

Pectinoidea (Bivalvia: Propeamussiidae, Entoliidae and Pectinidae) from the Tarava Seamounts, Society Islands and the Tuamotu Archipelago (French Polynesia)

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Dijkstra H. H. & Maestrati P. 2013. — Pectinoidea (Bivalvia: Propeamussiidae, Entoliidae and Pectinidae) from the Tarava Seamounts, Society Islands and the Tuamotu Archipelago (French Polynesia). *Zoosystema* 35 (3): 361-375. <http://dx.doi.org/10.5252/z2013n3a2>

ABSTRACT

Eighteen species of Pectinoidea (six Propeamussiidae Abbott, 1954, one Entoliidae Teppner, 1922, eleven Pectinidae Rafinesque, 1815) are listed from the Tarava Seamounts, Society Islands and Tuamotu Archipelago, French Polynesia. Four Propeamussiidae species (*Parvamussium lamellatum* n. sp., *Parvamussium scutulatum* n. sp., *Parvamussium vesiculosum* n. sp., *Cyclopecten comptulus* n. sp.) are new to science.

RÉSUMÉ

Pectinoidea (Bivalvia: Propeamussiidae, Entoliidae and Pectinidae) des Monts sous-marins Tarava, des Îles de la Société et de l'Archipel des Tuamotu (Polynésie française). Dix-huit espèces de Pectinoidea (six Propeamussiidae Abbott, 1954, un Entoliidae Teppner, 1922, onze Pectinidae Rafinesque, 1815) ont été récoltées des Monts sous-marins Tarava, des Îles de la Société, et de l'Archipel des Tuamotu, Polynésie française. Quatre espèces de Propeamussiidae (*Parvamussium lamellatum* n. sp., *Parvamussium scutulatum* n. sp., *Parvamussium vesiculosum* n. sp., *Cyclopecten comptulus* n. sp.) sont nouvelles pour la science.

KEY WORDS

Bivalvia,
French Polynesia,
littoral,
bathyal,
new species,
new records.

MOTS CLÉS

Bivalvia,
Polynésie française,
littoral,
bathyal,
espèces nouvelles,
nouvelles occurrences.

INTRODUCTION

This paper deals with new littoral and bathyal living pectinoid species from the French cruise to the Tarava Seamounts, Society Islands and Tuamotu Archipelago (*Tarasoc*, October 2009).

In relation to the Pectinoidea species (over 100 species) from the western and southwestern Pacific (Raines & Poppe 2006; Dijkstra & Beu observations), 46 Pectinoidea species (Tröndlé & Boutet 2009; Dijkstra & Maestrati 2010) are now reported from French Polynesia (see Table 1).

Eighteen species of Pectinoidea (six Propeamussiidae Abbott, 1954, one Entoliidae Teppner, 1922, eleven Pectinidae Rafinesque, 1815) are herein listed from the Tarava seamounts, the Society Islands and the Tuamotu Archipelago, French Polynesia. Four propeamussiid species (*Parvamussium lamellatum* n. sp., *Parvamussium scutulatum* n. sp., *Parvamussium vesiculosum* n. sp., and *Cyclopecten comptulus* n. sp.) are new to science.

Pectinoid species from earlier publications (see References) are briefly reported, but not refigured (Dijkstra 1989a, 1995, 2002, 2011; Dijkstra & Maestrati 2010).

All studied material is deposited in the Muséum national d'Histoire naturelle (MNHN) in Paris, with some voucher material in the reference collection of the senior author (part of Naturalis Biodiversity Center, Leiden).

ABBREVIATIONS

REPOSITORIES

coll. HD	Henk H. Dijkstra, senior author;
LSL	The Linnean Society of London, London;
MHNB	Muséum d'Histoire naturelle de Bordeaux;
MNHN	Muséum national d'Histoire naturelle, Paris;
BMNH	The Natural History Museum, London (formerly BMNHUK);
RMNH	Nationaal Natuurhistorisch Museum, Leiden (now part of Naturalis Biodiversity Center, Leiden);
USNM	National Museum of Natural History, Washington, DC;
ZMA	Zoölogisch Museum, Amsterdam (now part of Naturalis Biodiversity Center, Leiden).

STATION DATA

CP	chalut à perche (beam trawl);
DW	drague Warén (Warén dredge).

OTHER ABBREVIATIONS

d	depth "thickness of paired valves";
h	height;
IRD	Institut de Recherche pour le Développement.
lv	left valve(s);
rv	right valve(s);
spm(s)	live-taken specimens;
stn	station;
w	width.

SYSTEMATICS

Superfamily PECTINOIDEA Rafinesque, 1815

Family PROPEAMUSSIIDAE Abbott, 1954

Genus *Propeamussium* de Gregorio, 1884

Propeamussium watsoni (Smith, 1885)

Amussium watsoni Smith, 1885: 309, pl. 22, figs 8-8c.

Propeamussium watsoni – Dijkstra 1995: 24, figs 27-30, 123-124 (synonymy, references, type data, distribution, description). — Dijkstra & Maestrati 2010: 334.

MATERIAL EXAMINED. — **New Guinea.** Northeast, 1957 m, lectotype spm (BMNH 1887.2.9.3307).

Tarava Seamounts. *Tarasoc*, stn DW 3339, 18°23'S, 154°09'W, 778-1050 m, 1 lv; stn DW 3343, 17°51'S, 154°04'W, 763-812 m, 19 lv, 8 rv.

Tuamotu Archipelago. *Tarasoc*, stn DW 3377, 15°38'S, 146°53'W, 780-825 m, 1 lv; stn DW 3378, 15°38'S, 146°51'W, 887-890 m, 7 lv, 2 rv; stn DW 3379, 15°38'S, 146°51'W, 800 m, 2 lv; stn DW 3381, 15°41'S, 146°56'W, 830-988 m, 1 rv.

DISTRIBUTION. — Northern Indian Ocean, southern Japan, Papua New Guinea, New Caledonia, Vanuatu, and Austral Islands (Dijkstra & Maestrati 2010: 335). Depth range 650-1300 m (alive). Now also Society Islands and Tuamotu Archipelago (new record), only single valves at 763-1050 m (maximum depth range).

REMARKS

The present specimens are similar to the type material, although the radial riblets of the left valve are more developed on the central part of the disc (typical only in early growth stage) and the internal ribs are more

TABLE 1. — Pectinoid species from the Tarava seamounts, Society and Tuamotu and their distribution. Abbreviations: **ll**, live; **dd**, dead.

Species	ll/dd	Depth (m)	Remarks
<i>Propeamussium watsoni</i> (Smith, 1885)	dd	763-1050	broadly distributed
<i>Parvamussium australanum</i> Dijkstra & Maestrati, 2010	ll	572-981	endemic Australs, Society, Tuamotu
<i>Parvamussium lamellatum</i> n. sp.	ll	460	endemic
<i>Parvamussium scutulatum</i> n. sp.	ll	782-1030	endemic Society, Tuamotu
<i>Parvamussium vesiculosum</i> n. sp.	dd	437-836	endemic Society
<i>Cyclopecten comptulus</i> n. sp.	ll	700-730	endemic Society
<i>Pectinella aequoris</i> Dijkstra, 1991	dd	705-755	broadly distributed
<i>Pseudohinnites levii</i> Dijkstra, 1989	ll	493-501	broadly distributed
<i>Lamellipecten aduncus</i> Dijkstra & Maestrati, 2010	dd	270-500	endemic Austral Islands
<i>Pascahinnites coruscans</i> (Hinds, 1845)	dd	315-860	broadly distributed
<i>Cryptopecten nux</i> (Reeve, 1853)	dd	96-1060	broadly distributed
<i>Anguipecten lamberti</i> (Souverbie in Souverbie & Montrouzier, 1874)	dd	440-490	broadly distributed
<i>Excellichlamys sowerbyi</i> Dijkstra, 1998	dd	430-914	endemic Society, Tuamotu
<i>Glorichlamys elegantissima</i> (Deshayes, 1863)	dd	285-890	broadly distributed
<i>Gloripallium pallium</i> (Linnaeus, 1758)	dd	385-830	broadly distributed
<i>Gloripallium spiniferum</i> (G. B. Sowerby I, 1835)	dd	390-600	endemic French Polynesia
<i>Mirapecten boutetorum</i> Dijkstra, 2011	dd	350-870	endemic French Polynesia
<i>Haumea rehderi</i> (Grau, 1960)	dd	32-38	broadly distributed

closely spaced and almost regularly developed in size to the ventral margin (typical shorter and more irregularly development) and in addition greater in number (eight with one or two shorter riblets laterally, typical six with one shorter riblet laterally). Other conchological characters are identical to the type material.

Genus *Parvamussium* Sacco, 1897

Parvamussium australanum Dijkstra & Maestrati, 2010

Parvamussium australanum Dijkstra & Maestrati, 2010: 335, fig. 2A-E.

MATERIAL EXAMINED. — **Austral Islands.** East of Rapa Island, 800-850 m, holotype spm (MNHN 21377).

Tarava Seamounts. *Tarasoc*, stn DW 3297, 18°19'S, 148°32'W, 380 m, 1 rv; stn DW 3301, 19°18'S, 151°01'W, 700-990 m, 1 lv; stn DW 3302, 19°15'S, 150°57'W, 600-660 m, 1 lv; stn CP 3303, 19°15'S, 150°56'W, 587-704 m, 1 lv, 1 rv; stn DW 3309, 19°12'S, 151°35'W, 614-664 m, alive, 1 spm; stn DW 3325, 19°17'S, 151°33'W, 595-628 m, 1 lv; stn DW 3330, 18°45'S, 152°16'W, 717-794 m, alive, 1 spm, 1 lv, 1 rv; stn DW 3331, 18°45'S, 152°17'W, 766 m, alive, 1 spm, 6 lv, 15 rv; stn 3332, 18°45'S, 152°18'W, 790-880 m, alive, 1 spm, 9 lv, 8 rv; stn DW 3333, 18°45'S, 152°18'W, 795-975 m, alive, 1 spm, 16 lv, 18 rv; stn DW 3334, 18°22'S, 154°06'W, 635-760 m, 1 rv; stn

DW 3336, 18°23'S, 154°06'W, 573-619 m, 1 rv; stn DW 3338, 18°22'S, 154°08'W, 713 m, 1 rv; stn CP 3350, 15°05'S, 148°03'W, 981-992 m, alive, 1 spm.

Society Islands. *Tarasoc*, stn DW 3406, 16°31'S, 152°32'W, 504-763 m, alive, 1 spm; stn DW 3415, 16°34'S, 151°47'W, 614-730 m, 1 lv; stn DW 3418, 16°33'S, 151°48'W, 580-618 m, alive, 2 spms; stn DW 3420, 16°46'S, 151°04'W, 550 m, 1 rv; stn DW 3429, 16°43'S, 150°38'W, 493-540 m, 1 rv; stn DW 3442, 16°41'S, 151°26'W, 515-550 m, 1 rv; stn DW 3451, 16°53'S, 151°21'W, 440-490 m, 2 lv, 3 rv; stn DW 3457, 16°45'S, 151°24'W, 520-572 m, alive, 3 spms, 1 rv.

Tuamotu Archipelago. *Tarasoc*, stn DW 3349, 15°05'S, 148°03'W, 976-997 m, alive, 1 spm; stn DW 3350, 15°05'S, 148°03'W, 981-992 m, alive, 1 spm; stn DW 3351, 15°04'S, 148°01'W, 976-983 m, 1 lv; stn DW 3373, 15°41'S, 146°54'W, 507-607 m, 1 rv; stn DW 3374, 15°39'S, 146°54'W, 703-790 m, 2 lv, 7 rv; stn CP 3376, 15°41'S, 146°54'W, 646-737 m, alive, 1 spm; stn DW 3378, 15°38'S, 146°51'W, 887-890 m, 1 lv; stn DW 3380, 15°39'S, 146°56'W, 970-1060 m, alive, 1 spm.

DISTRIBUTION. — Austral Islands, alive at 500-800 m (minimum depth range). Now also Society Islands and Tuamotu Archipelago (new record), alive at 572-981 m (minimum depth range).

REMARKS. — The present specimens are identical to the type material. The intervals of the commarginal lamellae on the left valve are variable in development

and the interstitial radial sculpture varies in prominence. However, these variations could also be observed in the type material from the Austral Islands.

Parvamussium lamellatum n. sp.

(Fig. 1)

TYPE MATERIAL. — Society Islands. *Tarasoc*, stn DW 3463, 17°34'S, 149°54'W, 460-505 m, alive, paratypes 4 spms, 1 lv (MNHN 25697); stn CP 3464, 17°34'S, 149°54'W, 460 m, alive, holotype spm (MNHN 25695), paratypes 3 spms, 1 lv (MNHN 25696); stn DW 3476, 17°29'S, 149°45'W, 435-490 m, alive, paratypes 3 spms (two MNHN 25698, one ZMA Moll. 398322).

TYPE LOCALITY. — Society Islands, Moorea, 17°34'S, 149°54'W, 460-505 m (*Tarasoc*, stn DW 3463).

ETYMOLOGY. — Left valve covered with lamellae (latin: *lamellatus*, adjective meaning thinly layered).

OTHER MATERIAL EXAMINED. — Society Islands. *Tarasoc*, stn DW 3406, 16°31'S, 152°32'W, 504-763 m, 1 lv; stn DW 3408, 16°25'S, 152°17'W, 437-536 m, 34 lv, 91 rv; stn DW 3415, 16°34'S, 151°47'W, 614-730 m, 1 lv; stn DW 3455, 16°52'S, 151°20'W, 430-527 m, alive, 1 spm, 3 lv, 3 rv; stn DW 3482, 17°29'S, 149°45'W, 440 m, 2 lv; stn unknown, 300-900 m, 1 lv, 1 rv.

Tuamotu Archipelago. *Tarasoc*, stn DW 3378, 15°38'S, 146°51'W, 887-890 m, 1 lv.

DISTRIBUTION. — Society Islands and Tuamotu Archipelago, alive at 460 m depth.

DESCRIPTION

Shell up to c. 10 mm in height, fragile, opaque whitish or pigmented with white and creamy dots and streaks, almost circular, inequivalve, nearly equilateral, weakly inflated, left valve slightly more convex than right valve, auricles unequal in shape and size (anterior larger than posterior). Prodissoconch 230 µm long.

Left valve sculptured with strongly developed, closely spaced, commarginal lamellae and closely arranged radial rows of imbricated vesicles (damaged on many specimens), which are part of the commarginal lamellate sculpture, commencing at 1.5 mm from dorsal margin (radial rows of vesicles c. 12-15 mm), with increasing intercalated radial row of vesicles to ventral margin (c. 30 mm). Anterior auricle sculptured with prominent, closely spaced, commarginal lamellae and one or two hollow bands, posterior auricle almost

identically sculptured with slightly more closely spaced and less prominent commarginal lamellae.

Right valve with closely spaced, regularly arranged, weak commarginal lirae, lamellate near ventral margin. Marginal apron (c. 1.5 mm) pressed against left valve, broken off many specimens. Anterior auricle with coarse, closely spaced commarginal lamellae, posterior more delicate. Hinge line straight. Byssal notch shallow, byssal fasciole narrow, ctenolium lacking.

Internal riblets (ten and one weak auricular on each side, plus one or two rudimentary in some specimens) commence in early growth stage and extend to ventral submarginal area.

Dimensions of the holotype: H 9.5 mm, W 9.7 mm, D 2.2 mm.

REMARKS

The present species is morphologically close to *Parvamussium australanum*, known from the Austral Islands, but differs somewhat in size (*Parvamussium lamellatum* n. sp. up to 10 mm high, *P. australanum* up to 12 mm), in having radial rows and intercalated secondary radial rows of vesicles on the left valve, which are lacking in *P. australanum* (Dijkstra & Maestrati 2010: fig. 2A), in having closely spaced, prominent commarginal lamellae (*P. australanum* with widely spaced commarginal sculpture), in lacking intercalated radial microsculpture on the left valve (present in *P. australanum*), in having more prominently developed internal ribs (10 ribs) commencing early ingrowth (*P. australanum* 12 ribs, commencing later on the central part of the inner surface).

Parvamussium undosum Dijkstra, 1991, known from the southwestern Pacific, is similar in shape, size and internal ribs, but differs from *P. lamellatum* n. sp. by having more delicate and more closely spaced lamellae on the left valve and auricles and by lacking the radial rows of vesicles. Moreover, *P. undosum* has small solid radial lirae on the left valve that are lacking on *P. lamellatum* n. sp.

Parvamussium scutulatum n. sp.

(Fig. 2)

TYPE MATERIAL. — Tarava Seamounts. *Tarasoc*, stn DW 3314, 19°14'S, 151°39'W, 803-815 m, paratypes 2 lv, 1 rv (MNHN 25700); stn DW 3328, 18°46'S,

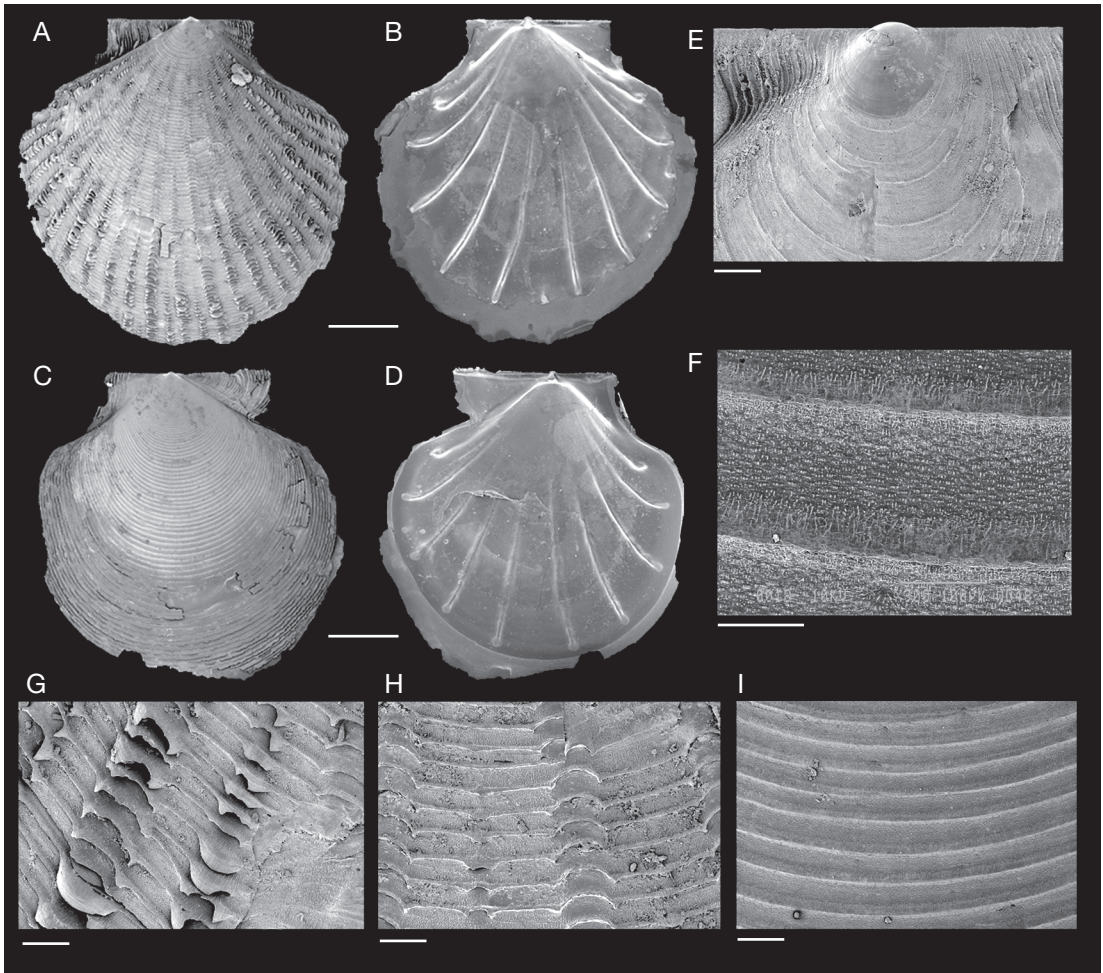


FIG. 1. — *Parvamussium lamellatum* n. sp.: **A**, holotype, external view of the left valve; **B**, holotype, internal view of the left valve; **C**, holotype, external view of the right valve; **D**, holotype, internal view of the right valve; **E**, prodissoconch and early stage of the left valve; **F**, details of the right valve; **G**, **H**, details of the left valve; **I**, details of the right valve. Scale bars: A-D, 2 mm; E, 200 µm; F, 100 µm; G-I, 200 µm. All SEM pictures.

152°15'W, 788-836 m, paratype 1 lv (MNHN 25701); stn DW 3333, 18°45'S, 152°18'W, 795-975 m, paratypes 3 lv, 4 rv (five MNHN 25702, two ZMA Moll. 398323); stn DW 3340, 18°24'S, 154°09'W, 787-792 m, paratypes 4 lv (MNHN 25703).

Society Islands. *Tarasoc*, stn DW 3421, 16°46'S, 151°04'W, 782-847 m, alive, holotype spm (MNHN 25699).

Tuamotu Archipelago. *Tarasoc*, stn DW 3354, 15°55'S, 147°06'W, 860-1030 m, paratypes 1 lv, 1 rv (MNHN 25705).

TYPE LOCALITY. — Society Islands, Huahine, 16°46'S, 151°04'W, 782-847 m (*Tarasoc*, stn DW 3421).

ETYMOLOGY. — Left valve with reticular sculpture (latin: *scutulatus*, adjective meaning with lozenge-shaped pattern).

DISTRIBUTION. — Society Islands and Tuamotu Archipelago, 782-1030 m, living in 782-847 m.

DESCRIPTION

Shell up to *c.* 5 mm in height, fragile, opaque to semi-transparent white, circular, inequivalve, left valve slightly more convex than right valve, almost equilateral, auricles subequal in shape and size, anterior demarcated from disc, posterior continuous

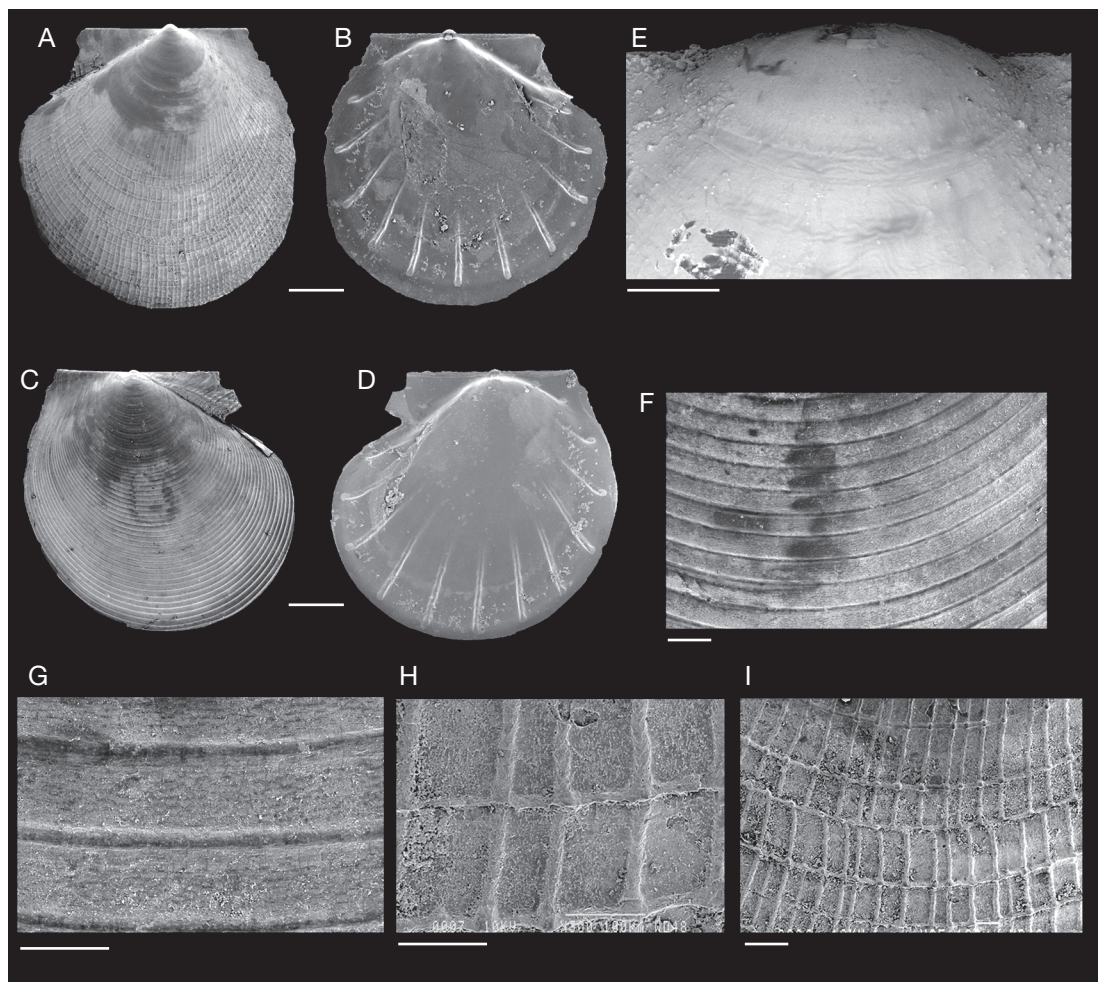


FIG. 2. — *Parvamussium scutulatum* n. sp.: **A**, holotype, external view of the left valve; **B**, holotype, internal view of the left valve; **C**, holotype, external view of the right valve; **D**, holotype, internal view of the right valve; **E**, prodissoconch of the left valve; **F**, **G**, details of the right valve; **H**, **I**, details of the left valve. Scale bars: A-D, 1 mm; E, 50 μ m, G, H, 100 μ m; F, I, 200 μ m. All SEM pictures.

with disc, umbonal angle *c.* 110°. Prodissoconch 185 μ m long.

Left valve with reticulate sculpture of widely spaced commarginal and more closely spaced radial threads, commencing at 2 mm shell height, extending to ventral margin. Umbonal region glossy. Auricles with some closely spaced commarginal lamellate riblets near lateral margins.

Right valve with regularly spaced commarginal lirae. Auricles with commarginal lamellae laterally, slightly stronger on anterior, more closely spaced on posterior. Hinge line straight. Byssal fasciole

narrow. Each valve with 12 short internal riblets, commencing in late growth stage. External sculpture clearly visible from interior side. Resilifer triangular. Byssal notch moderately deep, ctenolium lacking.

Dimensions of the holotype: H 4.7 mm, W 4.7 mm, D 0.9 mm.

REMARKS

The present species is morphologically closest to *Parvamussium multiliratum* Dijkstra, 1995, known from the southwestern Pacific. The two species are similar in shape, but differ in size (*Parvamussium*

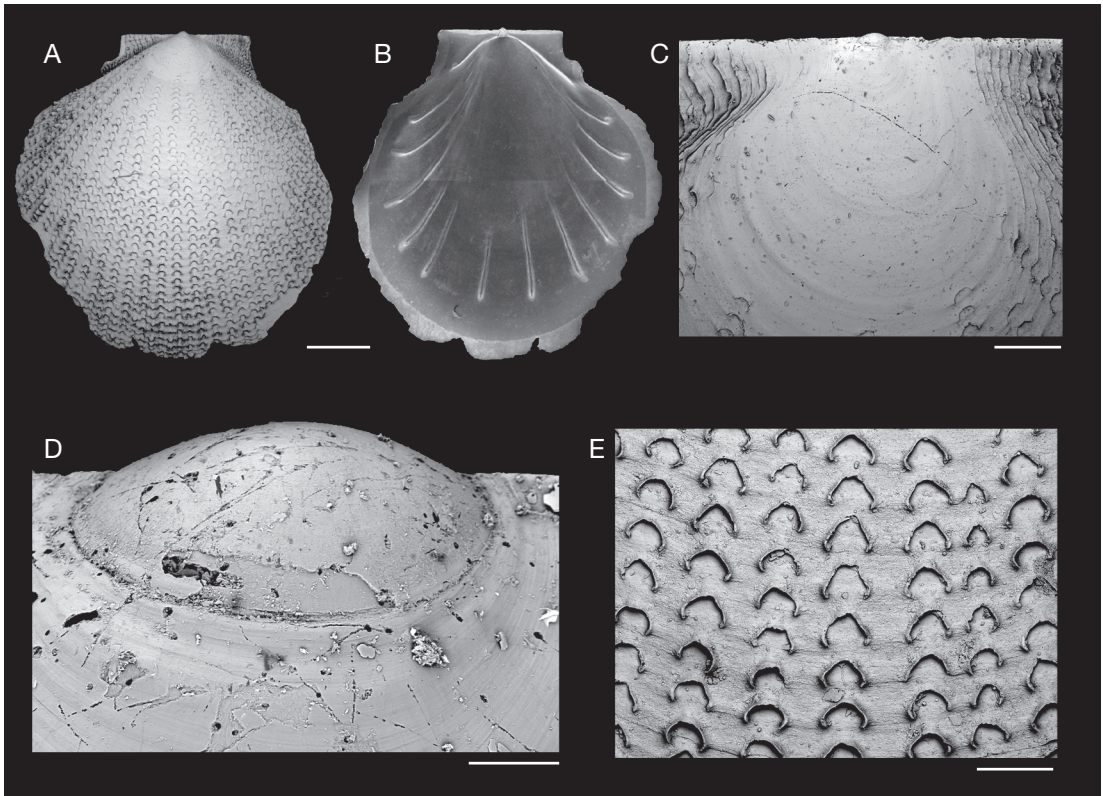


FIG. 3. — *Parvamussium vesiculosum* n. sp.: **A**, holotype, external view of the left valve; **B**, holotype, internal view of the left valve; **C**, early stage of the left valve; **D**, prodissoconch of the left valve; **E**, details of the left valve. Scale bars: A, B, 1 mm; C, E, 500 μ m; D, 50 μ m. All SEM pictures.

scutulatum n. sp. up to *c.* 5 mm high, *P. multiliratum* up to *c.* 9 mm), in the sculpture on the left valve (*P. scutulatum* n. sp. reticular, *P. multiliratum* commarginal), and in the number of internal riblets (*P. scutulatum* n. sp. 12 short riblets, *P. multiliratum* 14 longer riblets plus one or two rudimentary).

Parvamussium vesiculosum n. sp.
(Fig. 3)

TYPE MATERIAL. — **Tarava Seamounts.** *Tarasoc*, stn DW 3310, 19°13'S, 151°37'W, 613-698 m, holotype lv (MNHN 25704); stn DW 3328, 18°46'S, 152°15'W, 788-836 m, paratype lv (ZMA Moll. 398324).

TYPE LOCALITY. — Tarava Seamounts, Mont Ari'i Moana, 19°13'S, 151°37'W, 613-698 m (*Tarasoc*, stn DW 3310).

ETYMOLOGY. — Left valve covered with blisters (latin: *vesiculosus*, adjective meaning vesiculose).

OTHER MATERIAL EXAMINED. — **Society Islands.** *Tarasoc*, stn DW 3408, 16°25'S, 152°17'W, 437-536 m, 1 lv.

DISTRIBUTION. — Tarava Seamounts and Society Islands, only single valves at 437-836 m depth.

DESCRIPTION

Shell up to *c.* 12 mm high, circular, almost equilateral, weakly inflated, anterior auricle somewhat larger than posterior, opaque whitish. Prodissoconch 230 μ m long.

Left valve disc smooth, glossy and transparent in early growth stage to *c.* 2 mm from dorsal margin, followed by *c.* 10 radial rows of distant vesicles (*c.* 4 per mm) increasing in number by intercalated

radial rows of vesicles to *c.* 40 near ventral margin. Commarginal sculpture on disc lacking. Anterior auricle sculptured with prominent, closely spaced, commarginal lamellae (*c.* 8 per mm), posterior auricle almost identically sculptured with slightly more closely spaced and less prominent commarginal lamellae (*c.* 10 per mm). Hinge line straight. Internal riblets (12 and one auricular on each side) commence in late growth stage on central part of inner surface and extend to ventral submarginal area.

Dimensions of the holotype: H 12.1 mm, W 12.0 mm.

REMARKS

Although only single left valves are present of *Parvamussium vesiculosum* n. sp., this species can be distinguished from other congeners easily by its conspicuous vesicular sculpture.

The present species is morphologically closest to *Parvamussium vesiculatum* Dijkstra, 1995, known from the southwestern Pacific (Dijkstra & Maestrati 2008: 96), but differs in size (*P. vesiculosum* n. sp. up to 12 mm high, *P. vesiculatum* up to 6 mm), in having more radial rows and intercalated secondary radial rows of vesicles on the left valve (*P. vesiculatum* has fewer radial rows of vesicles and in addition, vesicles are present on intersections with the commarginal lamellae [see Dijkstra & Maestrati 2008: figs 93, 94]), in having a smooth, glossy and transparent early growth stage (*P. vesiculatum* with widely spaced commarginal sculpture [see Dijkstra & Maestrati 2008: fig. 96]), and in having more prominently developed internal ribs (*P. vesiculatum* only a few rudimentary laterally).

The specimen of *P. vesiculosum* n. sp. from the Society Islands is slightly different from the type material in having fewer and coarser radial vesicles.

Genus *Cyclopecten* Verrill, 1897

Cyclopecten comptulus n. sp.
(Fig. 4)

TYPE MATERIAL. — Society Islands. *Tarasoc*, stn CP 3415, 16°34'S, 151°47'W, 614-730 m, alive, holotype spm (MNHN 25706); stn DW 3434, 16°42'S, 151°03'W, 700-785 m, alive, paratype spm (ZMA Moll. 398325).

TYPE LOCALITY. — Society Islands, Bora Bora, 16°34'S, 151°47'W, 614-730 m (*Tarasoc*, stn CP 3415).

ETYMOLOGY. — Shell somewhat overdressed (Latin: *comptulus*, adjective meaning dressed up).

DISTRIBUTION. — Society Islands, living in 700-730 m (minimum depth range).

DESCRIPTION

Shell up to *c.* 25 mm in height, fragile, opaque to semi-transparent, whitish, almost circular, inequivalve, nearly equilateral, weakly inflated, left valve slightly more convex than right valve, auricles unequal in shape and nearly equal in size (anterior slightly larger than posterior). Prodissoconch 250 µm long.

Left valve sculptured with strongly developed, closely spaced, commarginal undulated lamellae and laterally closely arranged radial rows of imbricated vesicles (damaged on many specimens), which are part of the commarginal lamellate sculpture, commencing at 1 mm from dorsal margin. Auricles sculptured with prominent, closely spaced, commarginal lamellae forming hollow bands on anterior auricle and radial vesicular sculpture on posterior auricle, continuous with posterior part of disc.

Right valve with sculpture similar to left valve, although somewhat weaker and more closely spaced and with more radial rows of vesicular sculpture. Marginal apron, pressed against left valve, partly broken off. Anterior auricle with very closely spaced commarginal lamellae, posterior more coarsely sculptured with radial rows of vesicles, continuous with disc. Hinge line straight. Byssal notch shallow, byssal fasciole and ctenolium lacking. Very weak interior radial grooves throughout on left valve (*c.* 20), lacking on right valve. Interior riblets lacking.

Dimensions of the holotype: H 25.4 mm, W 25.0 mm, D 5.9 mm.

REMARKS

The morphologically closest resembling congeneric species is *Cyclopecten kermadecensis* (E. A. Smith, 1885), recorded from the Kermadec Islands (Dijkstra & Marshall 2008: 18). *Cyclopecten kermadecensis* differs from *Cyclopecten comptulus* n. sp. in size (*C. kermadecensis* up to *c.* 7.5 mm in height, *C. comp-*

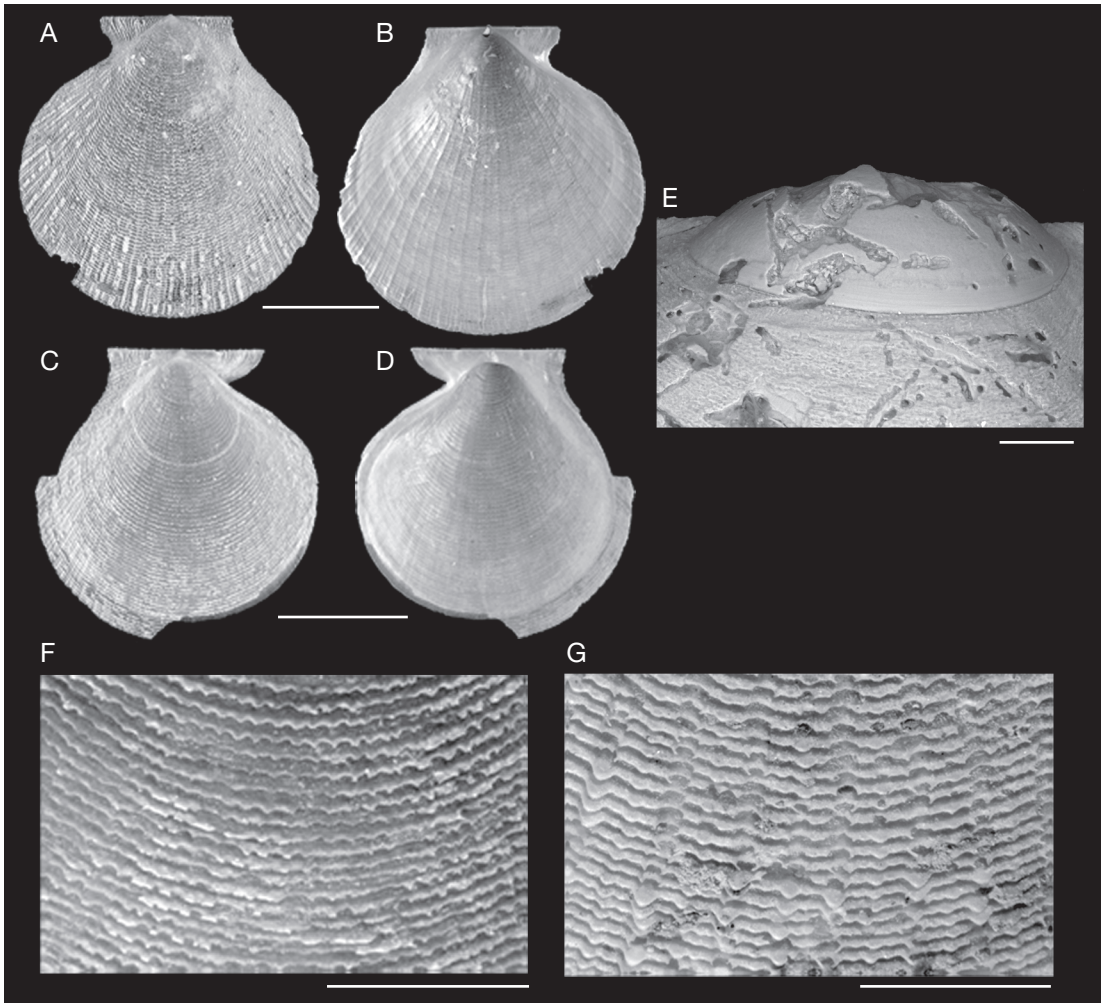


FIG. 4. — *Cyclopecten comptulus* n. sp.: **A**, holotype, external view of the left valve; **B**, holotype, internal view of the left valve; **C**, holotype, external view of the right valve; **D**, holotype, internal view of the right valve; **E**, prodissoconch of the left valve; **F**, details of the right valve; **G**, details of the left valve. Scale bars: A-D, 1 cm; E, 50 μ m; F, G, 5 mm.

tulus n. sp. up to c. 25 mm), in sculpture of the left valve (*C. kermadecensis* has delicate closely spaced commarginal ridges in early growth stage on the left valve, in *C. comptulus* n. sp. coarser and wider spaced; *C. kermadecensis* has rather regularly spaced, outwardly sloping commarginal lamellae with radially arranged hollow vesicles (Dijkstra & Marshall 2008: fig. 16D) in late growth stage, in *C. comptulus* n. sp. more irregularly spaced with outwardly sloping coarse undulated lamellae), and also in sculpture of the right valve (*C. kermadecensis* has regularly spaced, outwardly

sloping commarginal ridges [Dijkstra & Marshall 2008: fig. 16E], *C. comptulus* n. sp. has very closely spaced, outwardly sloping roughly formed lamellae).

The undulated commarginal lamellae in the early growth stage make *Parvamussium undisonum* Dijkstra, 1995 similar to the present species, but other characters are different, in size (*P. undisonum* up to c. 14 mm in height, *C. comptulus* n. sp. up to c. 25 mm), in shape (*P. undisonum* slightly elongate, *C. comptulus* n. sp. circular), in sculpture on the left valve (*P. undisonum* has radial riblets, *C. comptu-*

lus n. sp. has radial vesicles), and in internal riblets (*P. undisonum* has nine-ten plus some rudimentary, lacking in *C. comptulus* n. sp.).

Commarginal sculpture and radial rows of vesicles are also present on the left valve of *P. lamellatum* n. sp., but other morphological characters are different, i.e. in size (*P. lamellatum* n. sp. up to c. 10 mm in height, *C. comptulus* n. sp. up to 25 mm), in sculpture on the left valve (*P. lamellatum* n. sp. has a more delicate and more closely spaced commarginal sculpture, on *C. comptulus* n. sp. coarser and more widely spaced), and in internal riblets (*P. lamellatum* n. sp. has ten plus one or two rudimentary, lacking in *C. comptulus* n. sp.).

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

Pectinella aequoris Dijkstra, 1991

Pectinella aequoris Dijkstra, 1991: 23, figs 78-86. — Dijkstra & Maestrati 2010: 342; 2012: 397.

MATERIAL EXAMINED. — **Indonesia.** North of Sumbawa, 175-185 m, holotype lv (RMNH 56567).

Society Islands. *Tarasoc*, stn CP 3450, 16°40'S, 151°32'W, 705-755 m, 1 rv.

DISTRIBUTION. — Indonesia, New Caledonia, Norfolk Ridge, Hawaii Islands, Fiji Islands and Austral Islands (Dijkstra & Maestrati 2010: 344). Depth range 260 m (alive). Now also Society Islands (new record), only a single valve at 705-755 m depth.

REMARKS

The present immature specimen is indistinguishable from the type material from Indonesia. The right valve has very weak antimarginal micro-scratches on the disc surface, which are also present on the types (described as “radially diverging scratches”).

Family PECTINIDAE Rafinesque, 1815
Genus *Pseudohinnites* Dijkstra, 1989

Pseudohinnites levii Dijkstra, 1989

Pseudohinnites levii Dijkstra, 1989b: 29, figs 1-3. — Dijkstra & Maestrati 2010: 344.

MATERIAL EXAMINED. — **New Caledonia.** Southeast, 965 m, holotype lv (MNHN 21417).

Society Islands. *Tarasoc*, stn DW 3417, 16°35'S, 151°44'W, 1013-1060 m, 1 lv; stn DW 3462, 17°27'S, 149°50'W, 1000-1145 m, 1 lv.

Tuamotu Archipelago. *Tarasoc*, stn DW 3378, 15°38'S, 146°51'W, 887-890 m, 1 lv.

DISTRIBUTION. — Philippines, Indonesia, New Caledonia, Loyalty Islands, New Hebrides Arc, Wallis and Futuna, Vanuatu, Fiji Islands, Tonga, Austral Islands and Marquesas Islands (Dijkstra & Maestrati 2010: 344). Depth range 581-2000 m (alive). Now also Society Islands and Tuamotu Archipelago (new record), single valves at 887-1145 m (maximum depth range).

REMARKS

The present specimens of *Pseudohinnites levii* are similar to the type material from New Caledonia, although the vesicular lamellae on the radial lirae of the left valve are more widely spaced and the interlirral spaces are almost smooth or with very weak commarginal lamellae (typical with closely spaced prominent commarginal lamellae). Other characters are indistinguishable from the type material.

Genus *Lamellipecten* Dijkstra & Maestrati, 2010

Lamellipecten aduncus
Dijkstra & Maestrati, 2010

Lamellipecten aduncus Dijkstra & Maestrati, 2010: 345, fig. 3F-K.

MATERIAL EXAMINED. — **Austral Islands.** North of Rurutu, 270-500 m, holotype spm (MNHN 21381).

Tarava Seamounts. *Tarasoc*, stn DW 3297, 18°19'S, 148°32'W, 380 m, 1 rv.

Society Islands. *Tarasoc*, stn DW 3429, 16°43'S, 150°38'W, 493-540 m, alive, 1 spm; stn DW 3447, 16°42'S, 151°31'W, 620-700 m, 1 lv; stn DW 3455, 16°52'S, 151°20'W, 430-527 m, alive, 1 spm, 1 lv, 1 rv.

Tuamotu Archipelago. *Tarasoc*, stn DW 3367, 16°07'S, 146°22'W, 396-501 m, alive, 2 spms; stn DW 3395, 15°49'S, 148°17'W, 400-440 m, dead, 1 spm.

DISTRIBUTION. — Austral Islands (Dijkstra & Maestrati 2010: 345). Depth range 270-500 m (alive). Now also from the Society Islands and Tuamotu Archipelago (new record), living in 493-501 m depth (minimum depth range).

REMARKS

The present specimens are similar to the type material from the Austral Islands, although the anterior auricle of the left valve has one or two more radial riblets. However, all the other morphological characters are identical.

Genus *Pascabinnites* Dijkstra & Raines, 1999

Pascabinnites coruscans (Hinds, 1845)

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

Chlamys coruscans coruscans – Waller 1972: 231, pl. 1, figs 1–19 (synonymy, description, distribution, functional morphology, ecology).

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

Pascabinnites coruscans coruscans – Paulay 2003: appendix 1, note 39. — Dijkstra & Marshall 2008: 51, figs 35, 48A, D. — Dijkstra & Maestrati 2010: 346; 2012: 400.

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

Tarava seamounts. *Tarasoc*, stn DW 3363, 16°10'S, 146°23'W, 490–560 m, 2 lv; stn DW 3369, 16°08'S, 146°24'W, 412 m, 1 lv; stn DW 3370, 15°39'S, 146°52'W, 315–340 m, 1 juvenile lv; stn DW 3371, 15°38'S, 146°54'W, 430–450 m, 1 lv.

Society Islands. *Tarasoc*, stn DW 3413, 16°34'S, 151°46'W, 385–486 m, 1 lv; stn DW 3459, 17°28'S, 149°48'W, 485–560 m, 1 juvenile lv; stn DW 3477, 17°30'S, 149°44'W, 812–860 m, 1 lv.

DISTRIBUTION. — Eastern South Africa, Zanzibar, Mauritius, Maldives Islands, Cocos-Keeling Islands, southern Japan, southern China, Philippines, eastern Australia, New Caledonia, Loyalty Islands, New Hebrides, Lord Howe Island, Norfolk Island, Kermadec Islands, Mariana Islands, Caroline Islands, Marshall Islands, Gilbert Islands, Fiji Islands, Wallis and Futuna, Samoa, Tonga, Cook Islands, Line Islands, Society Islands, Tuamotu Archipelago, Marquesas Islands, Pitcairn Island, and Austral Islands (Waller 1972: 234; Dijkstra & Marshall 1997: 101; Dijkstra & Marshall 2008: 51; Dijkstra & Maestrati 2010: 346). Living depth range 0–60 m (unpubl. data, coll. HD).

REMARKS

The present post-mortem single valves have been washed down to bathyal depths (315–860 m).

The present specimens are indistinguishable from the type material from the Marquesas Islands.

Genus *Cryptopecten*

Dall, Bartsch & Rehder, 1938

Cryptopecten nux (Reeve, 1853)

Pecten nux Reeve, 1853: named in unnumbered page in “errata”.

Pecten coruscans – Reeve 1853: species 143, pl. 32, fig. 143 (not *Pecten coruscans* Hinds, 1845).

Cryptopecten nux – Dijkstra & Marshall 1997: 107 (synonymy, references, type data, distribution). — Dijkstra & Kilburn 2001: 310, figs 50, 51 (description). — Dijkstra & Maestrati 2010: 350; 2012: 402.

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

Society Islands. *Tarasoc*, stn DW 3413, 16°34'S, 151°46'W, 385–486 m, 3 lv, 2 rv; stn DW 3417, 16°35'S, 151°44'W, 1013–1060 m, 1 rv; stn DW 3451, 16°53'S, 151°21'W, 440–490 m, 1 lv; stn DW 3484, 17°47'S, 149°23'W, 300–650 m, 1 rv.

Tuamotu Archipelago. *Tarasoc*, stn DW 3363, 16°10'S, 146°23'W, 490–560 m, 6 lv, 2 rv; stn DW 3368, 16°08'S, 146°23'W, 96–300 m, 1 lv; stn DW 3369, 16°08'S, 146°24'W, 412 m, 1 lv; stn DW 3370, 15°39'S, 146°52'W, 315–340 m, 4 rv; stn DW 3371, 15°38'S, 146°54'W, 430–450 m, 3 lv; stn DW 3372, 15°39'S, 146°55'W, 326–540 m, 11 lv, 13 rv; stn DW 3373, 15°41'S, 146°54'W, 507–607 m, 1 lv, 4 rv; stn DW 3378, 15°38'S, 146°51'W, 887–890 m, 1 lv; stn DW 3379, 15°38'S, 146°51'W, 800 m, 1 rv; stn DW 3380, 15°39'S, 146°56'W, 970–1060 m, 1 lv; stn DW 3382, 15°40'S, 146°54'W, 285–286 m, 2 lv, 6 rv; stn DW 3385, 15°41'S, 146°54'W, 390–420 m, 1 lv, 5 rv.

DISTRIBUTION. — Red Sea, Oman, Kenya, Seychelles, Mozambique, Malagasy, Mauritius, eastern South Africa, Andaman Islands, southern Japan, Taiwan, Philippines, Indonesia, eastern and northern Australia, Lord Howe Island, Norfolk Ridge, New Caledonia, Loyalty Islands, Solomon Islands, Fiji Islands, Tonga, Wallis and Futuna, Vanuatu, Marquesas Islands, and Austral Islands (Dijkstra & Marshall 1997: 108; Dijkstra 2001: 93; Dijkstra & Maestrati 2008: 109, 110; 2010: 351). Living depth range 97–783 m. Now also Society Islands and Tuamotu Archipelago (new record), single valves at 96–1060 m (maximum depth range).

REMARKS

The present specimens are indistinguishable from the type material from the Marquesas Islands.

Genus *Anguipecten*

Dall, Bartsch & Rehder, 1938

Anguipecten lamberti

(Souverbie in Souverbie & Montrouzier, 1874)

Pecten lamberti Souverbie in Souverbie & Montrouzier, 1874: 200, pl. 7, fig. 9.

Anguipecten gregoryi Dall, Bartsch & Rehder, 1938: 93, pl. 23, figs 5, 6, 8.

Anguipecten lamberti – Dijkstra 2002: 140, figs 5-7; Dijkstra & Maestrati 2010: 351, fig. 5B.

MATERIAL EXAMINED. — **Loyalty Islands.** Holotype spm (MHNH 2004.TY.150).

Society Islands. *Tarasoc*, stn DW 3451, 16°53'S, 151°21'W, 440-490 m, 1 rv.

DISTRIBUTION. — Known from the Loyalty Islands and New Caledonia (Dijkstra 1985), the Hawaiian Islands and Austral Islands (Dijkstra & Maestrati 2010: 351). Living depth range 50-70 m (unpubl. data, coll. HD). Now also Society Islands (new record), only a single valve at 440-490 m depth.

REMARKS

The present specimen is similar to the holotype from the Loyalty Islands, although the radial riblets are slightly smaller and somewhat more emphasized as in the Hawaiian morph, and more numerous (c. 40, typical c. 35).

Genus *Excellichlamys* Iredale, 1939

Excellichlamys sowerbyi Dijkstra, 1998

Pecten parvus G. B. Sowerby I, 1835: 110 (preoccupied by *Pecten parvus* Da Costa, 1778). — Waller 1972: 248, pl. 6, figs 97-102 (holotype).

Excellichlamys spectabilis parva – Dijkstra 1989a: 14, fig.

Excellichlamys sowerbyi Dijkstra, 1998b: 247 (nom. nov.).

MATERIAL EXAMINED. — **Tuamotu Archipelago.** Marutea, holotype spm (BMNH 197011), refigured by Waller (1972: pl. 6, figs 97-102).

Society Islands. *Tarasoc*, stn DW 3416, 16°35'S, 151°44'W, 914 m, 1 lv; stn DW 3422, 16°43'S, 151°04'W, 430-620 m, 1 rv; stn DW 3482, 17°29'S, 149°45'W, 440 m, 1 lv.

DISTRIBUTION. — Tuamotu Archipelago (Waller, 1972: 250). Now also from the Society Islands (new record), post-mortem single valves washed down to 430-914 m depth.

DESCRIPTION

Shell up to c. 25 mm in height, solid, right valve more inflated than left valve, inequivalve, almost equilateral, auricles strongly unequal in size, umbonal angle c. 85°, colour creamy whitish with brown and/or red maculations.

Left valve sculptured with 8-10 dissimilar, strongly developed radial plicae, weakly developed laterally. Primary radial plicae with one or two narrow grooves, covered with prominent commarginal lamellae. Secondary intercostal riblets scabrous. Anterior auricle large, strongly noduliferous, posterior auricle almost rudimentary.

Right valve with broader and more regularly developed radial costae. Auricles of similar sculpture to left valve. Hinge line straight. Byssal notch moderately deep, byssal fasciole narrow. Functional ctenolium with c. four weak teeth. Internal rib carinae present near ventral margin.

REMARKS

The present single valves are morphologically similar to the holotype from the Tuamotu Archipelago.

For comparison with *Excellichlamys spectabilis* (Reeve, 1853) see Waller (1972: 248).

Genus *Glorichlamys* Dijkstra, 1991

Glorichlamys elegantissima (Deshayes, 1863)

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

Glorichlamys elegantissima – Dijkstra & Kilburn 2001: 279 (synonymy, references, description, distribution). — Dijkstra & Maestrati 2010: 353, fig. 5E; 2012: 405.

MATERIAL EXAMINED. — Type material from Réunion probably lost (not in MNHN).

Tuamotu Archipelago. *Tarasoc*, stn DW 3363, 16°10'S, 146°23'W, 490-560 m, 1rv; stn DW 3370, 15°39'S, 146°52'W, 315-340 m, 1lv; stn DW 3378, 15°38'S, 146°51'W, 887-890 m, 1lv; stn DW 3382, 15°40'S, 146°54'W, 285-286 m, 1rv.

DISTRIBUTION. — Mozambique, eastern South Africa, Malagasy, Réunion, Thailand, southern Japan, China, Philippines, Indonesia, northwestern Australia, Papua New Guinea, New Caledonia, Fiji Islands, Line Islands, Society Islands, Tuamotu Archipelago, and Austral Islands (Dijkstra 1991: 45; 1998a: 21; Dijkstra & Kilburn 2001: 280; Dijkstra & Maestrati 2010: 353; MNHN, coll. HD, unpubl. data). Living depth range 18-120 m (unpubl. data, coll. HD). The present post-mortem valves have been scattered to bathyal depths (285-890 m).

REMARKS

The present single valves are morphologically indistinguishable from recent material housed in the MNHN and ZMA from Réunion (type locality).

Genus *Gloripallium* Iredale, 1939

Gloripallium pallium (Linnaeus, 1758)

Ostrea pallium Linnaeus, 1758: 697, n° 163. — Dijkstra 1999: 405, figs 2E, F, 3A, B (lectotype).

Gloripallium pallium – Dijkstra & Kilburn 2001: 280 (synonymy, references, description, type data, distribution). — Dijkstra & Maestrati 2012: 405.

MATERIAL EXAMINED. — **Indonesia.** Maluku, lectotype spm (LSL), designated by Dijkstra (1999: 405).

Society Islands. *Tarasoc*, stn DW 3413, 16°34'S, 151°46'W, 385-486 m, 1 juvenile rv; stn DW 3429, 16°43'S, 150°38'W, 493-540 m, 1 juvenile rv; stn DW 3467, 17°34'S, 149°54'W, 800-830 m, 1 juvenile rv.

DISTRIBUTION. — Throughout the tropical shallow waters of the Indo-Pacific (except Red Sea and Hawaiian Islands), southwestern limit Zululand, South Africa (Dijkstra & Kilburn 2001: 281), southeastern limit French Polynesia (Dijkstra 1989: 15). The present juvenile valves from the Society Islands have been washed down to 385-830 m depth.

REMARKS

The present single juvenile valves are morphologically almost indistinguishable from the type material,

although the radial plicae are more tripartite with distinct lamellae on each secondary riblet (weakly tripartite with an undivided lamella on the three secondary riblets in the type material) and more orange-reddish tinted than similar-sized specimens from the western Pacific (basically more variegated in coloration). However, the sculpture and colour of *G. pallium* are variable and intermediate specimens are observed (MNHN, ZMA).

Gloripallium spiniferum

(G. B. Sowerby I, 1835)

Pecten spiniferus G. B. Sowerby I, 1835: 110. — G. B. Sowerby II 1842: 74, pl. 20, figs 229, 230. — Reeve 1853: sp. 118, pl. 28, fig. 118 (text unpaginated).

Pecten pulcherrimus Gray in Gray & G. B. Sowerby II, 1839: 150, pl. 41, figs 1, 2.

Gloripallium spiniferum – Waller 1972: 240, pl. 4, figs 58-63 (holotype). — Dijkstra 1989a: 15. — Dijkstra & Kilburn 2001: 281. — Dijkstra & Maestrati 2010: 354, fig. 5F.

MATERIAL EXAMINED. — **Tuamotu Archipelago.** Marutea, holotype spm (BMNH 1950.11.14.69).

Tarasoc, stn DW 3363, 16°10'S, 146°23'W, 490-560 m, 1rv; stn DW 3369, 16°08'S, 146°24'W, 412 m, 1rv; stn DW 3385, 15°41'S, 146°54'W, 390-420 m, 1lv; stn DW 3389, 14°55'S, 148°15'W, 889 m, 1rv; stn DW 3397, 15°50'S, 148°17'W, 600 m, 1rv.

DISTRIBUTION. — Society Islands, Austral Islands, Tuamotu Archipelago and Marquesas Islands (Dijkstra 1989a: 15; Dijkstra & Maestrati 2010: 354, MNHN, pers. data). Living sublittorally under coral slabs or amongst coral rubble on sandy bottoms (MNHN, coll. HD). Living depth range 18-32 m (pers. data, coll. HD). The present specimens have been washed down to 390-600 m depth.

REMARKS

The present single valves are indistinguishable from the holotype.

Genus *Mirapecten* Dall, Bartsch & Rehder, 1938

Mirapecten boutetorum Dijkstra, 2011

Mirapecten boutetorum Dijkstra, 2011: 63-69, figs 1-24.

MATERIAL EXAMINED. — **Society Islands.** Tahiti, NNW-coast, Arue, oceanside of barrier reef, 17°30'S, 149°31'W, 60 m, alive, dive, 2008, holotype spm (MNHN 23879). *Tarasoc*, stn DW 3408, 16°25'S, 152°17'W, 437-536 m, 1 lv; stn DW 3413, 16°34'S, 151°46'W, 385-486 m, 1 lv, 1 rv; stn DW 3459, 17°28'S, 149°48'W, 485-560 m, 1 lv; stn DW 3468, 17°34'S, 149°54'W, 800-870 m, 1 lv; stn DW 3487, 17°47'S, 149°21'W, 400-440 m, 1 rv; stn DW 3503, 17°34'S, 149°18'W, 350 m, 1 rv. **Tuamotu Archipelago.** *Tarasoc*, stn DW 3363, 16°10'S, 146°23'W, 490-560 m, 2 lv, 1 rv; stn DW 3385, 15°41'S, 146°54'W, 390-420 m, 2 lv.

DISTRIBUTION. — Society Islands, Marquesas Islands and Tuamotu Archipelago (French Polynesia), living amongst coral in shallow water outside reefs (Dijkstra 2011: 65). The present post-mortem material has been washed down to 350-870 m depth.

REMARKS

The present single valves are morphologically indistinguishable from the type material.

Genus *Haumea* Dall, Bartsch & Rehder, 1938

Haumea rehderi (Grau, 1960)

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

Haumea rehderi — Dijkstra 1998a: 44, pl. 9, figs 1-4. — Raines & Poppe 2006: 318, pl. 274, fig. 2. — Dijkstra & Maestrati 2012: 403.

MATERIAL EXAMINED. — **Society Islands.** Bora Bora Island, Tereia Point, 24-29 m, leg. H. A. Rehder, 04.04.1957, holotype spm (USNM 612201). *Tarasoc*, stn CP 3428, 16°45.5'S, 151°0.3'W, 32-38 m, 2 rv.

DISTRIBUTION. — Thailand, Philippines, Indonesia, NE Australia, Papua New Guinea, New Caledonia, Loyalty Islands, Fiji Islands, Vanuatu, and Society Islands; living at 3-55 m (coll. HD, pers. data).

REMARKS

The present single valves are morphologically indistinguishable from the type material.

DISCUSSION

Eighteen species of littoral and bathyal Pectinoidea are now known from the Tarava seamounts (6),

Society Islands (14) and Tuamotu Archipelago (10). Five species were taken alive at 460-1050 m (bathyal) and 13 were represented by shells only at 32-1145 m, of which seven sublittoral species have been scattered to bathyal depths.

All the present species are distributed in the tropical western Pacific, although one is most closely related to a species in the tropical western Atlantic (*Pseudohinnites levii* to *Pseudohinnites adamsi* (Dall, 1886)).

One pectinid species (*E. sowerbyi*), formerly often determined as *Excellichlamys spectabilis* (Reeve, 1853) or *Excellichlamys spectabilis parva* (G. B. Sowerby I, 1835) is herein upgraded to species level (see Waller 1972: 248), due to more available comparative material from the Central Pacific and French Polynesia (MNHN, ZMA).

Another pectinid species (*Mirapecten boutetorum*) was for a long time overlooked and incorrectly determined as "*Gloripallium spiniferum*".

Acknowledgements

We are much indebted to Dr P. Bouchet for allowing us to study the Pectinoidea from the Tarava seamount, Society Islands and Tuamotu Archipelago, taken by the *Tarasoc* cruise in 2009, supported by the MUSORSTOM (IRD, MNHN). We are also grateful to Drs Alan G. Beu and Eugene V. Coan for the constructive comments and suggestions. Thanks are also due to the Service Commun de Microscopie Électronique des Laboratoires des Sciences de la Vie (MNHN) for SEM photographs access (Figs 1 ; 2), and to the Direction des Collections (MNHN), in particular Sylvain Pont (Fig. 3).

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Submitted on 9 January 2013;
 accepted on 2nd May 2013;
 published on 27 September 2013.

