

Pectinoidea (Mollusca, Bivalvia, Propeamussiidae, Cyclochlamydidae n. fam., Entoliidae and Pectinidae) from the Vanuatu Archipelago

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ABSTRACT

This paper documents the species of Pectinoidea Rafinesque, 1815 collected in Vanuatu during the SANTO 2006 expedition. A total of 49 species (13 Propeamussiidae Abbott, 1954, 4 Cyclochlamydidae n. fam., 1 Entoliidae Teppner, 1922, and 31 Pectinidae Rafinesque, 1815) are represented, of which 70% are new records for Vanuatu. A new family, Cyclochlamydidae n. fam., is established for the genera *Cyclochlamys* Finlay, 1926, *Chlamydelia* Iredale, 1929 and *Micropecten* n. gen., formerly placed in Propeamussiidae, but differing by their sculptured prodissoconch (smooth in Propeamussiidae), an occasionally antimarginally sculptured right valve (smooth or weak commarginally sculptured in Propeamussiidae), a (common) simple outer prismatic layer of longitudinally hexagonal microstructure on the right valve (an outer layer of columnar calcite in Propeamussiidae). The family Cyclochlamydidae n. fam. includes about 30 species, all with adult size in the 1.2-6 mm range, and living mainly in the Southern Hemisphere and Indo-West Pacific; the family is not known from the Arctic, the Atlantic, or the northern and eastern Pacific. One new genus, *Micropecten* n. gen., and two new species, *Cyclochlamys aperta* n. sp. and *Micropecten excuratus* n. gen., n. sp., are described.

KEY WORDS

Bivalvia,
Vanuatu Archipelago,
littoral,
bathyal,
new family,
new genus,
new species,
new records.

RÉSUMÉ

Pectinoidea (Mollusca, Bivalvia, Propeamussiidae, Cyclochlamydidae n. fam., Entoliidae et Pectinidae) de l'archipel du Vanuatu.

Ce travail recense les espèces de bivalves Pectinoidea Rafinesque, 1815 échantillonnées pendant l'expédition SANTO 2006. Au total, 49 espèces (13 Propeamussiidae

MOTS CLÉS
 Bivalvia,
 archipel du Vanuatu,
 littoral,
 bathyal,
 famille nouvelle,
 genre nouveau,
 espèces nouvelles,
 occurrences nouvelles.

Abbott, 1954, 4 Cyclochlamydidae n. fam., 1 Entoliidae Teppner, 1922, et 31 Pectinidae Rafinesque, 1815) sont représentées, dont 70% constituent des signalisations nouvelles pour le Vanuatu. La nouvelle famille Cyclochlamydidae n. fam. est établie pour les genres *Cyclochlamys* Finlay, 1926, *Chlamydelia* Iredale, 1929 et *Micropecten* n. gen., auparavant classés dans les Propeamussiidae, mais qui en diffèrent par leur prodossoconque ornée (lisse chez les Propeamussiidae), une valve droite portant (occasionnellement) une sculpture radiale (lisse ou à faible sculpture concentrique chez les Propeamussiidae), une microstructure hexagonale fréquemment présente sur la valve droite, formée par la couche prismatique externe arrangée longitudinalement en hexagones (une couche extérieure de calcite en colonne est présente chez les Propeamussiidae). La famille des Cyclochlamydidae n. fam. comprend une trentaine d'espèces de taille adulte comprise entre 1,2 et 6 mm, vivant pour la plupart dans l'hémisphère Sud et dans l'Indo-Pacifique ; la famille est absente dans l'Arctique, l'Atlantique, et le nord et l'est du Pacifique. Un nouveau genre, *Micropecten* n. gen., et deux nouvelles espèces, *Cyclochlamys aperta* n. sp. et *Micropecten excuratus* n. gen., n. sp., sont décrits.

INTRODUCTION

Espiritu Santo is the largest island of Vanuatu (formerly known as the New Hebrides), situated in the north of the archipelago and, together with Malo and a few smaller satellite islands, forming the administrative province of Sanma. This paper deals with the littoral and bathyal pectinoid species collected during the SANTO 2006 expedition (Bouchet *et al.* 2011a). The expedition, based in Luganville, sampled the southeast corner of Santo Island and we refer to Bouchet *et al.* (2011b) for methods used in the field and samples and specimens workflow in the lab. An earlier paper (Dijkstra 2001) had reported on the deep-sea pectinoids sampled during the MUSORSTOM 8 expedition, but ironically the shallow-water fauna of the archipelago had earlier never been properly sampled.

Unsurprisingly, many new records and two new species have come to light: 70% of the 49 pectinoid species reported here are recorded from Vanuatu for the first time. Even in the deep-sea species, half of the Propeamussiidae Abbott, 1954, although well sampled during MUSORSTOM 8, are also new records. When the records of the present paper and those of the MUSORSTOM 8 expedition are summed up, a total of 59 pectinoid

species are now documented from Vanuatu. The fauna of Vanuatu is overall unremarkable, being part of the standard southwest Pacific part of the tropical Indo-Pacific.

Species treated in full earlier recent publications (Dijkstra 1995b, 1989, 2001) are here simply reported briefly, but not refigured. All studied material is deposited in the Muséum national d'Histoire naturelle (MNHN).

ABBREVIATIONS AND TEXT CONVENTIONS

Repositories

AMS	Australian Museum, Sydney;
LSL	Linnean Society of London, London;
MHNG	Muséum d'Histoire naturelle, Geneva;
MNHN	Muséum national d'Histoire naturelle, Paris;
NHMUK	The Natural History Museum, London;
NMW	National Museum of Wales, Cardiff;
RMNH	Nationaal Natuurhistorisch Museum, Leiden;
TMTT	Taiwan Museum, Taipei;
UMUT	University Museum, University of Tokyo, Tokyo;
UMZC	University Museum of Zoology, Cambridge;
USNM	National Museum of Natural History, Washington, DC;
UUZM	Zoological Museum, Uppsala;
ZMA	Zoologisch Museum, Amsterdam;
ZMUC	Zoologisk Museum, Copenhagen;
ZSI	Zoological Survey of India, New Alipur, Calcutta;

Other abbreviations

lv left valve(s);
 rv right valve(s);
 spm(s) live-taken specimen(s).

SYSTEMATICS

Superfamily PECTINOIDEA Rafinesque, 1815
 Family PROPEAMUSSIIDAE Abbott, 1954
 Genus *Propeamussium* de Gregorio, 1884

Propeamussium andamanicum (Smith, 1894)

Amussium andamanicum Smith, 1894: 172, pl. 5, figs 13, 14.

Propeamussium andamanicum – Dijkstra 1995b: 15, figs 5-8, 138-142 (references, type data, description, distribution).

MATERIAL EXAMINED. — **Andaman Sea.** 1249 m, lectotype spm (ZSI 7418/9), designated by Dijkstra (1995b: 15).

Vanuatu. SANTO 2006, stn AT60, 15°33.1'S, 167°22.0'E, 880-953 m, 19 spms, 1 lv. — Stn AT61, 15°39.2'S, 167°01.4'E, 266-281 m, 1 spm.

DISTRIBUTION. — Zanzibar area, Gulf of Aden, Arabian Sea, Andaman Sea, New Caledonia, Vanuatu, Fiji and Wallis and Futuna. Bathymetric range: earlier recorded from 1216 to 2000 m (Dijkstra & Maestrati 2008: 79), now significantly extended to shallower depths at 281-880 m.

Propeamussium caducum (Smith, 1885)

Amussium caducum Smith, 1885: 309, pl. 23, figs 1-1c.

Propeamussium caducum – Dijkstra 1995b: 15, figs 9, 10, 129-132 (synonymy, references, type data, description, distribution).

MATERIAL EXAMINED. — **Philippines.** W of Luzon, 1280 m, lectotype spm (NHMUK 1887.2.9.3310), designated by Dijkstra (1995b: 17).

Vanuatu. SANTO 2006, stn AT19, 15°40.8'S, 167°00.5'E, 503-600 m, 5 spms, 1 lv. — Stn AT59, 15°31.5'S, 167°21.9'E, 759-985 m, 3 spms. — Stn AT70, 15°40.7'S, 167°00.5'E, 517-614 m, 1 spm. — Stn AT72, 15°44.1'S, 167°03.3'E, 618-722 m, 1 spm. — Stn AT73, 15°40.8'S, 167°00.5'E, 514-636 m, 3 spms, 4 lv. — Stn AT107, 14°58.6'S, 166°52.5'E, 807-844 m, 1 spm, 1 lv, 1 rv. — Stn AT110, 15°01.6'S, 166°55.0'E, 567 m, 1 spm.

DISTRIBUTION. — Zanzibar area, Gulf of Aden, Arabian Sea, Bay of Bengal, Japan, Philippines, Indonesia, Solomon Islands, Vanuatu and New Caledonia. Bathymetric range: formerly recorded from 176 to 688 m (Dijkstra & Maestrati 2008: 82), here extended to 807 m.

Propeamussium investigatoris (Smith, 1906)

Amussium investigatoris Smith, 1906: 255.

Propeamussium investigatoris – Dijkstra & Kastoro 1997: 248, figs 11-15 (synonymy, references, type data, description, distribution).

MATERIAL EXAMINED. — **India.** W of Travancore, 410-519 m, lectotype spm (ZSI M835/1), designated by Dijkstra & Kastoro (1997: 250).

Vanuatu. SANTO 2006, stn AT19, 15°40.8'S, 167°00.5'E, 503-600 m, 3 spms. — Stn AT70, 15°40.7'S, 167°00.5'E, 517-614 m, 2 lv. — Stn AT72, 15°44.1'S, 167°03.3'E, 618-722 m, 1 spm. — Stn AT73, 15°40.8'S, 167°00.5'E, 514-636 m, 2 spms, 1 lv.

DISTRIBUTION. — Northern Indian Ocean, Indonesia, Solomon Islands, Vanuatu, New Caledonia, Fiji, Tonga, Kermadec Islands, alive in 176-688 m (Dijkstra & Maestrati 2008: 82).

Propeamussium jeffreysii (Smith, 1885)

Amussium jeffreysii Smith, 1885: 310, pl. 23, figs 2-2c.

Propeamussium jeffreysii – Dijkstra 2001: 76, figs 5-12 (references, type data, description, distribution).

MATERIAL EXAMINED. — **Philippines.** 686 m, lectotype spm (NHMUK 1887.2.9.3313), designated by Dijkstra (2001: 76).

Vanuatu. SANTO 2006, stn AT59, 15°31.5'S, 167°21.9'E, 759-985 m, 4 spms. — Stn AT60, 15°33.1'S, 167°22.0'E, 880-953 m, 1 spm.

DISTRIBUTION. — Southeast Africa, Gulf of Aden, Maldives, Japan, Philippines, Vanuatu, Fiji, Wallis and Futuna. Bathymetric range: formerly recorded from 290 to 797 m (Dijkstra & Maestrati 2008: 83), here extended to 880 m.

Propeamussium rubrotinctum
(Oyama, 1951)

Parvamussium (Parvamussium) rubrotinctum Oyama, 1951: 81, pl. 13, figs 8-10.

Propeamussium rubrotinctum – Dijkstra 1995b: 21, figs 23-26 (synonymy, references, type data, description, distribution).

MATERIAL EXAMINED. — **Japan**. Gulf of Tosa, off Shikoku, depth not recorded, type material untraceable, not in the Tosa Museum and Aquarium (Dr K. Oyama, pers. comm.). **Vanuatu**. SANTO 2006, stn AT58, 15°33.0'S, 167°19.3'E, 364-390 m, 1 spm.

DISTRIBUTION. — Japan, South China Sea, Solomon Islands, Vanuatu, New Caledonia, Fiji, Wallis and Futuna, Tonga, in 210-869 m (Dijkstra & Maestrati 2008: 84).

Propeamussium siratama
(Oyama, 1951)

Ctenamussium (*Micramussium*) *siratama* Oyama, 1951: 80, pl. 13, figs 5-7.

Propeamussium siratama – Dijkstra & Kastoro 1997: 253, figs 20-23 (references, type data, description, distribution).

MATERIAL EXAMINED. — **Japan**. Sagami Sea, off Manazuruzaki, 234-291 m, type material untraceable, not in the Tosa Museum and Aquarium (Dr K. Oyama, pers. comm.).

Vanuatu. SANTO 2006, stn AT10, 15°41.1'S, 167°00'E, 509-659 m, 1 spm, 1 rv. — Stn AT73, 15°40.8'S, 167°00.5'E, 514-636 m, 1 rv.

DISTRIBUTION. — Japan, Philippines, Indonesia, Solomon Islands, Vanuatu (new record), New Caledonia and Fiji, in 283-533 m (Dijkstra & Maestrati 2008: 85).

Genus *Parvamussium* Sacco, 1897

Parvamussium cristatellum
(Dautzenberg & Bavay, 1912)

Pecten (*Amussium*) *cristatum* [sic] Bavay, 1905: 187, pl. 17, fig. 2a-c.

Amussium cristatellum Dautzenberg & Bavay, 1912: 36, pl. 28, figs 5-8 [*nomen novum* for *Pecten* (*Amussium*) *cristatus* Bavay, 1905, preoccupied by *Pecten cristatus* Bronn, 1828].

Parvamussium cristatellum – Dijkstra & Kastoro 1997: 261, figs 62-72 (references, type data, distribution). — Dijkstra & Maestrati 2010: 336 (distribution).

MATERIAL EXAMINED. — **Andaman Islands**. Lectotype lv (ZSI M3360/1), designated by Dijkstra & Kastoro (1997: 261).

Vanuatu. SANTO 2006, stn AT48, 15°33.8'S, 167°18.9'E, 330-341 m, 1 spm. — Stn AT58, 15°33.0'S, 167°19.3'E, 364-390 m, 1 spm.

DISTRIBUTION. — Southeastern Africa, Andaman Islands, Indonesia, Solomon Islands, Vanuatu, New Caledonia, Fiji, Kermadec Islands, and Austral Islands, in 330-510 m (Dijkstra & Maestrati 2010: 338).

Parvamussium multiliratum Dijkstra, 1995

Parvamussium multiliratum Dijkstra, 1995b: 26, figs 31-34, 91-92. — Dijkstra & Maestrati 2010: 339.

MATERIAL EXAMINED. — **Southern New Caledonia**. 2100-2110 m, holotype spm (MNHN 21173).

Vanuatu. SANTO 2006, stn AT59, 15°31.5'S, 167°21.9'E, 759-985 m, 1 rv.

DISTRIBUTION. — Fiji, Wallis and Futuna, Tonga, Vanuatu and New Caledonia at 640-2110 m depth (Dijkstra & Maestrati 2010: 339).

Parvamussium pauciliratum (Smith, 1903)

Amussium paucilirata [sic] Smith, 1903: 622, pl. 36, figs 23-24.

Parvamussium pauciliratum – Dijkstra 1995b: 26, figs 107-110, 151, 152 (references, type data, description, distribution).

MATERIAL EXAMINED. — **Maldive Islands**. S Nilandu Atoll, 2-66 m, lectotype spm (NHMUK 1903.9.17.17), designated by Dijkstra (1995b: 28).

Vanuatu. SANTO 2006, stn EP03, 15°32.2'S, 167°09.6'E, 46 m, 1 lv. — Stn DS10, 15°36.6'S, 167°10.1'E, 6-24 m, 1 spm. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 3 rv. — Stn DS104, 15°34.1'S, 167°16.0'E, 10-80 m, 1 lv. — Stn DS108, 15°33.2'S, 167°16.6'E, 100 m, 1 lv.

DISTRIBUTION. — Maldive Islands, Indonesia, Solomon Islands, Vanuatu (new record) and New Caledonia. With the exception of one record from the Solomon Islands (Dijkstra & Maestrati 2008: 92), this is a shallow-water species.

Parvamussium retiaculum Dijkstra, 1995

Parvamussium retiaculum Dijkstra, 1995: 28, figs 35-38.

MATERIAL EXAMINED. — **New Caledonia**. Southern New Caledonia, 23°05'S, 167°45'E, 680-700 m, holotype spm (MNHN 24266).

Vanuatu. SANTO 2006, stn AT19, 15°40.8'S, 167°00.5'E, 503-600 m, 2 spms.

DISTRIBUTION. — New Caledonia, Vanuatu (new record), Fiji, Tonga and Kermadec Islands, in 540-797 m (Dijkstra & Maestrati 2008: 93).

Parvamussium scitulum (Smith, 1885)

Amussium scitulum Smith, 1885: 312, pl. 23, figs 4-4b.

Parvamussium scitulum – Dijkstra 1995b: 31, figs 43-46, 153, 154 (synonymy, references, type data, distribution, description). — Dijkstra & Maestrati 2010: 339.

MATERIAL EXAMINED. — **South of New Guinea.** 51 m, lectotype lv (NHMUK 1887.2.9.3319/1), designated by Dijkstra (1995b: 31).

Vanuatu. SANTO 2006, stn ED02, 15°31.7'S, 167°09.7'E, 18-21 m, 1 spm, 3 rv. — Stn AT04, 15°32.9'-33.1'S, 167°13.3'-13.7'E, 97-101 m, 2 lv, 9 rv. — Stn ED13, 15°31.3'-31.6'S, 167°10.0'-10.4'E, 22-29 m, 6 lv, 5 rv. — Stn ED17, 15°32.0'S, 167°09.6'E, 23-27 m, 8 lv, 16 rv. — Stn DS22, 15°31.7'S, 167°09.7'E, 25 m, 2 spms, 2 lv, 3 rv. — Stn AT37, 15°22.5'S, 167°12.6'E, 72-82 m, 1 spm. — Stn AT44, 15°36.5'S, 167°02.7'E, 86-118 m, 1 rv. — Stn AT52, 15°31.5'S, 167°12.7'E, 52-62 m, 11 spms, 3 lv, 2 rv. — Stn AT53, 15°31.8'S, 167°13.6'E, 62-71 m, 9 lv, 12 rv. — Stn AT76, 15°38.7'S, 167°03.6'E, 105-135 m, 1 lv, 5 rv. — Stn AT80, 15°31.7'S, 167°10.8'E, 36-43 m, 1 lv, 1 rv.

DISTRIBUTION. — Western and southwestern Pacific from southern Japan to New Caledonia, Vanuatu (new record), Wallis and Futuna, Tonga and Austral Islands, alive in 50-300 m (Dijkstra & Maestrati 2010: 339). The Santo specimens are from as shallow as 21 m.

Genus *Cyclopecten* Verrill, 1897

Cyclopecten cancellus Dijkstra, 1991

Cyclopecten cancellus Dijkstra, 1991: 21, figs 66-70.

MATERIAL EXAMINED. — **Indonesia.** Off SW Salayer, 130-155 m, holotype lv (RMNH 56560).

Vanuatu. SANTO 2006, stn ZB06, 15°36.8'S, 167°01.3'E, 30 m, 1 spm. — Stn EP10, 15°34.5'-38.0'S, 167°05.1'-13.6'E, 45-101 m, 1 spm. — Stn NB12, 15°33.1'S, 167°09.6'E, 20 m, 1 spm, 3 lv, 1 rv. — Stn AT14, 15°23.7'-24.0'S, 167°12.9'-13.5'E, 102-120 m, 1 lv, 1 rv. — Stn EP19, 15°37.5'-38.0'S, 167°05.1'-05.6'E, 80-94 m, 2 lv. — Stn DB20, 15°30.5'S, 167°01.4'E, 22-25 m, 1 spm. — Stn EP21, 15°37.7'S,

167°05.2'E, 99 m, 1 spm. — Stn ZS22, 15°33.1'S, 167°09.6'E, 27-29 m, 1 lv. — Stn EP36, 15°33.1'-33.3'S, 167°12.4'-12.7'E, 20-60 m, 1 spm. — Stn EP40, 15°33.1'-33.6'S, 167°16.4'-16.5'E, 125-156 m, 1 spm. — Stn FB43, 15°28.4'S, 167°14.9'E, 19 m, 1 lv, 2 rv. — Stn FP50, 15°36.8'S, 167°08.7'E, 25 m, 1 spm. — Stn DB63, 15°26.9'S, 167°15.8'E, 21 m, 1 rv. — Stn DB77, 15°27.9'S, 167°14.7'E, 42-45 m, 1 spm. — Stn FS77, 15°33.1'S, 167°09.6'E, 29 m, 3 lv, 2 rv. — Stn DB80, 15°37.1'S, 167°07.5'E, 18 m, 1 lv. — Stn DS99, 15°32.5'S, 167°16.9'E, 100-105 m, 1 spm, 3 lv, 1 rv. — Stn DS102, 15°34.1'S, 167°16.0'E, 98-100 m, 1 spm, 2 lv, 1 rv. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 3 lv, 2 rv. — Stn DS105, 15°33.0'S, 167°16.7'E, 92 m, 3 lv.

DISTRIBUTION. — Indonesia, Vanuatu and Fiji. Bathymetric range: earlier known from shells in 130-614 m; Santo specimens collected alive in 20-125 m.

REMARKS

The Santo specimens are indistinguishable from the type material. The rudimentary internal riblets are very variable, i.e. lacking (typically) one or several short rudimentary.

Cyclopecten kapalae Dijkstra, 1990

Cyclopecten kapalae Dijkstra, 1990: 29, figs 1-5.

MATERIAL EXAMINED. — **Australia.** New South Wales, off Sydney, 914-907 m, holotype spm (AMS C.155831.1).

Vanuatu. SANTO 2006, stn AT19, 15°40.8'S, 167°00.5'E, 503-600 m, 6 lv, 4 rv. — Stn DB69, 15°24.4'S, 167°13.0'E, 38 m, 1 spm.

DISTRIBUTION. — Eastern Australia, Solomon Islands, Vanuatu (new record) and Kermadec Islands. Earlier known from 512-549 m (Dijkstra & Maestrati 2008: 97), the Santo specimen live collected in 38 m shows that this is a shallow offshore species.

CYCLOCHLAMYDIDAE n. fam.

TYPE GENUS. — *Cycloclamys* Finlay, 1926: 245. — Type species (by original designation): *Pecten transenna* [sic] Suter, 1913. Recent, New Zealand.

DIAGNOSIS. — Very small Pectinoidea (*c.* 1.2 up to 6 mm in height) with a smooth or variously sculptured left valve with a flat, weakly to strongly inflated or even conical and pointed sculptured prodissococonch, sometimes bordered by a strong flange-like commarginal

lamella or rim (Dijkstra & Marshall 2008: 24, fig. 20D) Right valve with a flattened sculptured prodissoconch, and commonly a smooth, rarely antimarginally sculptured, right valve with a simple outer prismatic layer of longitudinally hexagonal microstructure; internal riblets lacking.

REMARKS

This newly named family of micro-scallops includes three genera (*Cycloclamys*, *Chlamydella* Iredale, 1929 and *Micropecten* n. gen.) formerly classified in Propeamussiidae. Cyclochlamydidae n. fam. comprises c. 30 Recent species mainly recorded from southern Australia, eastwards to New Zealand, but also recorded from the West Pacific (southern Japan and Indonesia), southwestern Indian Ocean (Rodrigues), and the Falkland Islands. It is absent in the Arctic, the Atlantic, and the northern and eastern Pacific.

Cyclochlamydidae n. fam. differs from Propeamussiidae by the following morphological characters: – a sculptured prodissoconch in Cyclochlamydidae n. fam. (uniformly smooth in Propeamussiidae); – a sometimes antimarginally sculptured right valve in Cyclochlamydidae n. fam. (smooth or weak commarginally sculptured in Propeamussiidae); – a simple outer prismatic layer of longitudinally hexagonal microstructure on the right valve in Cyclochlamydidae n. fam. (an outer layer of columnar calcite in Propeamussiidae).

Size: species of Cyclochlamydidae n. fam. measure 1.2 to 6 mm, whereas Propeamussiidae measure typically 5 to 120 mm in height.

Results of phylogenetic research attesting the monophyly of Cyclochlamydidae n. fam. will be published elsewhere.

Genus *Cycloclamys* Finlay, 1926

Cycloclamys aperta n. sp. (Fig. 1A-E)

TYPE MATERIAL. — Vanuatu. SANTO 2006, stn DS93, 15°33.6'S, 167°16.5'E, 70 m, holotype spm (MNHN 24271). — Stn DS104, 15°34.1'S, 167°16.0'E, 10-80 m, 2 paratypes lv (MNHN 24272).

TYPE LOCALITY. — Vanuatu Archipelago, west of Tutuba Island, 15°33.6'S, 167°16.5'E, 70 m (SANTO 2006 stn DS93).

DISTRIBUTION. — Known only from the type locality, alive at 70 m depth.

ETYMOLOGY. — A micro-scallop with a smooth disc (Latin "aperus", adjective meaning uncovered or laevis).

DESCRIPTION

Shell up to c. 1.20 mm high, fragile, posteriorly oblique, inequivalve, inequilateral, left valve more inflated than right valve, wider than high, translucent.

Left valve disc and auricles smooth with a few commarginal growth lines. Posterior auricle slightly larger than anterior one. Prodissoconch c. 310 µm wide, conical, sculptured with crisp radial threads.

Right valve disc and ventral half of posterior auricle with outer layer of commarginally elongate, hexagonal prisms that form broad, flexible ventral apron. Anterior auricle with three weak radial threads with small tubercles. Byssal notch moderately deep.

Dimensions of holotype: H 1.2 mm, W 1.8 mm, D 0.8 mm.

REMARKS

Cycloclamys aperta n. sp. is morphologically closest to *Cycloclamys australense* Dijkstra & Maestrati, 2010, from the Austral Islands (lives in 3-52 m). Both species are almost the same size (*C. aperta* n. sp. 1.2 mm in height, *C. australense* 1.8 mm), and are posteriorly oblique. However, *C. aperta* n. sp. is almost smooth with only a few very weak commarginal growth lines. *Cycloclamys australense* has a commarginal vesicular sculpture in late growth stage.

Cycloclamys incubata (Hayami & Kase, 1993)

Chlamydella incubata Hayami & Kase, 1993: 62, figs 202-212.

MATERIAL EXAMINED. — Japan. Ryukyu Islands, Miyako Islands, 20-25 m, holotype spm (UMUT RM 19473a). Vanuatu. SANTO 2006, stn DB58, 15°24.6'S, 167°14.3'E, 6-43 m, 1 lv. — Stn DB75, 15°22.9'S, 167°11.9'E, 20 m, 1 spm, 2 lv. — Stn EP32, 15°36.6'S, 167°02.0'E, 100 m, 1 lv. — Stn FS54, 15°31.4'S, 167°14.1'E, 20-31 m, 1 spm.

DISTRIBUTION. — Southern Japan, live at 20-25 m depth. Here documented from Vanuatu (new record) from depths of 20-31m.

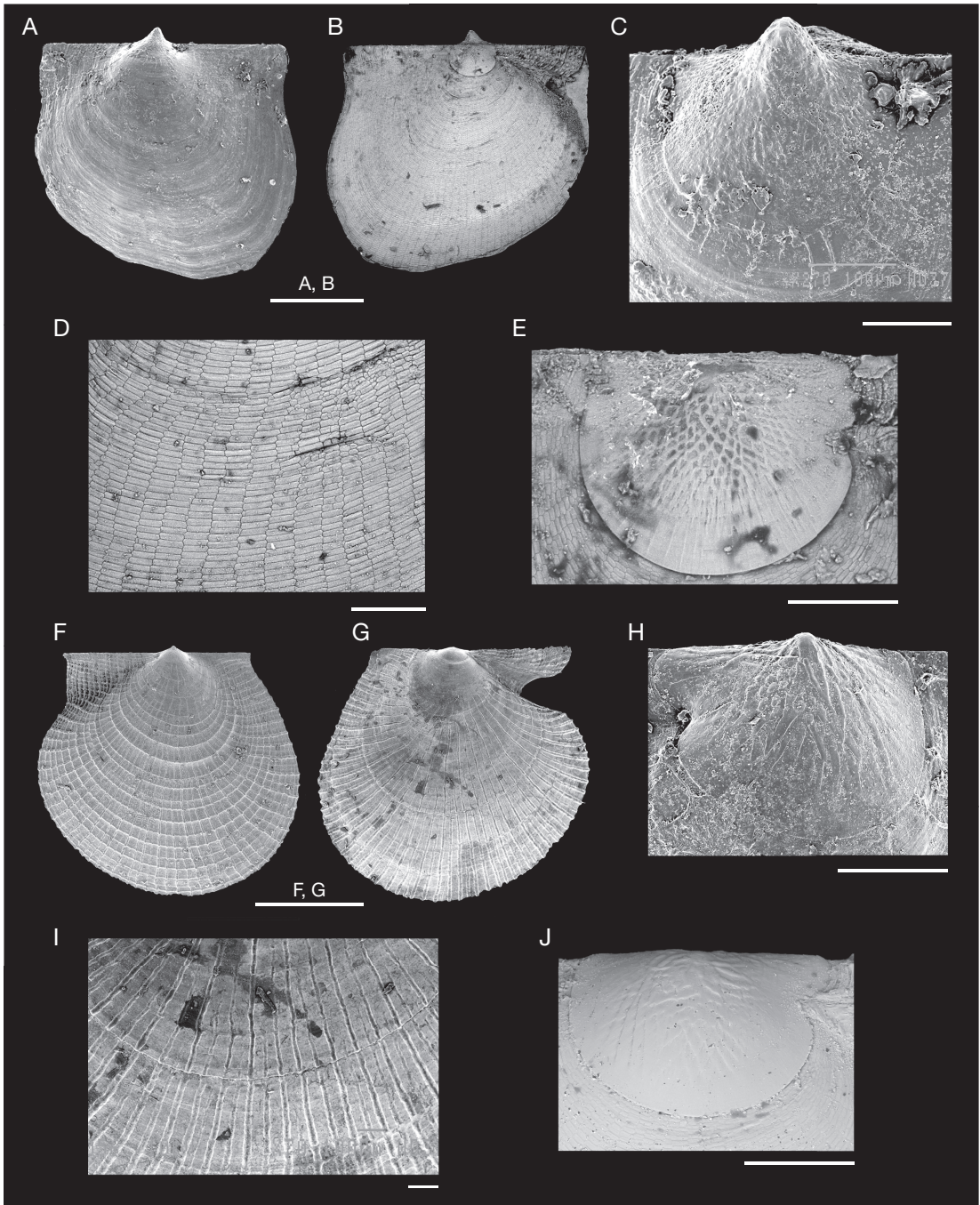


FIG. 1. — **A-E**, Holotype of *Cyclochlamys aperta* n. sp. (MNHN 24271); **A, B**, external views of left and right valve; **C**, left valve prodissoconch; **D**, right valve detail; **E**, right valve prodissoconch; **F-J**, *Micropecten excuratus* n. gen., n. sp.; **F**, holotype (MNHN 24273), external view of left valve; **G**, paratype (MNHN 24274), external view of right valve; **H**, holotype, left valve prodissoconch; **I**, paratype, right valve detail; **J**, paratype, right valve prodissoconch. Scale bars: A, B, F, G, 500 μ m; C-E, H-J, 100 μ m.

Genus *Chlamydella* Iredale, 1929

Chlamydella favus (Hedley, 1902)

Cyclopecten favus Hedley, 1902: 305, fig. 50 (as *Cyclopecten flavus*, typographic error). *Cyclopecten favus* is herein the correct original spelling (ICZN 1999 article 24.2.3) and *Cyclopecten flavus* is incorrect.

Chlamydella favus – Iredale 1929: 164.

Cyclochlamys favus – Dijkstra 1995b: 40, figs 87-90 (synonymy, references, description, distribution).

MATERIAL EXAMINED. — Australia. New South Wales, 5.5-7.5 miles NE of Cape Three Points, 75-91 m, holotype spm (AMS C.13231).

Vanuatu. SANTO 2006, stn FB43, 15°28.4'S, 167°14.9'E, 19 m, 20 spms, 3 lv, 2 rv. — Stn DB58, 15°24.6'S, 167°14.3'E, 6-43 m, 4 spms, 3 lv, 1 rv. — Stn DB63, 15°26.9'S, 167°15.8'E, 21 m, 1 spm, 4 lv, 3 rv. — Stn DB75, 15°22.9'S, 167°11.9'E, 20 m, 10 spms, 13 lv, 4 rv.

DISTRIBUTION. — Australia (Western Australia, southern Queensland, New South Wales), Vanuatu (new record), and New Caledonia. Bathymetric range: earlier recorded alive at 367-570 m; the Santo specimens live collected in 19-21 m show that this is also a shallow offshore species, which corresponds with unpublished data (Dijkstra & Beu in prep.) from Australia.

Micropecten n. gen.

TYPE SPECIES. — *Cyclochlamys plectofilum* Oliver & Holmes, 2004. Recent, Rodrigues Island, Indian Ocean, shallow water.

INCLUDED SPECIES. — *Micropecten plectofilum* (Oliver & Holmes, 2004) n. comb. and *M. excuratus* n. sp.

DIAGNOSIS. — Cyclochlamydidae n. fam. with an irregularly lattice-sculptured prodissoconch, conical on left valve and flattened on right valve; antimarginally sculptured valves, at least in late ontogeny, left valve also weakly commarginally sculptured or lacking; preradial stage of right valve with a simple outer layer of longitudinal and hexagonal microstructure. Byssal notch well developed; ctenolium lacking; internal disc riblets absent; hinge teeth and ridges lacking.

ETYMOLOGY. — A small pectinoid. Gender masculine.

REMARKS

Micropecten n. gen. is different from *Cyclochlamys* by the following morphological characters:

– a rounded prodissoconch angle (obtuse in *Cyclochlamys*);

– a lattice-sculptured prodissoconch on both valves (left valve antimarginal, right valve almost smooth in *Cyclochlamys*);

– a simple outer layer of longitudinally hexagonal microstructure in preradial stage on the right valve (throughout right valve in *Cyclochlamys*);

– and an antimarginal sculpture on the right valve (lacking in *Cyclochlamys*).

Micropecten n. gen. also differs from *Chlamydella* by: – having a circular shape (more posteriorly oblique in *Chlamydella*), an antimarginal sculpture on both valves (smooth or commarginally sculptured on the left valve in *Chlamydella*);

– a latticed sculptured conical left valve prodissoconch (weakly inflated and radially sculptured in *Chlamydella*);

– a simple outer layer of longitudinally hexagonal microstructure in preradial stage on the right valve (throughout right valve in *Chlamydella*);

– an antimarginal sculpture on the right valve (lacking in *Cyclochlamys*).

Micropecten excuratus n. sp.

(Fig. 1F-J)

TYPE MATERIAL. — Vanuatu. SANTO 2006, stn DS101, 15°32.3'S, 167°17.2'E, 17-19 m, holotype lv (MNHN 24273), 10 paratypes lv, 14 paratypes rv (MNHN 24274), 1 paratype lv, 1 paratype rv (ZMA Moll. 4.11.015).

TYPE LOCALITY. — Vanuatu Archipelago, north of Tutuba Island, 15°32.3'S, 167°17.2'E, 17-19 m, sand (SANTO 2006 stn DS101).

DISTRIBUTION. — Known only from the type locality, collected dead in 17-19 m.

ETYMOLOGY. — From the Latin adjective “excuratus”, meaning well-groomed or well-dressed, with reference to the abundantly sculptured disc of this micro-scallop.

DESCRIPTION

Shell up to c. 2.5 mm high, fragile, hyaline, sub-circular, slightly posteriorly oblique, inequivalve, inequilateral, left valve more inflated than right valve; translucent, prodissoconch of left valve conical, of right valve flat.

TABLE 1. — Principal different morphological characters of *Cycloclamys* Finlay, 1926, *Chlamydella* Iredale, 1929 and *Micropecten* n. gen.

	<i>Cycloclamys</i>	<i>Chlamydella</i>	<i>Micropecten</i> n. gen.
Prodissoconch	obtuse	rounded	rounded
Sculpture prodissoconch left valve	antimarginal	smooth	latticed
Sculpture prodissoconch right valve	almost smooth	smooth	latticed
Sculpture left valve	radial or latticed	smooth or commarginal	latticed
Sculpture right valve	smooth	smooth	radial
Microstructure right valve	hexagonal throughout	hexagonal throughout	hexagonal only in pre-radial stage

Left valve (holotype) disc and auricles sculptured with numerous narrow antimarginal lirae, secondary riblets in interspaces, and delicate commarginal lirae, commencing in early growth stage. Auricles subequal, anterior one slightly larger than posterior one. Prodissoconch *c.* 230 µm wide, conical, sculptured with a web-like pattern of raised tracery.

Right valve (paratype) disc and ventral half of posterior auricle similarly sculptured with narrow antimarginal lirae; intercostal secondary riblets in late growth stage. Longitudinal hexagonal microstructure. Posterior auricle continuous with disc, anterior one demarcated and sculptured with a few fine nodulous radial riblets. Byssal notch relatively deep. Prodissoconch flat and similarly sculpture as prodissoconch of left valve.

Dimensions of holotype (left valve): H 2.4 mm, W 2.4 mm.

REMARKS

Micropecten excuratus n. gen., n. sp. is morphologically closest to *Micropecten plectofilum* (Oliver & Holmes, 2004) n. comb., known from Rodrigues (Indian Ocean, Mascarene Islands; dead at 17 m depth). Both species have a similar size (*M. excuratus* n. gen., n. sp. 2.5 mm in height, *M. plectofilum* (Oliver & Holmes, 2004) n. comb. 2 mm), are slightly posteriorly oblique, and have an antimarginal sculpture on the right valve. However, *M. excuratus* n. gen., n. sp. has more regularly spaced antimarginal sculpture, commencing at an earlier stage on the right valve, and *M. excuratus* n. gen., n. sp. also has a commarginal sculpture on the left valve, which is lacking in *M. plectofilum* (Oliver & Holmes, 2004) n. comb.

Family ENTOLIIDAE Teppner, 1922
Genus *Pectinella* Verrill, 1897

Pectinella aequoris Dijkstra, 1991

Pectinella aequoris Dijkstra, 1991: 23, figs 78-86.

MATERIAL EXAMINED. — Indonesia. N of Sumbawa, Bay of Sanggar, 175-185 m, holotype lv (RMNH 56567). Vanuatu. SANTO 2006, stn DS93, 15°33.6'S, 167°16.5'E, 70 m, 1 rv. — Stn DS99, 15°32.5'S, 167°16.9'E, 100-105 m, 1 lv. — Stn DS102, 15°34.1'S, 167°16.0'E, 98-100 m, 1 lv, 1 rv. — Stn DS104, 15°34.1'S, 167°16.0'E, 10-80 m, 1 spm. — Stn DS105, 15°33.0'S, 167°16.7'E, 92 m, 1 lv.

DISTRIBUTION. — Indonesia, New Caledonia, Vanuatu (new record), Fiji, Austral Islands and the Hawaii Islands (Dijkstra 2001: 90; Dijkstra & Maestrati 2008: 102; 2010: 342). Bathymetric range: earlier recorded from depths of 260 m; the Santo specimens live collected in 10-80 m show that this is also a shallow offshore species.

Family PECTINIDAE Rafinesque, 1815
Genus *Delectopecten* Stewart, 1930

Delectopecten musorstomi Poutiers, 1981

Delectopecten musorstomi Poutiers, 1981: 331, pl. 1, figs 2-3. — Dijkstra & Maestrati 2010: 344.

MATERIAL EXAMINED. — Philippines. N of Lubang, 150-159 m, holotype spm (MNHN 21162). Vanuatu. SANTO 2006, stn EP40, 15°33.1'-33.6'S, 167°16.4'-16.5'E, 125-156 m, 1 spm.

DISTRIBUTION. — Philippines, Indonesia, Solomon Islands, Vanuatu (new record), New Caledonia and French Polynesia, Austral Islands (Dijkstra & Marshall 1997: 88; Dijkstra & Maestrati 2008: 105; 2010: 344), alive from 150-250 m.

Genus *Coralichlamys* Iredale, 1939*Coralichlamys madreporarum*
(Sowerby II, 1842)*Pecten madreporarum* Sowerby II, 1842: 68, pl. 14, fig. 68.*Coralichlamys madreporarum* – Dijkstra & Knudsen 1998: 73, pl. 10, figs 44, 45 (synonymy, references, type data, description, distribution). — Raines & Poppe 2006: pl. 136, figs 2, 4-6.

MATERIAL EXAMINED. — “Red Sea” (original description), “Java” (on label), lectotype spm (NHMUK 1995083/1), designated by Dijkstra & Knudsen (1998: 75).

Vanuatu. SANTO 2006, stn ZR01, 15°33.1'S, 167°09.6'E, 8-35 m, 1 spm. — Stn DS06, 15°30.9'S, 167°11.1'E, 8-15 m, 1 lv, 1 rv. — Stn DB12, 15°36.6'S, 167°10.1'E, 10-18 m, 1 spm. — Stn ZB16, 15°32.4'S, 167°12.1'E, c. 5 m, 4 spms. — Stn LS17, 15°31.1'S, 167°10.5'E, 7 m, 2 lv, 1 rv. — Stn DS31, 15°31.4'S, 167°09.7'E, 5 m, 1 lv. — Stn LD35, 15°32.7'-32.8'S, 167°11.5'-11.6'E, 3-8 m, 3 lv. — Stn NS37, 15°31.4'S, 167°09.8'E, 2-3 m, 1 lv, 3 rv. — Stn DS43, 15°27.9'S, 167°14.3'E, 22 m, 2 lv. — Stn FP46-49, 15°32.4'S, 167°12.7'E, 45-50 m, 1 spm. — Stn FB52, 15°42.7'S, 167°15.1'E, 7 m, 1 spm (juv.). — Stn DS59, 15°24.6'S, 167°14.3'E, 6-43 m, 1 lv. — Stn DB67, 15°22.9'S, 167°13.1'E, 7 m, 1 spm. — Stn VM72, 15°31.5'S, 167°09.5'E, intertidal, 1 spm. — Stn DB75, 15°22.9'S, 167°11.9'E, 20 m, 2 spm. — Stn FS88, 15°32.7'S, 167°11.5'E, 5 m, 1 lv, 1 rv.DISTRIBUTION. — Throughout the tropical Indo-West Pacific (Raines & Poppe 2006: 188), live lodged in *Acropora* branches intertidally to sublittorally. This is a new record for Vanuatu, based on live specimens from the intertidal zone to 45 m.Genus *Hemipecten* Adams & Reeve, 1849*Hemipecten forbesianus*
Adams & Reeve, 1849*Hemipecten forbesianus* Adams & Reeve, 1849: 133, pl. 1, fig. 2; 1850: 72, pl. 20, figs 1a-c, 2a-d. — Dijkstra & Marshall 1997: 89, pl. 7, figs 1-6 (references, synonymy, type data, distribution). — Raines & Poppe 2006: 68, pl. 4, fig. 10 (original and additional descriptions). — Petit 2007: 99 (information on publication data).MATERIAL EXAMINED. — **Philippines.** Sulu Archipelago, c. 26 m, lectotype spm (NHMUK 1874.12.11.376), designated by Dijkstra & Marshall (1997: 89).**Vanuatu.** SANTO 2006, stn EP10, 15°34.5'-38.0'S, 167°05.1'-13.6'E, 45-101 m, 1 spm.

DISTRIBUTION. — Southern Japan, south China Sea, Philippines, Indonesia, northwestern, northern and northeastern Australia, Vanuatu (new record), and New Caledonia (Dijkstra & Marshall 1997: 89), live collected between 10-67 m.

Genus *Laevichlamys* Waller, 1993*Laevichlamys cuneata* (Reeve, 1853)*Pecten irregularis* Sowerby II, 1842: 69, pl. 13, figs 51, 52 (junior homonym of *Pecten irregularis* Schlothheim, 1813).*Pecten cuneatus* Reeve, 1853: sp. 94, pl. 24, figs 94a, 95.*Laevichlamys cuneata* – Raines & Poppe 2006: 198, 199, pl. 142, figs 1, 5, 6; pl. 151, fig. 4 (references, type data, original and additional descriptions, distribution).MATERIAL EXAMINED. — *Pecten irregularis*: type locality not indicated, Reeve (1853: species 19, pl. 4, figs 19a, 19b) mentioned “Eastern Seas” [Philippines and/or Indonesian archipelago], 2 syntypes spms (NHMUK 1950.11.14.39/1-2).*Pecten cuneatus*: **Indonesia.** Maluku, 3 syntypes spms (NHMUK 20010485/1-3).**Vanuatu.** SANTO 2006, stn DB01, 15°33.1'S, 167°17.8'E, 15-25 m, 2 spms. — stn NR03, 15°34.6'S, 167°13.6'E, 17 m, 1 spm. — Stn NR05, 15°28.7'S, 167°15.2'E, 19 m, 2 spms. — Stn DS06, 15°30.9'S, 167°11.1'E, 8-15 m, 1 rv. — Stn DB08, 15°34.6'S, 167°13.8'E, 12 m, 6 spms, 4 lv, 4 rv. — Stn ZB09, 15°40.6'S, 167°05.1'E, 5-7 m, 2 spms, 1 lv. — Stn NR11, 15°33.4'S, 167°09.4'E, 26 m, 1 spm. — Stn DB12, 15°36.6'S, 167°10.1'E, 10-18 m, 1 rv. — Stn LD14, 15°36.6'S, 167°10.5'E, 3-7 m, 1 spm. — Stn NR14, 15°33.4'S, 167°16.6'E, 23 m, 1 spm. — Stn ZB16, 15°32.4'S, 167°02.1'E, c. 5 m, 1 spm, 1 rv. — Stn NR19, 15°36.8'S, 167°10.4'E, 6 m, 1 spm. — Stn VM24, 15°35.2'S, 167°59.4'E, intertidal, 1 rv. — Stn FR26, 15°31.7'S, 167°09.5'E, 3-33 m, 2 spms. — Stn DB29, 15°38.9'S, 167°05.1'E, 15 m, 2 lv, 2 rv. — Stn DS31, 15°31.4'S, 167°09.7'E, 5 m, 1 lv. — Stn FB32, 15°42.7'S, 167°15.1'E, 7 m, 1 spm. — Stn VM32, 15°26.6'S, 167°15.2'E, intertidal, 3 lv, 2 rv. — Stn NS37, 15°31.4'S, 167°09.8'E, 2-3 m, 2 lv, 1 rv. — Stn DB46, 15°28.8'S, 167°15.2'E, 2-3 m, 2 spms. — Stn DS49, 15°38.7'S, 167°05.2'E, 10-17 m, 3 lv, 2 rv. — Stn DB58, 15°24.6'S, 167°14.3'E, 6-43 m, 2 spms. — Stn DS59, 15°24.6'S, 167°14.3'E, 6-43 m, 2 rv. — Stn DB63, 15°26.9'S, 167°15.8'E, 21 m, 1 lv, 1 rv. — Stn DB65, 15°25.8'S, 167°13.0'E, 13 m, 2 spms. — Stn DB67, 15°22.9'S, 167°13.1'E, 7 m, 2 spms. — Stn FS67, 15°35.4'S, 166°59.7'E, 4 m, 3 lv, 1 rv. — Stn DR68, 15°22.9'S, 167°13.1'E, 7-27 m, 1 spm. — Stn DB71, 15°21.6'S, 167°12.5'E,

7 m, 1 spm. — Stn DB75, 15°22.9'S, 167°11.9'E, 20 m, 8 spms, 1 rv. — Stn DB80, 15°37.1'S, 167°07.5'E, 18 m, 3 spms. — Stn FS82, 15°32.3'S, 167°17.4'E, 8-20 m, 2 lv. — Stn DB86, 15°38.5'S, 167°15.1'E, 13 m, 1 spm. — Stn FB90, 15°35.0'S, 167°07.7'E, 36-39 m, 1 spm, 2 lv, 1 rv. — Stn FB92, 15°33.6'S, 167°16.6'E, 2-4 m, 3 spms. — Stn FS96, 15°33.1'S, 167°09.6'E, 35 m, 5 lv, 2 rv. — Stn DS101, 15°32.3'S, 167°17.2'E, 17-19 m, 1 lv, 2 rv.

DISTRIBUTION. — Tropical Indo-West to the central Pacific, from southern Japan southwards to northern Australia, westwards to Sri Lanka, and eastwards to the Phoenix Islands (Raines & Poppe 2006: 198), found from the intertidal zone to 40 m (ZMA, unpublished data). This is a new record for Vanuatu.

Laevichlamys deliciosa (Iredale, 1939)

Mimachlamys deliciosa Iredale, 1939: 350, pl. 5, figs 22, 22a.

Laevichlamys deliciosa – Dijkstra & Kilburn 2001: 288, figs 23, 24 (references, synonymy, description, distribution). — Raines & Poppe 2006: 200, pl. 142, figs 2, 3 (references, type data, original and additional descriptions).

MATERIAL EXAMINED. — **Australia.** N Queensland, SE of Lizard Island, Low Isles, 35 m, 5 syntypes spms (AMS C89669).

Vanuatu. SANTO 2006, stn EP01, 15°32.5'S, 167°09.0'E, 46-47 m, 1 spm. — Stn EP10, 15°34.5'-38.0'S, 167°05.1'-13.6'E, 45-101 m, 2 spms. — Stn ED13, 15°31.3'-31.6'S, 167°10.0'-10.4'E, 22-29 m, 1 lv. — Stn EP22, 15°37.3'-37.4'S, 167°05.8'-06.0'E, 78-91 m, 1 lv, 1 rv. — Stn EP39, 15°33.6'-33.7'S, 167°16.3'-16.5'E, 75-80 m, 1 spm. — Stn AT46, 15°37.7'S, 167°05.3'E, 92-104 m, 1 lv. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 1 rv. — Stn DS104, 15°34.1'S, 167°16.0'E, 80 m, 1 rv. — Stn DS108, 15°33.2'S, 167°16.6'E, 100 m, 1 lv.

DISTRIBUTION. — Western Indian Ocean, southern Japan, Philippines, Indonesia, northern Australia, Solomon Islands, Vanuatu (new record) and New Caledonia, from depths of 35-205 m (Dijkstra & Maestrati 2008: 106).

Laevichlamys squamosa (Gmelin, 1791)

Ostrea squamosa Gmelin, 1791: 3319.

Laevichlamys squamosa – Raines & Poppe 2006: 208, pl. 151, figs 1-3, 5-6, pl. 152, figs 1-7, pl. 296, fig. 2 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — Type locality not indicated. Lectotype spm (NHMUK, Sloane collection), designated by Dijkstra (1991: 32).

Vanuatu. SANTO 2006, stn ZR03, 15°33.1'S, 167°09.6'E, 0-45 m, 1 spm. — Stn ZB13, 15°36.7'S, 167°02.0'E, 18-30 m, 1 spm. — Stn LS17, 15°31.1'S, 167°10.5'E, 7 m, 1 lv, 2 rv. — Stn LR18, 15°31.1'S, 167°10.5'E, 7 m, 1 spm. — Stn NR20, 15°27.2'S, 167°15.1'E, 42 m, 1 lv. — Stn ZB20, 15°36.1'S, 167°05.4'E, 15-20 m, 2 spms. — Stn DS31, 15°31.4'S, 167°09.7'E, 5 m, 2 lv. — Stn DB33, 15°34.7'S, 167°13.8'E, 14-25 m, 1 spm. — Stn EP36, 15°33.1'-33.3'S, 167°12.4'-12.7'E, 20-60 m, 1 spm. — Stn DS37, 15°29.5'S, 167°14.8'E, 8 m, 1 spm, 1 lv, 1 rv. — Stn NS37, 15°31.4'S, 167°09.8'E, 2-3 m, 5 lv, 3 rv. — Stn DS38, 15°29.9'S, 167°15.1'E, 3 m, 1 lv, 1 rv. — Stn DR39, 15°29.9'S, 167°15.1'E, 3 m, 1 spm. — Stn FB40, 15°22.9'S, 167°11.7'E, 9 m, 3 spms. — Stn NR48, 15°33.2'S, 167°08.8'E, 20 m, 1 spm. — Stn DB53, 15°28.8'S, 167°15.2'E, 5 m, 1 spm. — Stn FR53, 15°42.7'S, 167°15.1'E, 7 m, 1 spm. — Stn DS54, 15°28.8'S, 167°15.2'E, 5 m, 1 rv. — Stn FB56, 15°35.2'S, 167°02.1'E, 3-18 m, 1 spm. — Stn VM58, 15°28.6'S, 167°15.3'E, intertidal, 1 spm. — Stn FR57, 15°35.3'S, 167°01.9'E, 3-18 m, 1 spm. — Stn DR74, 15°22.9'S, 167°11.9'E, 15-20 m, 1 spm. — Stn DB80, 15°37.1'S, 167°07.5'E, 18 m, 1 spm. — Stn DR84, 15°43.4'S, 167°15.0'E, 6 m, 1 spm.

DISTRIBUTION. — Throughout the tropical Indo-Pacific, from the northeastern Indian Ocean eastwards into the Pacific to Easter Island, and southern Japan southwards to northern Australia (Raines & Poppe 2006: 210), living intertidally to sublittorally.

Laevichlamys wilhelminae (Bavay, 1904)

Chlamys wilhelminae Bavay, 1904: 200, pl. 6, figs 3, 4, 13, 14.

Laevichlamys wilhelminae – Raines & Poppe 2006: 212, pl. 154, figs 1-7 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **Indonesia.** Maluku, holotype spm (ZMA Moll. 3.04.003).

Vanuatu. SANTO 2006, stn ZB09, 15°40.6'S, 167°05.1'E, 5-7 m, 1 spm, 1 rv. — Stn DB20, 15°30.5'S, 167°01.4'E, 22-25 m, 1 lv. — Stn DB33, 15°34.7'S, 167°13.8'E, 14-25 m, 1 spm. — Stn DS59, 15°24.6'S, 167°14.3'E, 6-43 m, 1 lv. — Stn DB67, 15°22.9'S, 167°13.1'E, 7 m, 1 spm. — Stn DB69, 15°24.4'S, 167°13.0'E, 38 m, 1 lv. — Stn DB75, 15°22.9'S, 167°11.9'E, 20 m, 1 spm. — Stn DB77, 15°27.9'S, 167°14.7'E, 42-45 m, 1 spm. — Stn DS91, 15°33.7'S, 167°08.4'E, 7 m, 1 rv.

DISTRIBUTION. — Tropical Indo-West Pacific, from the Philippine Islands and Marshall Islands southwards to northern Australia, New Caledonia, Vanuatu (new record) and eastwards to the Society Islands (French Polynesia), found from the intertidal zone to 65 m (MNHN, ZMA, unpublished data).

Genus *Pascabinnites* Dijkstra & Raines, 1999

Pascabinnites coruscans coruscans (Hinds, 1845)

Pecten coruscans Hinds, 1845: 61, pl. 17, fig. 3.

Semipallium coruscans coruscans – Dijkstra & Kilburn 2001: 294, figs 31, 32 (references, type data, description, distribution).

Pascabinnites coruscans coruscans – Dijkstra & Maestrati 2010: 346 (references, distribution).

MATERIAL EXAMINED. — **Marquesas Islands.** Nukuhiva, 13 m, lectotype spm (NHMUK 19709), designated by Waller (1972: 231).

Vanuatu. SANTO 2006, stn DS04, 15°31.4'S, 167°14.1'E, 25 m, 1 rv. — Stn ED07, 15°33.9'-34.2'S, 167°08.0'-08.4'E, 20-28 m, 1 rv. — Stn ZB09, 15°40.6'S, 167°05.1'E, 5-7 m, 1 spm. — Stn NB12, 15°33.1'S, 167°09.6'E, 20 m, 1 rv. — Stn DB20, 15°30.5'S, 167°01.4'E, 22-25 m, 1 rv. — Stn EP24, 15°36.5'S, 167°00.9-01.7'E, 108-121 m, 1 lv. — Stn AT37, 15°22.5'S, 167°12.6'E, 72-82 m, 1 rv. — Stn FB40, 15°22.9'S, 167°11.7'E, 9 m, 1 lv. — Stn FS79, 15°33.1'S, 167°09.6'E, 2 m, 1 lv. — FS96, 15°33.1'S, 167°09.6'E, 35 m, 1 lv.

DISTRIBUTION. — Indo-West Pacific, from eastern South Africa to southern Japan, throughout the South Pacific to Pitcairn Island, alive from the intertidal zone to 60 m (Waller 1972: 234; Dijkstra & Marshall 1997: 101; 2008: 51; Dijkstra & Maestrati 2010: 346).

Genus *Pedum* Bruguière, 1892

Pedum spondyloideum (Gmelin, 1791)

Ostrea spondyloidea Gmelin, 1791: 3335.

Pedum spondyloideum – Raines & Poppe 2006: 224, pl. 171, figs 1-5; pl. 296, fig. 1 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **India.** Holotype spm (ZMUC BIV-57).

Vanuatu. SANTO 2006, stn VM11, 15°28.8'S, 167°15.3'E, intertidal, 1 spm. — Stn FR33, 15°27.5'S,

167°15.2'E, 15-55 m, 3 spms. — Stn FS79, 15°33.1'S, 167°09.6'E, 2 m, 1 rv.

DISTRIBUTION. — Coral reefs throughout the Indo-Pacific; lives embedded in massive heads of scleractinian corals in shallow water. Live specimens from the intertidal zone to 15 m.

Genus *Semipallium* Jousseaume in Lamy, 1928

Semipallium diana (Crandall, 1979)

Chlamys diana Crandall, 1979: 114, figs 3-8.

Semipallium diana – Raines & Poppe 2006: 238, pl. 188, figs 1-6 (references, type data, original description, distribution).

MATERIAL EXAMINED. — **Japan.** Ryukyu Islands, c. 30 m, holotype spm (TMTT 7911).

Vanuatu. SANTO 2006, stn FR08, 15°33.1'S, 167°12.2'E, 3-40 m, 1 spm. — Stn DS10, 15°36.6'S, 167°10.1'E, 6-24 m, 1 lv. — Stn DB16, 15°35.5'S, 167°15.8'E, 32-40 m, 1 rv. — Stn EP28, 15°38.0'S, 167°05.0'E, 90-110 m, 1 spm. — Stn NR40, 15°36.5'S, 167°01.4'E, 35 m, 1 spm. — Stn FP46-49, 15°32.4'S, 167°12.7'E, 45-50 m, 1 spm, 1 lv. — Stn DR56, 15°25.1'S, 167°14.2'E, 5-40 m, 1 spm. — Stn DS59, 15°24.6'S, 167°14.3'E, 6-43 m, 1 lv. — Stn DR68, 15°22.9'S, 167°13.1'E, 7-27 m, 1 spm. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 4 lv, 2 rv. — Stn DS104, 15°34.1'S, 167°16.0'E, 10-80 m, 1 rv. — Stn DS105, 15°33.0'S, 167°16.7'E, 92 m, 1 lv, 3 rv.

DISTRIBUTION. — Southern Japan, Philippines, the Solomon Islands, Vanuatu (new record), and western and southwestern Pacific at depths of 20-90 m (Dijkstra & Kastoro 1997: 270, and present records).

Semipallium flavicans (Linnaeus, 1758)

Ostrea flavicans Linnaeus, 1758: 698.

Semipallium flavicans – Raines & Poppe 2006: 240, pl. 192, figs 1-5 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — “*O. australiore*”, lectotype spm (UUZM), designated by Dijkstra (1999: 426).

Vanuatu. SANTO 2006, stn VM02, 15°34.9'S, 167°02.4'E, intertidal, 1 rv. — Stn ZB20, 15°36.1'S, 167°05.4'E, 15-20 m, 1 rv. — Stn AT40, 15°23.4'S, 167°12.7'E, 81-94 m, 1 rv. — Stn DB63, 15°26.9'S, 167°15.8'E, 21 m, 2 spms.

DISTRIBUTION. — Throughout most of Indo-West Pacific, from southern Japan southwards to northern Australia, westwards to Zululand and Mozambique, and eastwards to Samoa, found at depths of 3–35 m (ZMA, unpublished data). Vanuatu is a new record.

Semipallium fulvicostatum (Adams & Reeve, 1850)

Pecten fulvicostatus Adams & Reeve, 1850: 74, pl. 21, fig. 11.

Semipallium fulvicostatum – Raines & Poppe 2006: 242, pl. 194, figs 5, 6, 8, 9 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **Philippines.** Sulu Archipelago, holotype spm (NHMUK 1950.11.14.31).

Vanuatu. SANTO 2006, stn DS04, 15°31.4'S, 167°14.1'E, 25 m, 2 rv. — Stn DS06, 15°30.9'S, 167°11.1'E, 8–15 m, 1 lv, 1 rv. — Stn DS10, 15°36.6'S, 167°10.1'E, 6–24 m, 2 lv, 2 rv. — Stn DR11, 15°36.6'S, 167°10.1'E, 6–24 m, 1 spm. — Stn DB14, 15°30.9'S, 167°11.0'E, 10–14 m, 1 spm. — Stn LS17, 15°31.1'S, 167°10.5'E, 7 m, 1 spm, 4 lv, 3 rv. — Stn ZS19, 15°31.4'S, 167°14.1'E, 15–30 m, 1 rv. — Stn DS31, 15°31.4'S, 167°09.7'E, 5 m, 1 lv. — Stn NS36, 15°31.7'S, 167°09.5'E, 2–3 m, 1 lv. — Stn NS37, 15°31.4'S, 167°09.8'E, 2–3 m, 7 lv, 4 rv. — Stn DR41, 15°28.8'S, 167°15.2'E, 5–20 m, 2 spms. — Stn DS43, 15°27.9'S, 167°14.3'E, 22 m, 1 lv, 3 rv. — Stn DS54, 15°28.8'S, 167°15.2'E, 5 m, 1 rv. — Stn VM58, 15°28.6'S, 167°15.3'E, intertidal, 1 spm. — Stn DS91, 15°33.7'S, 167°08.4'E, 7 m, 2 lv, 4 rv. — Stn FS96, 15°33.1'S, 167°09.6'E, 35 m, 1 lv. — Stn DS99, 15°32.5'S, 167°16.9'E, 100–105 m, 1 lv. — Stn DS104, 15°34.1'S, 167°16.0'E, 80 m, 1 rv.

DISTRIBUTION. — Western and southwestern Pacific, from southern Japan southwards to northern Australia, and eastwards to French Polynesia, live in intertidal to 49 m (ZMA, unpublished data). Vanuatu is a new record.

Genus *Mimachlamys* Iredale, 1929

Mimachlamys gloriosa (Reeve, 1853)

Pecten gloriosus Reeve, 1853: sp. 134, pl. 30, fig. 134a, b.

Mimachlamys gloriosa – Raines & Poppe 2006: 272, pl. 218, figs 1–3; pl. 219, figs 1–6 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **Australia.** Queensland, Moreton Bay, 4 syntypes spms (NHMUK 1950.11.14.35–38).

Vanuatu. SANTO 2006, stn EP29, 15°38.0'S, 167°14.0'E, 91–110 m, 1 spm.

DISTRIBUTION. — China, Vietnam, Thailand, Philippines, Indonesia, Malaysia, northern Australia, Papua New Guinea, Solomon Islands, Vanuatu (new record), and New Caledonia, found from the intertidal zone to 91 m depth (ZMA, unpublished data and present record).

Genus *Talochlamys* Iredale, 1929

Talochlamys gladyisiae (Melville, 1888)

Pecten gladyisiae Melville, 1888: 279, pl. 2, fig. 5.

Talochlamys gladyisiae – Dijkstra & Maestrati 2008: 106, figs 48, 49 (references, synonymy, type data, description, distribution).

MATERIAL EXAMINED. — Type locality not indicated, holotype spm (NMW 1955.158.10).

Vanuatu. SANTO 2006, stn AT04, 15°32.9'–33.1'S, 167°13.3'–13.7'E, 97–101 m, 1 spm. — Stn EP10, 15°34.5'–38.0'S, 167°05.1'–13.6'E, 45–101 m, 7 spms. — Stn AT13, 15°27.8'S, 167°15.7'E, 146–153 m, 1 spm. — Stn AT14, 15°23.7'–24.0'S, 167°12.9'–13.5'E, 102–120 m, 1 spm. — Stn EP19, 15°37.5'–38.0'S, 167°05.1'–05.6'E, 80–94 m, 2 spms, 2 lv, 1 rv. — Stn EP21, 15°37.7'S, 167°05.2'E, 99 m, 1 lv. — Stn EP24, 15°36.5'S, 167°00.9'–01.7'E, 108–121 m, 1 spm. — Stn AT29, 15°35.9'–36.0'S, 167°01.3'–01.6'E, 83–90 m, 2 lv. — Stn EP29, 15°38.0'S, 167°14.0'E, 91–110 m, 2 spms. — Stn AT37, 15°22.5'S, 167°12.6'E, 72–82 m, 3 lv, 2 rv. — Stn AT41, 15°36.7'–37.0'S, 167°02.7'–02.8'E, 88–118 m, 1 rv. — Stn AT44, 15°36.5'S, 167°02.7'E, 86–118 m, 1 rv. — Stn AT46, 15°37.7'S, 167°05.3'E, 92–104 m, 1 lv. — Stn FP50, 15°36.8'S, 167°08.7'E, 25 m, 2 spms. — Stn AT76, 15°38.7'S, 167°03.6'E, 105–135 m, 1 lv. — Stn AT85, 15°32.6'S, 167°15.7'E, 114–196 m, 1 lv, 1 rv. — Stn AT88, 15°31.9'S, 167°15.0'E, 87–115 m, 1 spm, 1 lv, 1 rv. — Stn DS105, 15°33.0'S, 167°16.7'E, 92 m, 1 rv.

DISTRIBUTION. — Philippines, Indonesia, Solomon Islands, Vanuatu (new record) and Fiji (Dijkstra & Maestrati 2008: 107), alive in 25–180 m.

Genus *Palliolium* Monterosato, 1884

Palliolium minutulum

Dijkstra & Southgate, 2000

Palliolium minutulum Dijkstra & Southgate, 2000: 14, figs 1–7.

MATERIAL EXAMINED. — **New Caledonia.** Coral reef lagoon off Koumac, 12–14 m, holotype spm (MNHN 21160).

Vanuatu. SANTO 2006, stn LD35, 15°32.7'-32.8'S, 167°11.5'-11.6'E, 3-8 m, 1 spm. — Stn EP36, 15°33.1'-33.3'S, 167°12.4'-12.7'E, 20-60 m, 1 spm. — Stn EP37, 15°23.4'-23.6'S, 167°13.1'-13.3'E, 50-61 m, 1 spm. — Stn NS37, 15°31.4'S, 167°09.8'E, 2-3 m, 1 lv. — Stn DB53, 15°28.8'S, 167°15.2'E, 5 m, 1 spm.

DISTRIBUTION. — Philippines, Indonesia, northeastern Australia, Papua New Guinea, Solomon Islands, Vanuatu (new record), New Caledonia, Fiji and Kiribati (Dijkstra & Southgate 2000: 16), from depths of 5-50 m (ZMA, unpublished data, and present records).

Genus *Dentamussium* Dijkstra, 1990

Dentamussium obliteratum (Linnaeus, 1758)

Ostrea obliterata Linnaeus, 1758: 697. — Dijkstra 1999: 400, figs 9A, B.

Dentamussium obliteratum – Raines & Poppe 2006: 140, pl. 88, figs 1-5 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — “*O. australiore*”, lectotype spm (UUZM).

Vanuatu. SANTO 2006, stn EP36, 15°33.1'-33.3'S, 167°12.4'-12.7'E, 20-60 m, 1 spm.

DISTRIBUTION. — China, Philippines, Malaysia, Indonesia, Marshall Islands, and Vanuatu (new record), between the intertidal zone to 80 m depth (ZMA, unpublished data).

Genus *Serratovola* Habe, 1951

Serratovola rubicunda (Chenu, 1843)

Pecten asper Sowerby II, 1842: 50, pl. 19, figs 196, 197.

Pecten rubicundus Chenu, 1843: 3, pl. 7, figs 4, 5 (*nomen novum* for *Pecten asper* Sowerby II, 1842, preoccupied by *Pecten asper* Lamarck, 1819).

Serratovola rubicunda – Dijkstra & Maestrati 2008: 110, figs 46, 47 (synonymy, references, description, distribution).

MATERIAL EXAMINED. — **New Guinea.** 7 syntypes spms (NHMUK 20080065).

Vanuatu. SANTO 2006, stn AT02, 15°32.5'-32.8'S, 167°16.1'-16.5'E, 160-175 m, 1 rv. — Stn EP12, 15°31.9'S, 167°15.1'E, 97 m, 2 lv. — Stn AT22, 15°32.3'S, 167°16.0'E, 180-227 m, 1 rv. — Stn AT30, 15°36.7'S, 167°02.6'E,

83-120 m, 1 rv. — Stn AT36, 15°21.5'S, 167°12.3'E, 53-59 m, 4 lv, 2 rv. — Stn AT37, 15°22.5'S, 167°12.6'E, 72-82 m, 9 lv, 4 rv. — Stn AT39, 15°22.4'S, 167°12.6'E, 57-81 m, 2 lv, 4 rv. — Stn AT42, 15°37.5'S, 167°02.3'E, 112-148 m, 1 lv. — Stn AT43, 15°36.4'S, 167°02.3'E, 84-105 m, 1 rv. — Stn AT52, 15°31.5'S, 167°12.7'E, 52-62 m, 2 spms, 1 rv. — Stn AT53, 15°31.8'S, 167°13.6'E, 62-71 m, 3 spms, 7 lv, 9 rv. — Stn AT54, 15°32.1'S, 167°14.1'E, 68-79 m, 1 spm, 1 rv. — Stn AT55, 15°36.2'S, 167°02.5'E, 80-82 m, 1 lv, 3 rv. — Stn DR66, 15°25.8'S, 167°13.0'E, 9-30 m, 1 spm. — Stn AT75, 15°37.05'-37.3'S, 167°09.2'-09.6'E, 52-66 m, 1 spm. — Stn AT76, 15°38.7'S, 167°03.6'E, 105-135 m, 1 lv. — Stn AT82, 15°31.6'S, 167°12.4'E, 58-59 m, 2 spms, 1 rv. — Stn AT84, 15°32.4'S, 167°14.3'E, 71-104 m, 4 spms, 2 rv. — Stn AT112, 15°33.5'S, 167°16.1'E, 150-168 m, 1 lv. — Stn AT119, 15°36.5'S, 167°02.4'E, 87-120 m, 1 spm, 1 lv.

DISTRIBUTION. — Southern Japan, South China Sea, Philippines, Indonesia, Papua New Guinea, Solomon Islands, Vanuatu (new record), Fiji and Tonga (Dijkstra & Maestrati 2008: 111), alive in 30-140 m.

Genus *Cryptopecten* Dall, Bartsch & Rehder, 1938

Cryptopecten bullatus (Dautzenberg & Bavay, 1912)

Pecten (Chlamys) bullatus Dautzenberg & Bavay, 1912: 17, pl. 27, figs 1, 2.

Cryptopecten bullatus – Dijkstra 1995b: 60, figs 115-118 (synonyms, references, type data, description). — Dijkstra & Maestrati 2008: 109 (distribution).

MATERIAL EXAMINED. — **Philippines.** Sulu Archipelago, 275 m, holotype spm (ZMA Moll. 3.12.006).

Vanuatu. SANTO 2006, stn AT13, 15°27.8'S, 167°15.7'E, 146-153 m, 1 lv. — Stn AT23, 15°27.0'S, 167°16.1'E, 176-210 m, 3 lv, 3 rv. — Stn AT64, 15°39.6'S, 167°01.9'E, 249-252 m, 1 rv. — Stn AT116, 15°32.9'S, 167°16.2'E, 153-196 m, 1 lv.

DISTRIBUTION. — Indo-West Pacific from eastern South Africa to southern Japan, throughout the South Pacific to the Kermadec, Austral, Marquesas and Hawaiian Islands, at depths of 82-500 m (Dijkstra & Marshall 1997: 106; Dijkstra 2001: 92; Dijkstra & Maestrati 2008: 109).

Cryptopecten nux (Reeve, 1853)

Pecten coruscans – Reeve 1853: sp. 143, pl. 32, fig. 143 (not *Pecten coruscans* Hinds, 1845 [erroneously determined]).

Pecten nux Reeve, 1853: *errata* (correctly determined).

Cryptopecten nux – Raines & Poppe 2006: 314, pl. 276, figs 1-8 (references, type data, original and additional descriptions, distribution). — Dijkstra & Maestrati 2008: 109 (distribution).

MATERIAL EXAMINED. — **Marquesas Islands.** Nukuhiva, 13 m, lectotype spm (NHMUK 1950.11.14.52), designated by Wagner (1989: 56).

Vanuatu. SANTO 2006, stn EP01, 15°32.5'S, 167°09.0'E, 46-47 m, 2 rv. — Stn AT02, 15°32.5'-32.6'S, 167°16.1'-16.5'E, 160-175 m, 1 lv, 5 rv. — Stn AT06, 15°38.2'S, 167°02.2'E, 140-167 m, 1 rv. — Stn EP10, 15°34.5'-38.0'S, 167°05.1'-13.6'E, 45-101 m, 1 spm, 1 lv, 2 rv. — Stn AT13, 15°27.8'S, 167°15.7'E, 146-153 m, 1 spm, 1 lv, 3 rv. — Stn AT14, 15°23.7'-24.0'S, 167°12.9'-13.5'E, 102-120 m, 1 spm, 5 lv. — Stn AT17, 15°39.9'S, 167°02.0'E, 267-270 m, 1 lv. — Stn EP19, 15°37.5'-38.0'S, 167°05.1'-05.6'E, 80-94 m, 1 spm, 3 lv, 3 rv. — Stn EP22, 15°37.3'-37.4'S, 167°05.8'-06.0'E, 78-91 m, 3 lv, 1 rv. — Stn AT23, 15°27.0'S, 167°16.1'E, 176-210 m, 2 rv. — Stn ZS27, 15°35.0'S, 167°07.7'E, 3-15 m, 1 lv. — Stn EP28, 15°38.0'S, 167°05.0'E, 90-110 m, 1 spm, 2 rv. — Stn EP35, 15°34.9'-35.1'S, 167°13.9'-14.1'E, 10-51 m, 1 lv, 2 rv. — Stn AT36, 15°21.5'S, 167°12.3'E, 53-59 m, 6 lv, 4 rv. — Stn AT37, 15°22.5'S, 167°12.6'E, 72-82 m, 1 spm, 11 lv, 14 rv. — Stn AT46, 15°37.7'S, 167°05.3'E, 92-104 m, 3 lv, 5 rv. — Stn AT65, 15°40.3'S, 167°15.9'E, 160-167 m, 1 lv, 8 rv. — Stn AT67, 15°39.0'S, 167°15.8'E, 201-212 m, 2 rv. — Stn AT74, 15°37.0'-37.2'S, 167°09.7'-09.9'E, 50-64 m, 2 lv, 2 rv. — Stn AT76, 15°38.7'S, 167°03.6'E, 105-135 m, 1 lv, 1 rv. — Stn DS93, 15°33.6'S, 167°16.5'E, 100 m, 1 rv. — Stn DS99, 15°32.5'S, 167°16.9'E, 100-105 m, 1 rv. — Stn DS102, 15°34.1'S, 167°16.0'E, 98-100 m, 1 rv. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 1 lv. — Stn DS104, 15°34.1'S, 167°16.0'E, 10-80 m, 1 lv. — Stn DS105, 15°33.0'S, 167°16.7'E, 92 m, 2 lv, 3 rv. — Stn AT114, 15°33.4'S, 167°16.4'E, 148-166 m, 1 rv.

DISTRIBUTION. — Indo-West Pacific from eastern South Africa and the Red Sea to southern Japan, throughout the South Pacific to the Austral Islands and Marquesas (Dijkstra & Marshall 1997: 108; Dijkstra 2001: 93; Dijkstra & Maestrati 2008: 109-110), from depths of 82-783 m.

Genus *Haumea* Dall, Bartsch & Rehder, 1938

Haumea minuta (Linnaeus, 1758)

Ostrea minuta Linnaeus, 1758: 696.

Haumea minuta – Raines & Poppe 2006: 318, pl. 279, figs 1-6 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — “Oceano indien”, lectotype spm (UUZM), designated by Dijkstra (1999: 398).

Vanuatu. SANTO 2006, stn ED02, 15°31.7'S, 167°09.7'E, 18-21 m, 1 lv. — Stn ED05, 15°31.7'S, 167°09.4'E, 9-13 m, 1 lv. — Stn ED07, 15°33.9'-34.2'S, 167°08.0'-08.4'E, 20-28 m, 1 rv. — Stn ED13, 15°31.3'-31.6'S, 167°10.0'-10.4'E, 22-29 m, 3 rv. — Stn LD21, 15°31.3'S, 167°09.9'E, 1-6 m, 2 spms, 1 lv, 1 rv. — Stn DS22, 15°31.7'S, 167°09.7'E, 25 m, 1 spm, 1 rv. — Stn LD24, 15°31.4'S, 167°10.0'E, 4-7 m, 1 rv. — Stn VM24, 15°35.2'S, 167°59.4'E, intertidal, 1 lv, 1 rv. — Stn LD27, 15°35.3'S, 166°59.3'E, 3-5 m, 1 spm, 6 lv, 5 rv. — Stn LD28, 15°35.4'S, 166°58.7'E, 3-8 m, 1 spm. — Stn AT35, 15°20.7'S, 167°11.6'E, 28-37 m, 1 lv. — Stn LD39, 15°35.4'S, 166°58.7'E, 6-9 m, 1 lv. — Stn AT41, 15°36.7'-37.0'S, 167°02.7'-02.8'E, 88-118 m, 1 rv. — Stn FS74, 15°35.7'S, 166°59.3'E, 12 m, 1 rv. — Stn AT88, 15°31.9'S, 167°15.0'E, 87-115 m, 1 rv. — Stn FS88, 15°32.7'S, 167°11.5'E, 5 m, 12 m, 1 spm.

DISTRIBUTION. — Northeast South Africa, Madagascar, Reunion Island, Mauritius, Mozambique, Kenya, Philippines, Indonesia, Papua New Guinea, Solomon Islands, Vanuatu (new record) and Tahiti, from the intertidal zone to 36 m depth (ZMA, unpublished data).

Haumea rehderi (Grau, 1960)

Chlamys (Argopecten) rehderi Grau, 1960: 15, pl. 2, figs 1-3.

Haumea rehderi – Raines & Poppe 2006: 318, pl. 274, fig. 2 (references, type data, original description, distribution).

MATERIAL EXAMINED. — **Society Islands.** Bora Bora Island, Tereia Point, 24-29 m, holotype spm (USNM 612201). **Vanuatu.** SANTO 2006, stn ED02, 15°31.7'S, 167°09.7'E, 18-21 m, 2 lv, 2 rv. — Stn ED05, 15°31.7'S, 167°09.4'E, 9-13 m, 1 lv. — Stn DS06, 15°30.9'S, 167°11.1'E, 8-15 m, 1 lv, 1 rv. — Stn ED07, 15°33.9'-34.2'S, 167°08.0'-08.4'E, 20-28 m, 1 lv. — Stn ED13, 15°31.3'-31.6'S, 167°10.0'-10.4'E, 22-29 m, 1 rv. — Stn LD16, 15°36.7'S, 167°10.6'E, 5-6 m, 2 lv, 4 rv. — Stn ED17, 15°32.0'S, 167°09.6'E, 23-27 m, 3 lv, 7 rv. — Stn DS18, 15°31.3'S, 167°10.4'E, 5-10 m, 1 lv. — Stn LD21, 15°31.3'S, 167°09.9'E, 1-6 m, 1 lv, 1 rv. — Stn DS22, 15°31.7'S, 167°09.7'E, 25 m, 4 lv, 2 rv. — Stn LD24, 15°31.4'S, 167°10.0'E, 4-7 m, 1 rv. — Stn DS27, 15°31.4'S, 167°09.8'E, 2-4 m, 1 lv, 2 rv. — Stn LD27, 15°35.3'S, 166°59.3'E, 3-5 m, 11 lv, 10 rv. — Stn LD28, 15°35.4'S, 166°58.7'E, 3-8 m, 1 spm, 5 lv, 8 rv. — Stn LD29, 15°35.3'S, 166°59.4'E, 10-12 m, 2 spms, 1 lv, 2 rv. — Stn LD30, 15°31.4'S, 167°10.0'E, 7-8 m, 1 lv, 1 rv. — Stn DS31, 15°31.4'S, 167°09.7'S, 5 m, 1 rv. — Stn LD39, 15°35.4'S, 166°58.7'E, 6-9 m, 9 lv,

8 rv. — Stn FB68, 15°35.4'S, 166°59.7'E, 11 m, 2 lv,
4 rv. — Stn FS74, 15°35.7'S, 166°59.3'E, 12 m, 4 lv.

DISTRIBUTION. — Thailand, Philippines, Indonesia, Papua New Guinea, northern Australia, New Caledonia, Vanuatu (new record), Fiji, Samoa and Society Islands (ZMA, unpublished data), from the intertidal zone to 55 m depth.

Genus *Decatopecten* Sowerby II, 1839

Decatopecten radula (Linnaeus, 1758)

Ostrea radula Linnaeus, 1758: 698.

Decatopecten radula radula – Raines & Poppe 2006: 106, pl. 50, figs 1-7; pl. 51, figs 1-3, 5, 6; pl. 295, fig. 2 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — “O. Indico”, lectotype spm (UUZM), designated by Dijkstra (1999: 403).

Vanuatu. SANTO 2006, stn DR11, 15°36.6'S, 167°10.1'E, 6-24 m, 1 spm. — Stn VM24, 15°35.2'S, 167°59.4'E, intertidal, 1 lv. — Stn VM35, 15°29.4'S, 167°15.2'E, intertidal, 2 spms. — Stn NS37, 15°31.4'S, 167°09.8'E, 2-3 m, 1 lv. — Stn DR41, 15°28.8'S, 167°15.2'E, 5-20 m, 1 spm. — Stn FR53, 15°42.7'S, 167°15.1'E, 7 m, 1 spm. — Stn DR84, 15°43.4'S, 167°15.0'E, 6 m, 2 spms.

DISTRIBUTION. — Eastern India, Sri Lanka, China, Vietnam, Philippines, Malaysia, Indonesia, Papua New Guinea, Solomon Islands, Vanuatu, New Caledonia, Fiji Islands, Tonga and Samoa (ZMA, unpublished data), from the intertidal zone to 36 m depth. Live taken in the intertidal zone to depths of 7 m.

REMARKS

Geographical morphotypes will be discussed in a forthcoming monograph on the Australian Pectinoidea (Dijkstra & Beu in prep.).

Genus *Anguipecten* Dall, Bartsch & Rehder, 1938

Anguipecten picturatus Dijkstra, 1995

Pecten aurantiacus Adams & Reeve, 1850: 74, pl. 21, fig. 12.

Anguipecten picturatus Dijkstra, 1995a: 17 (*nomen novum* for *Pecten aurantiacus* Adams & Reeve, 1850, preoccupied by *Pecten aurantiacus* Röding, 1798). — Raines & Poppe

2006: 90, pl. 24, figs 1-3, 5-7 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **China Sea.** Holotype spm (NHMUK 1950.11.14.8).

Vanuatu. SANTO 2006, stn AT113, 15°33.7'S, 167°16.3'E, 115 m, 1 lv.

DISTRIBUTION. — Reunion Island, southern Japan, Philippines, Thailand, Papua New Guinea, Solomon Islands, Vanuatu (new record), Fiji and Austral Islands, at 20-130 m depth.

Genus *Bractechlamys* Iredale, 1939

Bractechlamys oweni (De Gregorio, 1884)

Pecten pictus Sowerby II, 1842: 62, pl. 20, fig. 233.

Pecten oweni De Gregorio, 1884: 133 (*nomen novum* for *P. pictus* Sowerby II, 1842, preoccupied by *P. pictus* Da Costa, 1778).

Bractechlamys oweni – Raines & Poppe 2006: 102, pl. 38, figs 1-6, pl. 51, fig. 4 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **Philippines.** Isle of Baicus, holotype spm (NHMUK 1950.11.14.53).

Vanuatu. SANTO 2006, stn DB20, 15°30.5'S, 167°01.4'E, 22-25 m, 1 spm. — Stn FB90, 15°35.0'S, 167°07.7'E, 36-39 m, 1 rv.

DISTRIBUTION. — Southern Japan, Philippines, Indonesia, northern Australia, Papua New Guinea, Solomon Islands, Vanuatu (new record), from depths of 14-165 m (ZMA, unpublished data).

Genus *Excellichlamys* Iredale, 1939

Excellichlamys spectabilis (Reeve, 1853)

Pecten spectabilis Reeve, 1853: sp. 128, pl. 29, fig. 128.

Excellichlamys spectabilis – Raines & Poppe 2006: 110, pl. 55, figs 1-7 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — Type locality not indicated, holotype spm (UMZC 1461).

Vanuatu. SANTO 2006, SE corner of Santo, shallow water, 2 spms, 2 lv. — Stn NR29, 15°17.3'S, 167°12.6'E, 32 m, 1 lv. — Stn LD34, 15°33.4'S, 167°12.4'E, 2-6 m, 1 rv. — Stn DS43, 15°27.9'S, 167°14.3'E, 22 m, 1 rv. —

Stn FB52, 15°42.7'S, 167°15.1'E, 7 m, 1 lv. — Stn DS59, 15°24.6'S, 167°14.3'E, 6-43 m, 1 rv. — Stn FS67, 15°35.4'S, 166°59.7'E, 4 m, 1 rv. — Stn DB69, 15°24.4'S, 167°13.0'E, 38 m, 1 spm, 1 lv.

DISTRIBUTION. — Reunion Island, Mauritius, Red Sea, Maldives, Thailand, southern Japan, China, Philippines, Malaysia, Indonesia, northern Australia, Papua New Guinea, Solomon Islands, Vanuatu (new record), New Caledonia, Fiji, Samoa (ZMA, unpublished data) and Marshall Islands, from the intertidal zone to 120 m.

Genus *Glorichlamys* Dijkstra, 1991

Glorichlamys elegantissima (Deshayes, 1863)

Pecten elegantissimus Deshayes, 1863: 32, pl. 4, figs 11, 12.

Glorichlamys elegantissima – Raines & Poppe 2006: 116, pl. 68, figs 1-3, 6, 7 (references, original and additional descriptions, distribution). — Dijkstra & Maestrati 2010: 353, fig. 5E (distribution).

MATERIAL EXAMINED. — **Reunion**. Type material appears to be lost (Dijkstra & Maestrati 2010: 353).

Vanuatu. SANTO 2006, stn FS67, 15°35.4'S, 166°59.7'E, 4 m, 1 spm. — Stn DS91, 15°33.7'S, 167°08.4'E, 7 m, 1 lv.

DISTRIBUTION. — Eastern South Africa, Mozambique, Madagascar, Reunion Island, southern Japan, China, Thailand, Philippines, Indonesia, northwestern Australia, Papua New Guinea, Vanuatu (new record), New Caledonia, Fiji, Line Islands, Society Islands, Austral Islands and Tuamotu Archipelago, from depths of 4-120 m (Dijkstra & Maestrati 2010: 353, and present record).

Glorichlamys quadrilirata (Lischke, 1870)

Pecten quadrilirata Lischke, 1870: 29; 1871: 158, pl. 9, figs 5, 6.

Glorichlamys quadrilirata – Raines & Poppe 2006: 116, pl. 58, figs 4, 5 (references, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **Japan**. Nagasaki, type material appears to be lost.

Vanuatu. SANTO 2006, SE corner of Santo, deep water, 7 lv, 7 rv. — Stn AT14, 15°23.7'-24.0'S, 167°12.9'-13.5'E, 102-120 m, 1 lv, 1 rv. — Stn DB20, 15°30.5'S, 167°01.4'E, 22-25 m, 1 rv. — Stn AT23, 15°27.0'S, 167°16.1'E, 176-210 m, 1 lv. — Stn AT43, 15°36.4'S, 167°02.3'E, 84-105 m, 1 rv. — Stn DB63, 15°26.9'S, 167°15.8'E, 21 m, 1 lv, 1 rv. — Stn AT65, 15°40.3'S,

167°15.9'E, 160-167 m, 2 rv. — Stn AT84, 15°32.4'S, 167°14.3'E, 71-104 m, 1 lv. — Stn AT88, 15°31.9'S, 167°15.0'E, 87-115 m, 1 lv. — Stn AT119, 15°36.5'S, 167°02.4'E, 87-120 m, 1 lv.

DISTRIBUTION. — Madagascar, Red Sea, southern Japan, China, Thailand, Philippines, northern Australia, Papua New Guinea, Vanuatu (new record), New Caledonia and Fiji, dead in 20-176 m depth (ZMA, unpublished data, and present records).

Genus *Gloripallium* Iredale, 1939

Gloripallium pallium (Linnaeus, 1758)

Ostrea pallium Linnaeus, 1758: 697. — Dijkstra 1999: 405, figs 2E, F, 3A, B.

Gloripallium pallium – Raines & Poppe 2006: 118, pl. 70, figs 1-6; pl. 71, figs 1-6; pl. 72, figs 1-5; pl. 294, figs 1-5 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — “O. australiore & Indico”, lectotype spm (LSL), designated by Dijkstra (1999: 405).

Vanuatu. SANTO 2006, SE corner of Santo, shallow water, 2 spms, 2 lv. — Stn FR01, 15°32.3'S, 167°13.1'E, 18-20 m, 1 spm. — Stn ZR01, 15°33.1'S, 167°09.6'E, 17 m, 1 spm. — Stn NR03, 15°34.6'S, 167°13.6'E, 17 m, 1 spm. — Stn DS04, 15°31.4'S, 167°14.1'E, 25 m, 1 lv, 1 rv. — Stn NR05, 15°28.7'S, 167°15.2'E, 19 m, 1 spm. — Stn ZB06, 15°36.8'S, 167°01.3'E, 30 m, 1 spm. — Stn ED07, 15°33.9'-34.2'S, 167°08.0'-08.4'E, 20-28 m, 1 lv, 1 rv. — Stn FR08, 15°33.1'S, 167°12.2'E, 3-40 m, 1 spm. — Stn NR09, 15°37.6'S, 167°08.8'E, 8 m, 1 spm. — Stn ZB09, 15°40.6'S, 167°05.1'E, 5-7 m, 1 rv. — Stn FR11, 15°36.9'S, 167°10.5'E, 6-33 m, 1 spm. — Stn NR11, 15°33.4'S, 167°09.4'E, 26 m, 1 spm. — Stn DB12, 15°36.6'S, 167°10.1'E, 10-18 m, 1 lv, 1 rv. — Stn LD12, 15°36.6'S, 167°11.3'E, 2-4 m, 1 lv. — Stn NB12, 15°33.1'S, 167°09.6'E, 20 m, 1 lv. — Stn LM13, 15°36.6'S, 167°11.1'E, intertidal, 1 rv. — Stn LS17, 15°31.1'S, 167°10.5'E, 7 m, 1 lv. — Stn NR21, 15°26.8'S, 167°15.1'E, 3-22 m, 2 spms. — Stn ZS22, 15°33.1'S, 167°09.6'E, 27-29 m, 1 lv. — Stn FR26, 15°31.7'S, 167°09.5'E, 3-33 m, 1 spm. — Stn FR29, 15°27.9'S, 167°14.6'E, 5-35 m, 1 rv. — Stn DR34, 15°34.7'S, 167°13.8'E, 14-25 m, 1 spm. — Stn NR41, 15°36.7'S, 167°02.0'E, 25 m, 1 spm. — Stn DS49, 15°38.7'S, 167°05.2'E, 10-17 m, 2 lv, 1 rv. — Stn DR50, 15°38.7'S, 167°05.2'E, 10-17 m, 1 spm. — Stn DR51, 15°32.9'S, 167°09.9'E, 28-60 m, 1 spm. — Stn FR53, 15°42.7'S, 167°15.1'E, 7 m, 1 spm. — Stn FB56, 15°35.2'S, 167°02.1'E, 3-18 m, 1 spm. — Stn

FB61, 15°34.4'S, 167°12.6'E, 2-3 m, 1 lv. — Stn FB64, 15°35.4'S, 166°59.2'E, ? m, 1 spm. — Stn DR66, 15°25.8'S, 167°13.0'E, 9-30 m, 1 spm. — Stn FB68, 15°35.4'S, 166°59.7'E, 11 m, 1 lv. — Stn FS77, 15°33.1'S, 167°09.6'E, 29 m, 1 lv, 1 rv. — Stn DR84, 15°43.4'S, 167°15.0'E, 6 m, 2 spms. — Stn FS86, 15°33.4'S, 167°16.7'E, 30 m, 1 lv, 1 rv. — Stn DS99, 15°32.5'S, 167°16.9'E, 100-105 m, 1 rv.

DISTRIBUTION. — Throughout tropical Indo-Pacific (except the Red Sea and Hawaiian Islands), southwestern limit northern Zululand, eastern limit French Polynesia, found in intertidal to sublittoral depths.

Genus *Juxtamusium* Iredale, 1939

Juxtamusium maldivense (Smith, 1903)

Pecten maldivensis Smith, 1903: 622, pl. 36, figs 19, 20.

Juxtamusium maldivense – Raines & Poppe 2006: 126, pl. 74, figs 1, 3; pl. 75, figs 1-7 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — **Maldiv Islands.** Lectotype spm (NHMUK 1903.9.17.49), designated and refigured by Waller (1972: 250, figs 111, 112).

Vanuatu. SANTO 2006, stn DS10, 15°36.6'S, 167°10.1'E, 6-24 m, 1 rv. — Stn AT36, 15°21.5'S, 167°12.3'E, 53-59 m, 1 rv. — Stn AT37, 15°22.5'S, 167°12.6'E, 72-82 m, 1 lv, 1 rv. — Stn DS96, 15°33.6'S, 167°16.5'E, 114 m, 1 rv.

DISTRIBUTION. — South Africa, Reunion Island, Red Sea, Mauritius, southern Japan, Thailand, Philippines, Malaysia, northern Australia, Papua New Guinea, Vanuatu (new record) and New Caledonia, live recorded at depths of 8-140 m (ZMA, unpublished data).

Genus *Mirapecten* Dall, Bartsch & Rehder, 1938

Mirapecten mirificus (Reeve, 1853)

Pecten mirificus Reeve, 1853: sp. 104, pl. 26, fig. 104.

Mirapecten mirificus – Raines & Poppe 2006: 130, pl. 77, figs 1-7, pl. 78, figs 1-7, pl. 79, figs 1-7 (references, type data, original and additional descriptions, distribution). — Dijkstra & Maestrati 2010: 354, fig. 5G, H.

MATERIAL EXAMINED. — **Indonesia.** Ambon, holotype spm (NHMUK 1950.11.14.46).

Vanuatu. SANTO 2006, stn FR24, 15°33.1'S, 167°09.6'E, 1-30 m, 1 lv. — Stn EP35, 15°34.9'-35.1'S, 167°13.9'-

14.1'E, 10-51 m, 1 rv. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 1 lv. — Stn DS105, 15°33.0'S, 167°16.7'E, 92 m, 1 rv.

DISTRIBUTION. — Southern Japan, China, Philippines, Malaysia, Indonesia, Papua New Guinea, Solomon Islands, Vanuatu (new record), New Caledonia, Fiji, Austral Islands and Hawaiian Islands, from depths of 37-230 m (Dijkstra & Maestrati 2010: 354).

Mirapecten rastellum (Lamarck, 1819)

Pecten rastellum Lamarck, 1819: 698. — Dijkstra 1994: 474, figs 17-26.

Mirapecten rastellum – Raines & Poppe 2006: 132, pl. 81, figs 1-6; pl. 82, figs 1-6 (references, type data, original and additional descriptions, distribution).

MATERIAL EXAMINED. — “Les mers du nord”, holotype spm (MHNG 1088/24).

Vanuatu. SANTO 2006, stn FR03, 15°36.2'S, 167°06.3'E, 3-32 m, 1 rv. — Stn DB20, 15°30.5'S, 167°01.4'E, 22-25 m, 1 rv. — Stn ZS22, 15°33.1'S, 167°09.6'E, 27-29 m, 1 lv. — Stn EP35, 15°34.9'-35.1'S, 167°13.9'-14.1'E, 10-51 m, 1 spm. — Stn EP39, 15°33.6'-33.7'S, 167°16.3'-16.5'E, 75-80 m, 2 spms. — Stn DB63, 15°26.9'S, 167°15.8'E, 21 m, 1 lv. — Stn DB65, 15°25.8'S, 167°13.0'E, 13 m, 1 spm. — Stn DB69, 15°24.4'S, 167°13.0'E, 38 m, 1 spm. — Stn DR87, 15°38.5'S, 167°15.1'E, 13 m, 1 spm. — Stn DS103, 15°34.1'S, 167°16.0'E, 70-80 m, 1 lv. — Stn AT114, 15°33.4'S, 167°16.4'E, 148-166 m, 1 lv.

DISTRIBUTION. — Southern Japan, Philippines, Indonesia, Guam, Marshall Islands, northwestern Australia, Papua New Guinea, Solomon Islands, Vanuatu (new record) and Fiji, live at depths of 10-200 m (ZMA, unpublished data, and present records).

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