New species and new records of deep-water Pectinoidea (Bivalvia: Propeamussiidae, Entoliidae and Pectinidae) from the South Pacific

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ABSTRACT

Fifty-two deep-water species of Pectinoidea (37 Propeamussiidae, 1 Entoliidae, 14 Pectinidae) are listed from Norfolk Ridge (11 species), Loyalty Islands (4 species), Fiji Islands (30 species), Tonga (26 species), Solomon Islands (26 species) and the Marquesas archipelago (8 species). All species from Fiji, Tonga and the Marquesas are new records and six species of Propeamussiidae are new to science: *Propeamussium boucheti* (Fiji and Tonga), *Parvamussium biformatum* (Solomons), *Parvamussium lozoueti* (Fiji and Tonga), *Parvamussium marquesanum* (Marquesas), *Parvamussium polynesianum* (Marquesas) and *Similipecten herosae* (Tonga). Two new combinations (*Hyalopecten tydemani*, *Talochlamys gladysiae*) are introduced.

RÉSUMÉ

Pectinoidea (Bivalvia : Propeamussiidae, Entoliidae et Pectinidae) des eaux profondes du Pacifique sud : espèces et occurences nouvelles.

Cinquante deux espèces profondes de Pectinoidea (37 Propeamussiidae, 1 Entoliidae, 14 Pectinidae) ont été reconnues de la Ride de Norfolk (11 espèces), des Iles Loyauté (4 espèces), des Iles Fidji (30 espèces), des Iles Tonga (26 espèces), des Iles Salomon (26 espèces) et des Iles Marquises (8 espèces). Toutes les espèces des Fidji, Tonga et Marquises représentent des occurences nouvelles. Six nouvelles espèces de Propeamussiidae sont décrites : *Propeamussium boucheti* (Fidji et Tonga), *Parvamussium biformatum* (Salomon), *Parvamussium lozoueti* (Fidji et Tonga), *Parvamussium marquesanum* (Marquises), *Parvamussium polynesianum* (Marquises) et *Similipecten herosae* (Tonga). Deux nouvelles combinaisons (*Hyalopecten tydemani*, *Talochlamys gladysiae*) sont établies.

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INTRODUCTION

This paper deals with new species and records of deep-water, Recent pectinoids from several French cruises (1997-2000) to the Loyalty Islands (ATELIER LIFOU 2000), Fiji Islands (MUSORSTOM 10, BORDAU 1), Tonga (BORDAU 2) and the Marquesas Islands (MUSORSTOM 9). For the context and narratives of these expeditions, see the introductory chapter by Bouchet *et al.* (this volume). The species mentioned in earlier publications (Dijkstra 1989b; 1990a; 1990b; 1991; 1995; 2001; Dijkstra and Kastoro 1997; Dijkstra and Marshall 1997; Dijkstra and Kilburn 2001) are briefly reported but not refigured and previously known shallow water pectinids (down to *c.* 50 m depth) from French Polynesia (Dijkstra 1989a; 2002) are not dealt with.

All studied material is deposited in the Muséum national d'Histoire naturelle (MNHN) in Paris, with the exception of voucher specimens in the private pectinoid reference collection of the senior author.

Repositories
BMNH: The Natural History Museum, London
HD: H. H. Dijkstra collection
HPW: H. P. Wagner collection
MNHN: Muséum national d'Histoire naturelle, Paris
NMW: National Museum of Wales, Cardiff
ZMA: Zoological Museum, University of Amsterdam, Amsterdam
ZMB: Museum für Naturkunde, Humboldt-Universität, Berlin
ZMUC: Zoological Museum, University of Copenhagen, Copenhagen.

Abbreviations
lv: left valve(s)
rv: right valve(s)
v: valve(s)
spm(s): live-taken specimen(s)
H: height (dorsal-ventral) in mm
L: length (anterior-posterior) in mm
D: diameter (convexity, or maximum combined thickness of both articulated valves) in mm.

SYSTEMATIC ACCOUNT

Superfamily PECTINOIDEA Rafinesque, 1815

REMARKS. — The superfamily Pectinoidea and family Pectinidae were previously attributed to Wilkes (1810). However, the chapter by Wilkes (1810) is not entirely binominal and therefore unavailable according to the *Code* (ICZN 1999).

Family PROPEAMUSSIIDAE Abbott, 1954

Genus ***PROPEAMUSSIUM*** de Gregorio, 1884

Propeamussium alcocki (Smith, 1894)

Amussium alcocki Smith, 1894: 172, pl. 5, figs 15-16.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 13, figs 133-137).
Solomon. SALOMON 1: stn CP 1750, 09°15.6'S, 159°54.6'E, 693-696 m, 3 lv; stn CP 1751, 09°10.4'S, 159°53.0'E, 749-799 m, 1 lv; stn CP 1753, 09°02.7'S, 159°49.4'E, 1001-1012 m, 4 spms.
Fiji. BORDAU 1: stn CP 1413, 16°10'S, 179°24'W, 669-676 m, 33 spms; stn CP 1415, 16°31'S, 179°00'W, 670-682 m, 1 spm; stn CP 1460, 18°47'S, 178°47'W, 750-767 m, 2 spms; stn CP 1491, 18°50'S, 178°27'W, 777-787 m, 2 spms; stn CP 1502, 18°21'S, 178°27'W, 640-660 m, 2 spms; stn CP 1504, 18°13'S, 178°34'W, 427-440 m, 1 spm.
Tonga. BORDAU 2: stn CP 1625, 23°28'S, 176°22'W, 824 m, 6 spms.

DISTRIBUTION. – Gulf of Aden, Laccadive Sea, Bay of Bengal, Chesterfield Islands, New Caledonia, Loyalty Islands (Dijkstra 1995: 13), Indonesia (Dijkstra & Kastoro 1997: 247), Norfolk Island (Dijkstra & Marshall 1997: 74), Wallis and Futuna and Vanuatu (Dijkstra 2001: 74); live in 750-1353 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 440-1001 m.

REMARKS. – The present material is similar to the type specimens, although somewhat darker in colour (brownish, whitish is typical) and slightly more elongate (type specimens nearly circular).

Propeamussium andamanicum (Smith, 1894)

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

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 15, figs 138-142).
Fiji. MUSORSTOM 10: stn CP 1354, 17°42.6'S, 178°55.0'E, 959-963 m, 85 spms; stn CP 1361, 18°00.0'S, 178°53.7'E, 1058-1091 m, 38 spms. – BORDAU 1: stn CP 1398, 16°22'S, 179°56'W, 907-912 m, 3 spms; stn CP 1458, 17°22'S, 179°28'W, 1216-1226 m, 21 spms.

DISTRIBUTION. – Zanzibar area, Gulf of Aden, Arabian Sea, Laccadive Sea, Andaman Sea, New Caledonia (Dijkstra 1995: 15), Wallis and Futuna and Vanuatu (Dijkstra 2001: 75); live in 956-2000 m. New record for Fiji. Present material live in 912-1216 m. This species seems to occur rather abundantly around Fiji, in contrast to other known localities in the southwestern Pacific.

REMARKS. – The present material is almost identical to the type specimens, except that the commarginal lirae on the left valve are more delicate and more closely spaced.

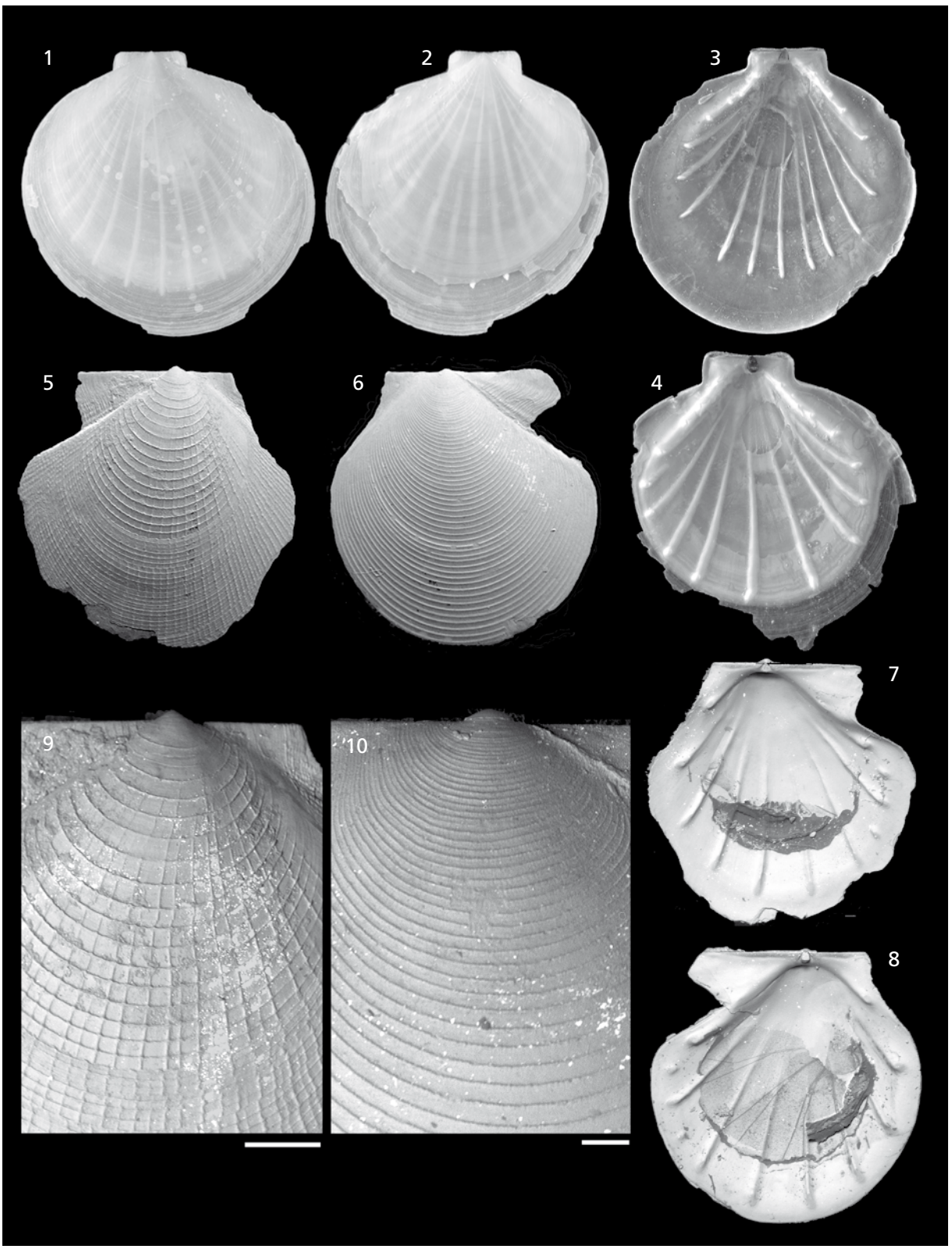
Propeamussium boucheti n. sp.

Figs 1-4

TYPE MATERIAL. – Holotype (spm) MNHN 20441 and 25 paratypes MNHN 20442-20447, 2 HD.

TYPE LOCALITY. – Fiji, Bligh Water, 16°52.51'S, 177°43.66'E, 500-614 m [MUSORSTOM 10: stn CP 1341].

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1330, 17°10'S, 177°56'E, 567-699 m, 1 lv (paratype MNHN 20442); stn CP 1341, 16°53'S, 177°44'E, 500-614 m, 6 spms, 1 lv, 2 rv (holotype MNHN 20441 and 7 paratypes MNHN 20443, 1 HD). – BORDAU 1: stn CP 1409, 16°02'S, 179°30'W, 557-558 m, 4 spms (paratypes MNHN 20444); stn CP 1420, 17°05'S, 178°57'W, 550-687 m, 6 spms (paratypes MNHN 20445, Figs 3-4).
Tonga. BORDAU 2: stn CP 1556, 20°11'S, 174°45'W, 589-591 m, 2 spms, 1 lv (paratypes MNHN 20446); stn CP 1558, 20°10'S, 174°43'W, 580-593 m, 5 spms (4 paratypes MNHN 20447, 1 HD).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DISTRIBUTION. — This species is so far only known from the easternmost regions of Melanesia, around Fiji and Tonga; live in 558-589 m.

DESCRIPTION. — Shell up to *c.* 65 mm in height, rather solid, circular, inequivalve, somewhat inequilateral, umbonal angle *c.* 125°, auricles short, small and equal in size, opaque to semi-translucent, left and right valve pale brownish, auricles of some specimens orange. Prodissoconch *c.* 250 µm in height.

Left valve more convex than right, nearly smooth, bearing only delicate commarginal growth lines, more prominent and closely spaced near the ventral margin. Anterior and posterior auricles with close-set commarginal growth lines. Generally 12-14 interior ribs (on left valve slightly smaller than on right) and an auricular riblet on each side, commencing just below resilifer and extending to pallial line, with one or two intermediate rudimentary riblets.

Right valve with fine and regularly, closely spaced commarginal lirae and granulate interstitial microsculpture (prismatic calcite layer). Marginal apron broken off of many specimens. Anterior and posterior auricles with close-set commarginal growth lines. Resilifer triangular.

Dimensions of holotype: H 65.6, L 65.8, D 8.9 mm.

REMARKS. — *Propeamussium boucheti* is morphologically closest to *Propeamussium watsoni*, but differs in size, external sculpture, internal ribbing and colour. The left valve of *P. boucheti* is almost smooth (with only commarginal growth lines), while that of *P. watsoni* is radially sculptured in the early growth stages and commarginally sculptured in later ontogeny. *Propeamussium boucheti* has more internal ribs (12-14, sometimes more, with interstitial rudimentary riblets) than *P. watsoni* (8-10, generally 10, without rudimentary riblets). *Propeamussium boucheti* is usually creamy or orange in colour, rarely whitish, whereas *P. watsoni* is whitish. Both species are semi-transparent, sometimes opaque.

Propeamussium boucheti differs from *P. alcocki* in having a more solid shell (*P. alcocki* is very fragile). It also differs in shape, *P. boucheti* being almost circular, somewhat wider than high, whereas *P. alcocki* is higher than wide. Both species lack external sculpture and only have commarginal growth lines on the left valve. The internal ribs of *P. boucheti* are prominent and more numerous than those of *P. alcocki*.

Propeamussium boucheti and *P. sibogai* are similar in shape but *P. boucheti* is more solid and larger. The two are similar in colour but *P. sibogai* is more transparent. *Propeamussium boucheti* has more internal ribs but they are less prominent than in *P. sibogai*. Moreover, the internal ribs of *P. boucheti* are whitish, while those of *P. sibogai* are brownish.

Propeamussium boucheti is compared with other species of *Propeamussium* as follows:

	P. boucheti	*P. alcocki*	*P. watsoni*	*P. sibogai*
Shape	circular	elongate	circular	circular
Height	65 mm	50 mm	60 mm	55 mm
Shell	semi-translucent	translucent	semi-translucent	translucent
Colour	yellowish	whitish	whitish	yellowish
lv	smooth	commarginal growth lines	radial and commarginal sculpture	smooth
Int. ribs	12-14	8-10	8-10	6-7
Int. ribs	strong	delicate	delicate	very strong

FIGS 1-10. **1-4**, *Propeamussium boucheti* n. sp., holotype MNHN 20441, H 65.6 mm, L 65.8 mm, MUSORSTOM 10 stn CP 1341; **1**, left valve, exterior; **2**, right valve, exterior; **3**, paratype MNHN 20445, BORDAU 1 stn CP 1420, left valve, interior, H 60.5 mm, L 61 mm; **4**, right valve, interior, H 57 mm, L 50 mm (marginal apron broken off). **5-10**, *Parvamussium biformatum* n. sp., holotype MNHN 20448, H 4.6 mm, L 4.9 mm, SALOMON 1 stn DW 1770; **5**, left valve, exterior; **6**, right valve, exterior; **7**, left valve, interior; **8**, right valve interior; **9**, left valve, microsculpture, scale bar 200 µm; **10**, right valve, microsculpture, scale bar 500 µm.

ETYMOLOGY. – Named after Dr Philippe Bouchet (MNHN), leader of several French expeditions to the South Pacific, who made this pectinoid material available for study.

Propeamussium caducum (Smith, 1885)

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

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 17).
Solomon. SALOMON 1: stn CP 1749, 09°21'S, 159°56'E, 582-594 m, 44 spms; stn CP 1750, 09°16'S, 159°55'E, 693-696 m, 2 lv, 5 spms; stn CP 1786, 09°21'S, 160°25'E, 387 m, 1 lv; stn CP 1800, 09°21'S, 160°24'E, 357-359 m, 1 rv; stn CP 1805, 09°35'S, 160°43'E, 367-500 m, 7 spms; stn CP 1808, 09°46'S, 160°53'E, 611-636 m, 1 lv.

DISTRIBUTION. – Zanzibar area, Gulf of Aden, Arabian Sea, Bay of Bengal, Japan, Philippines, Indonesia, New Caledonia (Dijkstra 1995: 17) and Vanuatu (Dijkstra 2001: 75); live in 190-1500 m. New record for the Solomon Islands. Present material live in 500-693 m.

Propeamussium investigatoris (Smith, 1906)

Amussium investigatoris Smith, 1906: 255.

MATERIAL EXAMINED. – The type material (see Dijkstra & Kastoro 1997: 250).
Solomon. SALOMON 1: stn CP 1792, 09°15'S, 160°09'E, 477-505 m, 1 rv; stn CP 1795, 09°19'S, 160°23'E, 442-451 m, 1 rv; stn CP 1805, 09°35'S, 160°43'E, 367-500 m, 1 spm; stn DW 1817, 09°48'S, 160°54'E, 233-269 m, 1 rv; stn CP 1836, 10°10'S, 161°22'E, 439-486 m, 1 spm; stn CP 1837, 10°13'S, 161°29'E, 381-383 m, 1 lv.
Fiji. MUSORSTOM 10: stn DW 1315, 17°16'S, 178°24'E, 480-500 m, 2 lv, 1 rv; stn CP 1316, 17°15'S, 178°22'E, 478-491 m, 254 spms; stn CP 1317, 17°12'S, 178°14'E, 471-475 m, 8 spms; stn CP 1330, 17°10'S, 177°56'E, 567-699 m, 9 spms; stn DW 1376, 18°19'S, 178°09'E, 497-504 m, 1 lv. – BORDAU 1: stn CP 1420, 17°05'S, 178°57'W, 550-687 m, 2 spms; stn DW 1432, 17°20'S, 178°44'W, 477-493 m, 1 spm, 4 lv, 2 rv; stn CP 1461, 18°09'S, 178°48'W, 560 m, 1 spm; stn CP 1462, 18°09'S, 178°44'W, 556-560 m, 2 spms, 1 lv; stn CP 1468, 18°16'S, 178°41'W, 478-500 m, 7 spms; stn DW 1486, 19°01'S, 178°26'W, 395-540 m, 2 spms, 2 lv.
Tonga. BORDAU 2: stn DW 1520, 21°25'S, 175°03'W, 447-450 m, 9 lv, 7 rv; stn CP 1528, 21°14'S, 174°59'W, 587-592 m, 8 spms; stn CP 1529, 21°13'S, 174°58'W, 688-710 m, 2 spms; stn CP 1566, 21°02'S, 175°18'W, 530-531 m, 2 spms; stn DW 1617, 23°03'S, 175°53'W, 483-531 m, 2 lv; stn DW 1618, 24°13'S, 176°18'W, 627-656 m, 1 lv; stn DW 1619, 24°16'S, 176°20'W, 591-593 m, 1 lv; stn DW 1632, 22°01'S, 175°42'W, 613-618 m, 1 rv; stn DW 1637, 21°05'S, 175°23'W, 464-507 m, 1 spm, 6 lv, 6 rv; stn CP 1638, 21°05'S, 175°23'W, 469-520 m, 19 spms; stn CP 1640, 21°09'S, 175°24'W, 564-569 m, 58 spms, 6 lv; stn CP 1641, 21°09'S, 175°22'W, 395 m, 2 spms; stn CP 1642, 21°05'S, 175°23'W, 532 m, 44 spms, 7 lv, 9 rv; stn CP 1643, 21°05'S, 175°22'W, 487 m, 2 spms; stn CP 1644, 21°05'S, 175°23'W, 501 m, 6 spms, 3 lv, 1 rv.

DISTRIBUTION. – Northern Indian Ocean, Indonesia (Dijkstra & Kastoro 1997: 250), Chesterfield Islands, New Caledonia, Loyalty Islands, Norfolk Island and Kermadec Islands (Dijkstra 2001: 76); live in 176-660 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 395-688 m.

REMARKS. – The present material is similar to the type specimens, although the radial sculpture on the left valve is somewhat weaker with fewer radial riblets in the present material. The present material has a few more internal ribs (12 and usually with 1-3 rudimentary interstitial riblets) than the type specimens (10 with 1 or 2 rudimentary interstitial riblets).

Propeamussium jeffreysii (Smith, 1885)

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

MATERIAL EXAMINED. – The type material (see Dijkstra 2001: 76).
Fiji. MUSORSTOM 10: stn CP 1312, 17°25'S, 178°34'E, 660-666 m, 16 spms, 10 lv, 12 rv; stn CP 1335, 16°53'S, 178°03'E, 729-753 m, 1 spm; stn CP 1346, 17°20'S, 178°32'E, 673-683 m, 15 spms. – BORDAU 1: stn CP 1392, 16°49'S, 179°54'E, 545-651 m, 1 lv; stn CP 1396, 16°39'S, 179°57'W, 591-596 m, 7 spms, 4 lv, 2 rv; stn DW 1408, 16°02'S, 179°30'W, 550-561 m, 3 rv.

DISTRIBUTION. – Southeast Africa, Gulf of Aden, Maldive Islands, Japan and Philippines (Knudsen 1967: 277), Wallis and Futuna and Vanuatu (Dijkstra 2001: 78); live in 290-797 m. New record for Fiji. Present material live in 596-729 m.

REMARKS. – The present material is similar to the type specimens, although somewhat more circular in shape (type specimens are more elongate and slightly posteriorly oblique), the sculpture on the left valve is slightly more prominent (type specimens with weaker commarginal sculpture) and the internal ribs are more numerous (present material 11-12 with numerous rudimentary interstitial riblets; type specimens 10 with one or two rudimentary riblets).

Propeamussium meridionale (Smith, 1885)

Amussium meridionale Smith, 1885: 316, pl. 24, figs 1-1a.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 19).
Norfolk Ridge. NORFOLK 1: stn DW 1665, 23°43'S, 167°43'E, 923 m, 1 lv, 4 rv.
Fiji. MUSORSTOM 10: stn CP 1342, 16°46'S, 177°40'E, 650-701 m, 41 spm, 6 lv, 6 rv. – BORDAU 1: stn DW 1414, 16°31'S, 178°59'W, 630-689 m, 3 lv, 8 rv; stn CP 1415, 16°31'S, 179°00'W, 670-682 m, 1 spm, 14 lv, 16 rv; stn DW 1417, 16°27'S, 178°55'W, 353 m, 1 rv; stn DW 1485, 19°03'S, 178°30'W, 700-707 m, 1 spm, 1 lv, 2 rv.
Tonga. BORDAU 2: stn DW 1531, 21°12'S, 174°56'W, 970-983 m, 3 lv, 10 rv; stn DW 1588, 18°40'S, 173°52'W, 630-710 m, 1 lv; stn DW 1597, 20°40'S, 174°55'W, 598-610 m, 8 lv, 6 rv; stn DW 1599, 20°44'S, 174°52'W, 720-760 m, 9 lv, 12 rv; stn DW 1601, 20°50'S, 174°57'W, 200-487 m, 2 rv; stn DW 1602, 20°49'S, 174°57'W, 263-320 m, 1 lv, 1 rv.

DISTRIBUTION. – East of Marion Island, south of Western Australia, Zanzibar area, Gulf of Aden, northern Arabian Sea, Maldive Islands, Indonesia, Chesterfield Islands, New Caledonia, Loyalty Islands and west of Patagonia (Dijkstra 1995: 19), Wallis and Futuna and Vanuatu (Dijkstra 2001: 78); live in 649-4810 m. New records for Fiji, Tonga and Norfolk Ridge. Present material live in 682-700 m.

REMARKS. – The present material is more circular in shape than the type specimens (which are more posteriorly oblique) and whitish opaque (type specimens more transparent). The reticulated sculpture on the left valve of the present material is more prominent than on the type specimens (very weak or absent commarginal sculpture on the types). The marginal apron of both valves is damaged in much of the present material.

Propeamussium rubrotinctum (Oyama, 1951)

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

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 21).

Norfolk Ridge. NORFOLK 1: stn DW 1680, 24°45'S, 168°10'E, 385-392 m, 3 spms, 1 lv, 1 rv.

Fiji. MUSORSTOM 10: stn CP 1318, 17°16'S, 178°03'E, 330-335 m, 15 spms; stn DW 1340, 16°57'S, 177°38'E, 303-365 m, 3 lv, 1 rv; stn DW 1347, 17°31'S, 178°40'E, 344-349 m, 2 spms, 3 lv, 5 rv; stn CP 1348, 17°30'S, 178°40'E, 353-390 m, 15 spms, 3 lv; stn DW 1350, 17°33'S, 178°38'E, 198-200 m, 1 lv; stn DW 1380, 18°19'S, 177°59'E, 321 m, 2 lv, 1 rv. – BORDAU 1: stn CP 1406, 16°39'S, 179°37'E, 360-380 m, 4 spms, 3 lv, 1 rv; stn DW 1410, 16°06'S, 179°28'W, 400-410 m, 1 spm, 3 lv, 10 rv; stn CP 1411, 16°05'S, 179°28'W, 390-403 m, 28 spms; stn CP 1412, 16°06'S, 179°28'W, 400-407 m, 15 spms, 8 lv; stn CP 1415, 16°31'S, 179°00'W, 670-682 m, 1 spm; stn DW 1421, 17°08'S, 178°59'W, 403-406 m, 13 spms, 15 lv, 17 rv; stn DW 1422, 17°08'S, 178°59'W, 360-371 m, 1 lv; stn DW 1423, 17°08'S, 178°59'W, 402-410 m, 3 spms, 9 lv, 5 rv; stn DW 1424, 17°17'S, 179°01'W, 385-416 m, 1 spm; stn DW 1425, 17°17'S, 179°01'W, 400-416 m, 1 lv; stn DW 1426, 17°15'S, 179°02'W, 330-367 m, 3 rv; stn CP 1434, 17°11'S, 178°41'W, 400-401 m, 5 spms; stn DW 1464, 18°09'S, 178°38'W, 285-300 m, 1 spm; stn CP 1468, 18°16'S, 178°41'W, 478-500 m, 26 spms; stn CP 1476, 19°41'S, 178°11'W, 310-420 m, 3 spms, 2 lv, 1 rv; stn DW 1477, 20°58'S, 178°45'W, 390-405 m, 12 spms, 1 lv; stn CP 1478, 20°59'S, 178°44'W, 386-396 m, 4 spms, 1 lv; stn DW 1479, 20°58'S, 178°45'W, 441-506 m, 26 spms, 1 lv, 8 rv; stn CP 1481, 20°57'S, 178°45'W, 441-506 m, 141 spm; stn DW 1485, 19°03'S, 178°30'W, 700-707 m, 1 lv, 2 rv; stn CP 1496, 18°43'S, 178°23'W, 392-407 m, 5 spms, 6 lv, 14 rv; stn DW 1497, 18°44'S, 178°25'W, 335-350 m, 2 lv; stn DW 1499, 18°40'S, 178°27'W, 389-400 m, 1 spm, 1 lv, 3 rv.

Tonga. BORDAU 2: stn CP 1510, 21°05'S, 175°23'W, 461-497 m, 4 spms, 13 lv, 10 rv; stn CP 1526, 21°16'S, 174°59'W, 463-464 m, 1 lv; stn CP 1565, 20°58'S, 175°16'W, 869-880 m, 1 spm; stn CP 1592, 19°08'S, 174°17'W, 391-426 m, 12 spms, 4 lv, 1 rv; stn DW 1601, 20°50'S, 174°57'W, 200-487 m, 1 spm, 1 lv, 1 rv; stn DW 1608, 22°12'S, 175°27'W, 401-413 m, 1 lv; stn DW 1628, 23°22'S, 176°18'W, 400-416 m, 4 lv, 7 rv; stn DW 1631, 23°23'S, 176°18'W, 407-443 m, 2 spms, 8 lv, 10 rv; stn CP 1641, 21°09'S, 175°22'W, 395 m, 2 spms.

Solomon Islands. SALOMON 1: stn DW 1760, 08°47'S, 160°01'E, 172-179 m, 1 lv.

DISTRIBUTION. – Japan, South China Sea, New Caledonia, Loyalty Islands (Dijkstra 1995: 21), Indonesia (Dijkstra & Kastoro 1997: 250), Norfolk Island (Dijkstra & Marshall 1997: 79), Wallis and Futuna and Vanuatu (Dijkstra 2001: 81); live in 210-490 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 300-869 m.

Propeamussium sibogai (Dautzenberg & Bavay, 1904)

Amussium sibogai Dautzenberg & Bavay, 1904: 207, figs 1-4.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 23).

Fiji. MUSORSTOM 10: stn CP 1360, 18°00'S, 178°48'E, 402-444 m, 2 spms. – BORDAU 1: stn CP 1395, 16°45'S, 179°59'E, 423-500 m, 2 spms; stn CP 1411, 16°05'S, 179°28'W, 390-403 m, 1 lv; stn CP 1412, 16°06'S, 179°28'W, 400-407 m, 1 spm; stn DW 1421, 17°08'S, 178°59'W, 403-406 m, 1 spm; stn CP 1468, 18°16'S, 178°41'W, 478-500 m, 1 rv; stn CP 1481, 20°57'S, 178°45'W, 441-506 m, 1 spm, 1 lv; stn CP 1491, 18°50'S, 178°27'W, 777-787 m, 1 lv; stn DW 1493, 18°43'S, 178°24'W, 429-440 m, 6 spms; stn DW 1496, 18°43'S, 178°23'W, 392-407 m, 1 spm; stn CP 1505, 18°12'S, 178°37'W, 420-450 m, 2 spms.

Tonga. BORDAU 2: stn CP 1613, 23°03'S, 175°47'W, 331-352 m, 1 lv; stn DW 1614, 23°02'S, 175°51'W, 429-549 m, 5 lv, 3 rv.

Solomon. SALOMON 1: stn DW 1835, 10°10'S, 161°24'E, 464-482 m, 1 lv.

DISTRIBUTION. – Southeast Africa, Japan, Philippines, Indonesia, northwest Australia, New Caledonia, Loyalty Islands (Dijkstra 1995: 23), Kermadec Islands (Dijkstra & Marshall 1997: 79), Wallis and Futuna and Vanuatu (Dijkstra 2001: 81); live in 183-710 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 406-441 m.

REMARKS. – The present material is similar to the holotype, although the shells are more fragile and transparent whitish with white internal ribs, whereas the holotype is generally pale brownish with dark brownish ribs.

Propeamussium siratama (Oyama, 1951)

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

MATERIAL EXAMINED. – The type material (see Dijkstra & Kastoro 1997: 253).
Fiji. MUSORSTOM 10: stn DW 1308, 17°33'S, 178°53'E, 893-897 m, 2 lv, 3 rv; stn CP 1309, 17°32'S, 178°53'E, 843-887 m, 1 lv; stn CP 1353, 17°31'S, 178°53'E, 879-897 m, 7 spms, 7 lv, 8 rv; stn CP 1354, 17°43'S, 178°55'E, 959-963 m, 3 lv, 4 rv; stn DW 1383, 18°18'S, 178°03'E, 230-251 m, 1 lv. – BORDAU 1: stn CP 1400, 16°28'S, 179°50'W, 1004-1012 m, 2 spms.
Solomon Islands. SALOMON 1: stn CP 1747, 09°22'S, 159°59'E, 364-402 m, 1 lv; stn CP 1749, 09°21'S, 159°56'E, 582-594 m, 13 spms; stn CP 1783, 08°33'S, 160°42'E, 399-700 m, 3 spms; stn CP 1786, 09°21'S, 160°25'E, 387 m, 1 spm; stn CP 1792, 09°15'S, 160°09'E, 477-505 m, 1 lv; stn CP 1795, 09°19'S, 160°23'E, 442-451 m, 1 rv; stn CP 1801, 09°25'S, 160°26'E, 264-273 m, 1 spm; stn CP 1804, 09°32'S, 160°37'E, 309-328 m, 2 lv, 1 rv; stn CP 1805, 09°35'S, 160°43'E, 367-500 m, 1 spm; stn CP 1808, 09°46'S, 160°53'E, 611-636 m, 1 spm.

DISTRIBUTION. – Japan, Philippines, Indonesia (Dijkstra & Kastoro 1997: 253) and New Caledonia (Dijkstra 2001: 82); live in 283-533 m. New records for the Solomon Islands and Fiji. Present material live in 273-1004 m. The specimens are from remarkably deeper water than previous records.

REMARKS. – The present material matches the original description closely and is very similar to studied material from Japan (Dijkstra 2001: 82), but differs in having a few more internal ribs (10 rather then the typical 8).

Genus ***PARVAMUSSIUM*** Sacco, 1897

Parvamussium araneum Dijkstra, 1991

Parvamussium araneum Dijkstra, 1991: 8, figs 3-10.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1330, 17°10'S, 177°56.E, 567-699 m, 2 spms. – BORDAU 1: stn DW 1469, 19°40'S, 178°10'W, 314-377 m, 2 lv.
Tonga. BORDAU 2: stn DW 1595, 19°03'S, 174°19'W, 523-806 m, 1 spm [atypical].
Solomon Islands. SALOMON 1: stn DW 1768, 08°21'S, 160°42'E, 194-286 m, 1 rv.

DISTRIBUTION. – Indonesia and Vanuatu (Dijkstra 2001: 82); live in 154-300 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 523-567 m.

REMARKS. – The present material from Fiji is similar to the type specimens, although in contrast to the type material (which has rudimentary internal ribs), the specimen from Tonga has more internal ribs in the adult stage.

Parvamussium biformatum n. sp.

Figs 5-10

TYPE MATERIAL. – Holotype (spm) MNHN 20448.

TYPE LOCALITY. – Solomon Islands, 08°20'S, 160°39'E, 453-542 m [SALOMON 1: stn DW 1770].

MATERIAL EXAMINED. – Only known from the type material.

DISTRIBUTION. – Only known from the type locality.

DESCRIPTION. – Shell small, fragile, circular, semi-transparent, inequivalve, rather inflated, left valve slightly more convex than right valve, auricles unequal in shape and size, umbonal angle about 110°, colour whitish with brownish maculations.

Left valve with reticulated sculpture produced by intersecting commarginal and radial sculpture in early to medium growth stages, and with more prominent commarginal sculpture in late growth stages. Commarginal lamellae commence at 0.5 mm shell height and extend to the ventral margin, more closely spaced near the margin. Irregularly and widely spaced, intercalated radial riblets commence at 1 mm shell height and also extend to the ventral margin, weaker and more closely spaced near the margin. Anterior and posterior auricles with closely spaced commarginal lamellae, umbonal area smooth.

Right valve with regularly arranged commarginal lirae (1 per mm on central part of disc). Anterior auricle with closely spaced, coarse commarginal lamellae, more delicate on posterior. Hinge line straight. Byssal notch shallow, byssal fasciole lacking.

Prominent internal ribs, 8 plus 2 rudimentary and 1 weak auricular on each side, commence at 1 mm shell height and extend close to ventral margin.

Dimensions of holotype: H 4.6, W 4.9, D 1.6.

REMARKS. – *Parvamussium biformatum* resembles *P. multiliratum* Dijkstra, 1995 in shape, but differs strongly in sculpture (reticulate in early ontogeny and commarginal in late ontogeny; *P. multiliratum* commarginal throughout) and internal ribs (8 prominent + 2 rudimentary, *P. multiliratum* 14 delicate + 2 rudimentary). Moreover, *P. biformatum* has a dull umbonal area, that of *P. multiliratum* being glossy, and it also differs in colour (*P. biformatum* is opaque whitish and brownish, *P. multiliratum* more whitish transparent).

Parvamussium biformatum somewhat resembles *Parvamussium retiaculum* Dijkstra, 1995 in sculpture. The two species have a similar reticulate sculpture on the central part of the disc, but differ strongly ventrally (*P. biformatum* commarginal, *P. retiaculum* reticulate). Moreover, *P. biformatum* is circular in shape with a smaller anterior auricle, *P. retiaculum* being more oblong. *Parvamussium biformatum* has fewer internal ribs (8 + 2 rudimentary, *P. retiaculum* 12) and they commence earlier. The two species are semi-transparent, but they differ in colour (*P. biformatum* whitish with brownish maculations, *P. retiaculum* whitish).

ETYMOLOGY. – Two different sculptures on the left valve (Latin *biformatus*, adjective = two forms).

Parvamussium cristatellum (Dautzenberg & Bavay, 1912)

Pecten (*Amussium*) *cristatum* [*sic*] Bavay, 1905: 187, pl. 17, figs 2a-c [*non Pecten cristatus* Bronn, 1828].
Amussium cristatellum Dautzenberg & Bavay, 1912: 36, pl. 28, figs 5-8 [*nom. nov.* for *Pecten* (*Amussium*) *cristatus* Bavay].

MATERIAL EXAMINED. – The type material (see Dijkstra & Marshall 1997: 80).
Fiji. MUSORSTOM 10: stn DW 1333, 16°50'S, 178°13'E, 200-215 m, 29 lv, 26 rv; stn DW 1334, 16°51'S, 178°14'E, 251-257 m, 5 lv, 3 rv; stn DW 1359, 17°50'S, 178°48'E, 183-188 m, 1 lv; stn DW 1365, 18°13'S, 178°32'E, 295-302 m, 5 lv, 12 rv.

Solomon Islands. SALOMON 1: stn DW 1742, 11°29'S, 159°57'E, 366-421 m, 2 lv, 4 rv; stn DW 1745, 09°23'S, 159°59'E, 253-356 m, 1 lv, 3 rv; stn DW 1762, 08°40'S, 160°04'E, 396-411 m, 4 lv, 4 rv; stn DW 1767, 08°19'S, 160°40'E, 98-200 m, 1 spm; stn DW 1768, 08°21'S, 160°42'E, 194-286 m, 1 spm, 7 lv, 2 rv; stn DW 1777, 08°20'S, 160°39'E, 405-450 m, 1 lv; stn CP 1781, 08°31'S, 160°38'E, 1036-1138 m, 3 lv, 1 rv; stn CP 1795, 09°19'S, 160°23'E, 442-451 m, 3 rv; stn DW 1820, 09°52'S, 160°51'E, 256-329 m, 4 lv, 1 rv; stn DW 1834, 10°12'S, 161°18'E, 225-281 m, 2 lv, 2 rv.

DISTRIBUTION. – Southeast Africa, Andaman Islands, Indonesia and Kermadec Islands (Dijkstra & Marshall 1997: 80), New Caledonia, Wallis and Futuna and Vanuatu (Dijkstra 2001: 83); live in 330-510 m. New records for the Solomon Islands and Fiji. Present material live in 194-200 m.

Parvamussium dautzenbergi (Dijkstra, 1990)

Figs 18, 19

Propeamussium (*Parvamussium*) *dautzenbergi* Dijkstra, 1990a: 2, figs 5-8.

MATERIAL EXAMINED. – **Solomon Islands**. SALOMON 1: stn DW 1741, 11°29.4'S, 159°57.4'E, 557-655 m, 1 lv.

DISTRIBUTION. – Indonesia; shells in 281-655 m (Dijkstra 1990a: 2). New record for the Solomon Islands.

Parvamussium lozoueti n. sp.

Figs 11-17

TYPE MATERIAL. – Holotype (spm) MNHN 20449 and 19 paratypes MNHN 20450-20454, 3 HD.

TYPE LOCALITY. – Fiji, 16°31.05'S, 179°00.29'W, 670-682 m [BORDAU 1: stn CP 1415].

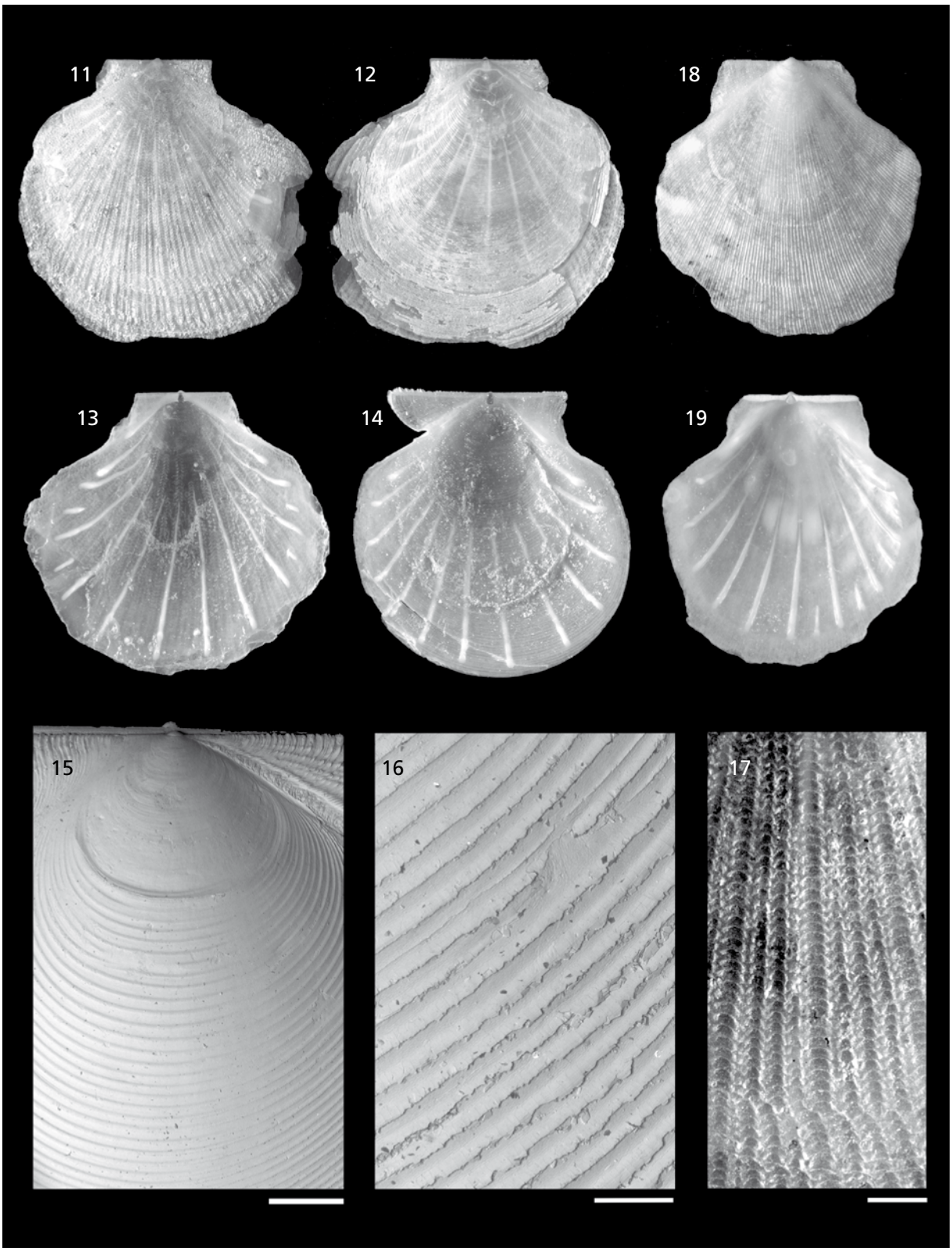
MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn DW 1314, 17°16'S, 178°15'E, 656-660 m, 1 spm (paratype MNHN 20451). – BORDAU 1: stn CP 1415, 16°315'S, 179°00'W, 670-682 m, 4 spms, 2 lv, 2 rv (holotype MNHN 20449 and 7 paratypes MNHN 20450, Figs 13, 14; 1 HD); stn DW 1485, 19°03'S, 178°30'W, 700-707 m, 6 spms, 2 lv, 3 rv (9 paratypes MNHN 20452, Figs 14-17; 2 HD); stn CP 1491, 18°50'S, 178°27'W, 777-787 m, 1 spm (paratype MNHN 20453).
Tonga. BORDAU 2: stn DW 1588, 18°40'S, 173°52'W, 630-710 m, 1 lv (paratype MNHN 20454).

DISTRIBUTION. – Fiji and Tonga; live in 660-777 m.

DESCRIPTION. – Shell up to 17 mm in height, fragile, semi-transparent, inequivalve, inequilateral, subcircular, posteriorly slightly oblique, right valve more convex than left, auricles nearly equal in size, umbonal angle 120°, colour whitish.

Left valve sculptured with irregularly spaced, numerous radial rows of curved commarginal vesicular lamellae (imbricated radial ribs), commencing unequally 2-3 mm below umbonal margin, increasing with interstitial secondary ones and extending to ventral margin. Preradial stage smooth and glossy. Auricles with commarginal lamellae, anterior more prominent than posterior.

Right valve with closely spaced, commarginal lirae (7-8 per mm in central part of disc). Anterior auricle with commarginal lamellae, transforming into spines on dorsal margin, posterior auricle with closer spaced commarginal lamellae. Byssal notch small.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Delicate internal ribs 12-13 with one or two interstitial rudimentary riblets, commencing 4-5 mm below umbonal margin and extending to ventral apron, with one or two auricular riblets.

Dimensions of holotype: H 17.0, L 17.9, D 3.8.

REMARKS. – The present species somewhat resembles *Parvamussium retiolum* Dijkstra, 1995 in shape (*P. lozoueti* is more circular), but differs completely in sculpture. On the left valve *P. lozoueti* has a prominent radial vesicular or pustulose sculpture, and *P. retiolum* a delicate reticular sculpture. This sculpture of *P. lozoueti* is not seen in other species of *Parvamussium*. It is known in *Cyclopecten*, viz. *Cyclopecten hoskynsi* (Forbes, 1844) from the northern Atlantic, *Cyclopecten antiquatus* (Philippi, 1844) from the tropical eastern Atlantic, *Cyclopecten carlottensis* Bernard, 1968 from the northeastern Pacific, and *Cyclopecten nakaii* Okutani, 1962 from Japan.

Parvamussium texturatum (Dautzenberg & Bavay, 1912), *Parvamussium araneum* Dijkstra, 1991 and *Parvamussium vesiculatum* Dijkstra, 1995 have sculpture of hollow scales or vesicles at the intersections of the radial and commarginal sculpture of the left valve. All these species have commarginal sculpture, which is lacking in *P. lozoueti*.

ETYMOLOGY. – Named after Dr Pierre Lozouet, currently collection manager of Marine Invertebrates at MNHN, and a participant in several of the deep-sea cruises on Norfolk Ridge that collected material reported in the present paper.

Parvamussium marquesanum n. sp.

Figs 20-25

TYPE MATERIAL. – Holotype (spm) MNHN 20455 and 8 paratypes MNHN 20456-20458, 1 HD.

TYPE LOCALITY. – Marquesas Islands, Eiao, 07°55'S, 140°44'W, 660-680 m [MUSORSTOM 9: stn CP 1272].

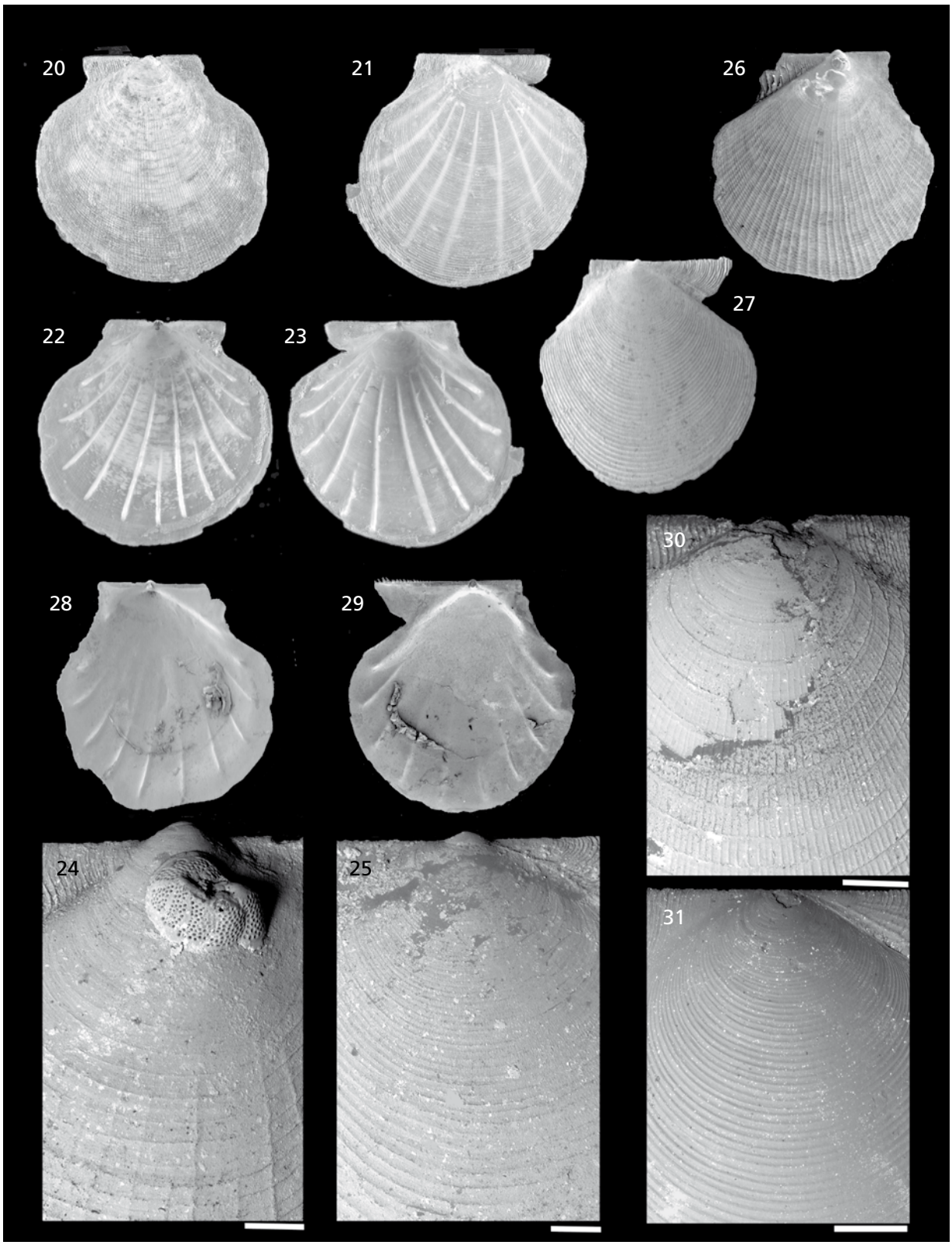
MATERIAL EXAMINED. – **Marquesas**. MUSORSTOM 9: stn CP 1271, 07°54'S, 140°42'W, 600 m, 2 spms, 1 lv, 1 rv (paratypes MNHN 20456); stn CP 1272, 07°55'S, 140°44'W, 660-680 m, 5 spms (holotype MNHN 20455 and 3 paratypes MNHN 20457, 1 HD); stn CP 1307, 08°58'S, 140°16'W, 708-738 m, 1 spm (paratype MNHN 20458).

DISTRIBUTION. – Marquesas Islands; live in 600-708 m.

DESCRIPTION. – Shell up to *c.* 13 mm in height, fragile, opaque to semi-transparent, flattened, left valve slightly more convex than right valve, nearly circular, slightly wider than high, inequivalve, sculpture of left valve somewhat reticulated, right valve commarginally sculptured, equilateral, auricles unequal in shape and size (anterior larger than posterior).

Left valve sculptured with delicate commarginal lamellae (somewhat curled ventrally), commencing at *c.* 2 mm from umbonal margin, widely spaced (*c.* 0.8 mm apart), extending to the ventral margin, closely spaced (*c.* 0.1 mm apart)

FIGS 11-19. 11-17, *Parvamussium lozoueti* n. sp., holotype MNHN 20449, H 17.0 mm, L 17.9 mm, BORDAU 1 stn CP 1415; **11**, left valve, exterior; **12**, right valve, exterior; **13**, paratype MNHN 20450, BORDAU 1 stn CP 1415, left valve, interior, H 14.5 mm, L 16.2 mm; **14**, paratype MNHN 20452, BORDAU 1 stn DW 1485, right valve, interior, H 12.7 mm, L 12.6 mm; **15**, right valve, microsculpture, scale bar 1 mm; **16**, right valve, microsculpture, scale bar 300 µm; **17**, left valve, microsculpture, scale bar 2 mm. **18-19**, *Parvamussium dautzenbergi* (Dijkstra, 1990), SALOMON 1 stn DW 1741; **18**, left valve, exterior; **19**, left valve, interior, H 8.1 mm, L 7.7 mm.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and prominently sculptured near the margin. Lamellae overrun irregularly spaced, delicate radial lirae (*c.* 8 per mm over central part of disc). Anterior auricle with wider set, more prominent commarginal lamellae than posterior.

Right valve with closely spaced, regularly arranged commarginal lirae, weak in early growth stage, more lamellated near ventral margin. Marginal apron (*c.* 1 mm wide) pressed to left valve. Auricles with closely spaced, prominent commarginal lamellae. Hinge line straight. Byssal notch moderately deep and small, byssal fasciole narrow. Internally 11 radial ribs, commencing 3 mm from umbonal margin, extending to marginal apron.

Dimensions of holotype: H 12.8, W 12.9, D 3.3.

REMARKS. – *Parvamussium multiliratum* Dijkstra, 1995 is a somewhat similar bathyal species, known from New Caledonia (Dijkstra 1995: 26), Wallis and Futuna and Vanuatu (Dijkstra 2001: 83). The two species are similar in shape (circular) and in the lamellar sculpture of the left valve, but can be differentiated by the following characters:

	P. marquesanum	*P. multiliratum*
Height	*c.* 13 mm	*c.* 9 mm
Sculpture lv	reticulate	commarginal lamellae
Internal ribs	11 (coarse)	14+ (delicate)

Parvamussium retiaculum Dijkstra, 1995, known from similar localities to *P. multiliratum* and from the Norfolk Ridge and Kermadec Islands (Dijkstra & Marshall 1997: 81), has somewhat similar internal ribs and reticulate sculpture on the left valve but differs from *P. marquesanum* in having an elongate shape (higher than wide), a smaller size (up to *c.* 7 mm in height) and a larger anterior auricle with more prominent sculpture.

ETYMOLOGY. – After the Marquesas Islands.

Parvamussium multiliratum Dijkstra, 1995

Parvamussium multiliratum Dijkstra, 1995: 26, figs 31-34, 91-92.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1332, 16°56'S, 178°078'E, 640-687 m, 1 spm. **Tonga**. BORDAU 2: stn DW 1543, 21°16'S, 175°18'W, 427-436 m, 1 rv; stn DW 1630, 23°23'S, 176°18'W, 360 m, 1 rv.

DISTRIBUTION. – New Caledonia, Wallis and Futuna, and Vanuatu (Dijkstra 2001: 83); live in 748-2110 m. New records for Fiji and Tonga. Present material live in 640-687 m.

REMARKS. – The juvenile specimen from Fiji is smooth, without commarginal sculpture.

Parvamussium musorstomi Dijkstra, 2001

Parvamussium musorstomi Dijkstra, 2001: 83, figs 25-26.

FIGS 20-31. **20-25**, *Parvamussium marquesanum* n. sp., holotype MNHN 20455, H 12.8 mm, L 12.9 mm, MUSORSTOM 9 stn CP 1272; **20**, left valve, exterior; **21**, right valve, exterior; **22**, left valve, interior; **23**, right valve, interior; **24**, left valve, microstructure, scale bar 1 mm; **25**, right valve, microstructure, scale bar 1 mm. **26-31**, *Parvamussium polynesianum* n. sp., holotype MNHN 20459, H 5.3 mm, L 5.2 mm, MUSORSTOM 9 stn DR 1199; **26**, left valve exterior; **27**, right valve exterior; **28**, left valve interior; **29**, right valve interior; **30**, left valve, microstructure, scale bar 200 µm; **31**, right valve, microstructure, scale bar 200 µm.

MATERIAL EXAMINED. – **Solomon Islands**. SALOMON 1: stn DW 1741, 11°29.4'S, 159°57.4'E, 557-655 m, 1 lv.

DISTRIBUTION. – Wallis and Futuna; shells in 500 m (Dijkstra 2001: 83). New record for the Solomon Islands. Present material dead in 557-655 m.

Parvamussium pauciliratum (Smith, 1903)

Parvamussium pauciliratum Smith, 1903: 622, pl. 36, figs 23-24.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 28). **Solomon Islands**. SALOMON 1: stn CP 1748, 09°20'S, 159°58'E, 509-522 m, 2 spms.

DISTRIBUTION. – Maldive Islands, Indonesia, Chesterfield Islands and New Caledonia (Dijkstra 1995: 28); live in 27-45 m. New records for the Solomon Islands. Present material live in 509-522 m. The bathymetrical range is considerably extended, this species previously having been recorded only from sublittoral depths.

Parvamussium polynesianum n. sp.

Figs 26-31

TYPE MATERIAL. – Holotype (spm) MNHN 20459 and 19 paratypes MNHN 20460, 3 HD.

TYPE LOCALITY. – Marquesas Islands, Hiva Oa, 09°49'S, 140°00'W, 210-258 m [MUSORSTOM 9: stn DR 1199].

MATERIAL EXAMINED. – **Marquesas**. MUSORSTOM 9: stn DW 1146, 09°19'S, 140°06'W, 200 m, 3 lv, 1 rv; stn DR 1198, 09°50'S, 139°09'W, 290-320 m, 4 rv, 1 lv; stn DR 1199, 09°49'S, 140°00'W, 210-258 m, 2 spm (holotype MNHN 20459 and paratype HD); stn DW 1201, 09°51'S, 139°09'W, 275-300 m, 4 rv, 2 lv; stn DW 1206, 09°51'S, 139°09'W, 352-358 m, 2 rv; stn DW 1222, 09°44'S, 138°51'W, 252-340 m, 2 rv; stn DR 1231, 09°42'S, 139°05'W, 270-285 m, 1 spm, 2 lv; stn DW 1234, 09°42'S, 139°06'W, 408 m, 5 rv; stn DR 1253, 09°48'S, 139°38'W, 360-405 m, 1 rv; stn DR 1255, 09°38'S, 139°48'W, 416-440 m, 1 lv; stn DW 1287, 07°54'S, 140°40'W, 163-245 m, 19 rv, 2 lv (19 paratypes MNHN 20460, 2 HD); stn DW 1288, 08°54'S, 139°38'W, 200-220 m, 2 rv; stn DR 1298, 08°49'S, 140°17'W, 305 m, 3 rv, 2 lv; stn DR 1299, 08°49'S, 140°17'W, 405-418 m, 1 rv.

DISTRIBUTION. – Marquesas Islands; shells in 200-416 m, live in 258-270 m.

DESCRIPTION. – Shell up to *c.* 5.5 mm in height, fragile, opaque to semi-transparent, left valve slightly more convex than right valve, nearly circular, somewhat higher than wide, inequivalve, sculpture of left valve somewhat reticulate, right valve commarginally sculptured, equilateral, auricles unequal in shape and size (anterior larger than posterior).

Left valve sculptured with delicate commarginal lamellae, commencing at *c.* 1 mm from umbonal margin, closely spaced (*c.* 0.1 mm apart on central part of disc), extending to ventral margin. These thin and somewhat undulated lamellae overrun widely and irregularly spaced, radial lirae (on central part of disc *c.* 5 per mm), increasing in number to ventral margin. Anterior auricle more prominently sculptured than posterior with coarse, ventrally curled commarginal lamellae, posterior auricle sculpture more delicate and more closely spaced.

Right valve with closely spaced, regularly arranged weak commarginal lirae. Marginal apron (*c.* 0.8 mm high) pressed to left valve, broken off many specimens. Anterior auricle with coarse commarginal lamellae, posterior more

delicate. Hinge line straight. Byssal notch shallow, byssal fasciole narrow. Internally 10 prominent radial ribs, with a weak auricular rib on each side, commencing 2 mm from umbonal margin, extending nearly to ventral margin.

Dimensions of holotype: H 5.3, W 5.2, D 1.5.

REMARKS. – The delicate and somewhat undulated commarginal lamellae on the left valve of the present species resemble the sculpture of *Parvamussium undisonum* Dijkstra, 1995, known from New Caledonia, Loyalty Islands, Vanuatu (Dijkstra 1995: 37) and Wallis and Futuna (Dijkstra 2001: 87), but other characters differ strongly:

	P. polynesianum	*P. undisonum*
Height	up to 5.5 mm	up to c. 14 mm
Shape	nearly circular	oblong and oblique
Sculpture lv	delicate	coarse
Internal ribs	10	10 + rudimentary

The sculpture of the left valve of *P. polynesianum* also somewhat resembles that of *Parvamussium thetidis* (Hedley, 1902), known from eastern Australia as far east as Tonga. *Parvamussium polynesianum* differs in having a more circular shape (more oblong and oblique in *P. thetidis*), more delicate sculpture (coarser in *P. thetidis*) and more radial lirae (more prominent and fewer in number in *P. thetidis*). The two species also have similar internal ribs, although *P. thetidis* often has additional rudimentary ones, which are lacking in *P. polynesianum*.

ETYMOLOGY. – After Polynesia.

Parvamussium retiaculum Dijkstra, 1995

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

MATERIAL EXAMINED. – **Norfolk Ridge.** NORFOLK 1: stn DW 1697, 24°39'S, 168°38'E, 569-616 m, 6 lv, 2 rv.
Fiji. MUSORSTOM 10: stn CP 1331, 17°02'S, 178°02'E, 694-703 m, 1 spm, 1 lv, 1 rv; stn CC 1336, 16°58'S, 177°58'E, 797-799 m, 1 spm, 1 rv; stn CP 1341, 16°53'S, 177°44'E, 500-614 m, 1 spm, 1 lv, 4 rv. – BORDAU 1: stn DW 1485, 19°03'S, 178°30'W, 700-707 m, 2 lv.
Tonga. BORDAU 2: stn DW 1508, 21°02'S, 175°19'W, 555-581 m, 1 lv, 1 rv; stn DW 1544, 21°18'S, 175°18'W, 441-443 m, 1 rv; stn CP 1640, 21°09'S, 175°24'W, 564-569 m, 2 spms.

DISTRIBUTION. – Southern New Caledonia, southeast of Norfolk Island and Kermadec Islands (Dijkstra 2001: 85); live in 540-700 m. New records for the Norfolk Ridge, Fiji and Tonga. Present material live in 569-797 m.

Parvamussium retiolum Dijkstra, 1995

Parvamussium retiolum Dijkstra, 1995: 29, figs 39-42, 97.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1330, 17°10'S, 177°56'E, 567-699 m, 2 spms. – BORDAU 1: stn CP 1396, 16°39'S, 179°57'W, 591-596 m, 1 spm; stn CP 1413, 16°10'S, 179°24'W, 669-676 m, 2 lv; stn DW 1432, 17°20'S, 178°44'W, 477-493 m, 1 lv; stn CP 1476, 19°41'S, 178°11'W, 310-420 m, 1 spm.
Tonga. BORDAU 2: stn DW 1509, 21°05'S, 175°22'W, 456-510 m, 4 lv, 3 rv; stn DW 1537, 21°41'S, 175°19'W, 391-421 m, 11 lv, 25 rv.

DISTRIBUTION. – New Caledonia, Wallis and Futuna and Vanuatu (Dijkstra 2001: 85); live in 552-750 m. New records for Fiji and Tonga. Present material live in 420-591 m.

Parvamussium scitulum (Smith, 1885)

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

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 31, figs 153-154).
Loyalty Islands. LIFOU 2000: stn 1462, 20°47.1'S, 167°03.2'E, 70-120 m, 1 spm, 5 v; stn 1469, 20°54.2'S, 167°00.4'E, 70-130 m, 2 v.
Fiji. MUSORSTOM 10: stn DW 1329, 17°19'S, 177°47'E, 102-106 m, 2 lv, 11 rv; stn CP 1358, 17°49'S, 178°47'E, 80-120 m, 2 spms; stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 2 lv, 5 rv; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 2 lv, 7 rv. – BORDAU 1: stn DW 1498, 18°41'S, 178°28'W, 300-307 m, 1 lv, 1 rv.
Tonga. BORDAU 2: stn DW 1583, 18°37'S, 174°03'W, 327-360 m, 1 lv.

DISTRIBUTION. – Japan, Philippines, Indonesia, New Caledonia (Dijkstra 2001: 86); live in 50-300 m. New records for the Loyalty Islands, Fiji and Tonga. Present material live in 70-80 m.

Parvamussium squalidulum Dijkstra, 1995

Parvamussium squalidulum Dijkstra, 1995: 32, figs 47-50.

MATERIAL EXAMINED. – **Fiji**. BORDAU 1: stn DW 1471, 19°40'S, 178°10'W, 280-296 m, 1 spm; stn DW 1494, 18°55'S, 178°29'W, 240-319 m, 1 lv.
Tonga. BORDAU 2: stn DW 1523, 21°18'S, 175°00'W, 300-302 m, 1 lv; stn DW 1587, 18°37'S, 173°54'W, 309-400 m, 2 lv, 1 rv; stn DW 1595, 19°03'S, 174°19'W, 523-806 m, 1 spm; stn DW 1602, 20°49'S, 174°57'W, 263-320 m, 2 lv; stn DW 1606, 22°16'S, 175°20'W, 313-316 m, 2 lv, 1 rv.

DISTRIBUTION. – Indonesia (Dijkstra & Kastoro 1997: 262), Chesterfield Islands, Loyalty Islands, New Hebrides Arc (Dijkstra 1995: 32), Kermadec Islands (Dijkstra & Marshall 1997: 81) and Wallis and Futuna (Dijkstra 2001: 86); live in 260-400 m. New records for Fiji and Tonga. Present material live in 296-523 m.

Parvamussium texturatum (Dautzenberg & Bavay, 1912)

Amussium texturatum Dautzenberg & Bavay, 1912: 37, pl. 27, figs 19-22.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 34).
Norfolk Ridge. NORFOLK 1: stn DW 1680, 24°45'S, 168°10'E, 385-392 m, 1 lv; stn DW 1704, 23°45'S, 168°16'E, 400-420 m, 1 rv.
Fiji. BORDAU 1: stn DW 1464, 18°09'S, 178°38'W, 285-300 m, 1 spm.
Tonga. BORDAU 2: stn DW 1589, 18°39'S, 173°54'W, 281 m, 1 lv, 3 rv.

DISTRIBUTION. – Philippines, Indonesia, New Caledonia (Dijkstra 1995: 34) and Wallis and Futuna (Dijkstra 2001: 86); live in 240-450 m. New records for the Norfolk Ridge, Fiji and Tonga. Present material live in 285-300 m.

Parvamussium thetidis (Hedley, 1902)

Amusium thetidis Hedley, 1902: 304, fig. 49 [right valve].
Amusium thetidis Hedley & Petterd, 1906: 223, pl. 38, figs 18-19 [left valve].

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 35).
Norfolk Ridge. NORKOLK 1: stn DW 1680, 24°45'S, 168°10'E, 385-392 m, 1 lv, 9 rv; stn DW 1694, 24°40'S, 168°39'E, 575-589 m, 1 lv; stn DW 1695, 24°40'S, 168°39'E, 562-587 m, 2 lv, 2 rv; stn DW 1697, 24°39'S, 168°38'E, 569-616 m, 1 spm, 3 lv, 2 rv; stn DW 1699, 24°40'S, 168°40'E, 581-600 m, 3 rv; stn DW 1700, 24°40'S, 168°40'E, 572-605 m, 1 rv.
Fiji. BORDAU 1: stn DW 1421, 17°08'S, 178°59'W, 403-406 m, 5 spms, 5 lv, 2 rv; stn DW 1423, 17°08'S, 178°59'W, 402-410 m, 2 spms, 6 lv, 2 rv; stn DW 1464, 18°09'S, 178°38'W, 285-300 m, 1 lv; stn DW 1477, 20°58'S, 178°45'W, 390-405 m, 2 spms, 2 rv; stn DW 1494, 18°55'S, 178°29'W, 240-319 m, 2 lv, 3 rv.
Tonga. BORDAU 2: stn DW 1520, 21°25'S, 175°03'W, 447-450 m, 6 lv, 5 rv; stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 2 lv; stn DW 1569, 21°02'S, 175°19'W, 433 m, 1 lv.

DISTRIBUTION. – Indonesia, eastern Australia, Chesterfield Islands and the New Hebrides Arc (Dijkstra & Kastoro 1997: 262); live in 346-650 m. New records for Fiji and Tonga. Present material live in 405-569 m.

Parvamussium torresi (Smith, 1885)

Amussium torresi Smith, 1885: 311, pl. 23, figs 3-3b.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 36, figs 125-128).
Loyalty Islands. LIFOU 2000: stn 1461, 20°54.0'S, 167°02.1'E, 100-120 m, 2 lv, 5 rv.
Fiji. MUSORSTOM 10: stn DW1388, 18°19'S, 178°02'E, 313-446 m, 2 lv, 6 rv. – BORDAU 1: stn DW 1450, 16°44'S, 179°58'E, 327-420 m, 1 lv; stn DW 1464, 18°09'S, 178°38'W, 285-300 m, 1 lv, 8 rv; stn DW 1465, 18°09'S, 178°39'W, 290-300 m, 1 spm, 10 rv; stn CP 1506, 18°09'S, 178°37'W, 294-300 m, 1 spm.
Tonga. BORDAU 2: stn CP 1510, 21°05'S, 175°23'W, 461-497 m, 1 rv; stn DW 1517, 21°21'S, 175°07'W, 342 m, 2 lv, 1 rv; stn DW 1518, 21°21'S, 175°07'W, 336-347 m, 2 lv, 1 rv; stn DW 1524, 21°17'S, 175°00'W, 351-354 m, 11 lv, 7 rv; stn DW 1537, 21°41'S, 175°19'W, 391-421 m, 3 lv, 1 rv; stn DW 1540, 21°15'S, 175°14'W, 317-329 m, 4 lv, 5 rv; stn CP 1541, 21°15'S, 175°14'W, 319-333 m, 1 spm; stn DW 1583, 18°37'S, 174°03'W, 327-360 m, 12 spms; stn DW 1587, 18°37'S, 173°54'W, 309-400 m, 1 spm, 2 lv, 7 rv; stn DW 1589, 18°39'S, 173°54'W, 281 m, 1 lv, 4 rv; stn DW 1602, 20°49'S, 174°57'W, 263-320 m, 2 spms, 4 lv, 4 rv; stn DW 1604, 22°16'S, 175°17'W, 227-350 m, 2 rv; stn DW 1606, 22°16'S, 175°20'W, 313-316 m, 1 spm, 7 lv, 3 rv; stn DW 1607, 22°15'S, 175°23'W, 356-367 m, 1 lv, 1 rv; stn DW 1611, 23°00'S, 175°47'W, 278-323 m, 31 lv, 28 rv; stn DW 1612, 23°02'S, 175°47'W, 327-342 m, 4 spms, 62 lv, 54 rv; stn DW 1614, 23°02'S, 175°51'W, 429-549 m, 15 lv, 14 rv; stn DW 1615, 23°03'S, 175°53'W, 482-504 m, 2 lv, 1 rv; stn DW 1634, 21°45'S, 175°20'W, 321-322 m, 3 lv, 1 rv; stn DW 1635, 21°44'S, 175°20'W, 320-323 m, 5 lv, 1 rv; stn DW 1636, 21°44'S, 175°20'W, 321-331 m, 1 rv.
Solomon Islands. SALOMON 1: stn DW 1834, 10°12'S, 161°18'E, 225-281 m, 6 lv, 2 rv.

DISTRIBUTION. – Southern Philippines, Indonesia, Chesterfield Islands, New Caledonia, Norfolk Ridge, Loyalty Islands, New Hebrides Arc (Dijkstra 1995: 36) and Wallis and Futuna (Dijkstra 2001: 87); live in 205-355 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 300-327 m.

Parvamussium undisonum Dijkstra, 1995

Parvamussium undisonum Dijkstra, 1995: 37, figs 55-58.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn DW 1314, 17°16'S, 178°15'E, 656-660 m, 2 lv, 3 rv; stn CP 1330, 17°10'S, 177°56'E, 567-699 m, 4 spms, 1 rv; stn DW 1345, 17°15'S, 178°30'E, 660-663 m, 1 spm, 1 lv. – BORDAU 1: stn DW 1459, 17°18'S, 179°33'W, 820-863 m, 2 rv.
Tonga. BORDAU 2: stn DW 1549, 20°38'S, 175°00'W, 500 m, 1 lv; stn DW 1552, 20°38'S, 174°58'W, 491-500 m, 1 lv, 2 rv; stn DW 1553, 20°42'S, 174°54'W, 650-676 m, 1 spm, 1 lv; stn DW 1555, 20°11'S, 174°45'W, 591 m, 1 lv, 1 rv; stn CP 1556, 20°11'S, 174°45'W, 589-591 m, 2 spms, 1 lv; stn CH 1557, 20°10'S, 174°42'W, 578 m, 1 spm; stn DW 1559, 19°53'S, 174°37'W, 339-345 m, 1 lv; stn CP 1566, 21°02'S, 175°18'W, 530-531 m, 1 lv, 1 rv; stn CP 1568, 21°02'S, 175°19'W, 431 m, 1 spm; stn DW 1585, 18°33'S, 173°57'W, 578 m, 10 lv, 5 rv; stn DW 1597, 20°40'S, 174°55'W, 598-610 m, 1 lv, 1 rv; stn DW 1618, 24°13'S, 176°18'W, 627-656 m, 1 lv, 1 rv; stn DW 1619, 24°16'S, 176°20'W, 591-593 m, 2 lv; stn DW 1637, 21°05'S, 175°23'W, 464-507 m, 2 spms, 8 lv, 4 rv; stn CP 1638, 21°05'S, 175°23'W, 469-520 m, 4 spms, 1 lv, 1 rv; stn DW 1639, 21°10'S, 175°24'W, 531-568 m, 2 rv; stn CP 1640, 21°09'S, 175°24'W, 564-569 m, 2 spms, 6 lv, 1 rv; stn CP 1642, 21°05'S, 175°23'W, 532 m, 1 lv, 1 rv; stn CP 1644, 21°05'S, 175°23'W, 501 m, 1 lv; stn DW 1645, 21°05'S, 175°23'W, 538-660 m, 1 lv, 1 rv.
Solomon Islands. SALOMON 1: stn DW 1772, 08°16'S, 160°40'E, 570-756 m, 3 lv, 5 rv; stn CP 1795, 09°19'S, 160°23'E, 442-451 m, 2 lv, 1 rv; stn DW 1830, 10°11'S, 161°19'E, 500-563 m, 1 lv.

DISTRIBUTION. – New Caledonia, Loyalty Islands, New Hebrides Arc (Dijkstra 1995: 37) and Wallis and Futuna (Dijkstra 2001: 87); live in 552-710 m. New records for the Solomon Islands, Fiji and Tonga. Present material live in 431-660 m.

Parvamussium undosum Dijkstra, 1991

Parvamussium undosum Dijkstra, 1991: 18, figs 53-61.

MATERIAL EXAMINED. – **Norfolk Ridge**. NORFOLK 1: stn DW 1680, 24°45'S, 168°10'E, 385-392 m, 1 lv.
Solomon Islands. SALOMON 1: stn DW 1741, 11°29'S, 159°57'E, 557-655 m, 3 lv; stn DW 1762, 08°39.9'S, 160°03.9'E, 396-411 m, 1 lv, 1 rv; stn DW 1765, 08°43.1'S, 160°06.5'E, 325-380 m, 1 rv.

DISTRIBUTION. – Indonesia, Wallis and Futuna (Dijkstra 2001: 87); shells in 295-600 m. New records for the Solomon Islands and Norfolk Ridge. Present material dead in 380-557 m.

Parvamussium vesiculatum Dijkstra, 1995

Parvamussium vesiculatum Dijkstra, 1995: 37, figs 59-62, 93-96.

MATERIAL EXAMINED. – **Norfolk Ridge.** NORFOLK 1: stn DW 1651, 23°27'S, 167°50'E, 276-350 m, 2 lv, 1 rv; stn DW 1729, 23°20'S, 168°16'E, 340-619 m, 1 lv.
Fiji. BORDAU 1: stn DW 1450, 16°44'S, 179°58'E, 327-420 m, 1 lv.
Tonga. BORDAU 2: stn DW 1559, 19°53'S, 174°37'W, 339-345 m, 1 lv; stn CP 1561, 19°52'S, 174°40'W, 383-393 m, 1 lv; stn DW 1571, 19°42'S, 174°32'W, 389-418 m, 3 lv; stn DW 1583, 18°37'S, 174°03'W, 327-360 m, 1 lv.
Solomon Islands. SALOMON 1: stn DW 1762, 08°40'S, 160°04'E, 396-411 m, 1 lv.

DISTRIBUTION. – New Caledonia, Norfolk Ridge (Dijkstra & Marshall 1997: 83), Wallis and Futuna and Vanuatu (Dijkstra 2001: 87); live in 205-650 m. New records for the Solomon Islands, Fiji and Tonga. Present material dead in 345-396 m.

Parvamussium virgatum Dijkstra, 1991

Parvamussium virgatum Dijkstra, 1991: 20, figs 62-65.

MATERIAL EXAMINED. – **Solomon Islands**. SALOMON 1: stn DW 1758, 08°49'S, 159°52'E, 180-187 m, 1 lv.

DISTRIBUTION. – Indonesia, Wallis and Futuna (Dijkstra 2001: 88); shells in 206-440 m. New record for the Solomon Islands. Present specimen dead in 180-187 m.

Genus ***CYCLOPECTEN*** Verrill, 1897

Cyclopecten bavayi Dijkstra, 1990

Figs 32, 33

Cyclopecten (*Cyclopecten*) *bavayi* Dijkstra, 1990a: 5, fig. 9.

MATERIAL EXAMINED. – **Solomon Islands**. SALOMON 1: stn CP 1781, 08°31'S, 160°38'E, 1036-1138 m, 1 spm (Figs 32, 33).

DISTRIBUTION. – Indonesia, shells in 835 m (Dijkstra 1990a: 5). New record for the Solomon Islands. Present specimen live in 1036-1138 m.

REMARKS. – The present specimen from the Solomons is nearly indistinguishable from the type material, although the commarginal and intercalated radial sculpture of the left valve are slightly more widely placed in the present specimen. Other morphological characters are extremely similar.

Cyclopecten cancellus Dijkstra, 1991

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

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1341, 16°53'S, 177°44'E, 500-614 m, 1 lv.

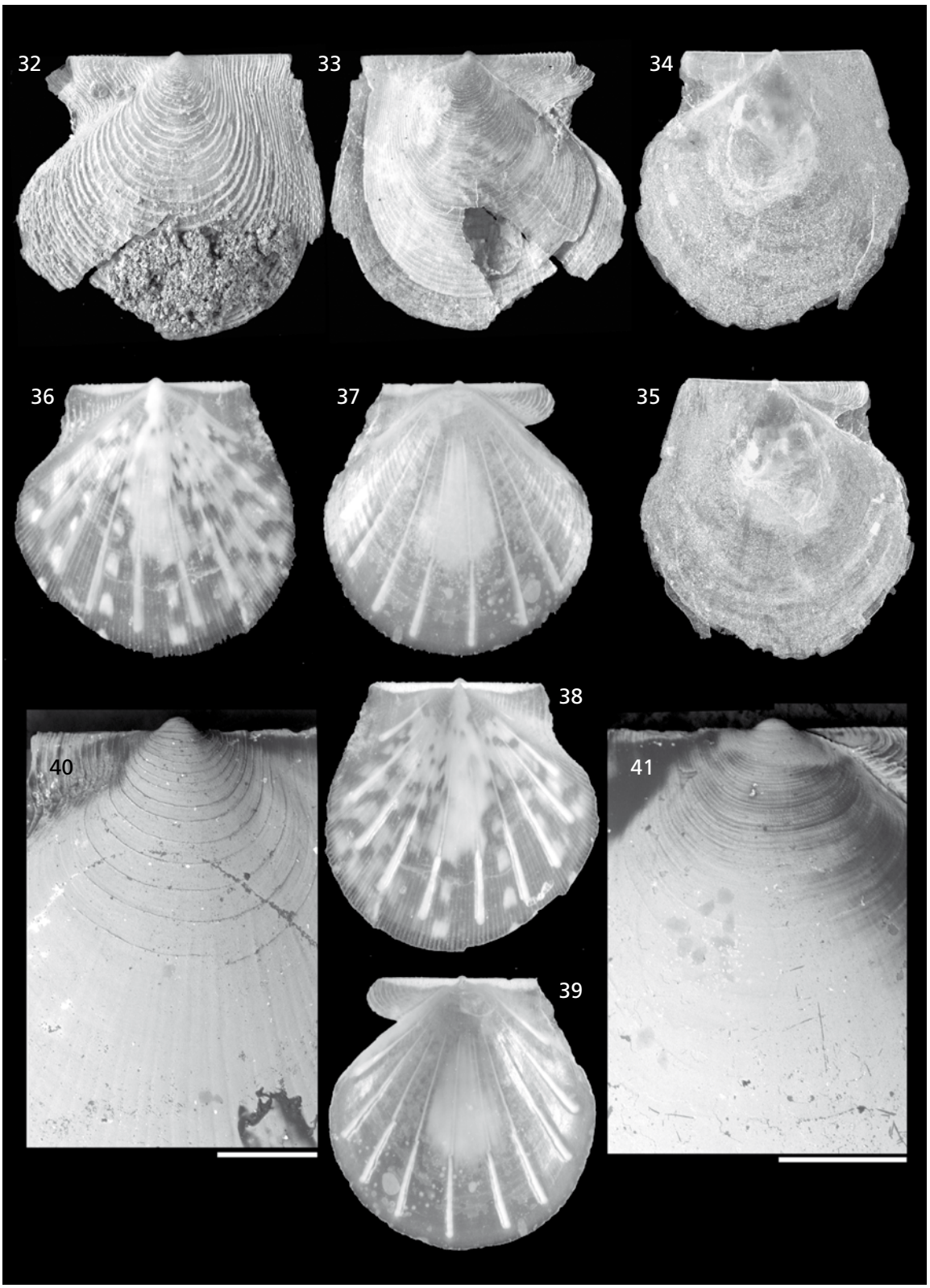
DISTRIBUTION. – Indonesia and Vanuatu; shells in 130-375 m (Dijkstra 2001: 90). New record for the Fiji Islands. Present specimen dead in 500-614 m.

Cyclopecten kapalae Dijkstra, 1990

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

MATERIAL EXAMINED. – **Solomon Islands**. SALOMON 1: stn CP 1751, 09°10'S, 159°53'E, 749-799 m, 1 lv, 3 rv; stn CP 1754, 09°00'S, 159°49'E, 1169-1203 m, 1 rv; stn CP 1764, 08°37'S, 160°07'E, 1327-1598 m, 1 lv; stn CP 1808, 09°46'S, 160°53'E, 611-636 m, 1 lv, 1 rv.

DISTRIBUTION. – Eastern Australia and the Kermadec Islands; live in 512-549 m (Dijkstra & Marshall 1997: 87). New record for the Solomon Islands. Present material dead in 636-1327 m.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Genus ***CATILLOPECTEN*** Iredale, 1939

Catillopecten Iredale, 1939: 347, 370. Type species (by original designation): *Pecten murrayi* Smith, 1885; *Challenger* stn 184, east of Cape York, northern Australia, 12°8'S, 145°10'E, 2561 m.

Synonym:
Bathypecten Schein-Fatton, 1985: 491. Type species (by original designation): *Bathypecten vulcani* Schein-Fatton, 1985; Central East Pacific, *Cyana* dive 33, 12°48'80"N, 103°56'60"W, 2620 m.

DIAGNOSIS. – Shell thin, translucent, flattened, inequivalve, left valve slightly more convex than right valve, left valve smooth or undulated, unsculptured or sculptured with weak commarginal lamellae, weaker on right valve, auricles nearly equal in size, unequal in shape, posterior auricles not delimited from disc. Byssal notch well-developed and rather deep, byssal fasciole very narrow or absent. No ctenolium.

DISTRIBUTION. – Atlantic, Indian, western and eastern Pacific Oceans; live in bathyal and abyssal depths (Waller 1984: 214).

REMARKS. – According to Schein (1989: 81) *Bathypecten* differs from *Catillopecten* mainly by having a weakly commarginally undulated left valve. However, examination of specimens in BMNH, MNHN, ZMA and ZMUC reveals that this undulation is highly variable and even absent from some specimens. This phenomenon is also recognized in *Delectopecten* and *Hyalopecten* in which the sculpture is highly variable or absent. Material of *Bathypecten* and *Catillopecten* varies from smooth to undulated without macro- or microsculpture or with weak commarginal sculpture on the left and right valve. Other characters (size, fragility, convexity, byssal notch, hinge line, coloration, cristallography) are very similar in these two genera.

Indo-Pacific species of *Catillopecten* are:
Catillopecten knudseni (Bernard, 1978) from the northeastern Pacific with a bathymetric range of 220-2900 m (most frequently 2700-2900 m).
Catillopecten squamiformis (Bernard, 1978) from the northeastern Pacific (2030-2884 m).
Catillopecten graui (Knudsen, 1970) from the eastern Pacific (3270-3670 m).
Catillopecten vulcani (Schein-Fatton, 1985) from the Eastern Pacific Rise (2620 m).
Catillopecten translucens (Dautzenberg & Bavay, 1912) from Indonesia (1301 m).

Catillopecten translucens (Dautzenberg & Bavay, 1912)

Figs 34, 35

Pecten (Cyclopecten) translucens Dautzenberg & Bavay, 1912: 30, pl. 27, figs 5-6.

TYPE MATERIAL. – Holotype (live) ZMA Moll. 3.12.008.

FIGS 32-41. 32-33, *Cyclopecten bavayi* Dijkstra, 1990, SALOMON 1 stn CP 1781; **32**, left valve exterior H 54 mm, L 6.2 mm; **33**, right valve, exterior H 4.8, L 5 mm. **34-35**, *Catillopecten translucens* (Dautzenberg & Bavay, 1912), MUSORSTOM 9 stn CP 1290; **34**, left valve, exterior, H 6.5 mm, L 6.0 mm; **35**, right valve, exterior, H 6.5 mm, L 6.0 mm. **36-41**, *Similipecten herosae* n. sp., holotype MNHN 20461, H 3.8 mm, L 4.1 mm, BORDAU 2 stn DW 1581; **36**, left valve, exterior; **37**, right valve, exterior; **38**, left valve, interior; **39**, right valve, interior; **40**, left valve, microstructure, scale bar 400 µm; **41**, right valve, microstructure, scale bar 400 µm.

TYPE LOCALITY. – Indonesia, Makassar Strait, 0°34.6'N, 119°8.5'E, 1301 m, alive, yellow mud [*Siboga* stn 88].

MATERIAL EXAMINED. – The type material. **Marquesas**. MUSORSTOM 9: stn CP 1290, 8°53'S, 139°38'W, 341-344 m, 1 spm (Figs 34, 35).

DISTRIBUTION. – Indonesia; live in 1301 m. New record for the Marquesas Islands. Present specimen live in 341-344 m.

DESCRIPTION. – Shell small, up to *c.* 10 mm in height, fragile, semi-transparent, flattened, circular, inequivalve, nearly equilateral, left valve slightly inflated, right valve flat, posterior auricle somewhat curved below disc, demarcated by a fold and slightly larger than anterior, umbonal angle *c.* 110°, colour whitish semi-transparent.

Left valve completely smooth and dull, without commarginal undulations, lacking macro- and microsculpture.

Right valve slightly more opaque than left valve, up to 1 mm high, glossy. Anterior auricle with delicate commarginal lirae, posterior smooth and continuous with disc. Hinge line straight. Internal ribs absent. Byssal notch relatively deep, byssal fasciole and ctenolium lacking.

REMARKS. – The present specimen from the Marquesas is similar to the type specimen from Indonesia, but differs in size (height 6 mm, typical 10 mm) and sculpture of the right valve, which has delicate commarginal lirae in the early growth stage (smooth in the type) and commarginal lirae on the anterior auricle of the right valve (smooth in the type). Other morphological characters are very similar.

Genus ***SIMILIPECTEN*** Winckworth, 1932

Similipecten herosae n. sp.

Figs 36-41

TYPE MATERIAL. – Holotype (spm) MNHN 20461 and 15 paratypes MNHN 20462-20463, 2 HD.

TYPE LOCALITY. – Tonga, 18°41'S, 174°02'W, 76-85 m [BORDAU 2: stn DW 1581].

DISTRIBUTION. – Only taken in the upper bathyal zone (see type locality) from Tonga.

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn DW 1581, 18°41'S, 174°02'W, 76-85 m, 1 spm (holotype MNHN 20461), 4 lv, 10 rv (12 paratypes MNHN 20462, 2 HD); stn DW 1582, 18°41'S, 174°03'W, 79-82 m, 2 lv, 1 rv (3 paratypes MNHN 20463).

DESCRIPTION. – Shell up to *c.* 4 mm in height, subcircular, inequivalve, nearly equilateral, right valve somewhat more convex than left, auricles nearly equal in size, semi-transparent and coloured with white spots, cardinal crura broad; with internal ribs.

Left valve sculptured with closely spaced, delicate radial lirae (12-14 per mm near ventral margin). Pre-radial stage (1 mm high) with about 10 very fine commarginal lamellae. Anterior auricle with commarginal lamellae, more prominent on disc flank, posterior smooth. Anterior and posterior auricle not distinguished from disc.

Right valve with delicate, widely and regularly spaced commarginal lirae (about 5 per mm on central part of disc) and covered with microscopic granular shell layer. Anterior auricle (folded near byssal fasciole) separated from disc by a suture, posterior continuous with disc. Anterior auricle with widely spaced commarginal lamellae (16-18), similar

number of widely spaced but weaker commarginal lamellae on posterior auricle, more prominent near margin. Byssal notch small.

Prominent internal ribs (10) commencing after 0.5 mm shell height and extending nearly to ventral margin.

Dimensions of holotype: H 3.8, L 4.1, D 1.0.

REMARKS. – *Similipecten herosae* differs from the only related species in the Indo-Pacific, *Similipecten eous* (Melvill *in* Melvill & Standen, 1907) from the northwestern Indian Ocean (see Dijkstra & Knudsen 1998: 50), in having a different sculpture on the left valve (*S. herosae* radial sculpture, *S. eous* some commarginal growth lines or smooth) and internal ribbing (*S. herosae* has 10 ribs, which are lacking in *S. eous*).

It is quite remarkable that strongly internal ribs are developed in *S. herosae*. Generally these are lacking in all species of *Similipecten*, although specimens of *Similipecten similis* (Laskey, 1811) from the eastern Atlantic also have auricular riblets and sometimes rudimentary internal ribs (Dijkstra unpubl. data).

Although *S. herosae* has internal ribs, it has no other characters in common with species of *Propeamussium* or *Parvamussium* but several characters of *Similipecten* (small size, subcircular shape, right valve more convex than left valve, broad cardinal crura, anterior auricle of right valve somewhat curved, commarginal sculpture of right valve lacking or very weak) and hence we place it in this genus.

	S. similis	*S. eous*	*S. herosae*
Height	up to 7 mm	3 mm	4 mm
LV	smooth or rarely commarginal striae	smooth	radial sculpture
Internal ribs	absent or rarely rudimentary	absent	10
Colour	highly variable	whitish	whitish

ETYMOLOGY. – Named after Virginie Héros, curator of molluscs in MNHN, and generous resource person for the many taxonomists working on material from French expeditions.

Genus ***CYCLOCHLAMYS*** Finlay, 1926

Cyclochlamys favus (Hedley, 1902)

Cyclopecten favus Hedley, 1902: 305, fig. 50 (as *C. flavus* [*sic*]).

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 40).
Fiji. MUSORSTOM 10: stn CP 1348, 17°30'S, 178°40'E, 353-390 m, 1 lv; stn CP 1364, 18°12'S, 178°35'E, 135-151 m, 2 spms.

DISTRIBUTION. – Australia and New Caledonia; live in 305-610 m (Dijkstra 2001: 88). New record for the Fiji Islands. Present material live in 135-151 m.

Family ENTOLIIDAE von Teppner, 1922

Genus ***PECTINELLA*** Verrill, 1897

Pectinella aequoris Dijkstra, 1991

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

MATERIAL EXAMINED. – **Norfolk Ridge.** NORFOLK 1: stn CP 1716, 23°22'S, 168°03'E, 266-276 m, 1 rv.
Marquesas. MUSORSTOM 9: stn DW 1147, 9°19'S, 140°06'W, 205-302 m, 1 lv [juvenile].

DISTRIBUTION. – Hawaiian Islands, Indonesia, New Caledonia and Fiji (Dijkstra 2001: 90), alive in 260 m. New record for the Marquesas Islands. Present material dead in 266-276 m.

REMARKS. – The present material from the Marquesas is morphologically indistinguishable from the type specimens from Indonesia.

Family PECTINIDAE Rafinesque, 1815

Genus ***CICLOPECTEN*** Seguenza, 1877

Ciclopecten Seguenza, 1877: 362. Type species (by original designation): *Ciclopecten peloritanus* Seguenza, 1877; Pliocene, Italy.

DIAGNOSIS. – Pectinidae with prominent commarginal undulations, radial and commarginal macrosculpture, antimarginal microsculpture, posterior auricles continuous with shell disc, anterior auricle of right valve demarcated from shell disc, a broad byssal fasciole, and a functional ctenolium well-developed.

REMARKS. – Coan *et al.* (2000: 228) synonymized *Ciclopecten* with *Hyalopecten*, based on their similar commarginal undulations and reticulate sculpture. Dijkstra & Goud (2002: 47) treated the two as distinct genera. *Ciclopecten* has antimarginal microsculpture and the posterior auricles are continuous with the shell disc. *Hyalopecten* always lacks antimarginal microsculpture and the posterior auricles terminate in a point.

Ciclopecten fluctuatus (Bavay, 1905)

Pecten (*Chlamys*) *fluctuatus* Bavay, 1905: 188, pl. 17, figs 3a-b.

Other reference:
Ciclopecten fluctuatus - Dijkstra & Marshall 2008: 48, figs 35, 40c, 40g.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 51). **Marquesas**. MUSORSTOM 9: stn CP 1272, 7°55'S, 140°44'W, 660-680 m, 1 spm.

DISTRIBUTION. – Andaman Sea, Indonesia, New Caledonia and Vanuatu; live in 225-566 m (Dijkstra 2001: 91). New record for the Marquesas Islands. Present specimen live in 660-680 m.

REMARKS. – This species was formerly placed in *Delectopecten* (see Dijkstra 2001). However, examination of Pliocene material of *C. peloritanus*, the type species of *Ciclopecten*, from Italy, indicates that the present species is

morphologically closer to *Ciclopecten* than to *Delectopecten*. It has similar commarginal undulations and antimarginal microsculpture. For a description of *C. fluctuatus* see Dijkstra (1995: 51).

The present specimen from the Marquesas is similar to the holotype from the Andaman Sea, but differs slightly in size (15 mm in height, holotype 10 mm), sculpture of the left valve (fine radial sculpture, holotype somewhat coarser) and the presence of delicate commarginal sculpture (nearly lacking in holotype). However, intermediate variants are also known (MNHN). Other characters are identical.

Genus ***HYALOPECTEN*** Verrill, 1897

Hyalopecten mireilleae Dijkstra, 1995

Hyalopecten mireilleae Dijkstra, 1995: 48, figs 79-82.

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn CP 1565, 20°58'S, 175°16'W, 869-880 m, 1 spm.

DISTRIBUTION. – New Caledonia, New Hebrides Arc and Vanuatu; live in 710-775 m (Dijkstra 2001: 91). New record for Tonga.

Hyalopecten tydemani (Dijkstra, 1990) **comb. nov.**

Figs 42, 43

Palliolum (*Hyalopecten*) *tydemani* Dijkstra, 1990a: 7, fig. 13.

MATERIAL EXAMINED. – **Solomon Islands**. SALOMON 1: stn CP 1751, 09°10'S, 159°53'E, 749-799 m, 2 lv, 1 rv; stn CP 1753, 09°03'S, 159°49'E, 1001-1012 m, 1 lv, 1 rv; stn CP 1781, 08°31'S, 160°38'E, 1036-1138 m, 2 lv, 10 rv, 9 spms (Figs 42, 43).

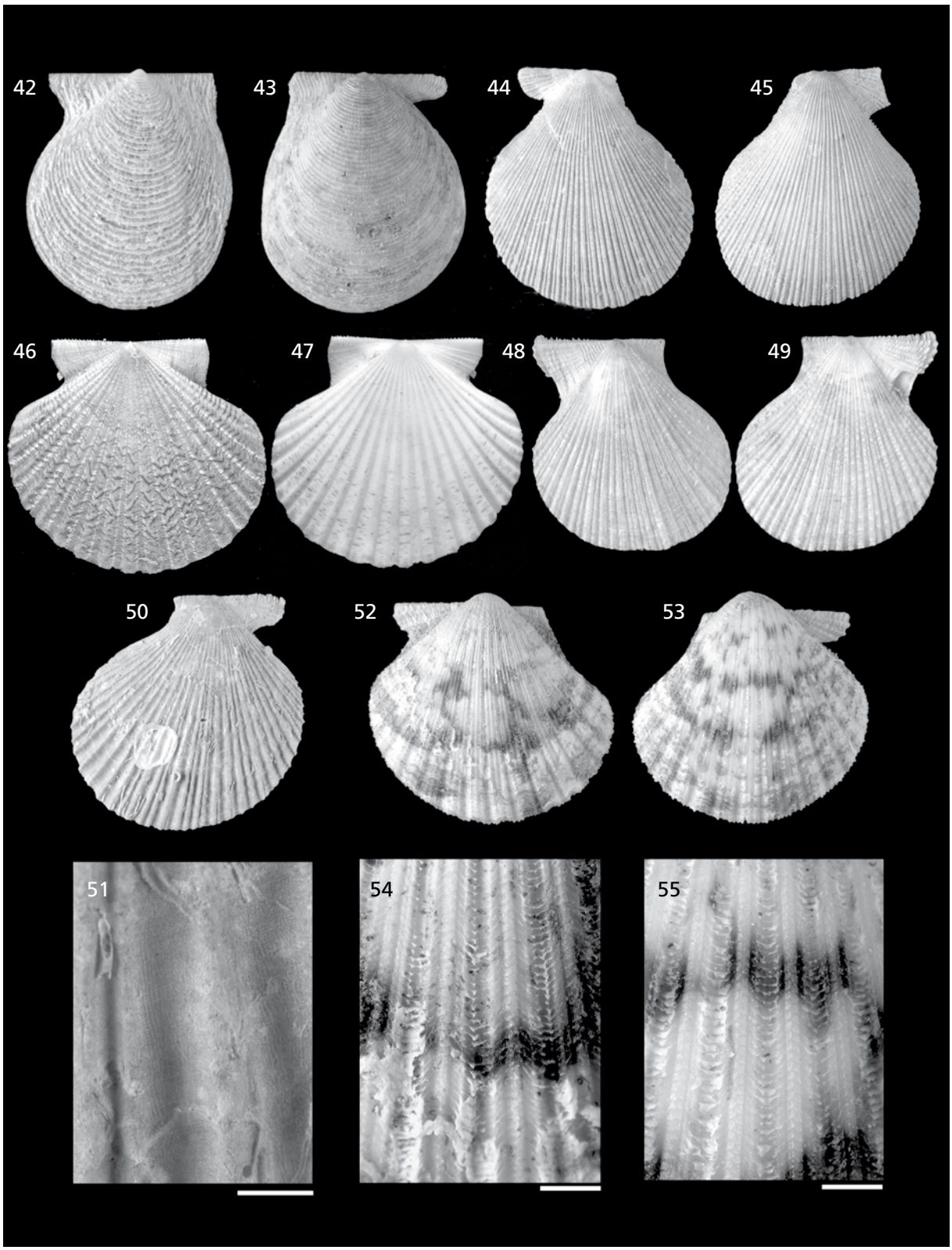
DISTRIBUTION. – Indonesia; shells in 835-950 m (Dijkstra 1990a: 28). New record for Solomon Islands, live in 1036-1138 m. This is the first living record of *H. tydemani*.

Genus ***PSEUDOHINNITES*** Dijkstra, 1989

Pseudohinnites levii Dijkstra, 1989

Pseudohinnites levii Dijkstra, 1989b: 29, figs 1-3.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1331, 17°02'S, 178°02'E, 694-703 m, 1 lv; stn CP 1361, 18°00'S, 178°54'E, 1058-1091 m, 1 spm. – BORDAU 1 stn CP 1415, 16°31'S, 179°00'W, 670-682 m, 1 lv; stn CP 1458, 17°22'S, 179°28'W, 1216-1226 m, 1 spm; stn CP 1460, 18°47'S, 178°47'W, 750-767 m, 2 spms, 2 lv; stn DW 1485, 19°03'S, 178°30'W, 700-707 m, 1 lv; stn CP 1490, 18°51'S, 178°32'W, 785-820 m, 1 lv; stn CP 1491, 18°50'S, 178°27'W, 777-787 m, 1 lv.
Tonga. BORDAU 2: stn DW 1508, 21°02'S, 175°19'W, 555-581 m, 3 spms, 1 lv; stn DW 1553, 20°42'S, 174°54'W, 650-676 m, 1 spm; stn CP 1600, 20°48'S, 174°52'W, 902-907 m, 6 spms, 1 lv.
Marquesas. MUSORSTOM 9: stn CP 1278, 7°52'S, 140°39'W, 1000 m, 1 spm.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DISTRIBUTION. – Philippines, Indonesia, Wallis and Futuna, Vanuatu and New Caledonia; live in 625-2000 m (Dijkstra 2001: 90). New records for Fiji, Tonga and Marquesas Islands. Present material live in 581-1216 m.

REMARKS. – The present specimen of *P. levii* from the Marquesas is similar to the type specimens from New Caledonia, although in the former the radial and commarginal sculpture of the left valve is slightly more delicate and the right valve nearly smooth (typical radially sculptured). However, these characters vary somewhat within material in the MNHN and the present specimen falls within this range of variation. Other characters of this specimen are identical to the types.

Genus ***DELECTOPECTEN*** Stewart, 1930

Delectopecten alcocki (Smith, 1904)

Pecten alcocki Smith, 1904: 13.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 50).
Solomon Islands. SALOMON 1: stn CP 1748, 09°20'S, 159°58'E, 509-522 m, 1 spm; stn CP 1798, 09°21'S, 160°29'E, 513-564 m, 1 spm.

DISTRIBUTION. – Indian Ocean, Philippines and New Caledonia; live in 176-688 m (Dijkstra 2001: 91). New record for the Solomon Islands. Present material live at 513-522 m.

Delectopecten musorstomi Poutiers, 1981

Delectopecten musorstomi Poutiers, 1981: 331, pl. 1, figs 2-3.

MATERIAL EXAMINED. – The type material. **Solomon Islands**. SALOMON 1: stn DW 1746, 09°23'S, 159°57'E, 302-396 m, 1 rv.

DISTRIBUTION. – Philippines, Indonesia, New Caledonia, Norfolk Island; live in 150-305 m (Dijkstra & Marshall 1997: 88; Dijkstra 2001: 91). New record for the Solomon Islands. Present specimen dead in 302-396 m.

Genus ***LAEVICHLAMYS*** Waller, 1993

Laevichlamys deliciosa (Iredale, 1939)

Figs 44, 45

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

FIGS 42-55. **42, 43**, *Hyalopecten tydemani* (Dijkstra, 1990), SALOMON 1 stn CP 1781; **42**, left valve, exterior, H 7.4 mm, L 6.5 mm; **43**, right valve, exterior, H 8.8 mm, L 6.5 mm. **44-45**, *Laevichlamys deliciosa* (Iredale, 1939), SALOMON 1 stn DW 1741; **44**, left valve, exterior, H 15.3 mm, L 13.3 mm; **45**, SALOMON 1 stn DW 1765, right valve, exterior, H 15.5 mm, L 13.4 mm. **46, 47**, *Serratovola rubicunda* (Recluz *in* Chenu, 1843), H 22 mm, L 24.5 mm, BORDAU 2 stn CP 1582; **46**, left valve, exterior; **47**, right valve, exterior. **48-49**, *Talochlamys gladysiae* (Melvill, 1888), H 15 mm, L 14.2 mm, MUSORSTOM 10 stn CP 1324; **48**, left valve, exterior; **49**, right valve, exterior. **50, 51**, *Veprichlamys cf. kiwaensis* (Powell, 1933), BORDAU 2 stn DW 1614; **50**, right valve, exterior, H 36 mm, L 36 mm; **51**, idem, microsculpture, scale bar 2 mm. **52-55**, *Cryptopecten bernardi* (Philippi, 1851), H 17 mm, L 17.3 mm, MUSORSTOM 9 stn CP 1188; **52**, left valve, exterior; **53**, right valve, exterior; **54**, left valve microsculpture, scale bar 2 mm; **55**, right valve microsculpture, scale bar 2 mm.

Other reference:
Laevichlamys deliciosa - Dijkstra & Kilburn 2001: 288, figs 23-24.

MATERIAL EXAMINED. – The type material.
Norfolk Ridge. NORFOLK 1: stn DW 1712, 23°23'S, 168°02'E, 180-250 m, 1 lv.
Solomon Islands. SALOMON 1: stn DW 1741, 11°29'S, 159°57'E, 557-655 m, 2 lv (Fig. 44); stn DW 1757, 08°51'S, 159°53'E, 120-134 m, 1 rv; stn CP 1761, 08°47'S, 160°02'E, 191-290 m, 2 rv; stn DW 1765, 08°43'S, 160°07'E, 325-380 m, 1 rv (Fig. 45).

DISTRIBUTION. – Western Indian Ocean, southern Japan, Philippines, Indonesia, northern Australia and New Caledonia; live in 80-205 m (Dijkstra & Kastoro 1997: 268; Dijkstra & Kilburn 2001: 289). New record for the Solomon Islands. Present material dead in 134-557 m.

Laevichlamys kauaiensis (Dall, Bartsch & Rehder, 1938)

Chlamys kauaiensis Dall, Bartsch & Rehder, 1938: 92, pl. 22, figs 9-10.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 57).
Loyalty Islands. LIFOU 2000: stn 1469, 20°54.2'S, 167°00.4'E, 70-130 m, 1 lv.
Fiji. MUSORSTOM 10: stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 1 lv; stn CP 1364, 18°12'S, 178°35'E, 135-151 m, 1 spm. – BORDAU 1: stn DW 1450, 16°44'S, 179°58'E, 327-420 m, 1 rv.
Tonga. BORDAU 2: stn DW 1508, 21°02'S, 175°19'W, 555-581 m, 1 lv.

DISTRIBUTION. – Hawaiian Islands, Chesterfield Islands and New Caledonia (Dijkstra 1995: 57); live in 55-220 m (Dijkstra, unpubl. data). New records for the Loyalty Islands, Fiji and Tonga. Present material live in 135-151 m.

Genus ***TALOCHLAMYS*** Iredale, 1929

Talochlamys Iredale, 1929: 164. Type species (by original designation): *Chlamys famigerator* Iredale, 1925 (= *Pecten pulleineanus* Tate, 1887). Recent, southeastern and southern Australia.

DIAGNOSIS. – A byssate genus of Chlamydini, weakly inflated, solid to fragile, inequivalve, equilateral to inequilateral, elongate, up to 40 mm in height, valves with irregularly spaced primary radial squamous costae, with secondary interstitial riblets in late ontogeny, microsculpture of weak antimarginal striae, intersecting widely spaced prominent commarginal lamellae, shagreen microsculpture commonly lacking, byssal notch deep, ctenolium well developed.

DISTRIBUTION. – Late Eocene to Recent (Beu 1995: 18). Tropical Indo-West Pacific, Australasia (New Zealand and southeastern, southern and southwestern Australia) and tropical eastern Atlantic; littoral to upper bathyal depths.

REMARKS. – Hertlein (1969: N355) considered *Talochlamys* to be a junior synonym of *Chlamys* Röding, 1798, but Waller (1993: 202) and subsequently Beu (1995: 11) and Beu & Darragh (2001: 95) treated *Talochlamys* as an extant genus in the tribe Chlamydini von Teppner, 1922.

Talochlamys gladysiae (Melvill, 1888) **comb. nov.**

Figs 48, 49

Pecten gladysiae Melvill, 1888: 279, pl. 2, fig. 5.

Synonym:
Chlamys elsae Wagner, 1988: 37, 6 figs.

Other reference:
Chlamys gladysiae - Dijkstra 1991: 31.

TYPE MATERIAL. – *P. gladysiae*: holotype NMW 1955.158.10. – *C. elsae*: holotype ZMA Moll. 3.88.030, 5 paratypes HPW 1313.

TYPE LOCALITY. – *P. gladysiae*: unknown. – *C. elsae*: Philippines, Bohol, Panglao, taken by deep-water nets at 80-150 m.

MATERIAL EXAMINED. – The type material.
Fiji. MUSORSTOM 10: stn CP 1323, 17°16'S, 177°46'E, 143-173 m, 1 lv; stn CP 1324, 17°17'S, 177°47'E, 102-104 m, 1 spm (Figs 48, 49); stn CP 1349, 17°31'S, 178°39'E, 244-252 m, 1 rv; stn DW 1357, 17°49'S, 178°47'E, 81-110 m, 3 lv; stn CP 1358, 17°49'S, 178°47'E, 80-120 m, 4 spms, 1 lv, 1 rv; stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 3 lv, 4 rv; stn CP 1364, 18°12'S, 178°35'E, 135-151 m, 3 spms, 3 lv, 2 rv; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 1 lv, 4 rv; stn CP 1370, 18°12'S, 178°33'E, 113-123 m, 8 lv, 11 rv; stn CP 1371, 18°12'S, 178°33'E, 135-151 m, 11 lv, 7 rv.
Solomon Islands. SALOMON 1: stn DW 1768, 08°21'S, 160°42'E, 194-286 m, 1 rv; stn DW 1840, 10°17'S, 161°43'E, 97-223 m, 1 lv, 1 rv.

DISTRIBUTION. – Philippines and Indonesia (Dijkstra 1991: 31); live in 45-180 m (Dijkstra, unpubl. data). New records for the Solomon Islands and Fiji. Present material live in 104-135 m.

DESCRIPTION. – Shell up to *c.* 25 mm in height, thin, elongate, compressed, inequivalve and inequilateral, oblique posteriorly, right valve slightly more convex than left valve, auricles unequal in size, umbonal angle 90°-95°, colour highly variable: uniform orange, red, pink, purple or brown with blotches and V-shaped streaks.

Left valve with 29 squamous lirae of which 6 are more prominent, preradial microsculpture granular, commarginal lamellae on flanks of primary ribs and antimarginal sculpture anteriorly and posteriorly in early ontogeny, absent in late ontogeny. Anterior auricle with 8-10 scaly radial riblets, posterior auricle with 4 rather weak riblets.

Right valve almost identical in sculpture to left valve. Byssal notch broad, ctenolium well-developed with 6 teeth. Resilium small and slender.

REMARKS. – The present material is indistinguishable from the type specimens of *Chlamys elsae* from the Philippines.

This species was provisionally placed in *Coralichlamys* Iredale, 1939 by Wagner (1988: 39) and in *Laevichlamys* by Dijkstra & Kastoro (1997: 282). However, the monotypic coral dwelling *Coralichlamys* is irregular in shape and has secondary commarginal sculpture, while *Laevichlamys* has very weak and low radial sculpture (commarginal sculpture lacking) and some species have shagreen microsculpture in the early growth stage. The morphological characters of the present species are closer to those of *Talochlamys* (see diagnosis of *Talochlamys*, above, and the description of the present species).

Genus ***VEPRICHLAMYS*** Iredale, 1929

Veprichlamys sp. cf. ***kiwaensis*** (Powell, 1933)

Figs 50, 51

Chlamys kiwaensis Powell, 1933: 371, pl. 40, figs 1-5.

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 85). **Tonga**. BORDAU 2: stn DW 1614, 23°02'S, 175°51'W, 429-549 m, 1 rv (Figs 50, 51).

REMARKS. – The present specimen from Tonga is like the type specimens of *C. kiwaensis* from New Zealand, although the sculpture of the Tongan specimen is somewhat different in having secondary radial ribs, which commence in the central part of the disc. These are lacking in the typical specimens. Other characters are similar. It is clearly a distinct species, but more material is needed in order to describe it. *Veprichlamys kiwaensis* has been recorded alive in New Zealand and New Caledonia in 366-1006 m (Dijkstra 1995: 85).

Genus ***CRYPTOPECTEN*** Dall, Bartsch & Rehder, 1938

Cryptopecten bernardi (Philippi, 1851)

Figs 52-55

Pecten bernardi Philippi, 1851: 90.

Synonym:
Pecten hastingsii Melvill, 1888: 279, pl. 2, fig. 7.

Other references:
Cryptopecten bernardi - Wagner 1989: 55, figs 3-5 [not type specimen]. – Dijkstra 1989a: 17, unnumbered fig. – Higo, Callomon & Goto 2001: 157, fig. B473 [not type specimen].
Cryptopecten hastingsii - Higo, Callomon & Goto 2001: 157, fig. B472s (refigured holotype).

TYPE MATERIAL. – *P. bernardi*: syntypes (3 spms) ZMB Moll. 103.078. Note: The specimen (BMNH 1923.7.13.7) figured by Wagner (1989) and Higo, Callomon & Goto (2001) as the "holotype" in fact does not belong to the type series. Further discussion will be published elsewhere. – *P. hastingsii*: holotype (spm) NMW 1955.158.10.

TYPE LOCALITY. – *P. bernardi*: unknown. – *P. hastingsii*: Japan.

MATERIAL EXAMINED. – The type material. **Marquesas**. MUSORSTOM 9: stn DR 1150, 9°18'S, 140°05'W, 450-480 m, 1 rv; stn DW 1170, 8°45'S, 140°13'W, 104-109 m, 1 rv; stn CP 1188, 8°49'S, 140°03'W, 35-55 m, 10 spms (Figs 52-55); stn DR 1223, 9°45'S, 138°51'W, 90-150 m, 1 lv, 1 rv; stn DR 1244, 10°28'S, 138°42'W, 1015-1020 m, 1 lv, 1 rv.

DISTRIBUTION. – Marquesas Islands; live in 35-108 m (Dijkstra unpubl. data). Present material live in 35-55 m, dead in 109-1015 m.

Melvill (1888) mentioned the locality Japan for *P. hastingsii*, which is a junior synonym of the present species (see also Wagner 1989). This locality is doubtful. No material referable to of *C. bernardi* has ever been recorded subsequently from that region.

REMARKS. – This rare species has previously been synonymized with *Cryptopecten nux* (Reeve, 1853) (Hayami 1984; Rombouts 1991), a common pectinid, widely distributed throughout the Indo-West Pacific. Wagner (1989), however, clearly described and figured *C. bernardi* and distinguished it from *C. nux*.

Cryptopecten bullatus (Dautzenberg & Bavay, 1912)

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

MATERIAL EXAMINED. – The type material (see Dijkstra 1995: 60).

Norfolk Ridge. NORFOLK 1: stn DW 1651, 23°27'S, 167°50'E, 276-350 m, 2 lv, 3 rv; stn DW 1673, 23°39'S, 168°00'E, 278 m, 1 rv; stn DW 1709, 23°42'S, 168°16'E, 380-389 m, 1 lv; stn DW 1723, 23°18'S, 168°15'E, 266-267 m, 1 rv; stn DW 1729, 23°20'S, 168°16'E, 340-619 m, 1 rv; stn CP 1731, 23°20'S, 168°16'E, 310-788 m, 2 rv.

Fiji. MUSORSTOM 10: stn CP 1323, 17°16'S, 177°46'E, 143-173 m, 1 lv, 2 rv; stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 1 rv; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 4 lv, 1 rv; stn CP 1370, 18°12'S, 178°33'E, 113-123 m, 2 rv; stn CP 1371, 18°12'S, 178°33'E, 135-151 m, 1 lv, 2 rv; stn CP 1386, 18°19'S, 178°05'E, 230-344 m, 1 rv; stn CP 1389, 18°19'S, 178°05'E, 241-417 m, 1 lv; stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 1 lv. – BORDAU 1: stn CP 1402, 16°38'S, 179°36'E, 260-279 m, 1 lv; stn CP 1404, 16°40'S, 179°36'E, 180 m, 1 lv; stn CP 1475, 19°41'S, 178°11'W, 321-424 m, 1 spm; stn DW 1498, 18°41'S, 178°28'W, 300-307 m, 1 rv.

Tonga. BORDAU 2: stn CP 1510, 21°05'S, 175°23'W, 461-497 m, 1 lv; stn DW 1518, 21°21'S, 175°07'W, 336-347 m, 1 rv; stn DW 1536, 21°45'S, 175°21'W, 320-323 m, 1 rv; stn DW 1537, 21°41'S, 175°19'W, 391-421 m, 1 rv; stn DW 1552, 20°38'S, 174°58'W, 491-500 m, 1 rv; stn DW 1583, 18°37'S, 174°03'W, 327-360 m, 1 spm, 1 rv; stn DW 1606, 22°16'S, 175°20'W, 313-316 m, 1 lv; stn DW 1611, 23°00'S, 175°47'W, 278-323 m, 1 lv; stn DW 1612, 23°02'S, 175°47'W, 327-342 m, 1 spm, 1 lv, 1 rv; stn DW 1614, 23°02'S, 175°51'W, 429-549 m, 1 lv, 3 rv; stn CP 1626, 23°20'S, 176°16'W, 220-249 m, 1 rv; stn DW 1628, 23°22'S, 176°18'W, 400-416 m, 1 lv, 3 rv; stn DW 1631, 23°23'S, 176°18'W, 407-443 m, 1 rv; stn DW 1635, 21°44'S, 175°20'W, 320-323 m, 1 lv, 1 rv; stn CP 1641, 21°09'S, 175°22'W, 395 m, 1 spm, 1 rv.

Marquesas. MUSORSTOM 9: stn DW 1146, 9°19'S, 140°06'W, 200 m, 1 rv; stn DW1148, 9°19'S, 140°06'W, 300 m, 2 lv, 2 rv; stn DR 1198, 9°50'S, 139°09'W, 290-320 m, 2 lv, 4 rv; stn DR 1199, 9°49'S, 140°00'W, 210-258 m, 2 spms, 13 lv, 24 rv; stn DW 1201, 9°51'S, 139°09'W, 275-300 m, 4 rv; stn DW 1206, 9°51'S, 139°09'W, 352-358 m, 1 rv; stn DW 1222, 9°44'S, 138°51'W, 340-352 m, 2 lv; stn DR 1231, 9°42'S, 139°05'W, 270-285 m, 2 spms, 1 rv; stn DW 1281, 7°48'S, 140°21'W, 450-455 m, 3 rv; stn CP 1282, 7°52'S, 140°31'W, 416-460 m, 1 lv; stn DW 1287, 7°54'S, 140°40'W, 163-245 m, 3 spms, 4 lv, 10 rv; stn DW 1288, 8°54'S, 139°38'W, 200-220 m, 2 spms, 3 lv, 8 rv.

DISTRIBUTION. – Southwest Indian Ocean, Japan, Philippines, East China Sea, Indonesia, eastern Australia, New Caledonia, Lord Howe Island, Norfolk Island, Kermadec Islands and Hawaiian Islands; live in 82-500 m (Dijkstra 1995: 61; Dijkstra & Marshall 1997: 106). New records for Fiji, Tonga and the Marquesas Islands. Present material live in 220-395 m.

Cryptopecten nux (Reeve, 1853)

Pecten coruscans Reeve, 1853: sp. 143, pl. 32, fig. 143 [*non* Hinds, 1845].
Pecten nux Reeve, 1853: *errata.*

MATERIAL EXAMINED. – The type material (see Wagner 1989: 56, figs 6-7).

Norfolk Ridge. NORFOLK 1: stn DW 1717, 23°23'S, 168°02'E, 250-312 m, 1 lv.

Loyalty Island. LIFOU 2000: stn 1461, 20°54.0'S, 167°02.1'E, 100-120 m, 4 lv, 8 rv; stn 1462, 20°47.1'S, 167°03.2'E, 70-120 m, 2 lv, 5 rv; stn 1469, 20°54.2'S, 167°00.4'E, 70-130 m, 10 lv, 3 rv.

Solomon Islands. SALOMON 1: stn DW 1741, 11°29'S, 159°57'E, 557-655 m, 5 lv, 2 rv; stn DW 1742, 11°29'S, 159°57'E, 366-421 m, 1 lv; stn DW 1745, 09°23'S, 159°59'E, 253-356 m, 2 lv, 1 rv; stn DW 1757, 08°51'S, 159°53'E, 120-134 m, 2 rv; stn CP 1761, 08°47'S, 160°02'E, 191-290 m, 1 rv; stn DW 1762, 08°40'S, 160°04'E, 396-411 m, 1 lv, 1 rv; stn DW 1765, 08°43'S, 160°07'E, 325-380 m, 2 rv; stn DW 1771, 08°17'S, 160°38'E, 411-498 m, 1 rv; stn DW 1811, 09°46'S, 160°51'E, 182-203 m, 1 rv; stn DW 1820, 09°52'S, 160°51'E, 256-329 m, 1 lv, 4 rv; stn DW 1825, 09°51'S, 160°58'E, 340-391 m, 1 rv; stn DW 1832, 10°12'S, 161°20'E, 122-135 m, 4 rv; stn DW 1834, 10°12'S, 161°18'E, 225-281 m, 2 lv, 2 rv; stn DW 1840, 10°17'S, 161°43'E, 97-223 m, 1 spm, 20 lv, 31 rv.

Fiji. MUSORSTOM 10: stn DW 1333, 16°50'S, 178°13'E, 200-215 m, 5 lv; stn DW 1334, 16°51'S, 178°14'E, 251-257 m, 1 rv; stn DW 1357, 17°49'S, 178°47'E, 81-110 m, 9 lv, 7 rv; stn CP 1358, 17°49'S, 178°47'E, 80-120 m, 2 spms, 1 rv; stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 7 lv, 6 rv; stn DW 1365, 18°13'S, 178°32'E, 295-302 m, 2 lv; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 2 lv, 2 rv; stn CP 1369, 18°11'S, 178°23'E, 392-433 m, 2 rv; stn CP 1370, 18°12'S, 178°33'E, 113-123 m, 1 lv, 3 rv; stn CP 1371, 18°12'S, 178°33'E, 135-151 m, 1 lv, 2 rv; stn DW 1374, 18°19'S, 178°06'E, 259-348 m, 1 lv, 2 rv; stn DW 1376, 18°19'S, 178°09'E, 497-504 m, 1 rv; stn DW 1384, 18°19'S, 178°06'E, 260-305 m, 2 lv; stn CP 1386, 18°19'S, 178°05'E, 230-344 m, 1 rv; stn DW 1388, 18°19'S, 178°02'E, 313-446 m, 5 lv, 7 rv; stn CP 1389, 18°19'S, 178°05'E, 241-417 m, 1 lv, 1 rv; stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 1 lv, 1 rv. – BORDAU 1: stn DW 1393, 16°45'S, 179°59'E, 426-487 m, 3 lv, 7 rv; stn CP 1394, 16°45'S, 179°59'E, 416 m, 17 lv, 36 rv; stn CP 1395, 16°45'S, 179°59'E, 423-500 m, 1 lv; stn DW 1439, 17°11'S, 178°44'W, 173-180 m, 4 rv; stn DW 1440, 17°11'S, 178°43'W, 190-308 m, 1 rv; stn DW 1450, 16°44'S, 179°58'E, 327-420 m, 4 lv, 3 rv; stn DW 1451, 16°45'S, 180°00'E, 400-460 m, 6 lv, 13 rv; stn DW 1453, 16°45'S, 179°59'E, 414-510 m, 7 lv, 8 rv; stn DW 1494, 18°55'S, 178°29'W, 240-319 m, 1 rv; stn DW 1495, 18°53'S, 178°30'W, 420-445 m, 1 rv; stn DW 1498, 18°41'S, 178°28'W, 300-307 m, 1 rv.

Tonga. BORDAU 2: stn DW 1508, 21°02'S, 175°19'W, 555-581 m, 4 rv; stn DW 1531, 21°12'S, 174°56'W, 970-983 m, 1 rv; stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 5 lv, 1 rv; stn CP 1568, 21°02'S, 175°19'W, 431 m, 1 rv; stn DW 1569, 21°02'S, 175°19'W, 433 m, 2 rv; stn DW 1583, 18°37'S, 174°03'W, 327-360 m, 6 lv, 5 rv; stn DW 1586, 18°34'S, 173°55'W, 440-487 m, 1 lv; stn DW 1587, 18°37'S, 173°54'W, 309-400 m, 3 rv; stn DW 1601, 20°50'S, 174°57'W, 200-487 m, 1 rv; stn DW 1602, 20°49'S, 174°57'W, 263-320 m, 1 lv, 5 rv; stn CP 1643, 21°05'S, 175°22'W, 487 m, 1 rv.

DISTRIBUTION. – Eastern South Africa, Madagascar, Mauritius, Seychelles, Mozambique, Kenya, Red Sea, Oman, Andaman Islands, Japan, Philippines, Indonesia, northern and eastern Australia, New Caledonia, Micronesia, Melanesia and Polynesia; live in 30-240 m (Dijkstra & Marshall 1997: 108). New records for the Solomon Islands, Loyalty Islands, Fiji and Tonga. Present material live in 97-120 m.

Genus ***SERRATOVOLA*** Habe, 1951

Serratovola Habe, 1951: 81. Type species (by original designation): *Pecten tricarinatus* Anton, 1838 (*non* Defrance, 1825) [= *Pecten rubicundus* Récluz *in* Chenu, 1843]; Pliocene-Recent, Indo-West Pacific (Hayami 1989: 16).

DIAGNOSIS. – Pectinini with a very weakly concave to flat left valve and a strongly convex right valve, solid, equilateral, circular to subcircular in shape, attaining 35 mm in height, valves with radial macrosculpture and intercalate commarginal microsculpture, radial ribs usually with hollow sections, auricles small, equal or almost equal in size, preradial area 1 mm, byssal notch weak, ctenolium weak in juvenile and absent in adult stage, resilial and intermediate teeth lacking, dorsal teeth weak.

DISTRIBUTION. – Pliocene to Recent. Indo-West Pacific (Hayami 1989: 16).

REMARKS. – See Dijkstra (1998: 28).

Serratovola rubicunda (Récluz *in* Chenu, 1843)

Figs 46, 47

Pecten asper Sowerby, 1842: 50, pl. 19, figs 196-197 (*non* Lamarck, 1819).
Pecten rubicundus Récluz *in* Chenu, 1843: 3, pl. 7, figs 4-5 (*nom. nov.* for *Pecten asper* Sowerby).

Other reference:
Serratovola rubicunda - Dijkstra 1998: 29, pl. 4, figs 7-8.

MATERIAL EXAMINED. – The type material (see Dijkstra 1998: 29).
Solomon Islands. SALOMON 1: stn CP 1761, 08°47'S, 160°02'E, 191-290 m, 1 lv; stn DW 1776, 08°21'S, 160°41'E, 295-381 m, 2 lv, 4 rv.
Fiji. MUSORSTOM 10: stn CP 1323, 17°16'S, 177°46'E, 143-173 m, 1 lv; stn CP 1324, 17°17'S, 177°47'E, 102-104 m, 2 rv; stn DW 1357, 17°49'S, 178°47'E, 81-110 m, 2 lv, 5 rv; stn CP 1358, 17°49'S, 178°47'E, 80-120 m, 2 spms, 2 rv; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 2 lv; stn CP 1370, 18°12'S, 178°33'E, 113-123 m, 3 lv, 2 rv; stn CP 1371, 18°12'S, 178°33'E, 135-151 m, 2 lv, 3 rv; stn DW 1388, 18°19'S, 178°02'E, 313-446 m, 1 lv, 1 rv; stn CP 1389, 18°19'S, 178°05'E, 241-417 m, 1 rv; stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 2 rv.
Tonga. BORDAU 2: stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 1 rv; stn CP 1582, 18°41'S, 174°03'W, 79-82 m, 1 spm (Figs 46, 47).

DISTRIBUTION. – Japan, Philippines, South China Sea, Indonesia and Papua New Guinea (Dijkstra 1998: 29); live in 30-140 m (Dijkstra unpubl. data). New records for the Solomon Islands, Fiji and Tonga. Present material live in 80-82 m.

DESCRIPTION. – Shell up to 35 mm in height, circular, inequivalve and equilateral, right valve much more convex than almost flat left valve, auricles small and nearly equal in size, umbonal angle 110°-120°, left valve coloured with numerous delicate red spots and/or streaks, right valve paler or more whitish.

Left valve sculptured with 17-18, regularly spaced, angular radial ribs solid or with hollow sections laterally. Interspaces slightly wider than one radial rib, bearing widely spaced, commarginal lamellae, lamellae also present on ribs near ventral margin where they are more closely spaced. Anterior and posterior auricle almost the same size, both with similar sculpture of closely spaced, commarginal lamellae and some very weak radial ridges.

Right valve with 18-19, regularly spaced, radial ribs, angular in early ontogeny, more rounded in late ontogeny, with similar sculpture as on left valve. Auricles with similar sculpture to that on left valve. Byssal notch very weak, ctenolium lacking in adult stage.

REMARKS. – The present material is similar to the type specimen, although somewhat paler in colour. The radial ribs of the right valve are highly variable: angular with hollow sections laterally (usually in early ontogeny), or rounded without these hollow sections. Both are observed in the present material, even in one specimen (stn DW 1357).

For comparison with *Serratovola gardineri* (Smith, 1903) from the Maldive Islands and *Serratovola pallula* Dijkstra, 1998 from Papua New Guinea and northern Australia, see Dijkstra (1998).

DISCUSSION

Thirty two species of deep-water Pectinoidea are now known from Fiji and Tonga, of which 3 are new to science (*Propeamussium boucheti*, *Parvamussium lozoueti* and *Similipecten herosae*). Of these, 28 species were taken alive in 70-1216 m, and 4 were represented by shells only in 188-614 m. Of the 32 species, 3 (10 %) are possible endemics and 29 (90 %) are more widespread Indo-Pacific species. By contrast, only 8 species have been recorded from the Marquesas, but 2 (25%) are new species and are possible endemics. The Marquesas have been found to be species-poor but endemic-rich in other molluscan taxa (e.g., *Conus*, see Moolenbeek *et al.* 2008), and this does not appear to be a result of uneven sampling efforts in different island groups. Subsequently to the SALOMON 1 cruise studied in the present paper, two more expeditions have taken place in the Solomon Islands (SALOMON 2 in 2004, SALOMONBOA 3 in 2007). Pending study of the additional pectinoid samples from these cruises, we refrain from making comments on the overall species richness of that archipelago.

Nearly all the present species are related to the tropical Indo-West Pacific region and are now new records for Fiji and Tonga. The geographic distribution of 30 species is extended considerably eastwards.

In comparison with Table 1 of Dijkstra (2001) the number of species is somewhat reduced, because of some dead-taken species that are known from the littoral of other localities in the Indo-Pacific, and possibly transported to bathyal depths.

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