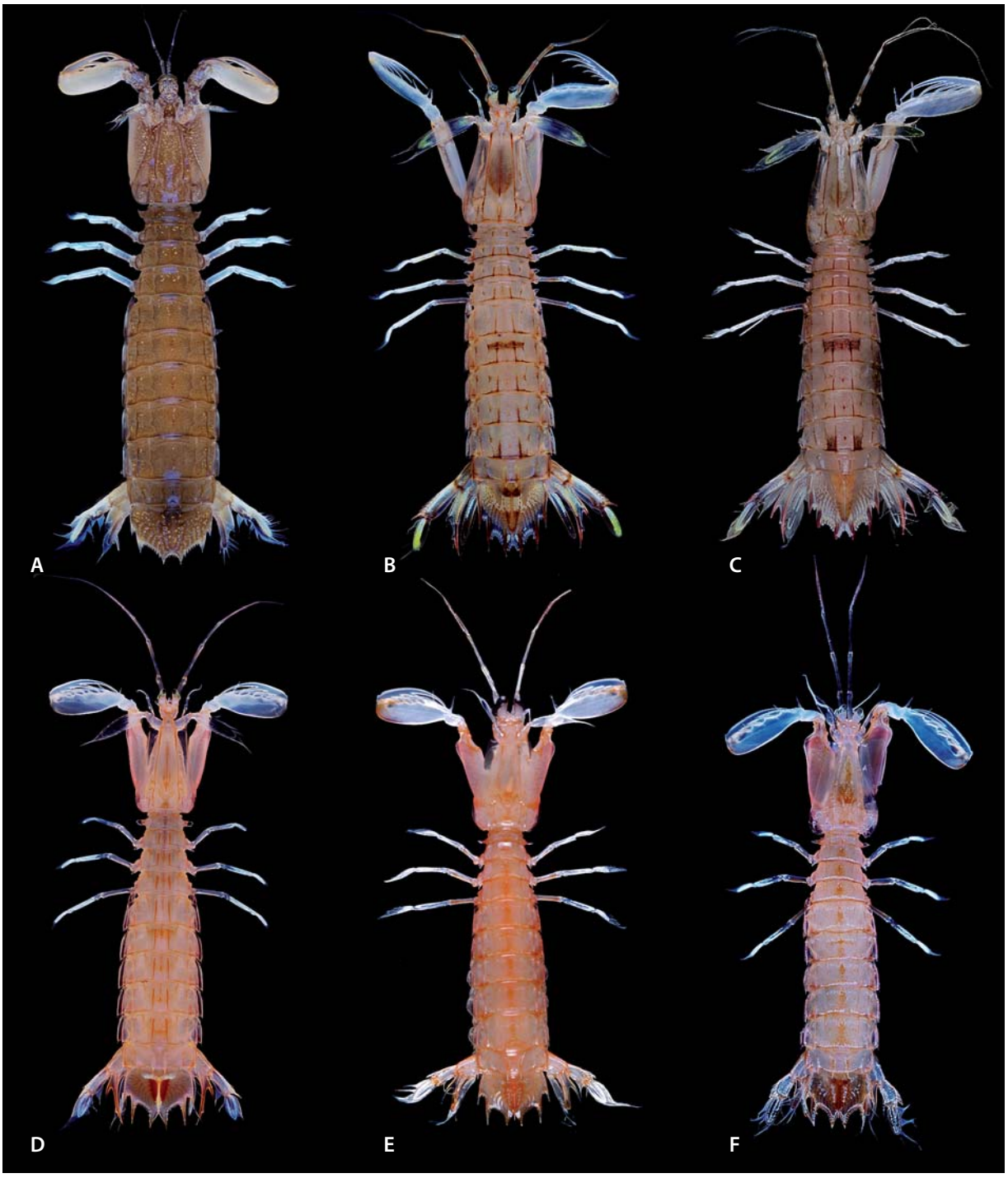
Neclorida miersi (Manning, 1968)

Figure 2A

Clorida miersi Manning, 1968: 11-14, fig. 3 (type locality: Banc de Pracel, Madagascar). – Moosa, 1973: 22. — Moosa & C1eva, 1984: 77.
Neclorida miersi – Manning, 1995: 25, 219. — Ahyong, 1998: 226-228, fig. 5.

TYPE MATERIAL — Holotype, western coast of Madagascar, Banc de Pracel, 65 m, 06.1959, male tl 33 mm (USNM 124091).

FIGURE 2
A, *Neclorida miersi* (Manning, 1968), male (tl 69 mm) ZRC 2008.0298, Philippines, AURORA stn CP 2764, 45-48 m. **B**, *Quollastria capricornae* Ahyong, 2001, male (tl 62 mm) ZRC 2008.0253, Philippines, AURORA, stn CC 2746, 182-220 m. **C**, *Quollastria gonypetes* (Kemp, 1911), female (tl 77 mm) ZRC 2008.0307, Philippines, AURORA stn CP 2653, 76-82.7 m. **D**, *Squilloides leptosquilla* (Brooks, 1886), female (tl 82 mm) ZRC 2008.0269, Philippines, AURORA stn CC 2743, 309 m. **E**, *Triasquilla profunda* n. sp., female (tl 39 mm) NMCR, Philippines, PANGLAO 2005 stn CP 2361, 543-613 m. **F**, *Triasquilla profunda* n. sp., male (tl 45 mm) ZRC, Philippines, AURORA stn CP 2731, 353-391 m. (Photographs T.-Y. Chan)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MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP2764, 15°50.47'N, 121°35.31'E, 45-48 m, 04.06.2007, 1 male tl 69 mm (ZRC 2008.0298).

DISTRIBUTION — Madagascar, Indonesia and now from the Philippines; 40-65 m (Ahyong 1998).

COLOUR — Overall pale brown with white speckling on carapace extending sparsely onto thorax and abdomen (Figure 2A). Merus and carpus of raptorial claw pale brown with darker brown reticulation dorsally; carpus dark brown; propodus white, brown occlusal margin and speckling proximally; dactylus white with diffuse yellowish margins. Pereopods white. Uropodal protopod pale brown with translucent primary spines; endopod black-brown, paler proximally; exopod white with brown-black inner half.

REMARKS — The Philippine specimen agrees well with material from other Indo-West Pacific localities (Ahyong 1998) and is figured in colour for the first time (Figure 2A). Both raptorial claws have five teeth on the dactylus and abdominal spination (submedian 6, intermediate 4-6, lateral 5-6, marginal 5) is within the documented range.

Genus ***QUOLLASTRIA*** Ahyong, 2001

Quollastria capricornae Ahyong, 2001

Figure 2B

Oratosquilla imperialis – Moosa & Cleva, 1984: 79 (in part). — Moosa, 1986: 409, 410 (in part); 2000: 411, 448 (in part). [not Manning, 1965]
Oratosquillina imperialis – Moosa, 1998: 448 (in part). [not Manning, 1965]
Quollastria imperialis – Wang & Liu, 2008: 660 (in part). [not Manning, 1965]
Quollastria capricornae Ahyong, 2001: 302-304, fig. 146 (type locality: E of Mooloolaba, Queensland, Australia, 26°52.74'S, 153°35.34'E). — Ahyong, 2004: 20, 21.

TYPE MATERIAL — Holotype, Australia, Queensland, east of Mooloolaba, stn QLD 1119, 26°52.74'S, 153°35.34'E, 160 m, 03.08.1994, male tl 90 mm (AM P56912).

MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP 2712, 15°20.99'N, 121°29.73'E, 139-140 m, 28.05.2007, 1 male tl 43 mm, 2 females tl 31-50 mm (ZRC 2008.0296). – stn CC 2746, 15°39.45'N 121°41.40'E, 182-220 m, 02.06.2007, 1 male tl 62 mm (ZRC 2008.0253).

DISTRIBUTION — Australia, Indonesia and the Philippines; 71-212 m (Ahyong 2001, 2004).

COLOUR — Dorsal surface pale brown, with darker, diffuse mottling between submedian and lateral carinae (Figure 2B). Carinae and grooves of carapace dark red-brown. Submedian carinae and posterior margins of thoracic and abdominal somites dark orange. Abdominal somite 2 with narrow, dark brown band. Abdominal somite 5 with dark brown band on mid-posterior margin between intermediate carinae, and extending onto submedian carinae. Telson median carina with dark rectangle proximally and dark triangle distally, encompassing apical spine; carinae of primary teeth red. Uropodal protopod with red primary spines; exopod proximal segment with dark distal margin, distal segment black-brown on inner half, yellow on outer half; movable spines on outer margin of exopod proximal spines clear red-brown.

REMARKS — *Quollastria capricornae* is figured in colour for the first time (Figure 2B). The AURORA specimens, all relatively small, agree well in most respects with the type material and Philippine specimens reported by Ahyong (2004). The

spination of the abdominal carina of the AURORA specimens (submedian 5-6, intermediate 2-6, lateral 1-6, marginal 3-5) is within the reported range, except for the unarmed marginal carinae on abdominal somites 1 and 2.

Quollastria gonypetes (Kemp, 1911)

Figure 2C

Squilla gonypetes Kemp, 1911: 96 (lectotype locality: vicinity of Cheduba island, Burma, 18°48'N, 93°38'E).
Oratosquilla gonypetes – Manning, 1978: 7, 12-14, fig. 5. — Moosa, 1986: 408.
Oratosquillina gonypetes – Manning, 1995: 25, 228. — Moosa, 1998: 447.
Quollastria gonypetes – Ahyong, 2001: 304-306, fig. 147; 2004: 21. — Ahyong ***et al.*** 2008: 167-169, figs 135, 136. — Wang & Liu, 2008: 660.

TYPE MATERIAL — Not examined.

MATERIAL EXAMINED — **Philippines**. AURORA: stn CP 2653, 16°06.500'N 121°59.747'E, 76-82.7 m, 20.05.2007, 1 female tl 77 mm (ZRC 2008.0307), 4 females tl 42-75 mm (ZRC 2008.0255). – CP2654, 16°04.74'N 121°57.498'E, 98.4-107 m, 20.05.2007, 1 male tl 40 mm (ZRC).

DISTRIBUTION — Western Indian Ocean to Australia, the South China Sea including the Philippines, Taiwan and Japan; 13-110 m (Ahyong *et al.* 2008).

COLOUR — Overall dorsal colour light brown (Figure 2C). Rostral plate with orange-brown margins. Carapace with dark carinae and grooves; median carina, gastric grooves and median posterior margin red. Thoracic somites 5-8 and abdominal somites 1-5 with dark red submedian carinae. Abdominal somites 1-5 with intermediate carinae red medially. Abdominal somite 2 with diffuse black, transverse rectangular bar. Abdominal somite 5 with black square lateral to each submedian carina. Telson with carinae of primary teeth red, that of lateral tooth red to level of apex of prelateral lobe; median carina with red posterior spine. Uropodal protopod off-white with red terminal spines and carinae; endopod white/yellow with central distal half black; exopod proximal segment black distally, outer spines red; exopod distal segment black on inner three quarters, remainder dull yellow.

REMARKS — Abdominal spination of the present series of *Q. gonypetes* (submedian 5-6, intermediate 3-6, lateral (1) 2-6, marginal 1-5) is within the reported range (Ahyong 2001).

Quollastria ornata (Manning, 1971)

Oratosquilla ornata Manning, 1971: 9-11, fig. 3 (type locality: South China Sea off Hong Kong).
Oratosquilla vietnamica Blumstein, 1974: 119-121, fig. 6 (type locality: Gulf of Tonkin, South China Sea, Vietnam).
Oratosquillina ornata – Manning, 1995: 25, 225, 233. — Moosa, 1998: 449.
Quollastria ornata – Ahyong, 2001: 301. — Ahyong *et al*., 2008: 172, 173, fig. 139. — Wang & Liu, 2008: 660.

TYPE MATERIAL — Holotype, South China Sea, off Hong Kong, ALBATROSS, stn 5309, 21°53'N, 115°51'E, 113 m, 04.11.1908, female tl 43 mm (USNM 77939).

MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP 2760, 15°55.74'N, 121°40.53'E, 98-100 m, 04.06.2007, 1 male tl 47 mm (ZRC 2008.0130). **Nansha**. 17°00'N, 109°00'E, 113 m, 20.11.1959, 1 male tl 52 mm, 1 female tl 48 mm (ZRC).

DISTRIBUTION — South China Sea off Vietnam, Hong Kong, the Philippines, north to Taiwan; 76-113 m (Liu & Wang 1998; Ahyong *et al.* 2008). The present record is the first for the Philippines.

COLOUR — Not known.

Quollastria subtilis (Manning, 1978)

Oratosquilla subtilis Manning, 1978: 33, 34, fig. 19 (type locality: off Visakhapatnam coast, Madras, India). — Moosa, 1991: 213.
Oratosquilla turbata Manning, 1978: 35, 36, fig. 20 (type locality: Banc de Pracel, W coast of Madagascar, 17°00'S, 43°30'E).
Oratosquillina subtilis – Manning, 1995: 25, 225, 226.
Quollastria subtilis – Ahyong, 2001: 308-310, fig. 149. — Ahyong *et al*., 2008: 174, 175, fig. 140. — Wang & Liu, 2008: 660.

TYPE MATERIAL — Not examined.

MATERIAL EXAMINED — Philippines. AURORA: stn CP 2653, 16°06.500'N 121°59.747'E, 76-82.7 m, 20.05.2007, 1 male tl 49 mm (ZRC). – stn CP 2762, 15°52.92'N, 121°36.83'E, 65-66 m, 04.06.2007, 1 male tl 52 mm, 1 female tl 27 mm (ZRC).

DISTRIBUTION – Madagascar to India, Australia, Indonesia, New Caledonia, the Philippines and Taiwan; 31-111 m (Ahyong 2001; Ahyong *et al.* 2008).

COLOUR – Dorsal surface pale grey-brown, with darker, diffuse patches between submedian and lateral carinae. Carinae and grooves of carapace dark red-brown. Submedian carinae and posterior margins of thoracic and abdominal somites dark red. Thoracic somites 6-7 with dark patch between intermediate carinae and lateral processes. Abdominal somite 2 with narrow dark red-brown band, medially diffuse. Abdominal somite 5 with dark red-brown triangular patch lateral to submedian carinae. Telson median carina with dark rectangle proximally and dark triangle distally, encompassing apical spine; carinae of primary teeth red. Uropodal exopod proximal segment with dark distal margin, distal segment dark on inner half; movable spines on outer margin of exopod proximal spines clear red (from Ahyong 2001; Ahyong *et al.* 2008).

REMARKS – The abdominal spination of the present series of *Q. subtilis* (submedian 5-6, intermediate 4-6, lateral 4-6, marginal (3) 4-5) is within the reported range for the species (Ahyong 2001).

Genus ***SQUILLOIDES*** Manning, 1968

Squilloides leptosquilla (Brooks, 1886)

Figure 2D

Squilla leptosquilla Brooks, 1886: 30-34, pl. 1-figs. 1, 2 (type locality: northern Sulu Sea, Philippines, 12°46'N, 122°10'E). – Lee & Wu, 1966: 47, 48, fig. 5A, B.
Squilla leptosquilla var *dentata* Jurich, 1904: 372, pl. 25(I)-fig. 2 (type locality: Nicobar Islands, Andaman Sea).
Squilloides leptosquilla – Moosa, 1986: 410, 411, pl. 1D, E; 1998: 450. — Manning, 1991: 15; 195: 26; 1995: 26. — Ahyong, 2001: 310-312, fig. 150. – Ahyong *et al*., 2008: 177-179, figs 141-143. — Wang & Liu, 2008: 660.

TYPE MATERIAL — Holotype, Philippines, northern Sulu Sea, Challenger, stn 204B, 12°46'N, 122°10'E, male tl 66 mm (BMNH 1894.10.16.7).

MATERIAL EXAMINED — The type material (see above). **Philippines**. AURORA: stn CP 2709, 15°10.18'N, 121°35.07'E, 244-331 m, 28.05.2007, 1 female tl 91 mm (ZRC). – stn CP 2733, 15°53.39'N, 121°45.80'E, 262-278 m, 01.06.2007, 1 male tl 44 mm (ZRC). – stn CC 2743, 16°00.75'N, 121°49.94'E, 309 m, 02.06.2007, 1 male tl 49 mm (ZRC), 1 female tl 82 mm (ZRC 2008.0269). – stn CP 2748, 15°54.89'N, 121°44.81'E, 231-249 m, 02.06.2007, 1 female tl 64 m (NMCR).

DISTRIBUTION — Andaman Sea to Australia, Indonesia, the Philippines, Taiwan and Japan; 170-754 m (Ahyong 2001).

COLOUR — Overall dorsal pale orange-brown dorsally (Figure 2D); carinae orange. Median carina of telson with pair of red-maroon patches. Raptorial claw merus pale pale orange-brown; carpus, propodus and dactylus white. Uropodal protopod pale orange.

REMARKS — The abdominal spination of the Philippine specimens (submedian 6, intermediate (1) 2-6, lateral 1-6, marginal 1-5) is within the reported range of the species (Ahyong 2001).

Genus ***TRIASQUILLA*** n. gen.

Type species. *Triasquilla prima* n. sp., by present designation.

DIAGNOSIS — Cornea strongly bilobed, distinctly broader than, and set obliquely on, stalk. Antennular somite dorsal processes with short slender apices, directed anterolaterally. Carapace without anterolateral spines; without carinae except for reflected marginal carinae, faintly indicated lateral carinae posteriorly only. Raptorial claw dactylus with 4 teeth, outer margin with basal notch; carpus with undivided dorsal carina; merus outer inferodistal angle unarmed. Mandibular palp absent. Maxillipeds 1 and 2 or 3 with epipod. Thoracic somites 6-8 with intermediate carinae; submedian carinae absent. Thoracic somites 5-8 lateral processes single. Abdominal somites 1-5 with intermediate, lateral and marginal carinae, submedian carinae absent. Abdominal somite 6 with submedian, intermediate and lateral carinae; sternum posterior margin unarmed. Telson subtriangular in shape, with well-developed primary teeth (submedian, intermediate lateral); submedian teeth with movable apices; submedian denticles minute, intermediate and lateral denticles triangular with acute apices; prelateral lobe absent; dorsolateral surface without carinae or distinct pitting. Uropodal protopod inner margin crenulated; primary spines long, slender. Male pleopod 1 endopod hook process with apical point.

COMPOSITION — *T. prima* n. sp., *T. profunda* n. sp.

REMARKS — *Triasquilla* n. gen. belongs to the "*Meiosquilla*" group within the Squillidae, having unilobate lateral processes of thoracic somites 5-8, lacking the prelateral lobe on the telson, and lacking the ventrolateral (stridulatory) carina of the telson (Ahyong 2005). In many respects, *Triasquilla* n. gen. superficially resembles the shallow water American genus *Meiosquilla* Manning, 1968, in lacking a mandibular palp, lacking anterolateral carapace spines and lacking submedian carina on abdominal somites 1-5. *Triasquilla* n. gen., however, is readily separated from *Meiosquilla* by the posteriorly spined or pointed (versus rounded) lateral processes of thoracic somites 6 and 7, and the crenulated versus spinous inner margin of the uropodal protopod.

Within the '*Meiosquilla*' group, *Triasquilla* n. gen. is most closely related to *Schmittius* Manning, 1972, from the Eastern Pacific, and to a lesser extent, *Squilloides* Manning, 1968, from the Indo-West Pacific, sharing a four-toothed dactylus of the raptorial claw, absence of the mandibular palp, a well developed lateral process on thoracic somite 5, triangular telson with elongate intermediate teeth, and relatively slender uropodal protopod with a crenulated inner margin. *Triasquilla* n. gen. differs from both *Schmittius* and *Squilloides* in lacking anterolateral spines on the carapace, and in having fewer epipods (present only on maxillipeds 1 and 2 or 3, instead of 1-4). *Triasquilla* n. gen. further differs from *Schmittius* in

having acute or spiniform, rather than rounded, posterolateral margins of the lateral processes of thoracic somites 6 and 7. *Triasquilla* n. gen. also differs from *Squilloides*, in having reduced carapace carination (reflected marginal and posterior portion of intermediate carinae only versus entire median, lateral, reflected marginal carina, in addition to the intermediate carina in *S. leptosquilla*), absence of submedian carinae on thoracic somites 5-8 and abdominal somites 1-5 (present in *Squilloides*), and moveable instead of fixed submedian telson teeth. Species of all three genera occur in relatively deep water, but apparently in overlapping bands of increasing depth: *Schmittius* (125-350 m; Manning 1972); *Squilloides* (170-750 m; Ahyong *et al.* 2008); and *Triasquilla* n. gen. (297-1250 m). On the basis of the 1210-1250 m record for *T. profunda* n. sp., *Triasquilla* n. gen. includes the deepest dwelling squilloid stomatopods.

ETYMOLOGY — Derived from the Greek, *trias*, three or of three, in combination with the generic name *Squilla*; the name alludes to the close relationship of *Triasquilla* n. gen., *Schmittius* and *Squilloides*, which form a closely related triumvirate within the "*Meiosquilla*" group of the Squillidae. Gender: feminine.

KEY TO SPECIES OF *TRIASQUILLA* N. GEN.

1. Maxillipeds 1 and 2 with epipod. Rostral plate as long as wide ..... *T. prima* n. sp.
– Maxillipeds 1-3 with epipod. Rostral plate usually longer than wide ..... *T. profunda* n. sp.

Triasquilla prima n. sp.

Figures 3, 4

TYPE MATERIAL — Holotype, Fiji, MUSORSTOM 10, stn CP1330, 17°09.5'S, 177°56.3'E, 567-699 m, 08.08.1998, male tl 45 mm (MNHN-IU-2012-984). Paratypes: Fiji. MUSORSTOM 10: stn CP 1330, 17°09.5'S, 177°56.3'E, 567-699 m, 08.08.1998 , male tl 35 mm (MNHN-IU-2012-985). – BORDAU 1: stn CP 1468, 18°16'S, 178°41'E, 478-500 m, 07.03.1999, 1 female tl 32 mm (MNHN-IU-2012-986). Tonga. BORDAU 2: stn CP 1527, 21°16'S, 174°59'W, 483-509 m, 03.06.2000, 1 female tl 29 mm (MNHN-IU-2012-987).

MATERIAL EXAMINED — The type material (see above).

DISTRIBUTION — Fiji and Tonga (Figure 4); 478-699 m.

DESCRIPTION — Dorsal surface smooth, polished.

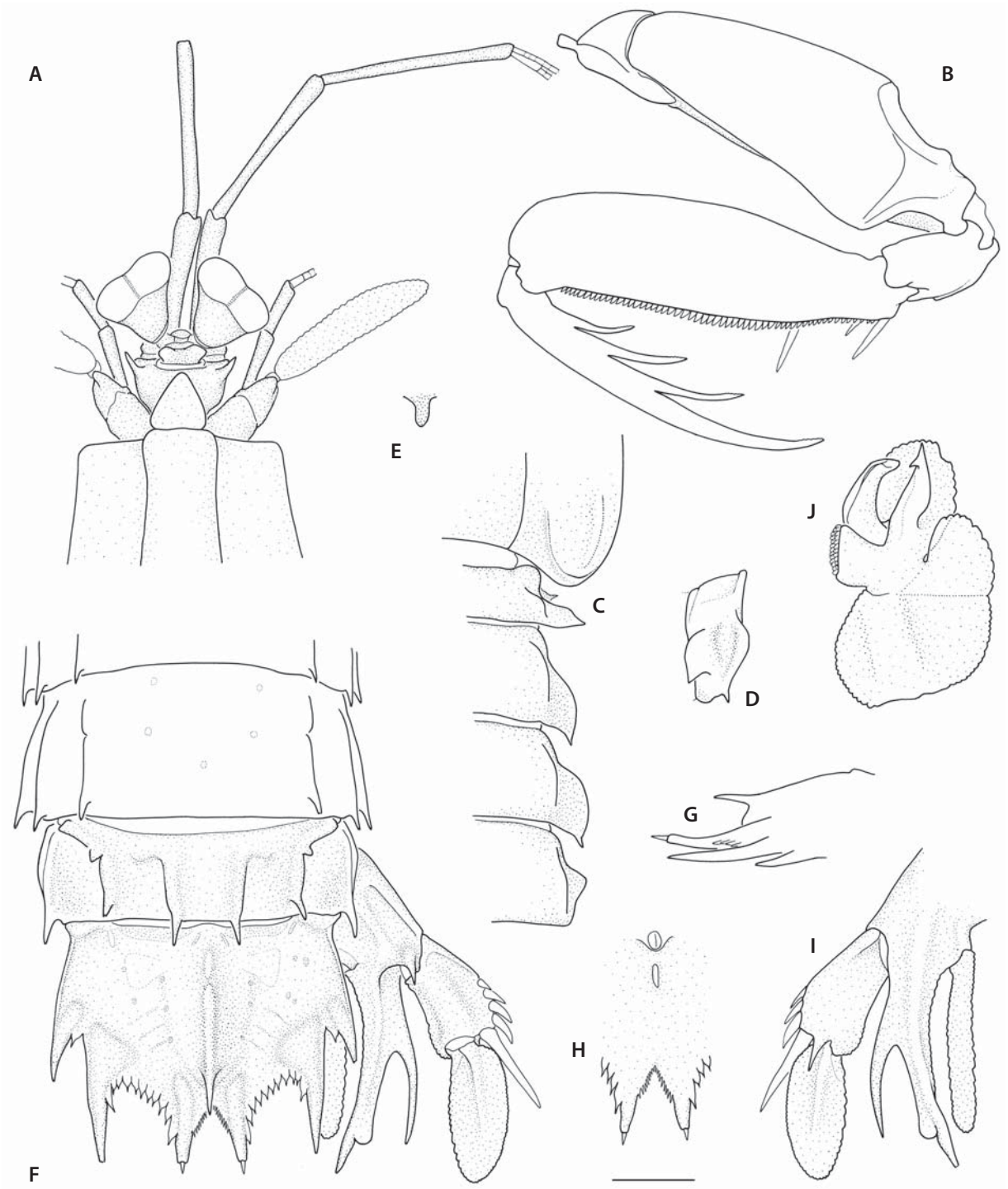
Eye not extending beyond antennular peduncle segment 1; cornea strongly bilobed, distinctly broader than, and set obliquely on, stalk; CI 453-475.

Ophthalmic somite anterior margin rounded. Ocular scales subtruncate, separate.

Antennular somite dorsal processes with short slender apices, directed anterolaterally.Antennular peduncle 1.32-1.41 cl. Antennal scale 0.39-0.43 cl; slender; entire margin setose.

FIGURE 3

Triasquilla prima n. sp., holotype male (tl 45 mm) MNHN, Fiji, MUSORSTOM 10 stn CP 1330, 567-699 m. **A**, anterior cephalothorax. **B**, right raptorial claw. **C**, right posterolateral corner of carapace and lateral processes of thoracic somites 5-8. **D**, right thoracic somite 5, lateral view. **E**, thoracic somite 8 sternal keel, right lateral view. **F**, abdominal somites 5 & 6, telson and right uropod. **G**, telson, right lateral view. **H**, telson postanal carina. **I**, left uropod, ventral view. **J**, right pleopod 1 endopod, anterior view. Scale bar 2 mm for A-I; 1 mm for J.


A
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Rostral plate trianguloid, about as long as wide, widest slightly in advance of base; apex rounded; without dorsal carinae.

Carapace anterior width about half median length; surface smooth; anterolateral angle rounded; reflected marginal carina indicated; lateral carina faintly indicated, evident posteriorly only. Median posterior margin unarmed, faintly concave.

Raptorial claw dactylus with 4 teeth, outer margin evenly curved, with basal notch; carpus with undivided dorsal carina; merus outer inferodistal angle unarmed.

Mandibular palp absent. Maxillipeds 1 and 2 with epipod. Maxilliped 5 basal segment unarmed.

Pereopod 1-3 basal segment unarmed; endopod 2-segmented, distal segment slender.

Thoracic somites 6-8 with unarmed intermediate carinae. Thoracic somite 5 lateral process a single flattened triangular lobe, directed laterally; ventral spine small, directed ventrolaterally. Thoracic somites 6 and 7 lateral process single, broadly rounded laterally, spiniform posteriorly. Thoracic somite 8 lateral process bluntly angular; sternal keel obtusely rounded, directed ventrally.

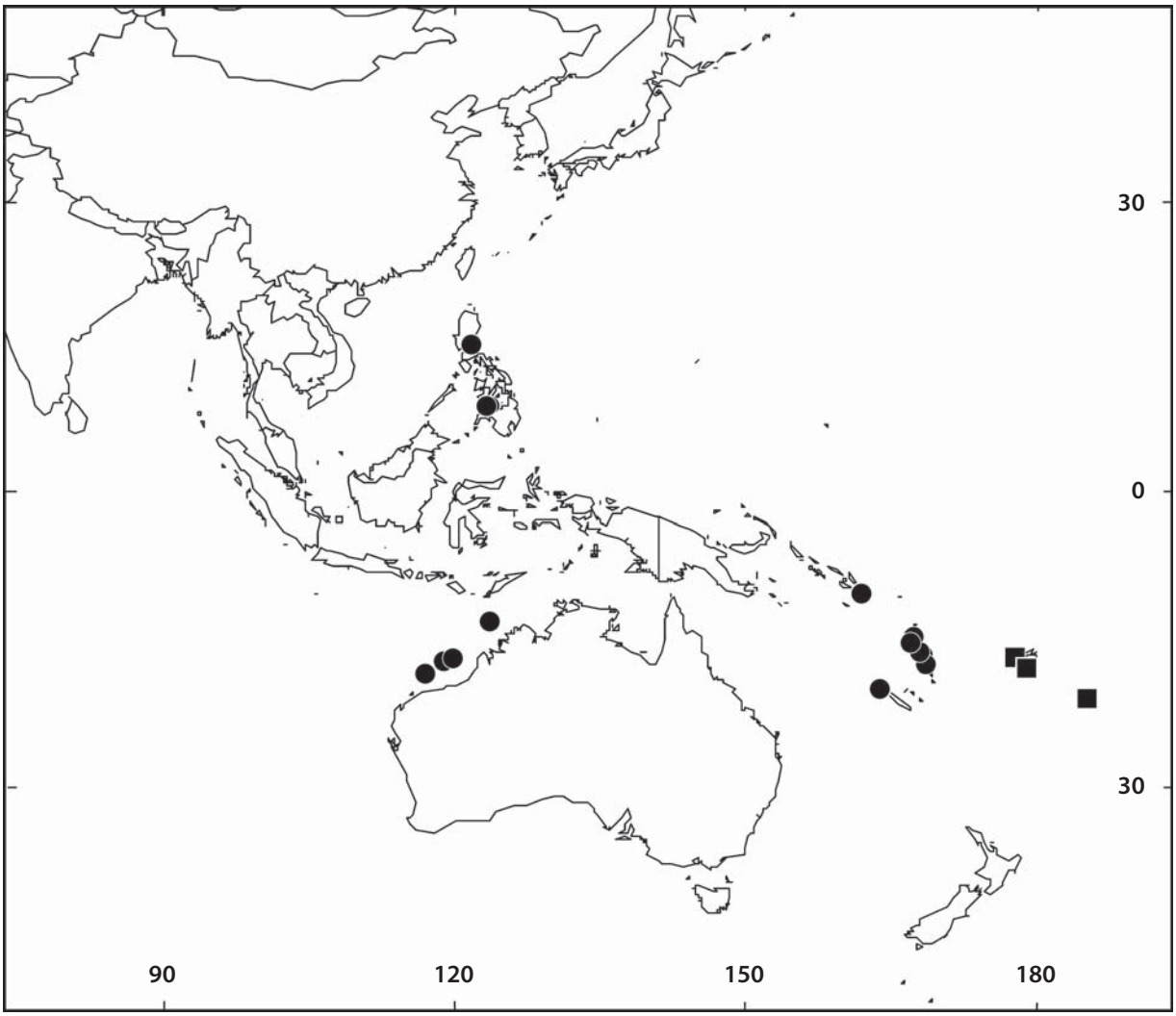


FIGURE 4
Geographical distribution of species of *Triasquilla* n. gen.: *T. profunda* n. sp. (■), *T. prima* n. sp. (●).

Pleopod 1 endopod in adult males with posterior endite; hook process distally acute; hook process as long as tube process.

Abdominal somites 1-5 with well-developed intermediate, lateral and marginal carinae. Abdominal somite 6 with normal complement of carinae; sternum posterior margin unarmed; at most with minute ventrolateral tubercle anterior to uropodal articulation. Abdominal carinae spined as follows: submedian 6, intermediate 4-6, lateral 2-6, marginal 1-5.

Telson wider than long, subtriangular; denticles spiniform, submedian much smaller than intermediates; numbers of denticles as follows: submedian 10-13, intermediate 11-15, lateral 1; submedian teeth movable apices small, slender; intermediate teeth slender, considerably elongate, subequal to half median length of telson and extending posteriorly to base of movable apices of submedian teeth; lateral teeth directed posterolaterally, well clear of margin of lateral tooth, apex spiniform; prelateral lobe absent; submedian, intermediate and lateral teeth each with low carina, more inflated in males than females; marginal carina extending for about two-thirds length of proximal margin of lateral tooth; median carina interrupted proximally, armed with long posterior spine overhanging; dorsolateral surface smooth, without carinae or distinct pitting. Telson ventral surface smooth on either side of postanal carna; postanal carina extending posteriorly for about one-third to one-half distance from anal pore to median posterior margin of telson; ventrolateral carina absent.

Uropodal protopod terminating in 2 slender ventrally carinate spines, inner longer, with rounded lobe on outer margin of inner spine; unarmed dorsally except for spine above proximal exopod articulation; protopod inner margin crenulate; without spine or tubercle anterior to endopod articulation.

Uropodal exopod proximal segment unarmed dorsally; outer margin with 4-6 (usually 5) movable spines, distalmost extending slightly beyond midlength of distal exopod segment; distoventral margin with fixed distal spine adjacent to articulation with exopod distal segment; exopod distal segment ovate, elongate, longer than proximal segment; endopod unarmed dorsally, entire margin setose.

COLOUR — Largely faded in preservative. Telson median carina darkly pigmented.

MEASUREMENTS — Male (n = 2) tl 35-45 mm, female (n = 2) tl 29-32 mm. Other measurements of holotype: cl 9.5 mm, antennular peduncle length 12.5 mm, antennal scale length 3.9 mm.

REMARKS — The two species of *Triasquilla* n. gen. closely resemble each other differing chiefly in the number of epipods, with two pairs of epipods in *T. prima* n. sp. and three pairs in *T. profunda* n. sp. *Triasquilla profunda* n. sp. also appears to have a generally more elongate rostral plate than *T. prima* n. sp. (see below). The two species overlap bathymetrically at around 500-600 m but far as is known, have discrete geographic ranges (Figure 4). *Triasquilla prima* n. sp. is known only from the central-western Pacific around Fiji and Tonga, *T. profunda* n. sp. has a more westerly distribution ranging from New Caledonia and Vanuatu to the Philippines and Western Australia.

ETYMOLOGY — From the Latin, *primus*, first, foremost, as the type species of the genus.

Triasquilla profunda n. sp.

Figures 2E-F, 3-5

TYPE MATERIAL — Holotype, Vanuatu, MUSORSTOM 8, stn CP 1047, 16°53.62'S, 168°10.49'E, 486-494 m, 30.09.1994, male tl 40 mm (MNHN-IU-2012-988). Paratypes, Vanuatu. MUSORSTOM 8: stn CP 1027, 17°53.05'S, 168°39.35'E, 550-571 m, 28.09.1994, 1 damaged female cl 11.5 mm (MNHN-IU-2012-989). – stn CP 1054, 16°27.95'S, 167°57.44'E, 522-527 m, 01.10.1994, 1 male tl 21 mm (MNHN-IU-2012-990). – stn CP 1111, 14°51.09'S, 167°14.00'E, 1210-1250 m, 08.10.1994, 1 female tl 61 mm (MNHN-IU-2012-991). – SANTO: stn AT 19, 15°40.8'S, 167°00.5'E, 503-600 m, 21.09.2006, 1 male tl 45 mm (ZRC).

MATERIAL EXAMINED — The type material (see above). **Philippines**. PANGLAO 2005: stn CP 2359, 8°49.9'N, 123°34.9'E, 437-443 m, 26.05.2005, 2 females tl 44, 46 mm (ZRC). – stn CP 2361, 8°53.1'N, 123°33.5'E, 543-613 m, 26.05.2005, 1 female tl 39 mm (NMCR). – stn CP2383, 8°44.7'N, 123°18.5'E, 351-376 m, 29.05.2005, 1 female tl 36 mm (ZRC). – stn CP 2385, 8°51.0'N, 123°10.0'E, 982-1040 m, 29.05.2005, 1 female tl 43 mm (ZRC). – AURORA: stn CP 2731, 15°21.92-24.48'N, 121°33.45-33.51'E, 353-391 m, 31.05.2007, 1 male tl 45 mm (ZRC). **Solomon Islands**. SALOMON 1: stn CP 1851, 10°27.6'S, 162°00.0'E, 297-350 m, 06.10.2001, 1 male tl 54 mm (MNHN-IU-2012-992). **New Caledonia**. BATHUS 4: stn CP899, 20°16.68'S, 163°50.26'E, 500-600 m, 03.08.1994, 1 male tl 35 mm (MNHN-IU-2012-993). **Western Australia**. SS 0507: stn 36-26, 18°46.452'S, 116°54.75'E, 400 m, 13.06.2007, 1 male tl 30 mm (NMV J55738). – stn 57-55, 17°31.734'S, 118°50.616'E, 400 m, 15.06.2007, 1 male tl 35 mm (NMV J55735). – stn 64-55, 17°31.05'S, 118°51.168'E, 400 m, 16.06.2007, 4 males tl 33-36 mm, 1 female tl 46 mm (NMV J55730). – stn 80-25, 17°01.098'S, 119°35.466'E, 400 m, 08.06.2007, 1 juvenile male tl 25 mm (NMV J56059). – stn 176-37, 13°13.482'S, 123°23.742'E, 400 m, 05.07.2007, 1 female tl 43 mm (NMV J56062).

DISTRIBUTION — Northwestern Australia to the Solomon Islands, New Caledonia, Vanuatu and the Philippines (Figure 4); 297-1250 m.

DESCRIPTION — Dorsal surface smooth, polished.

Eye not extending beyond antennular peduncle segment 1; cornea strongly bilobed, distinctly broader than, and set obliquely on, stalk; CI 392-550.

Ophthalmic somite anterior margin rounded. Ocular scales subtruncate, separate.

Antennular somite dorsal processes with short slender apices, directed anterolaterally.Antennular peduncle 1.20-1.33 cl. Antennal scale 0.38-0.49 cl; slender; entire margin setose.

Rostral plate trianguloid, usually longer than wide but occasionally about as long as wide; widest slightly in advance of base; apex rounded; without dorsal carinae.

Carapace anterior width about half median length; surface smooth; anterolateral angle rounded; reflected marginal carina indicated; lateral carina faintly indicated, evident posteriorly only. Median posterior margin unarmed, faintly concave.

Raptorial claw dactylus with 4 teeth, outer margin evenly curved, with basal notch; carpus with undivided dorsal carina; merus outer inferodistal angle unarmed.

Mandibular palp absent. Maxillipeds 1-3 with epipod. Maxilliped 5 basal segment unarmed.

Pereopod 1-3 basal segment unarmed; endopod 2-segmented, distal segment slender.

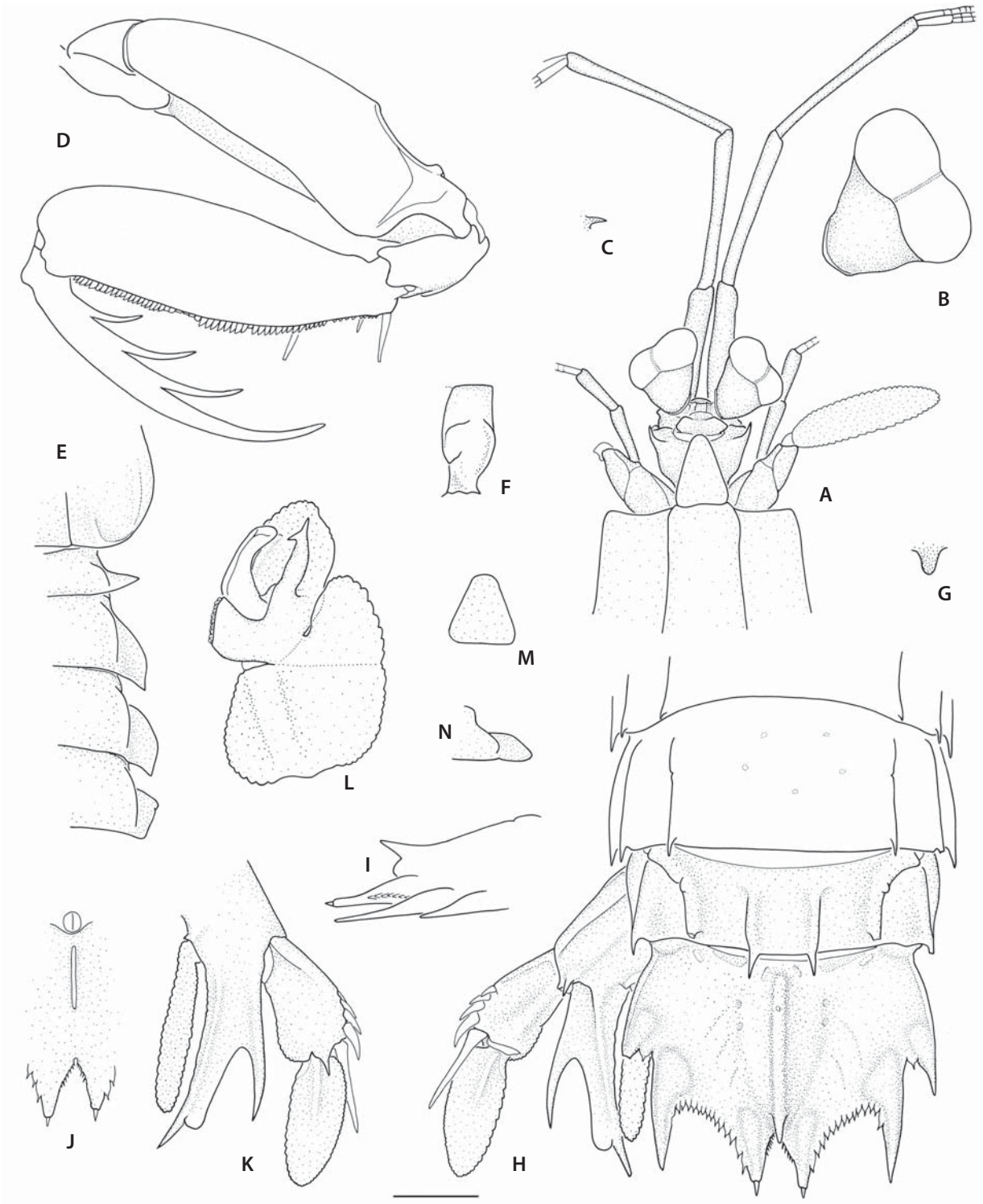
Thoracic somites 6-8 with unarmed intermediate carinae. Thoracic somite 5 lateral process a single flattened triangular lobe (occasionally subrectangular or trapezoid), directed laterally; ventral spine small, directed ventrolaterally. Thoracic somites 6 and 7 lateral process single, broadly rounded laterally, acutely pointed to spiniform posteriorly. Thoracic somite 8 lateral process bluntly angular; sternal keel obtusely rounded, directed ventrally.

Pleopod 1 endopod in adult males with posterior endite; hook process distally acute; hook process as long as tube process.

Abdominal somites 1-5 with well-developed intermediate, lateral and marginal carinae. Abdominal somite 6 with normal complement of carinae; sternum posterior margin unarmed; at most with minute ventrolateral tubercle anterior to uropodal articulation. Abdominal carinae spined as follows: submedian 6, intermediate (4) 5-6 (usually 4-6), lateral (2-3) 4-6 (usually 3-6), marginal 1-5.

FIGURE 5

Triasquilla profunda n. sp. **A**-**L**, holotype male (tl 40 mm) MNHN, Vanuatu, MUSORSTOM 8 stn CP 1047, 486-494 m. M-N, paratype female (cl 11.5 mm) MNHN, Vanuatu, MUSORSTOM 8 stn CP 1027, 550-571 m. **A**, anterior cephalothorax. **B**, right eye. **C**, right dorsal process of antennular somite, lateral view. **D**, right raptorial claw. **E**, right posterolateral corner of carapace and lateral processes of thoracic somites 5-8. **F**, right thoracic somite 5, lateral view. **G**, thoracic somite 8 sternal keel, right lateral view. **H**, abdominal somites 5 & 6, telson and left uropod. **I**, telson, right lateral view. **J**, telson postanal carina. **K**, left uropod, ventral view. **L**, right pleopod 1 endopod, anterior view. **M**, rostral plate. **N**, right thoracic somite 5 lateral process, dorsal view. Scale bar 2 mm for A, C-K, M-N, 1 mm for B, L.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Telson wider than long, subtriangular; denticles spiniform, submedian much smaller than intermediates; numbers of denticles as follows: submedian 6-15, intermediate 12-17, lateral 1; submedian teeth movable apices small, slender; intermediate teeth slender, considerably elongate, subequal to half median length of telson and extending posteriorly to or almost to base of movable apices of submedian teeth; lateral teeth directed posterolaterally, well clear of margin of lateral tooth, apex spiniform; prelateral lobe absent; submedian, intermediate and lateral teeth each with low carina, more inflated in males than females; marginal carina extending for about two-thirds length of proximal margin of lateral tooth; median carina interrupted proximally, armed with long posterior spine overhanging; dorsolateral surface smooth, without carinae or distinct pitting. Telson ventral surface smooth on either side of postanal carna; postanal carina extending posteriorly for about one-third to more than one-half distance from anal pore to median posterior margin of telson; ventrolateral carina absent.

Uropodal protopod terminating in 2 slender ventrally carinate spines, inner longer, with rounded lobe on outer margin of inner spine; unarmed dorsally except for spine above proximal exopod articulation; protopod inner margin crenulate; without spine or tubercle anterior to endopod articulation.

Uropodal exopod proximal segment unarmed dorsally; outer margin with 4-6 (usually 5) movable spines, distalmost extending to or beyond midlength of distal exopod segment; distoventral margin with fixed distal spine adjacent to articulation with exopod distal segment; exopod distal segment ovate, elongate, longer than proximal segment; endopod unarmed dorsally, entire margin setose.

COLOUR — In life (Figure 2E-F), body translucent overall with scattered red-brown chromatophores, especially along cervical groove and along somite margins giving a weakly banded appearance; thoracic and abdominal somites with diffuse red-brown streak along midline. Telson median carina red brown and with diffuse white mottling; dorsolateral surfaces with white and red-brown speckling. Raptorial claw merus with diffuse red-brown mottling on lateral surface of merus and meral saddle; carpus to dactylus translucent white but with some red brown mottling on distal end of propodus. Uropods with brown markings along margins and white speckling on surfaces.

MEASUREMENTS — Male (n = 12) tl 21-54 mm, female (n = 9) tl 36-61 mm. Other measurements of holotype: cl 9.1 mm, antennular peduncle length 11.2 mm, antennal scale length 3.7 mm.

REMARKS — *Triasquilla profunda* n. sp. is readily distinguished from *T. prima* n. sp. by having an epipod on maxillipeds 1-3 rather than 1-2 only. Other differences between the species are in the proportions of the rostral plate and proportional length of the antennular peduncle, but these are not consistently reliable. The rostral plate of *T. profunda* n. sp. has variable proportions (Figure 5A, M) but is usually longer than wide in contrast to that of *T. prima* n. sp., in which the rostral plate is as long as wide. The antennular peduncle is proportionally shorter in *T. profunda* n. sp., although the ranges of the proportional lengths slightly overlap (1.20-1.33cl versus 1.32-1.41cl). Maturity is reached at a relatively small size with the pleopod 1 endopod of males fully modified in specimens above tl 25 mm. In most specimens, the lateral process of thoracic somite 5 is usually sharp or pointed, but may be bluntly angular (Figure 5N). The specimen collected at 1210-1250 m off Vanuatu is the deepest known record for the Squilloidea.

ETYMOLOGY — Derived from the Latin, *profundus*, deep. *Triasquilla profunda* n. sp. is the deepest occurring squilloid known to date.

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