

## Muricidae (Mollusca: Gastropoda) from Fiji and Tonga

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### ABSTRACT

Fifty-eight muricid species were collected during recent expeditions to Fiji, including 3 new species. A review of the literature added another 37 species reliably recorded from the archipelago, bringing the total muricid fauna of Fiji to 95 species. Twenty-five species, including 14 shared with Fiji, are reported from Tonga. *Bouchetia* n. gen. is described for *Poirieria* (*Paziella*) *vaubanensis* Houart, 1986, originally described from New Caledonia and now recorded from Fiji. *Conchatalos spinula* n. sp. and *Prototyphis gracilis* n. sp. are described from Fiji; *Murexsul merlei* n. sp. is described from Fiji and Tonga. *Attiliosa caledonica* (Jousseaume, 1881), formerly treated as a synonym or subspecies of *Attiliosa nodulifera* (Sowerby, 1841), is recognized as a valid species, as both species co-occur in Fiji without intermediates. *Pascula ambonensis* Houart, 1996, *Tritonidea lefevreiana* Tapparone Canefri, 1880 and *Pentadactylus paucimaculatus* Sowerby, 1903 are reclassified in *Cytharomorula* Kuroda, 1953.

### RÉSUMÉ

#### Gastéropodes Muricidae des îles Fidji et Tonga.

Cinquante-huit espèces de Muricidae (Coralliophilinae exceptés), dont 3 nouvelles, ont été récoltées au cours de récentes expéditions aux îles Fidji. Un examen critique de la littérature indique la présence crédible dans cet archipel de 37 espèces additionnelles, ce qui porte à 95 le nombre d'espèces de Muricidae maintenant connues de Fidji. Vingt-cinq espèces, dont 14 partagées avec Fidji, sont signalées des Tonga. *Bouchetia* n. gen. est introduit pour *Poirieria* (*Paziella*) *vaubanensis* Houart, 1986, décrit à l'origine de Nouvelle-Calédonie et maintenant signalé des Fidji. *Conchatalos spinula* n. sp. et *Prototyphis gracilis* n. sp. sont décrits des Fidji et *Murexsul merlei* n. sp. est décrit des Fidji et de Tonga. *Attiliosa caledonica* (Jousseaume, 1881), auparavant considéré comme un synonyme ou une sous-espèce d'*Attiliosa nodulifera* (Sowerby, 1841), est revalidée, les deux espèces étant syntopiques à Fidji, sans intermédiaire. *Pascula ambonensis* Houart, 1996, *Tritonidea lefevreiana* Tapparone Canefri, 1880 et *Pentadactylus paucimaculatus* Sowerby, 1903 sont reclassés dans le genre *Cytharomorula* Kuroda, 1953.

## INTRODUCTION

This paper is a continuation of the senior author's ongoing reports on the Muricidae (Coralliophilinae excepted; for the latter, see Oliverio, this volume) sampled during the exploring expeditions of the Muséum national d'Histoire Naturelle (MNHN) and the Institut de Recherche pour le Développement (IRD, Nouméa) to the tropical South and West Pacific. The present report focusses on the island groups of Fiji and Tonga, which were specifically explored in 1998-2000 during the MUSORSTOM 10 and BORDAU 1 cruises to Fiji and BORDAU 2 cruise to Tonga (for the context and narratives of these expeditions, see the introductory chapter by Bouchet *et al.*, this volume), with the adjunction of scattered samples taken during an ecological survey of southern Viti Levu (SUVA 2 and SUVA 4 cruises). Prior to these expeditions, the muricid fauna of Fiji had been the focus of two papers by Cernohorsky (1967, 1969). Walter Cernohorsky, at that time a resident of Viti Levu, collected intertidally or in the shallow subtidal, and his papers thus contain many Fiji records with little or no overlap with the MUSORSTOM and BORDAU expeditions, which conversely focussed on the deep offshore (100-1200 m). Cernohorsky's records were fully illustrated, which allows for corrections of taxonomy and changes of nomenclature that have taken place in the intervening 40 years. Updated Cernohorsky records and the present new data together account for 95 muricid species now recorded from Fiji (Table 2).

Tonga was much less intensively surveyed. Historically, Tonga was collected by Eduard Graeffe, a young naturalist sent by the Hamburg-based trading company of Cesar Godeffroy to explore Samoa, Uvea [= Wallis], Tonga and Fiji; in Tonga, Graeffe visited Niuaafou, the Vavau and Ha'apai groups, and Tongatabu. Undoubtedly, a number of records of marine species from Tonga in, e.g., Paetel's catalogue (Paetel 1888), must originate from Graeffe. Graeffe's muricid records from Tonga may be scattered in other late 19th century literature and were unillustrated; also, the Godeffroy Museum, later incorporated in the Hamburg University Museum, was destroyed during the bombing of Hamburg at the end of World War II. All this makes the historical muricid records from Tonga outdated and essentially unverifiable. Consequently, although the 25 muricid species sampled by the French BORDAU 2 expedition (Table 3) undoubtedly represent only a fraction of the local fauna (especially, all the intertidal and shallow subtidal taxa are missing), no attempt has been made to reconcile the historical records with modern systematics and nomenclature.

In the present report, the references for each species are restricted to the original description and, if any, references to their occurrence in Fiji and Tonga. The spiral cord and apertural denticle terminology is mainly based on Merle (1999, 2001; here Table 1). Under "Distribution" the bathymetric distribution summarizes the local records from Fiji and Tonga only.

### *Repositories*

IRD: Institut de Recherche pour le Développement (formerly ORSTOM)

MNHN: Muséum national d'Histoire naturelle, Paris

NMNZ: Museum of New Zealand Te Papa Tongarewa, Wellington

SMNH: Swedish Museum of Natural History, Stockholm.

### *Abbreviations*

dd: dead specimen(s)

juv: juvenile specimen(s)

lv: live specimen(s).

TABLE 1. — Terminology used to describe the spiral cords and the internal denticles of the outer lip (based on Merle 1999, 2001).

P	Primary cord
s	Secondary cord
t	Tertiary cord
d	Adapical
b	Abapical
SP	Subsutural cord (adapical to IP)
IP	Infrasutural primary cord (primary cord on shoulder)
adis	Adapical infrasutural secondary cord (shoulder)
abis	Abapical infrasutural secondary cord (shoulder)
P1	Shoulder cord
P2-P6	Primary cords of the convex part of the teleoconch whorl or of the siphonal canal
s1-s6	Secondary cords
s1	Secondary cord between P1 and P2; s2: secondary cord between P2 and P3
t1d	Tertiary cord between P1 and s1
t1b	Tertiary cord between s1 and P2
ADP	Adapical siphonal cord
MP	Median siphonal cord
ABP	Abapical siphonal cord
EAB	Extreme abapical cord
ID	Infrasutural denticle of the aperture
D1-D5	Denticles of the convex part of the aperture

## SYSTEMATIC ACCOUNT

Family MURICIDAE Rafinesque, 1815

Subfamily MURICINAE Rafinesque, 1815

Genus *MUREX* Linné, 1758

*Murex aduncospinosus* (Sowerby, 1841)

Fig. 1A

*Murex ternispina* var. *aduncospinosus* Sowerby, 1841: 1, pl. 188, fig. 68.

Other references:

*Murex trapa* - Cernorhorsky 1967: 115 (in part), pl. 14, fig. 1 (*non Murex trapa* Röding, 1798).

*Murex aduncospinosus* - Ponder & Vokes 1988: 34, fig. 81-F.

MATERIAL EXAMINED. — Fiji. MUSORSTOM 10: stn DW juv; stn CP 47, 17°54'S, 177°14'E, 25 m, 22 lv many juv (Fig. 1A) 1362, 18°12'S, 178°36'E, 80-89 m, 3 lv, 2 dd juv; stn CP 1366, & dd many juv; stn BS 49, 17°45'S, 177°12'E, 23 m, 6 lv; stn 18°12'S, 178°33'E, 149-168 m, 1 dd juv. — SUVA 2: stn CP CP 80, 17°38'S, 177°20'E, 36 m, 1 lv, 1 dd; stn CP 84, 17°40'S, 23, 18°11'S, 178°34'E, 26 m, 1 lv, 2 dd; stn CP 24, 18°11'S, 177°22'E, 22 m, 1 lv. — SUVA 4: stn BS 29, 18°17'S, 178°05'E, 178°34'E, 26 m, 1 lv; stn BS 34, 18°08'S, 178°25'S, 20 m, 1 lv 35 m, 1 lv juv; stn CP 30, 18°17'S, 178°04'E, 32 m, 2 dd.

DISTRIBUTION. – Central Indo-West Pacific: Japan, Taiwan, the Philippines, Indonesia and Fiji, live in 22-80 m, shells to 168 m.

REMARKS. – Ponder & Vokes (1988: 34) commented on the various forms of *M. aduncospinosus* and illustrated a beautiful specimen from Fiji (fig. 81F). In the Fiji form, the space between the spiral cords is coloured dark brown. Otherwise the protoconch, teleoconch sculpture and organization of the spines are identical to the typical form, from Indonesia.

***Murex tenuirostrum*** Lamarck, 1822

Fig. 1B

*Murex tenuirostrum* Lamarck, 1822: 159.

Other reference:

*Murex tribulus* - Cernohorsky 1967: 115 (in part), pl. 14, fig. 2.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn DW 1333, 16°50'S, 178°13'E, 200-215 m, 1 dd juv; stn CP 1371, 18°12'S, 178°33'E, 135-151 m, 1 lv juv. – SUVA 2: stn DW 44, 17°52'S, 177°13'E, 33 m, 4 dd; stn CP 45, 17°52'S, 177°13'E, 35 m, 2 lv, 1 dd; stn CP 48, 17°56'S, 177°14'E, 16 m, 2 lv; stn BS 49, 17°45'S, 177°12'E, 23 m, 1 lv; stn DW 50, 17°45'S, 177°14'E, 36 m, 1dd; stn CP 57, 17°43'S, 177°23'E, 17 m, 2 lv; stn CP 65, 17°48'S, 177°13'E, 32 m, 1 lv juv; stn CP 66, 17°45'S, 177°14'E, 37 m, 1 lv (Fig. 1B); stn CP 67, 17°44'S, 177°18'E, 28 m, 1 lv. – BORDAU 1: stn DW 1498, 18°41'S, 178°28'W, 300-307 m, 1 dd juv. – SUVA 4: stn DW 09, 18°21'S, 178°06'E, 37-41 m, 1 lv; stn DW 16, 18°26'S, 178°07'E, 32-36 m, 1 lv; stn CP 18, 18°26'S, 178°06'E, 44-45 m, 4 lv; stn CP 19, 18°26'S, 178°04'E, 48-50 m, 7 lv & dd; stn CP 20, 18°26'S, 178°02'E, 50-51 m, 17 lv & dd; stn CP 30, 18°17'S, 178°04'E, 32 m, 6 lv & dd. **Tonga**. BORDAU 2: stn CP 1582, 18°41'S, 174°03'W, 79-82 m, 1 lv (juv.), 1 dd.

DISTRIBUTION. – Indo-West Pacific, Fiji and Tonga, live in 16-135 m, shells to 307 m.

REMARKS. – *Murex tenuirostrum* is probably the most common species in the genus. It has been wrongly identified as *M. tribulus* Linné, 1758 in many publications but differs from *M. tribulus* in having a more nodose (cancellate) sculpture, fewer spines on the siphonal canal, and more rounded and nodose first teleoconch whorls (Ponder & Vokes 1988: 24). Both species have a conical multispiral protoconch, indicating planktotrophic larval development.

***Murex troscheli*** Lischke, 1868

Fig. 1C

*Murex troscheli* Lischke, 1868: 219; 1869: 41, pl. 1, figs 1-2.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1328, 17°17'S, 177°50'E, 248-277 m, 2 lv (Fig. 1C); stn DW 1384, 18°19'S, 178°06'E, 260-305 m, 1 dd juv; stn CP 1387, 18°19'S, 178°05'E, 229-370 m, 1 lv; stn CP 1389, 18°19'S, 178°05'E, 241-417 m, 1 dd.

DISTRIBUTION. – Central Indo-West Pacific: from southern Japan, Taiwan, the Philippines, Indonesia, the Solomon Islands and Fiji (new record), live in 248-277 m. Also from off Port Hedland, Western Australia.

REMARKS. – At first sight, the Fiji specimens seem to differ from typical *M. troscheli* (in their heavier varices, narrower axial ribs, and absence of brown colouration at the top of the spiral cords); however, a careful study of the protoconch, spiral and axial sculpture of the teleoconch whorls, and organization of the spines leaves no doubt about their correct identification. The shells from Fiji are uniformly whitish, smaller and more slender than the typical form. They could be considered as intermediate between the typical form, from the Philippines, and the form named *M. heros* Fulton, 1936 from the Solomon Islands.

Genus **VOKESIMUREX** Petuch, 1994

***Vokesimurex dentifer coriolis*** (Houart, 1990)

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*Haustellum dentifer coriolis* Houart, 1990: 335, figs 8-10, 27.

MATERIAL EXAMINED. – Fiji. MUSORSTOM 10: stn DW 1333, 16°50'S, 178°13'E, 200-215 m, 1 dd juv; stn DW 1334, 16°51'S, 178°14'E, 251-257 m, 1 dd juv.

DISTRIBUTION. – New Caledonia and Fiji (new record), shells in 215-251 m. The nominotypical subspecies *Vokesimurex dentifer dentifer* (Watson, 1883) is known from the Moluccas, Borneo, the Philippines, Taiwan and southern Japan.

REMARKS. – Although only two juvenile specimens were collected, it was possible to identify them without any doubt from the characters of the protoconch and the first teleoconch whorls. The protoconch consists of two glossy, rounded whorls and the shell begins to develop axial varices on the third or fourth teleoconch whorl, having 9-11 axial ribs on previous whorls.

***Vokesimurex dolichourus*** (Ponder & Vokes, 1988)

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*Haustellum dolichourus* Ponder & Vokes, 1988: 105, figs 50 L-N, 68 H, 79 A, 88 F.

MATERIAL EXAMINED. – Fiji. MUSORSTOM 10: stn CP 1349, 17°31'S, 178°39'E, 244-252 m, 1 dd juv; stn CP 1387, 18°19'S, 178°05'E, 229-370 m, 1 lv juv; stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 1 dd juv.

DISTRIBUTION. – Indo-West Pacific: from Madagascar to Taiwan, Papua New Guinea, Australia (Queensland) and now Fiji (new record), shells in 244-252 m, live in 229-370 m; Pleistocene of Vanuatu (Ponder & Vokes 1988: 106).

REMARKS. – *Vokesimurex dolichourus* resembles *V. kiiensis* (Kira, 1959) (see below), but the protoconch of *V. dolichourus* is broader with a broader first whorl and fewer (2-2.5 vs. 3-3.5) more rounded whorls. The shell is heavier with a comparatively smaller aperture, higher spire and broader varices.

***Vokesimurex hirasei*** (Hirase, 1915)

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Fig. 1D

*Murex hirasei* Hirase, 1915: pl. 47, fig. 232.

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn CP 1387, 18°19'S, 178°05'E, 229-370 m, 1 dd. – BORDAU 1: stn DW 1464, 18°09'S, 178°38'W, 285-300 m, 2 dd juv; stn DW 1469, 19°40'S, 178°10'W, 314-377 m, 1 lv, 1 dd; stn DW 1470, 19°40'S, 178°10'W, 316-323 m, 1 dd; stn DW 1471, 19°40'S, 178°10'W, 280-296 m, 1 lv; stn DW 1472, 19°40'S, 178°10'W, 262-266 m, 1 lv; stn DW 1475, 19°41'S, 178°11'W, 321-424 m, 4 lv (Fig. 1D); stn CP 1476, 19°41'S, 178°11'W, 310-420 m, 1 lv juv; stn DW 1497, 18°44'S, 178°25'W, 335-350 m, 4 lv & dd.

**Tonga.** BORDAU 2: stn DW 1535, 21°43'S, 175°18'W, 268 m, 1 lv juv; stn DW 1540, 21°15'S, 175°14'W, 317-329 m, 1 dd juv; stn CP 1541, 21°15'S, 175°14'W, 319-333 m, 1 lv juv; stn DW 1586, 18°34'S, 173°55'W, 440-487 m, 1 dd juv; stn DW 1602, 20°49'S, 174°57'W, 263-320 m, 2 dd; stn DW 1603, 22°12'S, 175°20'W, 189-196 m, 1 dd; stn DW 1607, 22°15'S, 175°23'W, 356-367 m, 1 dd; stn DW 1610, 22°59'S, 175°47'W, 216-237 m, 1 lv; stn DW 1611, 23°00'S, 175°47'W, 278-323 m, 1 dd juv. stn DW 1636, 21°44'S, 175°20'W, 321-331 m, 1 dd.

DISTRIBUTION. – Known from Japan, New Caledonia, Vanuatu, and now Fiji and Tonga (new records), live in 237-335 m.

REMARKS. – *Vokesimurex hirasei* is easily distinguishable from its congeners by its multispiral, conical protoconch and rounded, broad last teleoconch whorl with some dark brown spiral cords.

***Vokesimurex kiiensis*** (Kira, 1959)

Fig. 1H

*Murex kiiensis* Kira, 1959: 58, pl. 23, fig. 10.

MATERIAL EXAMINED. – **Fiji.** BORDAU 1: stn DW 1494, 18°55'S, 178°29'W, 240-319 m, 1 lv, 1 dd.

DISTRIBUTION. – Japan, the Philippines and now Fiji (new record), live in 240-319 m.

REMARKS. – *Vokesimurex kiiensis* has a conical, multispiral protoconch, short, blunt, shoulder spines, and crowded, short, blunt spines (ADP, MP, ABP and occasionally EAB1; see Table 1 for explanation of terms) at the base of the siphonal canal.

***Vokesimurex mindanaoensis*** (Sowerby, 1841)

Fig. 1G

*Murex mindanaoensis* (sic) Sowerby, 1841: 2, pl. 194, fig. 92.

*Murex mindanaoensis* - Vokes, 1971: 70 (justified emendation).

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn CP 1323, 17°16'S, 177°46'E, 143-173 m, 1 lv; stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 2 lv, 1 dd; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 5 lv, 2 dd; stn DW 1370, 18°12'S, 178°33'E, 113-123 m, 1 lv (Fig. 1G); stn CP 1371, 18°12'S, 178°33'E, 135-151 m, 1 lv; stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 2 dd. – BORDAU 1: stn CP 1402, 16°38'S, 179°36'E, 260-279 m, 1 lv; stn CP 1403, 16°40'S, 179°36'E, 220-224 m, 1 dd; stn CP 1404, 16°40'S, 179°36'E, 180 m, 2 dd.

DISTRIBUTION. – The Philippines, Papua New Guinea (Ponder & Vokes 1988: 115) and now Fiji (new record), live in 123-260 m.

REMARKS. – All the shells examined from Fiji are similar to Philippines specimens. *Vokesimurex mindanaoensis* is distinguishable by its high spire with short shoulder spines, its numerous short spines on the broad, rounded varices of the last whorl, and its almost spineless, long siphonal canal.

***Vokesimurex* sp. cf. *hirasei*** (Hirase, 1915)

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Fig. 1E

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn DW 1603, 22°12'S, 175°20'W, 189-196 m, 1 dd.

REMARKS. – This specimen is referred with doubt to *Vokesimurex hirasei* from which it differs in having a slightly broader last teleoconch whorl and in lacking the typical creamish-white colour with dark brown spiral cords. *Vokesimurex* sp. cf. *hirasei* has a pale tan shell with bands of a slightly darker color at the shoulder and periphery. The protoconch is incomplete with only the last whorl remaining. A typical, living specimen of *V. hirasei* was collected at the same station.

**Genus *CHICOREUS*** Montfort, 1810

**Subgenus *TRIPLEX*** Perry, 1811

***Chicoreus (Triplex) boucheti*** Houart, 1983

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*Chicoreus boucheti* Houart, 1983: 27, text figs 3-4, pl. 1, figs 1-2.

MATERIAL EXAMINED. – **Fiji**. SUVA 2: stn BS 10, 18°12'S, 178°30'E, 123 m, 1 dd juv (damaged).

**Tonga**. BORDAU 2: stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 1 dd juv (damaged).

DISTRIBUTION. – New Caledonia, now Fiji and Tonga (new records), shells only in 123-351 m.

REMARKS. – *Chicoreus boucheti* has a typical broad and large protoconch consisting of 1¼ to 1½ whorls, and long, open spines in the extension of P1, P3 and P5.

***Chicoreus (Triplex) nobilis*** Shikama, 1977

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Fig. 1I

*Chicoreus (Triplex) nobilis* Shikama, 1977: 14, pl. 2, fig. 9, pl. 5, fig. 1.

Other references:

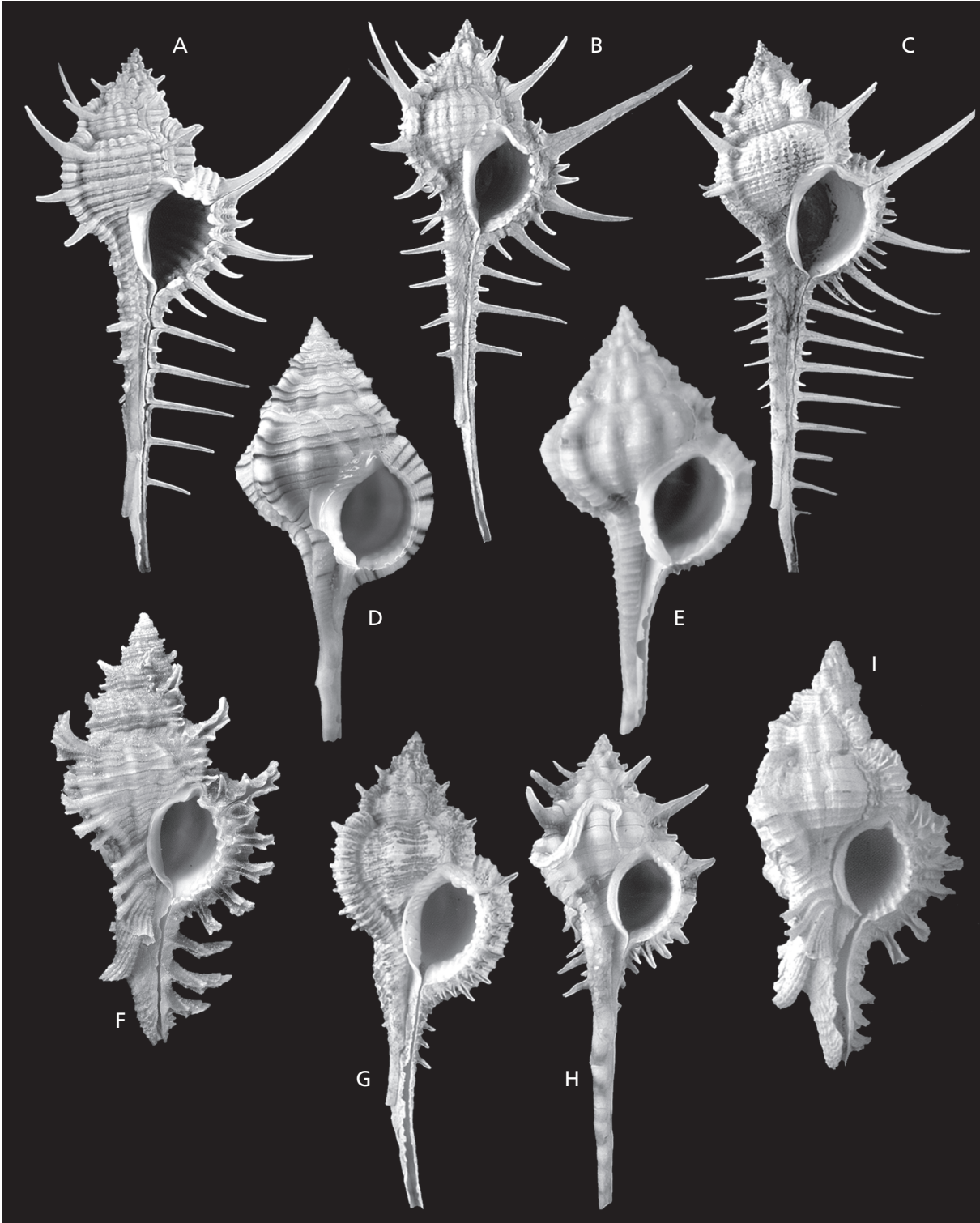
*Chicoreus aculeatus* - Cernohorsky 1967: 117, pl. 14, fig. 5, text fig. 1 (*non M. aculeatus* Lamarck, 1822).

*Chicoreus (Triplex) nobilis* - Houart 1992: 100, figs 55, 110-111, 137, 202, 208-210, 211, 251.

MATERIAL EXAMINED. – **Fiji**. SUVA 2: stn DW 62, 17°48'S, 177°13'E, 32 m, 1 dd. – SUVA 4: stn DW08, 18°22'S, 178°02'E, 28-30 m, 8 lv & dd juv; stn DW 22, 18°27'S, 177°59'E, 32-36 m, 1 lv juv; stn DW 26, 18°24'S, 178°05'E, 42-43 m, 1 dd (Fig. 1I).

DISTRIBUTION. – Western Pacific: Taiwan, the Philippines, Papua New Guinea, the Coral Sea, New Caledonia and Fiji, live in 28-32 m, shells in 30-42 m.







REMARKS. — The Fiji specimens have spineless teleoconch whorls although other shell characters are identical to the typical form of *Chicoreus nobilis*. A specimen from Fiji was illustrated previously by Houart (1992: 101, fig. 210). *Chicoreus nobilis* is included in a group of small species (20-53 mm) with short varical, frondose spines. It differs from the other species in having 2 or 3 frondose, adaperturally recurved spines on the abapical end of the siphonal canal.

***Chicoreus (Triplex) ryukyuensis*** Shikama, 1978

Fig. 1F

*Chicoreus (Triplex) ryukyuensis* Shikama, 1978: 35, pl. 7, figs 1-2.

MATERIAL EXAMINED. — **Tonga**. BORDAU 2: stn CP 1582, 18°41'S, 174°03'W, 79-82 m, 2 lv.

DISTRIBUTION. — Okinawa, Guam (R. Houart coll., unpublished) and now Tonga (new record), live in 79-82 m.

REMARKS. — *Chicoreus ryukyuensis* is included in the same group of small species as *C. nobilis*. It differs from *C. nobilis* in having a globose rather than conical protoconch and 3 frondose spines covering the entire length of the siphonal canal.

Subgenus **CHICOPINNATUS** Houart, 1992

***Chicoreus (Chicopinnatus) orchidiflorus*** (Shikama, 1973)

*Pterynotus orchidiflorus* Shikama, 1973: 5, pl. 2, figs 7-8.

MATERIAL EXAMINED. — **Fiji**. MUSORSTOM 10: stn DW 1333, 16°50'S, 178°13'E, 200-215 m, 1 dd (damaged); stn DW 1384, 18°19'S, 178°06'E, 260-305 m, 1 dd.

DISTRIBUTION. — Indo-West Pacific: Reunion, Mauritius, Taiwan, the Philippines, New Caledonia, Fiji (new record), shells in 215-260 m, and Tubuai.

REMARKS. — The shell of *C. orchidiflorus* bears 3 finely folded, wing-like varices, with adapical and abapical parts of the wings either separate or joined by a thin webbing.

Subgenus **SIRATUS** Jousseaume, 1880

**FIG. 1. A**, *Murex aduncospinosus* (Sowerby, 1841), Fiji, SUVA 2 CP 47, h 75.4 mm. **B**, *Murex tenuirostrum* Lamarck, 1822, Fiji, SUVA 2 CP 66, h 94.2 mm. **C**, *Murex troscheli* Lischke, 1868, Fiji, MUSORSTOM 10 CP 1328, h 127 mm. **D**, *Vokesimurex hirasei* (Hirase, 1915), Fiji, BORDAU 1 DW 1475, h 57.6 mm. **E**, *Vokesimurex* sp. cf. *hirasei* (Hirase, 1915), Tonga, BORDAU 2 DW 1603, h 45.6 mm. **F**, *Chicoreus (Triplex) ryukyuensis* Shikama, 1978, Tonga, BORDAU 2 CP 1582, h 27.2 mm. **G**, *Vokesimurex mindanaoensis* (Sowerby, 1841), Fiji, MUSORSTOM 10 CP 1370, h 54.2 mm. **H**, *Vokesimurex kiiensis* (Kira, 1959), Fiji, BORDAU 1 DW 1494, h 68.1 mm. **I**, *Chicoreus (Triplex) nobilis* Shikama, 1977, Fiji, SUVA 4 DW 26, h 28.7 mm.

***Chicoreus (Siratus) pliciferoides*** Kuroda, 1942

Fig. 2A

*Murex pliciferus* Sowerby, 1841 (*non* Bivona-Bernardi, 1832).*Chicoreus pliciferoides* Kuroda, 1942: 81.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1325, 18°40'S, 178°30'W, 350-357 m, 1 lv, 1 dd; stn CP 1501, 18°40'S, 178°30'W, 350-357 m, 1 lv, 1 dd. 17°16'S, 177°50'E, 282-322 m, 1 lv (Fig. 2A); stn CP 1326, 17°14'S, 177°50'E, 265-300 m, 1 lv; stn CP 1389, 18°19'S, 178°05'E, 241-417 m, 1 lv. – **BORDAU 1**: stn CP 1427, 17°16'S, 179°01'W, 364-369 m, 1 lv; stn DW 1440, 17°11'S, 178°43'W, 190-308 m, 1 lv; stn DW 1465, 18°09'S, 178°39'W, 290-300 m, 1 dd.

**Tonga**. BORDAU 2: stn CP 1562, 19°52'S, 174°42'W, 417-424 m, 1 dd; stn CH 1563, 19°52'S, 174°39'W, 362-388 m, 4 lv; stn CH 1564, 19°52'S, 174°39'W, 371-387 m, 1 dd.

DISTRIBUTION. – Southeastern and central Japan, Taiwan, the Philippines, Western Australia, the Solomon Islands, New Caledonia, Tonga and Fiji (new records), live in 300-364 m.

REMARKS. – These new records are not unexpected, considering the planktotrophic larval development of the species. Other reports will probably confirm its distribution throughout the central Pacific and probably in other localities of the Indian and Pacific Oceans. The shell is large, reaching a maximum length of almost 150 mm; it is broad, heavy and spiny. A number of synonyms, not listed here, are based on the variable morphological characters of the shell, such as breadth of the last whorl, length of the siphonal canal and thickness of varices.

**Genus *CHICOMUREX*** Arakawa, 1964***Chicomurex superbus*** (Sowerby, 1889)*Murex superbus* Sowerby, 1889: 565, pl. 28, figs 10-11.

MATERIAL EXAMINED. – **Fiji**. BORDAU 1: stn DW 1472, 19°40'S, 178°10'W, 262-266 m, 2 lv, 1 juv.

DISTRIBUTION. – Southeast Japan, Taiwan, the Philippines, Queensland (Australia), New Caledonia and Fiji (new record), live in 262-266 m.

REMARKS. – *Chicomurex superbus* belongs to a group of species that also includes *C. venustus* (Rehder & Wilson, 1975) and *C. problematicus* (Lan, 1981). Their shells are up to 85 mm in length and bear 3 more or less spinose, abapical webbed varices, and all have a multispiral, conical, protoconch.

***Chicomurex turschi*** (Houart, 1981)

Fig. 2B

*Chicoreus (Chicomurex) turschi* Houart, 1981: 186, figs 1-6.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1364, 18°12'S, 178°35'E, 100-122 m, 1 dd (Fig. 2B). 18°12'S, 178°35'E, 80-86 m, 1 dd. – **BORDAU 1**: stn DW 1453, 16°45'S, 179°59'E, 414-510 m, 1 dd. – **SUVA 4**: stn DW 04, 18°12'S, 178°35'E, 100-122 m, 1 dd (Fig. 2B). **Tonga**. BORDAU 2: stn CP 582, 18°41'S, 174°03'W, 79-82 m, 2 lv juv.

DISTRIBUTION. – Indo-West Pacific: known from Zululand (South Africa), southern Madagascar, the Philippines, Papua New Guinea, New Caledonia, Fiji and Tonga (new records), shells in 86-414 m, live in 79-82 m.

REMARKS. – The shell is small, reaching a maximum length of 40 mm, with a paucispiral protoconch. The last whorl bears 3 squamose varices, slightly webbed abapically.

Genus **NAQUETIA** Jousseaume, 1880

***Naquetia cumingii*** (A. Adams, 1853)

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*Murex cumingii* A. Adams, 1853: 270.

Other references:

*Pterynotus (Naquetia) triqueter* - Cernohorsky 1967: 124 (in part), pl. 15, fig. 15, text fig. 6 (*non Murex triqueter* Born, 1778).

*Naquetia cumingii* - Houart 1992: 128.

MATERIAL EXAMINED. – **Fiji**. SUVA 4: stn DW 23, 18° 28'S, 177° 59'E, 31-32 m, 1 dd. – MUSORSTOM 10: stn DW 1333, 16° 50'S, 178° 13'E, 200-215 m, 1 dd.

DISTRIBUTION. – Widely distributed in the Indo-West Pacific.

REMARKS. – *Naquetia cumingii* was previously reported from Fiji by Cernohorsky (1967: 124) as *Pterynotus triqueter*. Finet & Houart (1989) presented a historical review of this species. The shell bears 3 rounded, frondose varices on its last whorl. The apertural varix is strongly webbed, mostly on its abapical part, extending to the siphonal canal. The protoconch whorls are shouldered.

Genus **PTERYNOTUS** Swainson, 1833

***Pterynotus levii*** Houart, 1988

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Fig. 2C

*Pterynotus levii* Houart, 1988: 185, figs 7-8, 18.

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn DW 1628, 23° 22'S, 176° 18'W, 400-416 m, 1 dd; stn DW 1630, 23° 23'S, 176° 18'W, 360 m, 1 dd; stn DW 1631, 23° 23'S, 176° 18'W, 407-443 m, 6 dd (Fig. 2C).

DISTRIBUTION. – Southern New Caledonia and now Tonga (new records), shells in 360-407 m.

REMARKS. – *Pterynotus levii* is easily distinguishable from the other *Pterynotus* species from the Indo-West Pacific by its elongate, very narrow aperture, narrow shell, long siphonal canal and wide, expanded varical wings.

***Pterynotus marshalli*** Houart, 1989

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Fig. 2D

*Pterynotus marshalli* Houart, 1989: 273, figs 1-1a, 7-9.

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn DW 1521, 21°19'S, 175°01'W, 225-233 m, 1 dd (damaged); stn DW 1535, 21°43'S, 175°18'W, 268 m, 1 dd (damaged) (Fig. 2D).

DISTRIBUTION. – Off Norfolk Island (holotype), live in 225-308 m, and now Tonga (new record), shells in 233-268 m.

REMARKS. – The shells from Tonga are damaged and collected dead but are still identifiable. They have more slender whorls and a higher spire than the holotype, but are otherwise similar to it. The last teleoconch whorl bears 3 wide, thin and fragile, wing-like varices. It resembles *Pterynotus bednalli* (Brazier, 1878) but differs in the ornamentation of the first teleoconch whorls. *Pterynotus bednalli* bears 6 or 7 thin axial lamellae on the first and second whorls, and 3 lamellae from the third whorl onwards. *Pterynotus marshalli* bears 3 thin varices and a small lamellate ridge on its first whorl, and from its second whorl onwards has 3 thin varices and a small axial ridge. *Pterynotus bednalli* also has more numerous secondary and tertiary spiral cords on its last teleoconch whorl.

#### *Pterynotus miyokoeae* Kosuge, 1979

*Pterynotus miyokoeae* Kosuge, 1979: 1, pl. 1, figs 1-7.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1389, 18°19'S, 178°05'E, 241-417 m, 1 dd juv (damaged); stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 1 lv juv.

DISTRIBUTION. – Southern Philippines and now Fiji (new record), shell in 241-417 m, live in 234-361 m.

REMARKS. – Both specimens dredged off Fiji are juveniles but are readily identifiable by the protoconch, which has 1½ - 1¾ whorls, and by the morphology of the first teleoconch whorls, which have thin axial lamellae, webbed varices and broad spiral cords.

#### *Pterynotus* sp. cf. *richeri* Houart, 1987

Fig. 2E

*Pterynotus richeri* Houart, 1987b: 758, figs 1-1a.

MATERIAL EXAMINED. – **Fiji**. BORDAU 1: stn DW 1399, 16°24'S, 179°55'W, 400 m, 1 dd (damaged); stn DW 1469, 19°40'S, 178°10'W, 314-377 m, 7 lv & dd juv; stn DW 1470, 19°40'S, 178°10'W, 316-323 m, 5 dd; stn DW 1471, 19°40'S, 178°10'W, 280-296 m, 2 dd; stn CP 1474, 19°39'S, 178°10'W, 316-340 m, 1 lv; stn DW 1475, 19°41'S, 178°11'W, 321-424 m, 2 dd; stn DW 1485, 19°03'S, 178°30'W, 700-707 m, 1 lv; stn DW 1497, 18°44'S, 178°25'W, 335-350 m, 6 lv, 1 dd juv. **Tonga**. BORDAU 2: stn DW 1518, 21°21'S, 175°07'W, 336-347 m, 1 dd juv; stn DW 1532, 21°44'S, 175°20'W, 322 m, 3 dd juv. (Fig. 2E); stn CP 1533, 21°44'S, 175°20'W, 322-329 m, 1 dd juv; stn DW 1534, 21°43'S, 175°19'W, 302-327 m, 8 dd juv; stn DW 1535, 21°43'S, 175°18'W, 268 m, 5 dd juv; stn DW 1536, 21°45'S, 175°21'W, 320-323 m, 9 lv & dd; stn DW 1537, 21°41'S, 175°19'W, 391-421 m, 6 dd juv; stn DW 1548, 20°38'S, 175°03'W, 476-478 m, 2 dd juv; stn CP 1560, 19°52'S, 174°39'W, 365-372 m, 4 dd, 1 lv juv; stn CP 1561, 19°52'S, 174°40'W, 383-393 m, 1 lv; stn CP 1562, 19°52'S, 174°42'W, 417-424 m, 1 lv, 1 dd; stn CH 1563, 19°52'S, 174°39'W, 362-388 m, 1 dd; stn CP 1572, 19°42'S, 174°31'W, 391-402 m, 2 lv; stn CP 1591, 19°10'S, 174°15'W, 351-360 m, 1 dd juv; stn DW 1607, 22°15'S, 175°23'W, 356-367 m, 8 dd juv; stn DW 1608,

22°12'S, 175°27'W, 401-413 m, 1 dd juv; stn DW 1614, 23°02'S, 322 m, 7 dd juv; stn DW 1635, 21°44'S, 175°20'W, 320-323 175°51'W, 429-549 m, 3 dd; stn DW 1615, 23°03'S, 175°53'W, m, 5 dd juv; stn DW 1636, 21°44'S, 175°20'W, 321-331 m, 3 482-504 m, 1 dd (juv.); stn DW 1634, 21°45'S, 175°20'W, 321- dd juv.

DISTRIBUTION. – Southern New Caledonia, Fiji and Tonga (new records), live in 323-700 m.

REMARKS. – Except for an empty shell dredged off the Kermadec Islands (NMNZ) all other specimens of *P. richeri* have been collected alive in 250-500 m, off New Caledonia. The species collected in Fiji and Tonga differs from *P. richeri* in having shorter shoulder spines (P1) and in having P2-P6 extending as short spines, connected by webbing. In *P. richeri* the shoulder spine is almost twice the size, and P2-P6 are almost indiscernable, fused in a broad, adapical webbing. The Fiji and Tonga form has also been collected off New Caledonia (MNHN) and till now has been tentatively identified as *P. richeri*. It is probably more closely related to *P. vespertilio* (Kuroda, 1959).

**Genus *ASPELLA*** Mörch, 1877

***Aspella media*** Houart, 1987

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*Aspella media* Houart, 1987a: 202, figs 1, 10-11.

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn CP 1366, 33 m, 1 dd (damaged); stn DW 74, 17°49'S, 177°12'E, 38 m, 1 18°12'S, 178°33'E, 149-168 m, 2 dd; stn CP 1369, 18°11'S, dd (damaged). – **BORDAU 1:** stn CP 1394, 16°45'S, 179°59'E, 178°23'E, 392-433 m, 1 dd; stn DW 1384, 18°19'S, 178°06'E, 416 m, 1 dd. 260-305 m, 2 dd. – **SUVA 2:** stn DW 44, 17°52'S, 177°13'E,

DISTRIBUTION. – Philippines, Guam, New Caledonia and Fiji (new record), shells in 33-416 m.

REMARKS. – Originally described from southern New Caledonia, in 59-62 m, *Aspella media* probably occurs throughout the western Pacific. *Aspella* was and still is a rather difficult group of poorly known species. There were only 6 Recent species known prior to the description of 7 new ones by Radwin & D'Attilio (1976). Since then another 5 species have been discovered and described, bringing the total of Recent *Aspella* species worldwide to 18, of which 9 are Indo-Pacific. The species are distinguished by their protoconch morphology, by the intritacalx, a chalky layer described by D'Attilio & Radwin (1971), and by a few other shell characters (axial and spiral sculpture, shape).

**Genus *POIRIERIA*** Jousseaume, 1880

**Subgenus *ACTINOTROPHON*** Dall, 1889

***Poirieria (Actinotrophon) fragilis*** Houart, 1996

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Fig. 2F

*Poirieria (Actinotrophon) fragilis* Houart, 1996a: 60, figs 1-2, 5-9, 27-28.

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn CP 1330, 179°28'W, 400-410 m, 1 lv (Fig. 2F); stn DW 1413, 16°10'S, 17°10'S, 177°56'E, 567-699 m, 1 lv; stn CP 1331, 17°02'S, 179°24'W, 669-676 m, 1 dd; stn DW 1485, 19°03'S, 178°30'W, 178°02'E, 694-703 m, 2 dd; stn CP 1341, 16°53'S, 177°44'E, 700-707 m, 2 dd. 500-614 m, 2 dd. – **BORDAU 1:** stn DW 1410, 16°06'S, **Tonga.** BORDAU 2: stn CP 1556, 20°11'S, 174°45'W, 589-

591 m, 1 dd; stn DW 1585, 18°33'S, 173°57'W, 578 m, 1 dd; 1640, 21°09' S, 175°24' W, 564-569 m, 2 lv, 1 dd; stn CP 1642, stn CP 1638, 21°50'S, 175°23'W, 469-520 m, 3 dd; stn CP 21°05'S, 175°23'W, 532 m, 1 lv, 6 dd.

DISTRIBUTION. – Northwest of Port Hedland (Western Australia), New Caledonia, Vanuatu, Wallis and Futuna, Fiji and Tonga (new records), live in 410-567 m.

REMARKS. – See *P. tenuis* (below) for comparison with that species.

***Poirieria (Actinotrophon) tenuis*** Houart, 2001

Fig. 2G

*Poirieria (Actinotrophon) tenuis* Houart, 2001: 255, figs 20, 22-23.

MATERIAL EXAMINED. – **Fiji.** BORDAU 1: stn DW 1410, 19°01'S, 178°26'W, 395-540 m, 1 dd juv; stn DW 1488, 19°01'S, 16°06'S, 179°28'W, 400-410 m, 1 lv (Fig. 2G); stn DW 1432, 178°25'W, 500-516 m, 1 lv, 4 dd. – MUSORSTOM 10: stn CP 17°20'S, 178°44'W, 477-493 m, 1 dd juv; stn DW 1486, 1331, 17°02'S, 178°02'E, 694-703 m, 1 dd.

DISTRIBUTION. – SW Pacific, Waterwitch Bank (12°30'S, 176°41'W), Vanuatu and now Fiji, live in 410-500 m.

REMARKS. – It is interesting to note the occurrence of both Pacific species of *Poirieria*, *P. tenuis* and *P. fragilis*, at station BORDAU 1 DW 1410. Examination of this new material supports their separation, proposed previously (Houart 2001: 256), on the basis of the broader siphonal canal relative to the shell height, and the broader, shorter and more broadly open, less acute, more backwardly recurved and more adapically bent carinal spine of *P. tenuis*. Moreover, on the last teleoconch whorl of *P. tenuis*, the preceding axial lamellae almost entirely cover the succeeding spine on the sutural ramp, while the lamellae of *P. fragilis* are narrower and less expanded.

**Genus BOUCHETIA** Houart and Héros, n. gen.

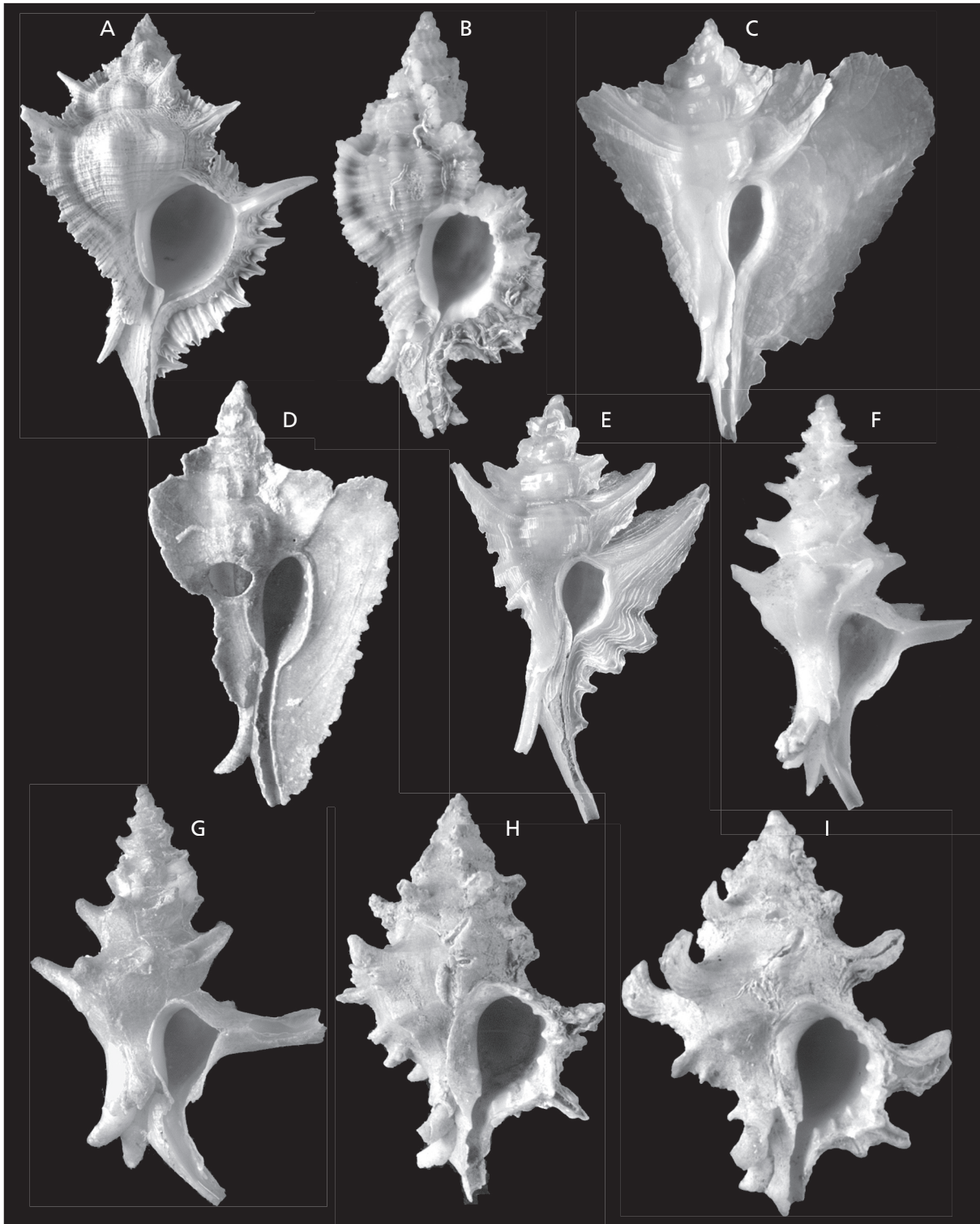
Type species: *Poirieria (Paziella) vaubanensis* Houart, 1986.

DESCRIPTION. – Shell small, adult approximately 10 mm in length. Last teleoconch whorl broad, rounded. Axial sculpture of last teleoconch whorl consisting of 10 or 11 webbed, spinose varices. Spiral sculpture of 5 smooth cords (P1-P5), ending as long, open spines on varical wings. Spines joined by webbed expansion. Aperture rounded, inner and outer lips strongly raised; outer lip weakly denticulate. Siphonal canal open, short, approximately 20-24 % of total shell length, with MP. Radula (Fig. 9C): rachidian tooth with broad, long, triangular central cusp, and narrow, long, lateral cusp on each side; no lateral denticles; lateral tooth narrow, sickle shaped. Operculum (Fig. 10C) with basal nucleus.

ETYMOLOGY. – Named for Philippe Bouchet, Muséum national d'Histoire naturelle, Paris, in recognition of his work, his collaboration in many ways, and his unfaltering dedication to field research.

**FIG. 2. A,** *Chicoreus (Siratus) pliciferoides* Kuroda, 1942, Fiji, MUSORSTOM 10 CP 1325, h 86.7 mm. **B,** *Chicomurex turschi* (Sowerby, 1889), Fiji, SUVA 4 DW 04, h 31.1 mm. **C,** *Pterynotus levii* Houart, 1988, Tonga, BORDAU 2 DW 1631, h 32.1 mm. **D,** *Pterynotus marshalli* Houart, 1989, Tonga, BORDAU 2 DW 1535, h 24 mm. **E,** *Pterynotus* sp. cf. *richeri* Houart, 1987, Tonga, BORDAU 2: stn DW 1532, h 18.7 mm. **F,** *Poirieria (Actinotrophon) fragilis* Houart, 1996, Fiji, BORDAU 1 DW 1410, h 14.6 mm. **G,** *Poirieria (A.) tenuis* Houart, 2001, Fiji, BORDAU 1 DW 1410, h 11 mm. **H,** *Attiliosa caledonica* (Jousseaume, 1881), Fiji, SUVA 4 DW04, h 28.5 mm. **I,** *Attiliosa nodulifera* (Sowerby, 1841), Fiji, SUVA 4 DW 08, h 19 mm.







REMARKS. – *Paziella* (Fig. 3A), in which the type species of *Bouchetia* was originally included, differs from *Bouchetia* in having a more slender shell with a longer siphonal canal, fewer un-webbed varices, and a different radula morphology, having a rachidian tooth with a long central cusp, long, narrow lateral denticles and long lateral cusps. The radula of *Paziella pazi* (Crosse, 1869), the type species of *Paziella*, was illustrated by Radwin & D’Attilio (1976: fig. 50) and by Harasewych (1984: fig. 27). It is here also illustrated for comparison (Fig. 9E).

Future revision will probably include *Murex hystricinus* Dall, 1889 (Figs 3E, F) from the western Atlantic in the new genus. The shell morphology is similar to *B. vaubanensis* with 6-9 webbed varices and long, open spines. Radula morphology and the operculum are not yet known for that species.

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***Bouchetia vaubanensis*** (Houart, 1986)

Figs 3B-D

*Poirieria* (*Paziella*) *vaubanensis* Houart, 1986: 427, figs 1-2.

MATERIAL EXAMINED. – Fiji. BORDAU 1: stn DW 1497, 18°44’ S, 178°25’ W, 335-350 m, 1 dd (damaged).

DISTRIBUTION. – New Caledonia region, live in 314-516 m, and now Fiji, single shell in 335-350 m.

**Genus *ATTILIOSA*** Emerson, 1968

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***Attiliosa caledonica*** (Jousseume, 1881)

Fig. 2H

*Muricidea caledonica* Jousseume, 1881: 349.

MATERIAL EXAMINED. – Fiji. SUVA 4: stn DW 04, 18°12’S, 178°35’E, 100-122 m, 1 dd (Fig. 2H); stn DW 08, 18°22’S, 178°02’ E, 28-30 m, 1 dd; stn DW 23, 18°28’S, 177°59’E, 31-32 m, 1 dd.

DISTRIBUTION. – The Philippines, Marshall Islands, Coral Sea, New Caledonia, Fiji, Society and Tuamotu archipelagos.

REMARKS. – *Attiliosa caledonica* was treated as a form of *Attiliosa nodulifera* (Sowerby, 1841) by Vokes & D’Attilio (1982) and as a subspecies of it by Tröndlé & Houart (1992: 82). One of the distinguishing characters is the spine morphology: in *A. caledonica* there are 4 or 5 distinct acute spinelets on the varices of the last teleoconch whorl, whereas in *Attiliosa nodulifera* these spines are less acute, broader and joined together, especially P1 and P2.

We now consider *A. caledonica* to deserve full specific status, as both it and *A. nodulifera* are sympatric in the Philippines (R. Houart coll., unpublished) and even syntopic in Fiji, as both were found sharing the same habitat within the geographic range (SUVA 4 stn DW 08) with no intermediate forms.

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***Attiliosa nodulifera*** (Sowerby, 1841)

Fig. 2I

*Murex noduliferus* Sowerby, 1841: pl. 194, fig. 94.

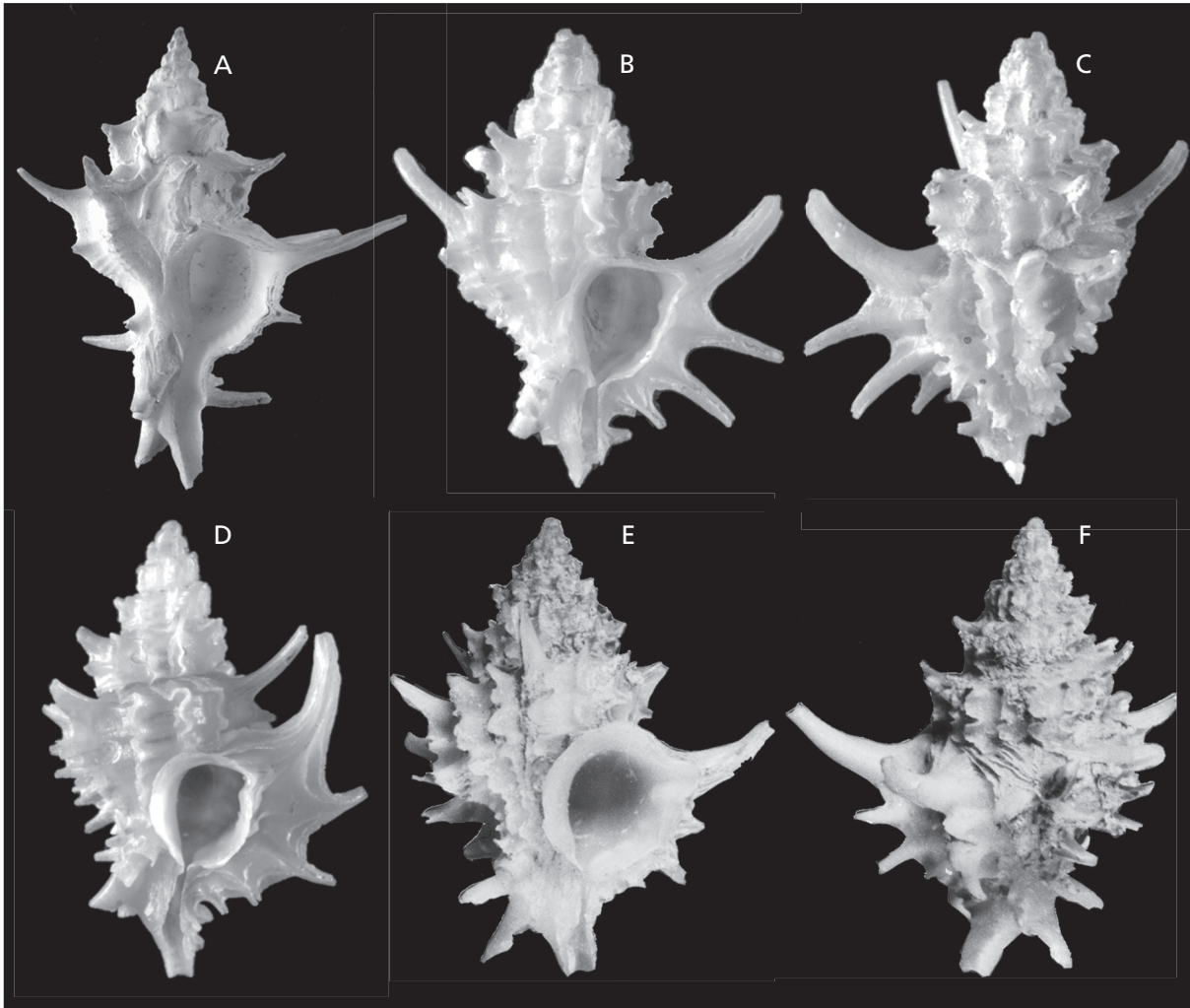


FIG. 3. **A**, *Poirieria (Paziella) pazi* Crosse, 1869, Mer des Antilles, holotype MNHN 0956, h 35 mm. **B, C**, *Bouchetia vaubanensis* (Houart, 1986), southern New Caledonia, VAUBAN 1978-79 stn 1, holotype MNHN 0885, h 10.5 mm. **D**, *B. vaubanensis* (Houart, 1986), Norfolk Ridge, SMIB 8 DW 198, h 19.9 mm. **E, F**, *?B. hystricina* (Dall, 1889), Cuba, off Santiago, 19°56'66"N, 75°47'30"W, 465 m, paralectotype USNM 93959, h 16.2 mm.

Other reference:

*Poirieria nodulifera* - Cernohorsky 1967: 125, pl. 15, fig. 17.

MATERIAL EXAMINED. – Fiji. SUVA 4: stn DW 08, 18°22'S, 178°02'E, 28-30 m, 1 dd.

DISTRIBUTION. – Central Indo-West Pacific: Australia (Northern Territory to north Queensland), Indonesia, the Philippines, Japan and Fiji.

Genus *PHYLLOCOMA* Tapparone Canefri, 1881

***Phyllocoma convoluta*** (Broderip, 1833)

Fig. 4A

*Triton convoluta* Broderip, 1833: 7.

Other reference:

*Phyllocoma convolutum* - Cernohorsky 1967: 127, pl. 14, fig. 4.MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn DW 1601, 20°50'S, 174°57'W, 200-487 m, 1 dd juv.

DISTRIBUTION. – Indo-West Pacific. Fossil shells have been collected from Pleistocene deposits on Oahu, Hawaiian Islands, but there are no Recent records to indicate that this species now lives in Hawaiian waters (Kay 1979: 239). New for Tonga.

Subfamily MURICOPSINAE Radwin &amp; D'Attilio, 1971

Genus **MUREXSUL** Iredale, 1915***Murexsul charcoti*** (Houart, 1991)

Fig. 4D

*Muricopsis (Murexsul) charcoti* Houart, 1991a: 35, figs 10-11, 46-47.MATERIAL EXAMINED. – **Fiji**. BORDAU 1: stn DW 1469, 19°40'S, 178°10'W, 314-377 m, 2 dd.**Tonga**. BORDAU 2: stn DW 1615, 23°03'S, 175°53'W, 482-504 m, 2 dd (Fig. 4D).

DISTRIBUTION. – New Caledonia, now Fiji and Tonga (new records), live in New Caledonia in 310-440 m

REMARKS. – *Murexsul charcoti* is a very small species, not exceeding 8 mm in length. It was originally described from and was previously known only from New Caledonia.***Murexsul merlei*** n. sp.

Figs 4E-G

TYPE MATERIAL. – Holotype MNHN 20006 and 2 paratypes MNHN 20007-20008.

TYPE LOCALITY. – Tonga, N Ha'apai group, 19°03'S, 174°19'W, 523-806 m [BORDAU 2: stn DW 1595].

MATERIAL EXAMINED. – **Fiji**. BORDAU 1: stn DW 1469, 19°40'S, 178°10'W, 314-377 m, 1 lv juv (paratype MNHN 20007; Fig. 4G). **Tonga**. BORDAU 2: stn DW 1535, 21°43'S, 175°18'W, 268 m, 1 dd (paratype MNHN 20008); stn DW 1595, 19°03'S, 174°19'W, 523-806 m, 1 dd (holotype MNHN 20006; Figs 4E, F).

DISTRIBUTION. – Tonga, shells in 268-523 m, and Fiji, live in 314-377 m.

DESCRIPTION. — Shell small for the genus, adult up to 14.6 mm in length, slender, lanceolate, biconical, squamous. Spire high. Suture impressed. Protoconch of *sinusigera* type, conical, of 3 smooth whorls. Terminal lip raised, curved.

Teleoconch sculpture consisting of low, narrow, rounded, frondose varices, each with short, blunt spinelets. No intervarical sculpture except for numerous axial growth lamellae. Spiral sculpture of squamous primary, secondary and tertiary cords as follows: first teleoconch whorl with P1 and P2 visible; second with P1, s1, P2; third with IP, P1, s1, P2; fourth and fifth with adis, IP, abis, P1, s1, P2; last whorl with adis, IP, abis, P1, s1, P2, s2, P3, s3, P4, s4, P5, s5, P6, s6, ADP, MP. Last whorl with primary, secondary and tertiary cords of same strength in some specimens.

Aperture small, ovate, almost round. Columellar lip narrow, flaring, smooth except for one elongate knob abapically (holotype). Lip partially erect, adherent at adapical extremity. Anal notch shallow. Outer lip erect, crenulate, with weak denticles within. D1 and D2 very low, almost indistinct, D3 and D4 low, D5 strongest. Siphonal canal moderately long, narrow, dorsally recurved.

Yellowish white (juvenile paratype) or ivory white with slightly darker protoconch and first teleoconch whorl. Tip of siphonal canal pale brown in the holotype and adult paratype.

Operculum and radula not studied.

Height of holotype: 14.6 mm.

REMARKS. — *Murexul* and related groups have been revised by Merle & Houart (2003). Four species resemble *M. merlei* and are probably related to it: *M. tokubeii* Nakamigawa & Habe, 1964, occurring widely in the West Pacific, *M. purpurispina* (Ponder, 1972), from Queensland and New South Wales, Australia, *M. reunionensis* Houart, 1985, from Réunion, in 75-280 m, and *M. spiculus* (Houart, 1986) from the Coral Sea. Although none of them has a multispiral protoconch with sinusigeral notch as in *M. merlei*, all of them have a paucispiral protoconch of 1.5 to 2 whorls.

*Murexul purpurispina*, except for its tilted protoconch of 1.5 smooth, very slightly shouldered whorls (Ponder 1972: 242), is most similar to *M. merlei* in having the same outline and colour, even the darker first whorl and light brown tip of the siphonal canal. However, not only are the protoconch whorls different, but the shell of *M. purpurispina* also has a comparatively larger and broader aperture with a more strongly prominent abapical columellar knob, a comparatively shorter siphonal canal, almost half the length of that in *M. merlei*, and a broader shoulder.

ETYMOLOGY. — Named for Didier Merle (MNHN, Département des Sciences de la Terre) in recognition of his work on fossil muricids and their terminology.

### Genus **FAVARTIA** Jousseaume, 1880

#### ***Favartia maculata*** (Reeve, 1845)

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*Murex maculatus* Reeve, 1845: pl. 33, fig. 136.

#### Synonyms:

*Murex (Ocinebra) salmonea* Melville & Standen, 1899: 162, pl. 10, fig. 2.

*Favartia dorothyae* Emerson & D'Attilio, 1979: 5, figs 3, 4, 15, 16.

MATERIAL EXAMINED. — **Tonga**. BORDAU 2: stn DW 1569, 21°02'S, 175°19'W, 433 m, 1 dd (damaged).

DISTRIBUTION. — Indo-West Pacific. New record for Tonga.

REMARKS. – Three names are commonly used for this species: *Favartia maculata* (Reeve, 1845) for specimens from the western Indian Ocean, *F. salmonea* for those from Australia and *F. dorotheae* for those from the Philippines. Many specimens, including the type material have been studied by the senior author from throughout its geographical range. No noticeable morphological differences have been noted between the different forms (protoconchs studied only for *F. maculata* and *F. dorotheae* forms). In the absence of further studies showing important differences in the protoconch morphology of *F. salmonea*, we consider all these names as synonyms. *F. maculata* has not previously been reported from Tonga.

***Favartia conleyi*** Houart, 1999

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*Favartia conleyi* Houart, 1999 [March]: 14, figs 1, 4-5.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1363, 178°06'E, 37-41 m, 1 dd juv (damaged); stn DW 15, 18°23'S, 18°12'E, 178°33'E, 144-150 m, 1 dd (damaged). – SUVA 4: stn 178°11'E, 32-34 m, 1 dd; stn DW 24, 18°28'S, 177°57'E, 40 m, DW 08, 18°22'S, 178°02'E, 28-30 m, 1 dd; stn DW 09, 18°21'S, 1 dd.

DISTRIBUTION. – Guam, the Coral Sea, New Caledonia, Tahiti (Society Islands) and now Fiji (new record), shells only in 30-144 m.

REMARKS. – The axial sculpture of the teleoconch whorls consists of high, strong, frondose varices, each with short, blunt, occasionally bifurcated spines. The first whorl has 6 varices, the second and third 5 or 6, and the fourth, penultimate and last whorls have 5 varices. The spiral sculpture consists of high, strong, squamous, striate cords: 2 cords (P1 & P2) from the first to the penultimate whorl; the last whorl bears 5 cords (P1-P5). The space between the second and third cords is approximately twice that between the other cords. There are 3-5 narrow threads between the abapical cord and the spine of the siphonal canal.

***Favartia*** sp.

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Figs 4B, C

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1384, 18°19'S, 178°06'E, 260-305 m, 2 dd juv (Figs 4B, C); stn CP 1390, 18°19'S, 178°05'E, 234-361 m, 1 dd.

REMARKS. – The protoconch is paucispiral and broad, the aperture is broad, strongly denticulate within, the teleoconch whorls are ornamented with 4 varices with broad, webbed spines, there are 5 primary spiral cords on the fourth whorl, 3 on early whorls, and the siphonal canal is fairly long. We could not identify this species. However, as the shells are undoubtedly juveniles, with only 4 teleoconch whorls (an adult specimen of *Favartia* has 6 or 7 whorls), we illustrate it to facilitate recognition when adult specimens are collected.

Genus ***PYGMAEPTERYS*** Vokes, 1978

***Pygmaepterys cracentis*** Houart, 1996

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Fig. 4H

*Pygmaepterys cracentis* Houart, 1996b: 382, figs 12-13.

MATERIAL EXAMINED. – Fiji. SUVA 2: stn BS 18, 18°11'S, 178°28'E, 83 m, 1 lv juv with 4 teleoconch whorls.

DISTRIBUTION. – Indonesia (Ambon and Java), now Fiji (new record), live in 83 m.

REMARKS. – Described from Ambon, *Pygmaepterys cracentis* has only recently been discovered in Java (R. Houart coll, unpublished). Its discovery off Fiji enlarges its geographical range considerably.

### Genus *PAZINOTUS* Vokes, 1970

*Pazinotus* has been considered a subgenus of *Poirieria* (Muricinae) by Vokes (1970; 1971, 1992). However, Houart (1991a; 1994a) has shown that at least two species considered as *Pazinotus* by recent authors have a muricopsine radula with a short central projecting cusp, two long lateral denticles situated between the central and lateral cusps, and short marginal cusps. The radula of *Poirieria* is muricine with a less projecting, long central cusp and short lateral denticles between the central and lateral cusps (Marshall & Houart 1995). *Pazinotus falcatiformis* has a muricopsine radula (Figs 9A, B).

The radular morphology was not previously known for *Pazinotus stimpsonii* (Dall, 1889), the type species of *Pazinotus*. However, recent study of a radula extracted from a specimen of *P. stimpsonii* dredged off the Virgin Islands SMNH-71734 (Fig. 9D) determined that it had a short, typically muricopsine, projecting central tooth, indicating that *Pazinotus* is more akin to muricopsine species. Therefore, *Pazinotus* Vokes, 1970 is transferred here from Muricinae to Muricopsinae.

### *Pazinotus falcatiformis* (Thiele, 1925)

Figs 8A-D, 9A, B, 10B

*Murex falcatiformis* Thiele, 1925: 168, pl. 18, fig. 10.

MATERIAL EXAMINED. – Fiji. MUSORSTOM 10: stn DW DW 1383, 18°18'S, 178°03'E, 230-251 m, 13 dd; stn DW 1384, 1333, 16°50'S, 178°13'E, 200-215 m, 1 dd; stn DW 1345, 18°19'S, 178°06'E, 260-305 m, 7 dd. – BORDAU 1: stn DW 17°15'S, 178°30'E, 660-663 m, 1 dd; stn DW 1365, 18°13'S, 1464, 18°09'S, 178°38'W, 285-300 m, 2 lv, 2 dd (Figs 8D; 9B); 178°32'E, 295-302 m, 5 dd; stn CP 1366, 18°12'S, 178°33'E, stn DW 1465, 18°09'S, 178°39'W, 290-300 m, 1 lv, 2 dd (Figs 149-168 m, 4 dd; stn CP 1369, 18°11'S, 178°23'E, 392-433 m, 8C; 9A); stn CP 1507, 18°09'S, 178°38'W, 294-300 m, 1 dd. 1 dd; stn DW 1376, 18°19'S, 178°09'E, 497-504 m, 6 dd; stn

DISTRIBUTION. – North of Nias Island, Sumatra, Indonesia (1°48'N, 97°6'E), in 141 m (holotype); Aliguay Islands, Sulu Sea, Philippines, in 180-240 m; and Fiji, live in 290-300 m.

REMARKS. – *Pazinotus falcatiformis* was only known from the holotype until very recently, when specimens were dredged in the Philippines (R. Houart coll, unpublished), and now in Fiji. The holotype (Figs 8A, B) has longer, more acute carinal spines than other material, but other shell characters (paucispiral protoconch, angulate aperture, spines connected by a broad webbing, number of varices) are similar to those of the Philippines and Fiji specimens.

Subfamily ERGALATAXINAE Kuroda, Habe & Oyama, 1971

Genus **ERGALATAX** Iredale, 1931

***Ergalatax contracta*** (Reeve, 1846)

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Fig. 4I

*Buccinum contractum* Reeve, 1846: pl. 8, fig. 53.

MATERIAL EXAMINED. – Fiji. SUVA 2: stn CP 45, 17°52'S, 18°21'E, 178°09'E, 26 m, 1 dd; stn CP 19, 18°26'S, 178°04'E, 177°13'E, 35 m, 1 lv; stn DW 62, 17°48'S, 177°13'E, 32 m, 48-50 m, 1 dd (Fig. 4I); stn DW 26, 18°24'S, 178°05'E, 42-1 dd; stn BS 82, 17°39'S, 177°22'E, 21 m, 1 lv, 2 dd. – SUVA 43 m, 1 dd. 4: stn DW 10, 18°21'S, 178°07'E, 39-43 m, 1 lv; stn DW 11,

DISTRIBUTION. – Indo-West Pacific.

REMARKS. – A highly variable and common species in the whole Indo-West Pacific. However, it is not certain whether *E. calcarius* (Dunker, 1860) from Japan and *E. smithi* (Schepman, 1911) from Indonesia are synonyms or should be considered separate species. The Fiji specimens are typical *E. contracta* with a high spire, shouldered teleoconch whorls, broad and high axial ribs, and a short siphonal canal.

Genus **CYTHAROMORULA** Kuroda, 1953

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Several species here included in *Cytharomorula* were earlier classified in *Pascula* Dall, 1908 (Houart 1995a; 1996b). However, having now seen much more material of both genera, we think that these species are more akin to *Cytharomorula* than to *Pascula*. We also realize that some specimens, previously considered as within the range of variation of known species are in fact worthy of specific status. Our present aim is not a revision of ergalataxine genera. However, we feel that a re-examination of the generic assignment of several species is urgently needed.

Currently we consider that *Cytharomorula* includes the following Recent species:

- C. ambonensis* Houart, 1996
- C. danigoi* Houart, 1995
- C. grayi* (Dall, 1889)
- C. lefevreiana* (Tapparone Canefri, 1880)
- C. paucimaculata* (Sowerby, 1903)
- C. pinguis* Houart, 1995
- C. springsteeni* Houart, 1995
- C. vexillum* Kuroda, 1953 (type species)

***Cytharomorula danigoi*** Houart, 1995

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Fig. 4J

*Cytharomorula danigoi* Houart, 1995a: 253, figs 20, 27, 65-66.



MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn DW 184 m, 1 dd; stn DW 1535, 21°43'S, 175°18'W, 268 m, 2 dd; 1333, 16°50'S, 178°13'E, 200-215 m, 2 dd. – BORDAU 1: stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 1 dd; stn DW DW 1472, 19°40'S, 178°10'W, 262-266 m, 1 dd (Fig. 4J). 1586, 18°34'S, 173°55'W, 440-487 m, 1 dd.  
**Tonga.** BORDAU 2: stn DW 1512, 21°19'S, 175°01'W, 183-

DISTRIBUTION. – New Caledonia, Loyalty Ridge, Norfolk Ridge, Vanuatu, now Fiji and Tonga, shells in 184-440 m.

REMARKS. – Compared with *Cytharomorula lefevreiana* (Tapparone Canefri, 1880), *C. danigoi* has fewer and shorter denticles within the aperture, the shell is broader with less angular teleoconch whorls, a broader, more globose protoconch, and the tip of the siphonal canal is always dark brown instead of the same colour as the rest of the shell.

### *Cytharomorula grayi* (Dall, 1889)

*Nassarina grayi* Dall, 1889: 183, pl. 32, fig. 12a.

MATERIAL EXAMINED. – **Tonga.** BORDAU 2: stn DW 1508, 225-233 m, 1 dd; stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 21°02'S, 175°19'W, 555-581 m, 1 dd; stn DW 1512, 21°19'S, 1 dd; stn DW 1603, 22°12'S, 175°20'W, 189-196 m, 3 dd. 175°01'W, 183-184 m, 1 dd; stn DW 1521, 21°19'S, 175°01'W,

DISTRIBUTION. – Eastern Atlantic: St Helena, Madeira and the Canary Islands. Western Atlantic: Lesser Antilles to southern Brazil. Indo-Pacific: South Africa, western Indian Ocean, New Caledonia, Norfolk Ridge, Tonga (new record), shells in 184-555 m, French Polynesia and probably Japan (Tsuchiya 2000: 381), live in about 100-300 m (data from all localities).

REMARKS. – As noted by Houart (1995a), the wide distribution of this species is probably a result of a planktotrophic larval life of exceptionally long duration. No consistent differences could be detected between the Indo-Pacific material and specimens from the western and eastern Atlantic.

### *Cytharomorula paucimaculata* (Sowerby, 1903)

*Pentadactylus paucimaculatus* Sowerby, 1903: 496.

MATERIAL EXAMINED. – **Fiji.** SUVA 4: stn DW 09, 18°21'S, 178°06'E, 37-41 m, 1 dd; stn DW 12, 18°21'S, 178°10'E, 39 m, 1 dd; stn DW 25, 18°27'S, 178°01'E, 48-51 m, 1 dd.

DISTRIBUTION. – Very little is known about the geographical distribution of *C. paucimaculata* but it probably occurs throughout the Indo-West Pacific. Specimens are known from some scattered localities: the Red Sea (MNHN), the Indian Ocean (MNHN), Japan (type locality), the Philippines (MNHN, and in coll. R. Houart), New Caledonia (MNHN) and the Tuamotu archipelago (in coll. J. Tröndlé). It is very common in the Philippines.

REMARKS. – *Cytharomorula paucimaculata* differs from *C. lefevreiana* in having a smoother, larger shell with a lirate rather than denticulate aperture.

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***Cytharomorula pinguis*** Houart, 1995
 

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*Cytharomorula pinguis* Houart, 1995a: 255, figs 25, 72-73. Not *C. pinguis* Tsuchiya 2000: 380, pl. 189; fig. 88 [= probably *C. springsteeni*].

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn DW 1606, 22° 16'S, 175° 20'W, 313-316 m, 1 dd (damaged).

DISTRIBUTION. – New Caledonia area: Loyalty Ridge, Norfolk Ridge, Hunter and Matthew Islands, live in 313-360 m; and Tonga (new record), shells only in 313-316 m.

REMARKS. – *Cytharomorula pinguis* is very distinctive in having broad, heavy, white axial ribs, broad, flat, spiral cords, a strongly denticulate aperture, and narrow protoconch whorls. The shell illustrated by Tsuchiya (2000: pl. 189, fig. 88) is not *C. pinguis*, but rather *C. springsteeni* Houart, 1988, or a related form.

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***Cytharomorula vexillum*** Kuroda, 1953
 

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Fig. 4K

*Cytharomorula vexillum* Kuroda, 1953: 183, fig. 11

MATERIAL EXAMINED. – **Tonga**. BORDAU 2: stn 1512, 21° 29'S, 175° 01'W, 183-184 m, 1 dd; stn DW 1549, 20° 38'S, 175° 00'W, 500 m, 1 dd; stn DW 1605, 22° 17'S, 175° 16'W, 441 m, 5 dd; stn DW 1607, 22° 15'S, 175° 23'W, 356-367 m, 2 lv (Fig. 4K), 1 dd.

DISTRIBUTION. – Kii (Japan), Chesterfield Plateau, New Caledonia and Tonga (new record), live in 356-367 m.

REMARKS. – *Cytharomorula vexillum* can be distinguished easily from other species of *Cytharomorula* by its characteristic brown primary spiral cords and broad axial ribs. Interspaces are whitish.

**Genus *DAPHNELLOPSIS*** Schepman, 1913

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***Daphnellopsis fimbriatus*** (Hinds, 1843)
 

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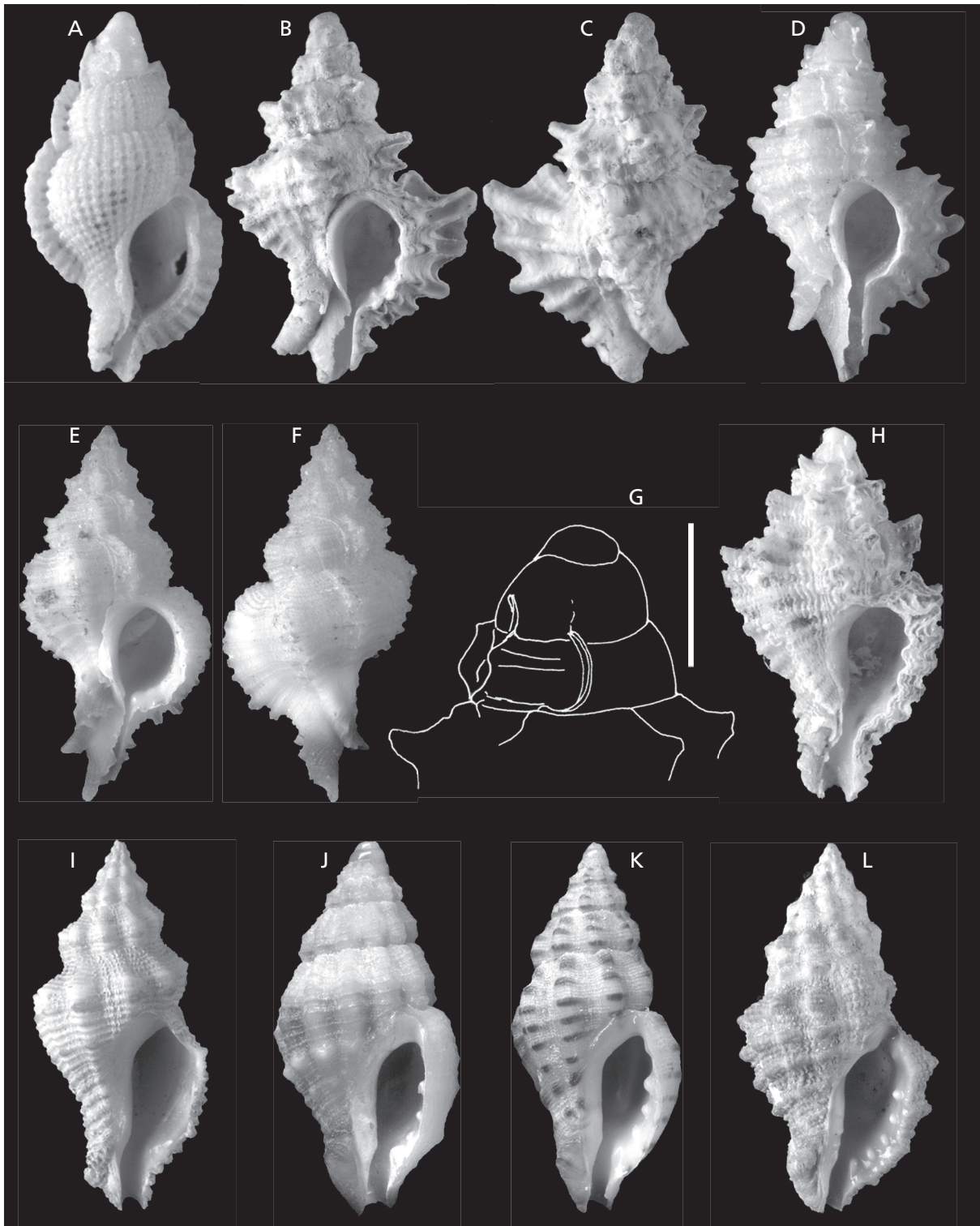
Fig. 5C

*Clavatula fimbriata* Hinds, 1843: 43; 1844: 22, pl. 7, fig. 9.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn DW 177° 54'E, 275-430 m, 1 dd; stn DW 1384, 18° 19'S, 178° 06'E, 1314, 17° 16'S, 178° 15'E, 656-660 m, 1 dd juv; stn DW 1366, 260-305 m, 1 dd (Fig. 5C). 18° 12'S, 178° 33'E, 149-168 m, 1 dd juv; stn DW 1381, 18° 18'S,

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**FIG. 4. A**, *Phyllocoma convoluta* (Broderip, 1833), Tonga, BORDAU 2 DW 1601, h 3.5 mm. **B, C**, ?*Favartia* sp., Fiji, MUSORSTOM 10 DW 1384, h 5.9 mm. **D**, *Murexsul charcoti* (Houart, 1991), Tonga, BORDAU 2 DW 1615, h 5.3 mm. **E, F**, *Murexsul merlei* n. sp., Tonga, BORDAU 2 DW 1595, holotype MNHN 20006, h 14.6 mm; **G**, protoconch of a juvenile paratype MNHN 20007. Fiji, BORDAU 1 stn DW 1469. Scale bar: 0.5 mm. **H**, *Pygmaepterys cracentis* Houart, 1996, Fiji, SUVA 2 BS 18, h 5.6 mm. **I**, *Ergalatax contracta* (Reeve, 1846), Fiji, SUVA 4 CP 19, h 24 mm. **J**, *Cytharomorula danigo* Houart, 1995, Fiji, BORDAU 1 DW 1472, h 8.7 mm. **K**, *Cytharomorula vexillum* Kuroda, 1953, Tonga, BORDAU 2 DW 1607, 12.2 mm. **L**, *Drupella rugosa* (Born, 1778), Fiji, SUVA 4 DW 23, h 28 mm.



DISTRIBUTION. – Philippines, north coast of New Guinea, in 40 m (type locality), Norfolk Ridge, Loyalty Basin and Fiji (new record), shells in 168-656 m.

***Daphnellopsis lamellosus*** Schepman, 1913

Fig. 5D

*Daphnellopsis lamellosus* Schepman, 1913: 449, pl. 30, figs 10 a-c.

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 1 dd juv. (Fig. 5D); stn DW 1365, 18°13'S, 178°32'E, 295-302 m, 2 dd juv; stn CP 1366, 18°12'S, 178°33'E, 149-168 m, 2 dd juv.

DISTRIBUTION. – Savu Sea, Indonesia, in 247 m (type locality), and Fiji (new record), shells in 150-295 m.

REMARKS. – *Daphnellopsis lamellosus* differs from *D. fimbriatus* in having a more elongated, narrow shell with weakly shouldered whorls. The spiral cords are comparatively narrower, more uniform and more widely spaced. The axial lamellae are lower and the teleoconch whorls are comparatively higher. The protoconch is shorter, with flatter whorls. *Daphnellopsis lamellosus* was until now only known from the type material illustrated by Houart (1995a). The discovery of this species in the Fiji archipelago confirms the differences between the two species, noted by Houart (1995a).

Genus **ORANIA** Pallary, 1900

***Orania adiaستolos*** Houart, 1995

Fig. 5E, 8F

*Orania adiaستolos* Houart, 1995a: 265, figs 14, 35-37, 54, 102-111.

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn DW 1357, 17°48'S, 178°47'E, 81-110 m, 1 lv, 2 dd; stn DW 1359, 17°50'S, 178°48'E, 183-188 m, 1 dd; stn CP1 366, 18°12'S, 178°33'E, 149-168 m, 1 dd juv. – **SUVA 2:** stn BS 11, 18°12' S, 178°028' E, 213 m, 1 dd; stn BS 43, 17°52'S, 177°13'E, 26 m, 8 dd (Fig. 5E); stn DW 44, 17°52' S, 177°13' E, 33 m, 69 lv & dd; stn CP 45, 17°52'S, 177°13'E, 35 m, 1 dd; stn DW 51, 17°15'S, 177°16'E, 32 m, 2 lv; stn DW 62, 17°48'S, 177°13'E, 32 m, 18 dd; stn CP 65, 17°48'S, 177°13'E, 32 m, 2 dd. – **BORDAU 1:** stn DW 1439, 17°11'S, 178°44'W, 173-180 m, 1 dd juv; stn DW 1498, 18°41'S, 178°28'W, 300-307 m, 1 dd. **Tonga.** BORDAU 2: stn DW 1567, 21°02'S, 175°19'W, 351-356 m, 2 dd juv; stn DW 1569, 21°02'S, 175°19'W, 433 m, 2 dd; stn DW 1570, 21°02'S, 175°19'W, 533-578 m, 1 dd; stn DW 1581, 18°41'S, 174°02'W, 76-85 m, 2 dd juv; stn CP1582, 18°41'S, 174°03'W, 79-82 m, 1 dd.

DISTRIBUTION. – South Africa, New Caledonia, Chesterfield Plateau, Loyalty Ridge, Fiji and Tonga (new records), live in 32-81 m.

REMARKS. – *Orania adiaستolos* is included in a group of three similar-looking species: *O. adiaستolos*, *O. corallina* (Melville & Standen, 1903) and *O. fischeriana* (Tapparone Canefri, 1882). Houart (1995a) described the differences among them (see also Figs 8E-G).

***Orania fischeriana*** (Tapparone Canefri, 1882)

Figs 5F, 8E

*Latirus fischerianus* Tapparone Canefri, 1882: 33, pl. 2, figs 8-9.

MATERIAL EXAMINED. – **Fiji**. SUVA 2: stn DW 74, 17°49'S, 177°12'E, 38 m, 2 dd (damaged); stn BS 82, 17°39'S, 177°22'E, 21 m, 1 dd (damaged, Fig. 5F).

DISTRIBUTION. – Indo-West Pacific. Currently known from scattered localities, in Mozambique, Borneo, west Sumatra, Queensland, New Caledonia, live in 10-60 m, and Fiji (new record), shells only in 21-38 m.

REMARKS. – *Orania fischeriana* has 4 strong, similar-sized columellar folds and a multispiral protoconch while *O. adistolos* has only 2 or 3 low columellar denticles and a protoconch of 1.5 whorls.

***Orania pacifica*** (Nakayama, 1988)*Morula pacifica* Nakayama, 1988: 251, fig. 1.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1371, **Tonga**. BORDAU 2: stn DW 1567, 21°02'S, 175°19'W, 351-356 18°12' S, 178°33'E, 135-151 m, 1 dd (damaged).– BORDAU 1: m, 1 dd; stn DW 1587, 18°37' S, 173° 54' W, 309-400 m, 1 dd. stn DW 1440, 17°11' S, 178°43' W, 190-308 m, 1 dd.

DISTRIBUTION. – Indo-Pacific. Known from South Africa, Japan, the Philippines, New Caledonia, Fiji and Tonga (new records), shells only in 151-351 m, and the Marquesas Islands, live in 30-160 m.

REMARKS. – *Orania pacifica* is fairly common in the Philippines and the Marquesas but it is only known from a few specimens in the other localities. It is easily recognizable by its multispiral protoconch, broad and large teleoconch whorl with numerous primary, secondary and tertiary squamose spiral cords, and a short, broadly open, siphonal canal.

**Genus *SPINIDRUPA*** Habe & Kosuge, 1966***Spinidrupa euracantha*** (A. Adams, 1853)*Murex euracanthus* A. Adams, 1853: 268.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1364, 18°12'S, 178°35'E, 80-86 m, 1 lv. – SUVA 2: stn DW 74, 17°49'S, 177°12'E, 38 m, 1 lv. – SUVA 4: stn DW 03, 18°12'S, 178°34'E, 25-32 m, 1 dd; stn DW 08, 18°22'S, 178°02'E, 28-30 m, 1 lv.

DISTRIBUTION. – Indo-West Pacific.

REMARKS. – The genus *Spinidrupa* was transferred from the Rapaninae to the Ergalataxinae by Houart (1995c) based on shell and radular morphology. *Spinidrupa euracantha* has broad varical spines of variable length. Short-spined specimens are usually called *S. iostoma* (A. Adams, 1853), in error because the syntype (BMNH 196572) from the Philippines also has the typical long spines of *S. euracantha*. Also, the name *Murex iostomus* A. Adams, 1853 is invalid as it is a junior primary homonym of *M. iostoma* Sowerby, 1834.

Subfamily TROPHONINAE Cossmann, 1903

Genus **PAGODULA** Monterosato, 1884

***Pagodula obtuselirata*** (Schepman, 1911)

Fig. 5G

*Trophon obtuseliratus* Schepman, 1911: 338, pl. 21, fig. 1, pl. 24, fig. 5.

MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn CP 1331, 17°22'S, 179°28'W, 1216-1226 m, 1 lv, 5 dd (Fig. 5G); stn DW 17°02'S, 178°02'E, 694-703 m, 1 dd juv; stn CP 1361, 18°00'S, 1494, 18°55'S, 178°29'W, 240-319 m, 1 dd juv. 178°54'E, 1058-1091 m, 11 lv, 12 dd. – BORDAU 1: stn CP 1458,

DISTRIBUTION. – Indonesia (Flores, Savu, Banda and Arafura Sea), SE Australia, the Loyalty Islands, live in 240-1820 m, and Fiji (new record), live in 1091-1216 m.

REMARKS. – *Trophon obtuseliratus* was transferred to *Pagodula*, together with other species, by Houart (2001), based on the strong similarity of its shell morphology to that of the type species, *P. echinata* (Kiener, 1835) (Houart & Sellanes 2006).

***Pagodula plicilaminata*** (Verco, 1909)

Fig. 5H

*Trophon plicilaminatus* Verco, 1909: 335, pl. 24, figs 1-2.

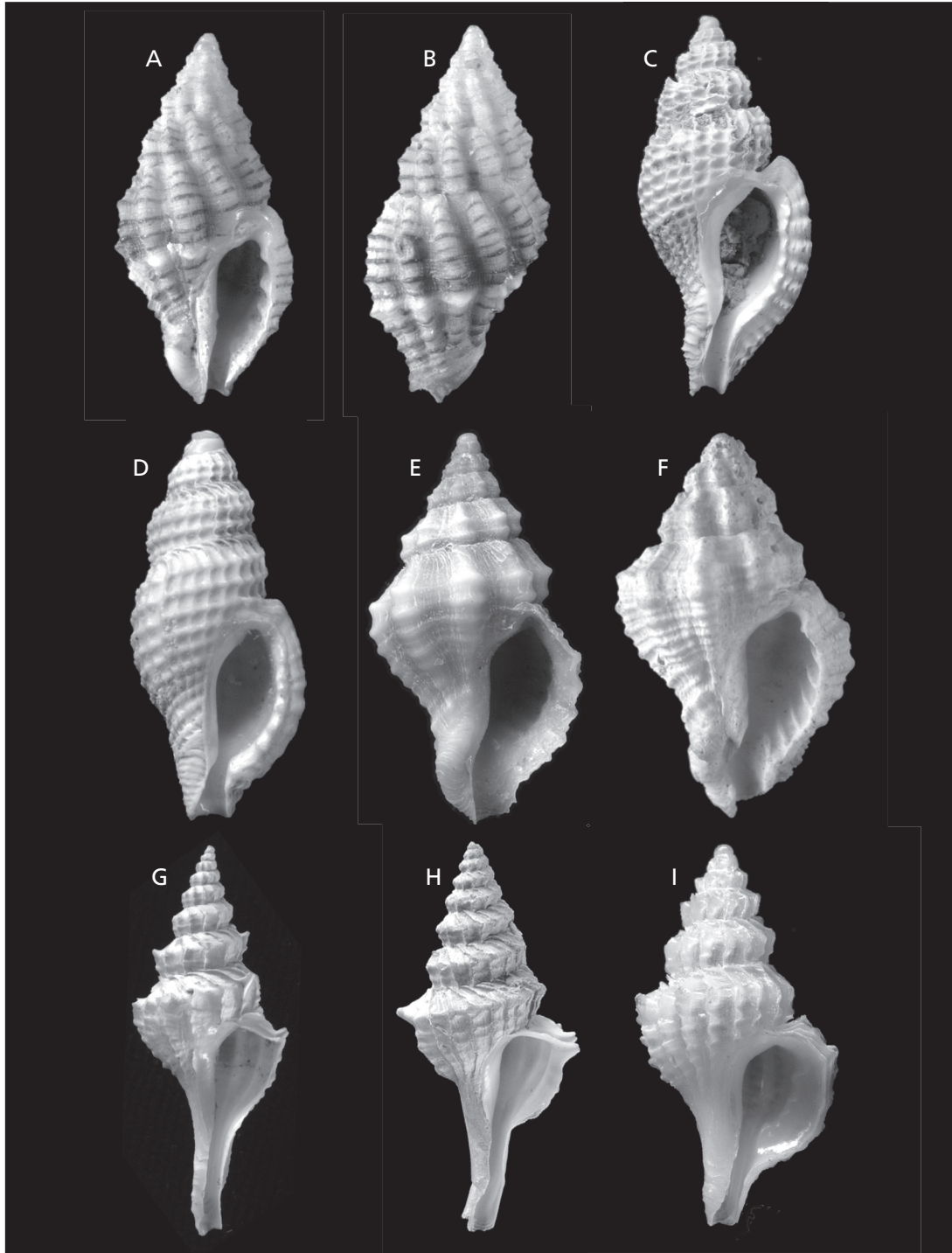
MATERIAL EXAMINED. – **Fiji**. MUSORSTOM 10: stn DW 1314, 17°16'S, 178°15'E, 656-660 m, 7 dd; stn CP 1330, 17°10'S, 177°56'E, 567-699 m, 5 dd; stn CP 1331, 17°02'E, 178°02'E, 694-703 m, 2 dd; stn CP 1332, 16°56'S, 178°08'E, 640-687 m, 4 dd; stn CC 1336, 16°58'S, 177°58'S, 797-799 m, 3 lv (Fig. 5H), 10 dd; stn CC 1337, 17°03'S, 177°47'E, 635-670 m, 2 dd; stn DW 1345, 17°15'S, 178°30'E, 660-663 m, 6 dd; stn CP 1353, 17°31'S, 178°53'E, 879-897 m, 6 lv, 22 dd; stn CP 1354, 17°43'S, 178°55'E, 959-963 m, 4 dd.

DISTRIBUTION. – Indonesia (Kai Islands), South Australia, the Coral Sea, southern New Caledonia and Fiji (new record), live in 799-879 m.

REMARKS. – Very young specimens of *Pagodula obtuselirata* and *P. plicilaminata* are difficult to separate because they have a similar protoconch and nearly identical morphology of the first and second teleoconch whorls. Therefore a misidentification is always possible in juveniles. Adult specimens of *P. plicilaminata* are comparatively smaller than *P. obtuselirata* with more numerous axial lamellae on the last teleoconch whorl and a shorter siphonal canal. *Pagodula plicilaminata* was transferred to *Pagodula*, together with *P. obtuselirata* and other species, by Houart (2001).

Genus **TROPHONOPSIS** Bucquoy & Dautzenberg, 1882





**FIG. 5.** **A, B**, *Cytharomorula vexillum* Kuroda, 1953, Tonga, BORDAU 2 DW 1512, h 12.9 mm. **C**, *Daphnellopsis fimbriatus* (Hinds, 1843), Fiji, MUSORSTOM 10 DW 1384, h 10 mm. **D**, *Daphnellopsis lamellosus* Schepman, 1913, Fiji, MUSORSTOM 10 CP 1363, h 4.9 mm. **E**, *Orania adiaistos* Houart, 1995, Fiji, SUVA 2 BS 43, h 8.7 mm. **F**, *Orania fischeriana* (Tapparone Canefri, 1882), Fiji, SUVA 2 BS 82, h 7.5 mm. **G**, *Pagodula obtuselirata* (Schepman, 1911), Fiji, BORDAU 1 CP 1458, h 33.1 mm. **H**, *Pagodula plicilaminata* (Verco, 1909), Fiji, MUSORSTOM 10 CC 1336, h 21.8 mm. **I**, *Trophonopsis polycyma* Kuroda, 1953, Fiji, BORDAU 1 DW 1486, h 9.2 mm.



***Trophonopsis polycyma*** Kuroda, 1953

Fig. 51

*Trophonopsis polycyma* Kuroda, 1953: 187, fig. 1.

MATERIAL EXAMINED. – Fiji. BORDAU 1: stn DW 1486, 19°01'S, 178°26'W, 395-540 m, 2 lv (Fig. 51), 20 dd; stn DW 1488, 19°01'S, 178°25'W, 500-516 m, 53 dd.

DISTRIBUTION. – Japan: Sagami Bay, the sea of Enshu-nada, Kii Peninsula (Tsuchiya 2000); Fiji (new record), live in 395-540 m.

REMARKS. – *Trophonopsis polycyma* was recorded previously by Houart (1985: 246) from Mayotte and Madagascar in the southwestern Indian Ocean. However, we have now found that there are a small number of consistent differences between the Fijian and Indian Ocean specimens, which has led to a reexamination of the entire material, and it is concluded that the Indian Ocean specimens represent a distinct, unnamed species with more numerous axial lamellae, a more globose last teleoconch whorl and more obvious spiral sculpture. *Trophonopsis polycyma* was not previously recorded from the Fiji archipelago.

**Genus *CONCHATALOS*** Houart, 1995***Conchatalos spinula*** n. sp.

Figs 6A-E

TYPE MATERIAL. – Holotype (dd) MNHN 20009 and 5 (1 lv, 4 dd) paratypes MNHN 20011, 1 (dd) NMNZ, 1 (dd) RH.

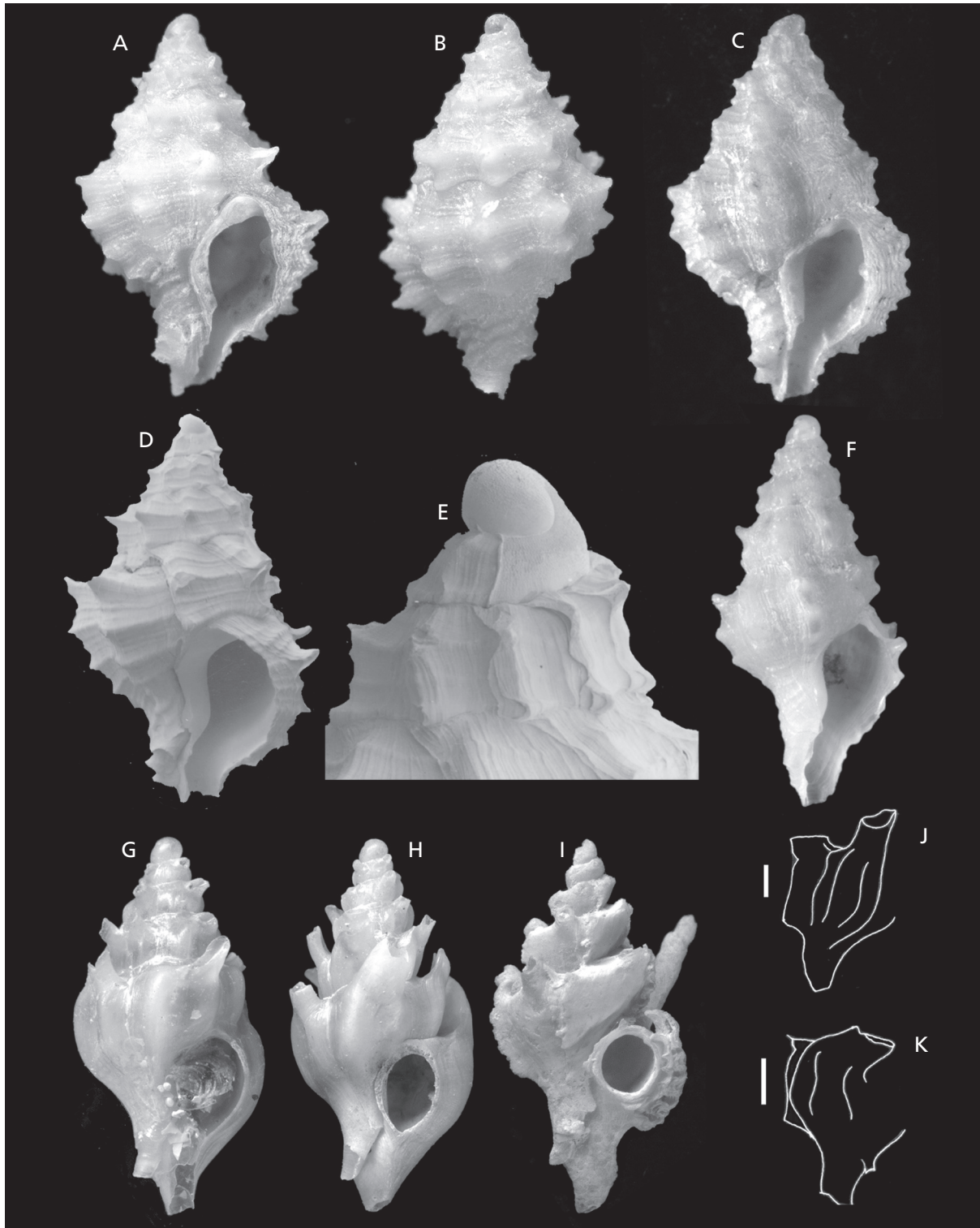
TYPE LOCALITY. – Fiji, 19°40'S, 178°10'W, 314-377 m [BORDAU 1: stn DW 1469].

MATERIAL EXAMINED. – Only known from the type material.

DESCRIPTION. – Shell medium-sized for the genus, up to 6.6 mm in height at maturity (Fig. 6C), biconical, heavy, weakly spinose. Spire tall with 1¼ protoconch whorls and up to 4¼ broad, angulate teleoconch whorls. Suture adpressed. Protoconch large, broad, whorls rounded, smooth. Terminal lip thin, almost straight.

Teleoconch axial sculpture consisting of high, broad, spinose or nodose ribs. Other axial sculpture of numerous growth lamellae. First whorl with 8 ribs, second with 9 or 10, third and last with 8. Spiral sculpture moderately high, consisting of primary, secondary and tertiary cords as follows: first whorl with P1 and P2 visible, s1 starting; second with IP, P1, s1, P2; third with adis, IP, abis, P1, s1, P2 and t1b starting; fourth with adis, IP, abis, P1, t1d, s1, t1b, P2, t2d, s2, t2b, P3, t3d, s3, P4, t4d, S4, t4b, P5, ADP, MP. Occasional additional threads between adis and P1. P5 narrower. Small knobs and/or open spinelets present at intersection of primary cords and axial ribs.

**FIG. 6. A, B**, *Conchatalos spinula* n. sp., Fiji, BORDAU 1 DW 1469, holotype MNHN 20009, h 6.7 mm; **C**, paratype MNHN 20011, h 6.6 mm; **D**, SEM, paratype MNHN 20011, h 5.9 mm; **E**, protoconch, 0.7 mm. **F**, *Leptotrophon* sp., Tonga, BORDAU 2 DW1 538, h 6.8 mm. **G**, *Siphonochelus boucheti* Houart, 1991, Fiji, MUSORSTOM 10 CP 1360, h 5.9 mm. **H**, *Siphonochelus japonicus* (A. Adams, 1863), Tonga, BORDAU 2 DW 1615, h 7.9 mm. **I**, *Monstrotrophis montforti* (A. Adams, 1863), Fiji, BORDAU 1 DW 1465, h 8 mm. **J**, *Siphonochelus boucheti* Houart, 1991, profile of the aperture and the last varix. Scale bar: 1 mm. **K**, *Siphonochelus japonicus* (A. Adams, 1863), profile of the aperture and the last varix. Scale bar: 1 mm.



Aperture small, almost round. Columellar lip narrow, flaring, rim partially erect, adherent at adapical extremity, with 3 knobs abapically and with parietal rib adapically in a few specimens. Anal notch broad, deep. Outer lip weakly erect, with 4 strong denticles within. D3 occasionally absent. Siphonal canal short, broad, weakly bent dorsally, open. Shell fleshy white, with weakly darker protoconch and first teleoconch whorl on a few specimens. Operculum with apical nucleus.

REMARKS. — The genus *Conchatalos* currently includes four species: *C. lacrima* (Houart, 1991), *C. tirardi* (Houart, 1991), *C. canalibrevis* Houart, 1995 and *C. vaubani* Houart, 1995, all from off New Caledonia, in deep water. *Conchatalos spinula* differs from them all in being more nodose or spinose, in having more obvious spiral primary cords, and in having a narrower aperture with conspicuous denticles. Some characters, such as the occasional spinelets at the intersections of axial ribs and spiral cords and the narrow aperture, are more reminiscent of *Leptotrophon* Houart, 1995. However, the lower spire, the broader last teleoconch whorl, and the shorter siphonal canal suggest placement in *Conchatalos*. The radula of *Conchatalos* differs from that of *Leptotrophon* in having broader cusps and denticles, and a larger central cusp (Houart 1995b: figs 25-27). However, the radula of *C. spinula* is not yet known.

ETYMOLOGY. — *Spinula* (Latin): diminutive of *spina* (spine).

Genus **LEPTOTROPHON** Houart, 1995

*Leptotrophon* sp.

Fig. 6F

MATERIAL EXAMINED. — **Tonga**. BORDAU 2: stn DW 1538, 21°39'S, 175°19'W, 471-508 m, 1 lv, 1 dd.

REMARKS. — Of the two specimens collected off Tonga, one is badly damaged, dredged dead, with a large drill hole. The other is live-taken but juvenile. The species could not be determined.

Subfamily TYPHINAE Cossmann, 1903

Genus **SIPHONOCHELUS** Jousseume, 1880

*Siphonochelus boucheti* Houart, 1991

Figs 6G, J

*Siphonochelus boucheti* Houart, 1991b: 230, figs 5-6, 17-18, 47, 68.

MATERIAL EXAMINED. — **Fiji**. MUSORSTOM 10: stn CP 1360, 17°60'S, 178°48'E, 402-444 m, 1 lv (juv.).

DISTRIBUTION. — New Caledonia and Fiji (new record), live in 402-444 m.

REMARKS. — *Siphonochelus boucheti* differs from *S. japonicus* (which co-occurs with it in Fiji, see below) in having more shouldered whorls and a more globose, comparatively large protoconch. In *S. boucheti* the varices are strongly shouldered and the anal tubes are somewhat separated from the varices, while in *S. japonicus* the varices are rounded, more strongly curved backwards, and the anal tubes are flatter and broader and not separated from the varices.

***Siphonochelus japonicus*** (A. Adams, 1863)

Figs 6H, K

*Typhis japonicus* A. Adams, 1863: 374.

MATERIAL EXAMINED. – **Fiji.** MUSORSTOM 10: stn CP 1325, CP 1390, 18°19'S, 178°05'E, 234-361 m, 3 dd. – BORDAU 1: 17°16'S, 177°50'E, 282-322 m, 2 dd; stn DW 1376, 18°19'S, stn DW 1469, 19°40'S, 178°10'W, 314-377 m, 1 dd. 178°09'E, 497-504 m, 9 dd; stn DW 1377, 18°18'S, 178°02'E, **Tonga.** BORDAU 2: stn DW 1538, 21°39'S, 175°19'W, 471-508 m, 1 dd; stn DW 1607, 22°15'S, 175°23'W, 356-367 m, 1 lv; stn 233-248 m, 5 dd; stn DW 1384, 18°19'S, 178°06'E, 260-305 m, 12 dd; stn DW 1388, 18°19'S, 178°02'E, 313-446 m, 1 dd; stn DW 1615, 23°03'S, 175°53'W, 482-504 m, 2 dd (Fig. 6H).

DISTRIBUTION. – Southern Japan, the Philippines, Indonesia (Kai Islands), Queensland (AMS), Fiji and Tonga (new records), live in 356-367 m.

**Genus *MONSTROTYPHIS*** Habe, 1961

REMARKS. – A revised classification of the Recent species included in *Monstrotyphis* was provided by Houart (2002).

***Monstrotyphis montforti*** (A. Adams, 1863)

Fig. 6I

*Typhis montforti* A. Adams, 1863: 374.

MATERIAL EXAMINED. – **Fiji.** BORDAU 1: stn DW 1465, 18°09'S, 178°39'W, 290-300 m, 1 dd (Fig. 6I). – MUSORSTOM 10: stn stn CP 1363, 18°12'S, 178°33'E, 144-150 m, 3 dd; stn DW 1384, 18°19'S, 178°06'E, 260-305 m, 1 dd.

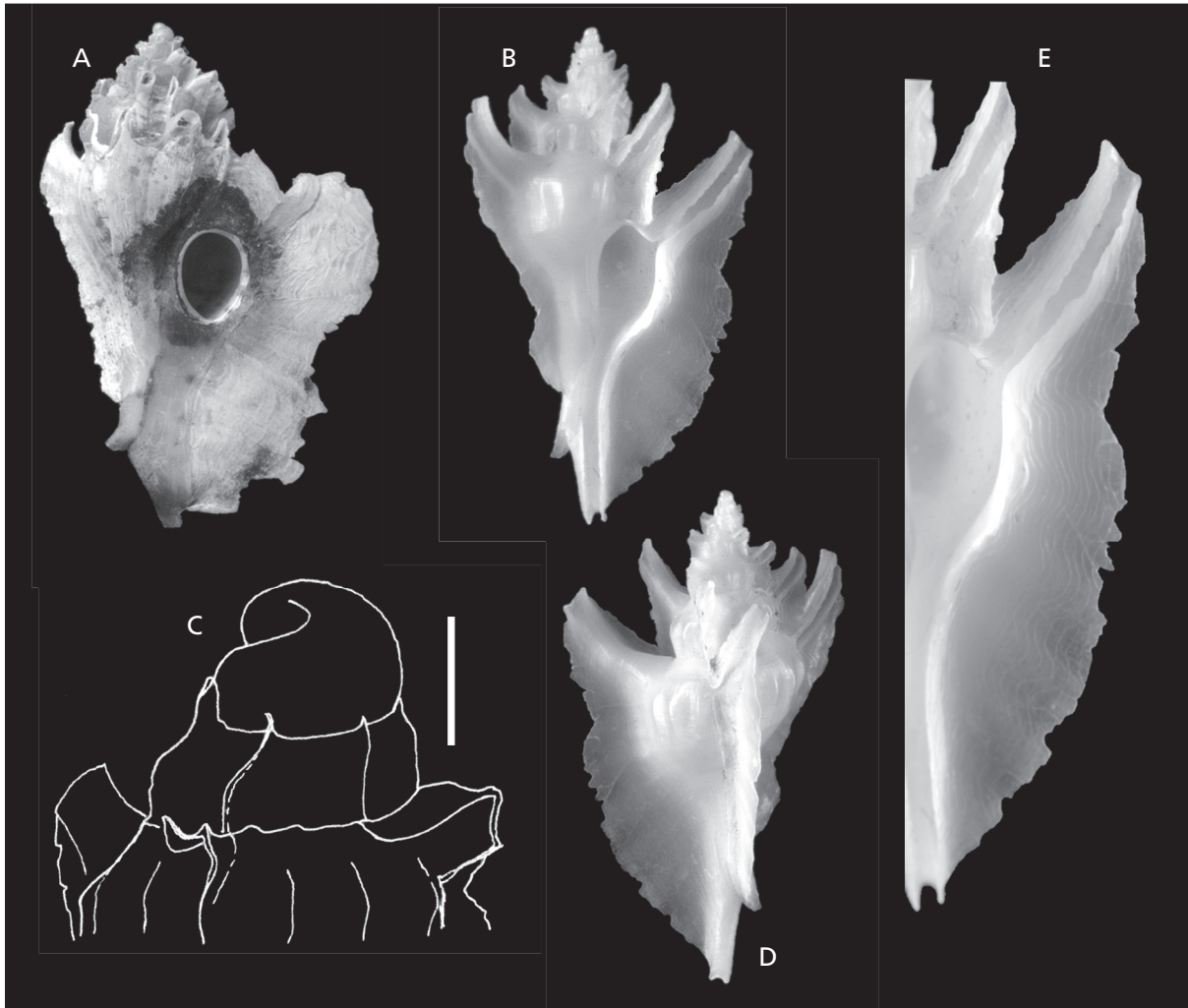
DISTRIBUTION. – Southern Japan (in 50-200 m; Tsuchiya 2000) and Fiji (new record), depth of living specimens unknown, shells in 150-290 m.

REMARKS. – *Monstrotyphis imperialis* Keen & Campbell, 1964 has been dredged off New Caledonia, but to date, no specimens of the similar *M. montforti* have been recorded from that region. *Monstrotyphis montforti* differs from *M. imperialis* in having anal tubes forming an angle of 40-47° with the axis of the shell (rather than 70-85° in *M. imperialis*), and in having a smooth siphonal canal rather than an ornamented canal with a broad, fluted spine in *M. imperialis*.

**Genus *TYPHINELLUS*** Jousseaume, 1880***Typhinellus oclusus*** (Garrard, 1963)

Fig. 7A

*Typhis oclusus* Garrard, 1963: 46, pl. 7, figs 9-10.



**FIG. 7.** **A**, *Typhinellus oclusus* (Garrard, 1963), Fiji, MUSORSTOM 10 CP 1364, h 14.9 mm. **B, D**, *Prototyphis gracilis* n. sp., Fiji, BORDAU 1 CP 1394, holotype MNHN 20010, h 23.5 mm; **C**, protoconch. Scale bar 0.5 mm; **E**, adapertural side of wing.

**MATERIAL EXAMINED.** – Fiji. MUSORSTOM 10: stn CP 1364, 18°12'S, 178°35'E, 80-86 m, 1 lv.

**DISTRIBUTION.** – Philippines (Springsteen & Leobrera 1986: 131), Queensland (type locality), live in 31-200 m, and Fiji (new record), live in 80-86 m.

**REMARKS.** – The varices of *Typhinellus* are constricted above the aperture and flaring at the abapical end; the varical flange of the last teleoconch whorl extends to almost the tip of siphonal canal; the anal tubes are situated near the preceding varix, addressed to the preceding partition. *Typhinellus oclusus* is easily distinguished by its narrow last teleoconch whorl, narrow aperture and very broad varical flange.



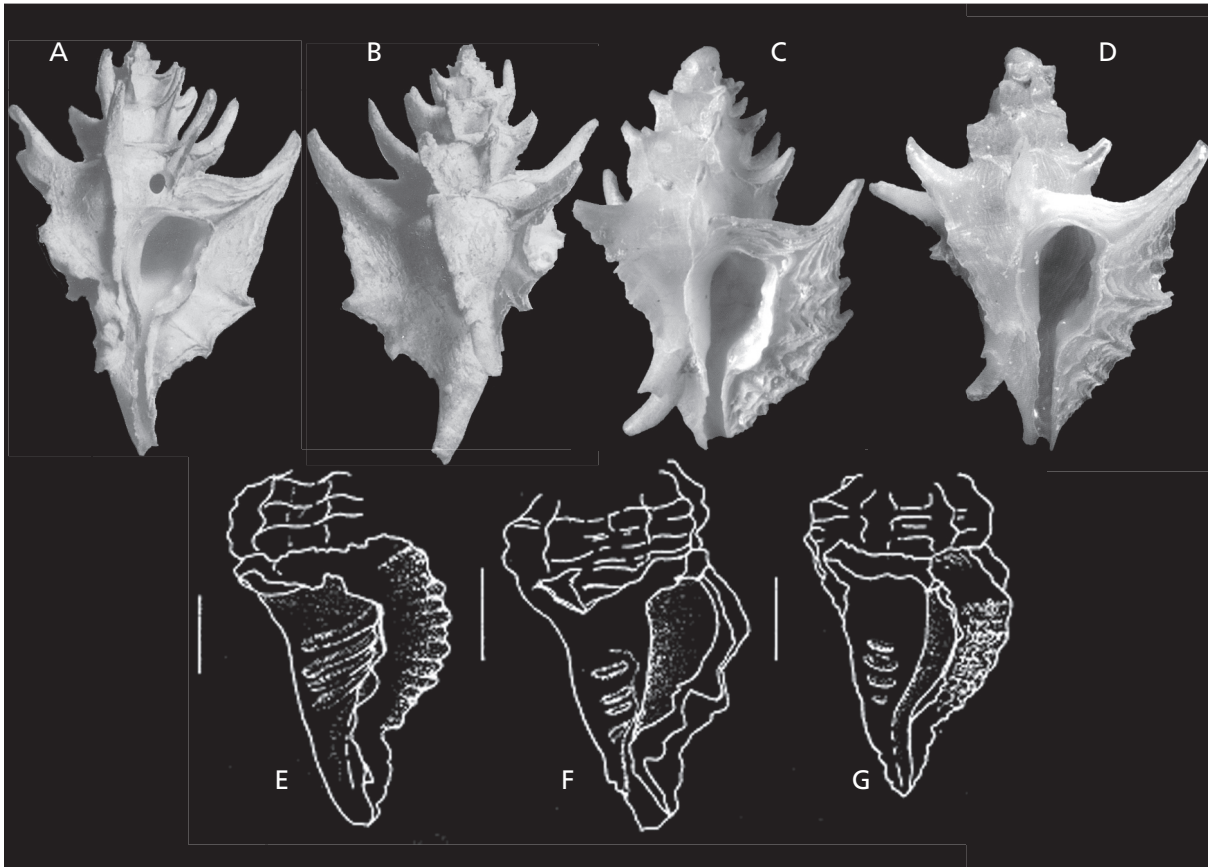
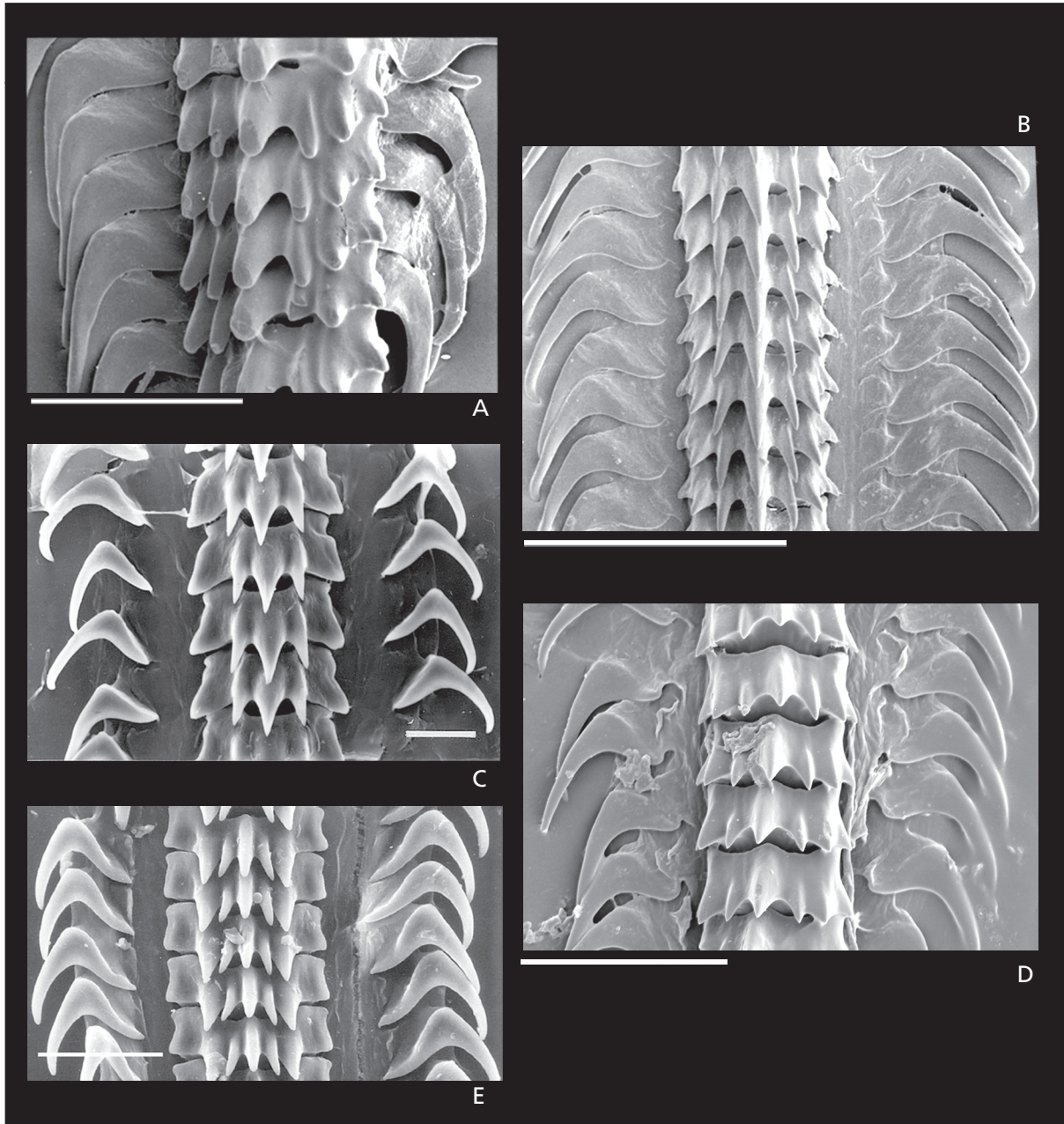


FIG. 8. A-B, *Pazinotus falcatiformis* (Thiele, 1925), North of Nias Island, 01°48'N, 97°6'E, 141 m, holotype ZMB, h 18 mm; C, Fiji, BORDAU 1 DW 1465, h 8.9 mm; D, Fiji, BORDAU 1 CP 1464, 7.3 mm. E-G, detail of the columellar lip from Houart (1995); E, *Orania fischeriana*, New Caledonia; F, *O. adiaestolos*, New Caledonia; G, *O. corallina*, South Africa. Scale bars: 2 mm.

Subfamily TRIPTEROTYPHINAE D'Attilio & Hertz, 1988

Genus *PROTOTYPHIS* Ponder, 1972

Tripterotyphinae was established by D'Attilio & Hertz (1988) to include a few genera with a trivacate shell, a muricopsine radula, and sealed or open spine-like tubes. This subfamily includes *Pterotyphis* Jousseau, 1880, *Tripterotyphis* Pilsbry & Lowe, 1932, *Prototyphis* Ponder, 1972, *Ponderia* Houart, 1986 and perhaps *Semityphis* Martin, 1931. The species included in Tripterotyphinae superficially resemble Typhinae in having sealed or, in a few species, open tube-like spines. However, species of Typhinae have 4 or more varices and a highly varied and different radular morphology. The species of *Prototyphis* are somewhat atypical of Tripterotyphinae, as this is the only genus in which the aperture opens into an open (not sealed) channel in the shoulder spine, somewhat like that of *Pterochelus*. However, in *Prototyphis* the channel remains open into the aperture while the channel is sealed off by the apertural lip in mature specimens of *Pterochelus* (D'Attilio & Myers 1983). Moreover, the radula of *Prototyphis angasi* is muricopsine, having a short, prominent central cusp (Ponder 1972: text fig. 2, figs 16-16b; D'Attilio 1982: fig. 12).



**FIG. 9.** Radulae. **A**, *Pazinotus falcatifformis* (Thiele, 1925), Fiji, BORDAU 1 DW 1465; **B**, Fiji, BORDAU 1 CP 1464. Scale bar: 35 µm. **C**, *Bouchetia vaubanensis* (Houart, 1986), New Caledonia, BIOCAL stn DW 44. Scale bar: 10 µm. **D**, *Pazinotus stimpsoni* (Dall, 1889), off the Virgin Islands, SMNH-71734. Scale bar: 30 µm. **E**, *Poirieria (Paziella) pazi*, courtesy M.G. Harasewych (USNM). Scale bar: 40 µm.



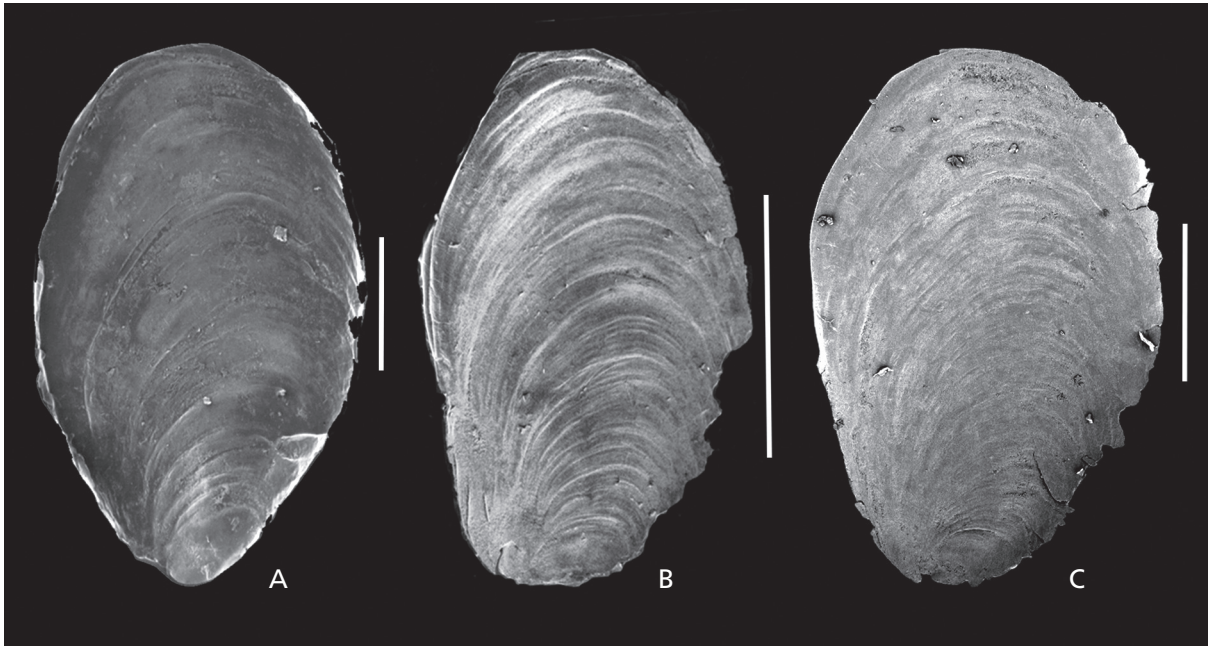


FIG. 10. Operculum. **A**, *Pazinotus stimpsonii*. Scale bar: 0.6 mm. **B**, *Pazinotus falcatifformis*. Scale bar: 1 mm. **C**, *Bouchetia vaubanensis*. Scale bar: 0.5 mm.

Currently we consider that the following species belong to *Prototyphis*:

- P. allani* Maxwell, 1971 (Lower Miocene, New Zealand)
- P. angasi* Crosse, 1863 (Recent, southern Australia)
- P. awamoanus* Finlay, 1930 (Miocene, New Zealand)
- P. eos* Hutton, 1873 (Recent, New Zealand)
- P. gracilis* n. sp. (Fiji, described below)
- P. tahuensis* Maxwell, 1971 (Upper Eocene, New Zealand)

***Prototyphis gracilis*** n. sp.

Figs 7B-E

TYPE MATERIAL. – Holotype (dd) MNHN 20010.

TYPE LOCALITY. – **Fiji**, Somosomo Strait, 16°45'S, 179°59'E, 416 m [BORDAU 1: stn CP 1394].

MATERIAL EXAMINED. – Only known from the holotype.

DESCRIPTION. — Shell large for genus, holotype 23.5 mm in length, triangular, smooth, lightly built. Spire high with  $1\frac{3}{4}$  protoconch whorls and 6 convex, narrow teleoconch whorls. Suture impressed. Protoconch bulbous, whorls rounded, smooth, glossy; terminal lip curved, eroded.

Teleoconch axial sculpture consisting of narrow, lamellar varices. First whorl with 4 lamellae, second to last whorls with 3 narrow, wing-like varices with fairly long, open spine-like tube on shoulder. Wings narrow, fragile, with wavy growth lines on adapertural surface. Intervarical sculpture consisting of 3 narrow, rounded, low axial ridges from first to last teleoconch whorls. Other axial sculpture of growth striae. Primary and secondary spiral sculpture indistinct on early whorls; partly visible on last whorl and on abapertural side of varical wings of last whorl but still very shallow and indistinct. Other spiral sculpture consisting of numerous, narrow lirae, variable in strength.

Aperture entirely smooth within, narrow, ovate, opening into open channel in shoulder spine. Columellar lip narrow, smooth. Inner lip adherent but broken in holotype. Outer lip erect, smooth. Siphonal canal long, strongly dorsally bent at tip, open.

Shell pale fleshy-brown with faint, darker bands on abapical part of varical wings of last whorl.

REMARKS. — *Prototyphis gracilis* differs from the Australian species *P. angasi* in having a smoother and larger shell, although with one fewer teleoconch whorl. The protoconch is rounded rather than keeled or strongly keeled in *P. angasi*. The teleoconch whorls are less strongly shouldered, almost rounded with smoother intervarical ridges. *Prototyphis gracilis* has 3 intervarical axial ridges from first to last teleoconch whorls, while *P. angasi* has 3 ridges on the penultimate and last whorls but the early whorls have only 2 strong ridges. The spine-like tubes in *P. gracilis* are broader and less upwardly bent and the siphonal canal is almost twice as long as in *P. angasi*.

*Prototyphis gracilis* differs from *P. eos* in having rounded rather than strongly shouldered whorls, lower and smoother axial ridges, a rounded protoconch, a longer siphonal canal, a more weakly ornamented adapertural surface of the varical wings, reduced spiral sculpture, and a smooth rather than strongly denticulate outer apertural lip.

*Prototyphis gracilis* resembles *Murex extrinodosus* Sacco, 1904 [= *Murex trinodosus* Tate, 1888 non Bellardi, 1872]. Tate (1888: 97) compared *M. trinodosus* with *P. angasi*; however, in the original description of the aperture, Tate described the peristome of *M. trinodosus* as “continuous”. Therefore we think that this Australian Pliocene species would be better placed in *Ponderia*.

ETYMOLOGY. — *Gracilis* (Latin): slender, thin.

#### ACKNOWLEDGEMENTS

We are most grateful to the late R. Kilius (Museum für Naturkunde, Berlin, Germany) for the loan of the holotype of *Pazinotus falcatifformis* (Thiele, 1925); to the late R. S. Houbrick (National Museum of Natural History, Smithsonian Institution, Washington D.C., USA), for the loan of the paralectotype of *Murex hystericinus* Dall, 1889; to M.G. Harasewych (National Museum of Natural History, Smithsonian Institution, Washington D.C., USA) for the photograph of the radula of *Paziella pazi* (Crosse, 1869); to A. Warén (Natural History Museum, Stockholm, Sweden) for preparation and SEM photographs of the radulae and shells; to P. Maestrati and D. Brabant (Muséum national d’Histoire naturelle, Paris) for the digital photographs and for mounting the plates, and to A. Beu (Institute of Geological & Nuclear Sciences, Lower Hutt, New Zealand) and R. H. Cowie (University of Hawaii, USA) for useful comments on the manuscript.

TABLE 2. — Muricidae from Fiji.

SUBFAMILY	SPECIES	REFERENCE
MURICINAE	<i>Poirieria fragilis</i> Houart, 1996	Present paper.
	<i>Poirieria tenuis</i> Houart, 2001	Present paper.
	<i>Aspella media</i> Houart, 1987	Present paper.
	<i>Attiliosa caledonica</i> (Jousseau, 1881)	Present paper.
	<i>Attiliosa nodulifera</i> (Sowerby, 1841)	Cernohorsky 1967: 125, pl. 15, fig. 17; "North and South of Viti Levu"; and present paper.
	<i>Bouchetia vaubanensis</i> (Houart, 1986)	Present paper.
	<i>Chicomurex laciniatus</i> (Sowerby, 1841)	Cernohorsky 1967: 119, pl. 14, fig. 9-9b; "Mamanuca group, West of Viti Levu".
	<i>Chicomurex superbus</i> (Sowerby, 1889)	Present paper.
	<i>Chicomurex turschi</i> Houart, 1981	Present paper.
	<i>Chicoreus</i> ( <i>Chicoreus</i> ) <i>ramosus</i> (Linné, 1758)	Cernohorsky 1967: 120, pl. 14, fig. 11, text fig. 5; "throughout the Fiji Islands".
	<i>Chicoreus</i> ( <i>Siratus</i> ) <i>pliciferoides</i> Kuroda, 1942	Present paper.
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>boucheti</i> Houart, 1983	Present paper.
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>brunneus</i> (Link, 1807)	Cernohorsky 1967: 117, pl. 41, fig. 6, text fig. 2; "throughout the Fiji Islands"; and present paper.
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>microphyllus</i> (Lamarck, 1822)	Cernohorsky 1967: 120, pl. 14, fig. 10, text fig. 4; "North Viti Levu" and present paper, SUVA 4: stn DW 09.
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>nobilis</i> Shikama, 1977	Cernohorsky 1967: 117, pl. 14, fig. 5, text fig. 1 as <i>M. aculeatus</i> Lamarck, 1822; "Mamanuca group, Fiji Islands"; and present paper.
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>rossiteri</i> Shikama, 1977	Present paper.
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>saulii</i> (Sowerby, 1841)	Cernohorsky 1967: 122, pl. 15, fig. 12; "South Viti Levu".
	<i>Chicoreus</i> ( <i>Triplex</i> ) <i>torrefactus</i> (Sowerby, 1841)	Cernohorsky 1967: 119, pl. 14, fig. 8 as <i>C. carneolus</i> (Röding, 1798); "throughout the Fiji Islands" and present paper, SUVA 2: stn CP 84.
	<i>Chicoreus</i> ( <i>Rhizophorimurex</i> ) <i>capucinus</i> (Röding, 1798)	Cernohorsky 1967: 118, pl. 14, fig. 7; "North Viti Levu".
	<i>Chicoreus</i> ( <i>Chicopinatus</i> ) <i>orchidiflorus</i> (Shikama, 1973)	Present paper.
	<i>Haustellum haustellum</i> (Linné, 1758)	Cernohorsky 1967: 116, pl. 14, fig. 3; "North and South Viti Levu and Yasawa group".
	<i>Homalocantha anatomica</i> (Perry, 1811)	Cernohorsky 1967: 128, pl. 15, fig. 16, text fig. 9; "throughout the Fiji Islands".
	<i>Murex aduncospinosus</i> Sowerby, 1841	Cernohorsky 1967: 115 (in part), pl. 14, fig. 1 as <i>M. trapa</i> Röding, 1798; "Southeast Viti Levu"; and present paper.
	<i>Murex tenuirostrum</i> (Lamarck, 1822)	Cernohorsky 1967: 115 (in part), pl. 14, fig. 2 as <i>Murex tribulus</i> Linné, 1758; "throughout the Fiji Islands"; and present paper.
	<i>Murex troscheli</i> (Lischke, 1868)	Present paper.
	<i>Naquetia cumingii</i> (A. Adams, 1853)	Cernohorsky 1967: 124 (in part), pl. 15, fig. 15, text fig. 6 as <i>P. (N) triqueter</i> (Born, 1778) (not <i>Murex triqueter</i> Born, 1778); "throughout the Fiji Islands"; and present paper.
	<i>Pteryarmachia triptera</i> (Born, 1778)	Cernohorsky 1967: 124, fig. 14; "West Viti Levu".

	<i>Pterynotus elongatus</i> (Lightfoot, 1786)	Cernohorsky 1967: 123, pl. 15, fig. 13; “throughout the Fiji Islands”.
	<i>Pterynotus miyokoeae</i> Kosuge, 1979	Present paper.
	<i>Pterynotus</i> sp. cf. <i>richeri</i> Houart, 1986	Present paper.
	<i>Vokesimurex dentifer coriolis</i> Houart, 1990	Present paper.
	<i>Vokesimurex dolichourus</i> (Ponder & Vokes, 1988)	Present paper.
	<i>Vokesimurex hirasei</i> (Hirase, 1915)	Present paper.
	<i>Vokesimurex kiiensis</i> (Kira, 1959)	Present paper.
	<i>Vokesimurex mindanaoensis</i> (Sowerby, 1841)	Present paper.
ERGalATAxINAE	<i>Cronia aurantiaca</i> (Hombron & Jacquinot, 1853)	Cernohorsky 1969: 311, pl. 49, fig. 24 (juvenile); “West Viti Levu”.
	<i>Cytharomorula danigoi</i> Houart, 1995	Present paper.
	<i>Cytharomorula paucimaculata</i> (Sowerby, 1903)	Present paper.
	<i>Daphnellopsis fimbriatus</i> (Hinds, 1843)	Present paper.
	<i>Daphnellopsis lamellosus</i> Schepman, 1913	Present paper.
	<i>Ergalatax contracta</i> (Reeve, 1846)	Present paper.
	<i>Ergalatax margaritcola</i> (Broderip, 1832)	Cernohorsky 1969: 312, pl. 49, fig. 26, text fig. 20; “throughout the Fiji Islands”.
	<i>Morula (Morula) anaxares</i> (Kiener, 1835)	Cernohorsky 1969: 307, pl. 48, figs 17-17a, text fig. 12; “throughout the Fiji Islands”.
	<i>Morula (Morula) echinata</i> (Reeve, 1846)	Cernohorsky 1969: 309, pl. 49, fig. 21 as <i>Ricinula parva</i> “throughout the Fiji Islands”.
	<i>Morula (Morula) granulata</i> (Duclos, 1832)	Cernohorsky 1969: 308, pl. 49, fig. 19, text figs 15, 16; “throughout the Fiji Islands”.
	<i>Morula (Morula) purpureocincta</i> (Preston, 1909)	Cernohorsky 1969: 309, pl. 49, fig. 20, text fig. 17 as <i>Morula nodicostata</i> (Pease, 1868); “throughout the Fiji Islands”.
	<i>Morula (Morula) uva</i> (Röding, 1798)	Cernohorsky 1969: 310, pl. 49, figs 23-23a, text fig. 18; “throughout the Fiji Islands”.
	<i>Morula (Habromorula) lepida</i> Houart, 1995	Cernohorsky 1969: 308, pl. 48, fig. 13 (only) as <i>Morula biconica</i> ; “throughout the Fiji Islands” (in part).
	<i>Morula (Habromorula) spinosa</i> (H. & A. Adams, 1853)	Cernohorsky 1969: 309, pl. 49, figs 22-22a; “throughout the Fiji Islands”; and present paper.
	<i>Morula (Habromorula) striata</i> (Pease, 1868)	Cernohorsky 1969: 308, pl. 48, fig. 18 (only) as <i>Morula biconica</i> Blainville, 1832; “throughout the Fiji Islands”.
	<i>Muricodrupa fiscella</i> (Gmelin, 1791)	Cernohorsky 1969: 311, pl. 49, fig. 24; “throughout the Fiji Islands”; and present paper.
	<i>Orania adiaestolos</i> Houart, 1995	Present paper.
	<i>Orania fischeriana</i> (Tapparone Canefri, 1882)	Present paper.
	<i>Orania pacifica</i> (Nakayama, 1988)	Present paper.
	<i>Orania</i> sp.	MUSORSTOM 10: stn DW 1356; needs further research.
	<i>Pascula ochrostoma</i> (Blainville, 1832)	Cernohorsky 1969: 312, pl. 49, fig. 27 as <i>Maculotriton egregius</i> (Reeve, 1844); “North Viti Levu”.
	<i>Phyllocoma convoluta</i> (Broderip, 1833)	Cernohorsky 1967: 127, pl. 14, fig. 4; “South Viti Levu and Mamanuca group, West off Viti Levu”.
	<i>Spindrupa euracantha</i> (A. Adams, 1853)	Present paper.

MURICOPSINAE	<i>Murexsul charcoti</i> (Houart, 1991)	Present paper.
	<i>Murexsul merlei</i> n. sp.	Present paper.
	<i>Pygmaepterys cracentis</i> Houart, 1996	Present paper.
	<i>Pygmaepterys</i> sp.	MUSORSTOM 10: stn DW 1359; needs further research
	<i>Pazinotus falcatifformis</i> (Thiele, 1925)	Present paper.
	<i>Pazinotus</i> sp.	BORDAU 1: stn DW 1469; needs further research.
	<i>Favartia brevicula</i> (Sowerby, 1834)	Cernohorsky 1967: 126, pl. 15, fig. 19, text fig. 19 as <i>Favartia tetragona</i> (Broderip, 1833): 126, pl. 15, fig. 20 (not <i>Murex tetragonus</i> Broderip); "throughout the Fiji Islands".
	<i>Favartia conleyi</i> Houart, 1999	Present paper.
	<i>Favartia maculata</i> (Reeve, 1845)	Present paper.
	<i>Favartia</i> sp.	Present paper.
	<i>Vitularia miliaris</i> (Gmelin, 1791)	Cernohorsky 1967: 128, pl. 15, fig. 18, text fig. 10; "throughout the Fiji Islands".
	TROPIONINAE	<i>Trophonopsis polycyma</i> Kuroda, 1953
<i>Pagodula obtuselirata</i> (Schepman, 1911)		Present paper.
<i>Pagodula plicilaminata</i> (Verco, 1909)		Present paper.
<i>Conchatalos spinula</i> n. sp.		Present paper.
RAPANINAE	<i>Drupa (Drupa) morum</i> Röding, 1798	Cernohorsky 1969: 298, pl. 47, fig. 7, text fig. 4; "throughout the Fiji Islands".
	<i>Drupa (Drupa) ricinus</i> (Linné, 1758)	Cernohorsky 1969: 299, pl. 47, figs 8, 8a, text figs 5-6; "throughout the Fiji Islands".
	<i>Drupa (Drupina) grossularia</i> Röding, 1798	Cernohorsky 1969: 303, pl. 48, fig. 11, text fig. 7; "throughout the Fiji Islands".
	<i>Drupa (Ricinella) clathrata</i> (Lamarck, 1816)	Cernohorsky 1969: 298, pl. 47, fig. 6; "throughout the Fiji Islands".
	<i>Drupa (Ricinella) rubusidaeus</i> Röding, 1798	Cernohorsky 1969: 301, pl. 47, figs 10-10a; "throughout the Fiji Islands".
	<i>Drupella cornus</i> (Röding, 1798)	Cernohorsky 1969: 304 (in part), fig. 12 (only); "throughout the Fiji Islands".
	<i>Drupella fragum</i> (Blainville, 1832)	Cernohorsky 1969: 304 (in part), figs 12a-12b as <i>D. cornus</i> and Cernohorsky 1969: 305 (in part), pl. 48, figs 14-14a as <i>D. ochrostoma</i> ; "throughout the Fiji Islands".
	<i>Drupella minuta</i> Fujioka, 1984	Cernohorsky 1969: 306, pl. 48, figs 16-16a, 16b, text fig. 11 as <i>Drupella</i> c.f. <i>D. angulata</i> (Reeve, 1844); "throughout the Fiji Islands".
	<i>Drupella rugosa</i> (Born, 1778)	Cernohorsky 1969: 306, pl. 48, figs 15-15a; text fig. 10; "throughout the Fiji Islands"; and present paper.
	<i>Mancinella alouines</i> (Röding, 1798)	Cernohorsky 1969: 296, pl. 47, fig. 4, text fig. 1 as <i>Mancinella mancinella</i> Linné, 1758); "throughout the Fiji Islands".
	<i>Nassa sarta</i> (Bruguière, 1789)	Cernohorsky 1969: 313, pl. 49, fig. 29, text fig. 21; "throughout Viti Levu".
	<i>Reshia armigera</i> (Link, 1807)	Cernohorsky 1969: 295, pl. 47, fig. 2, as <i>Thais armigera</i> (Link, 1807); "throughout the Fiji Islands".
	<i>Thais intermedia</i> (Kiener, 1835)	Cernohorsky 1969: 296, pl. 47, fig. 3; "throughout the Fiji Islands".

	<i>Thais squamosa</i> (Pease, 1868)	Cernohorsky 1969: 298, pl. 47, fig. 9, text fig. 3 as <i>Drupa marginatra</i> (Blainville, 1832); “throughout the Fiji Islands”.
	<i>Thais tuberosa</i> (Röding, 1798)	Cernohorsky 1969: 297, pl. 47, fig. 5, text fig. 2 as <i>Mancinella tuberosa</i> (Röding, 1798); “throughout the Fiji Islands”.
	<i>Thais virgatus</i> (Dillwyn, 1817)	Cernohorsky 1969: 295, pl. 47, fig. 1 as <i>Thais aculeata</i> (Deshayes & Milne Edwards, 1844); “throughout the Fiji Islands”.
	<i>Vexilla vexillum</i> (Gmelin, 1791)	Cernohorsky 1969: 313, pl. 49, fig. 28; “South Vitu Levu”.
TRIPTEROTYPHINAE	<i>Prototyphis gracilis</i> n. sp.	Present paper.
TYPHINAE	<i>Monstrotyphis montforti</i> (A. Adams, 1863)	Present paper.
	<i>Siphonochelus boucheti</i> Houart, 1991	Present paper.
	<i>Siphonochelus japonicus</i> (A. Adams, 1863)	Present paper.
	<i>Typhinellus oclusus</i> (Garrard, 1963)	Present paper.

**TABLE 3.** — Muricidae from Tonga (all from the BORDAU 2 expedition) (bold: also reported from Fiji).

SUBFAMILY	SPECIES
MURICINAE	<b><i>Poirieria fragilis</i> Houart, 1996</b>
	<b><i>Chicomurex turschi</i> Houart, 1981</b>
	<b><i>Chicoreus (Siratus) pliciferoides</i> Kuroda, 1942</b>
	<b><i>Chicoreus (Triplex) boucheti</i> Houart, 1983</b>
	<i>Chicoreus (Triplex) ryukyuensis</i> Shikama, 1978
	<b><i>Murex tenuirostrum</i> (Lamarck, 1822)</b>
	<i>Phyllocoma convoluta</i> (Broderip, 1833)
	<i>Pterynotus levii</i> Houart, 1988
	<i>Pterynotus marshalli</i> Houart, 1989
	<b><i>Pterynotus</i> sp. cf. <i>richeri</i> Houart, 1986</b>
	<b><i>Vokesimurex hirasei</i> (Hirase, 1915)</b>
	<i>Vokesimurex</i> sp. cf. <i>hirasei</i> (Hirase, 1915)
ERGalATAXINAE	<b><i>Cytharomorula danigoi</i> (Houart, 1995)</b>
	<i>Cytharomorula grayi</i> (Dall, 1889)
	<i>Cytharomorula pinguis</i> Houart, 1995
	<i>Cytharomorula vexillum</i> Kuroda, 1953
	<b><i>Orania adiaستolos</i> Houart, 1995</b>
	<b><i>Orania pacifica</i> (Nakayama, 1988)</b>
MURICOPSINAE	<i>Favartia maculata</i> (Reeve, 1845)
	<b><i>Murexsul charcoti</i> (Houart, 1991)</b>
	<b><i>Murexsul merlei</i> n. sp.</b>
	<b><i>Vitularia miliaris</i> (Gmelin, 1791)</b>
TROPHONINAE	<i>Leptotrophon</i> sp. cf. <i>richeri</i> Houart, 1995
TYPHINAE	<b><i>Siphonochelus japonicus</i> (A. Adams, 1863)</b>



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