New species and new records of Calliostomatidae (Gastropoda: Trochoidea) from New Caledonia and Solomon Islands

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ABSTRACT. New records of 16 known Calliostomatidae species from New Caledonia and Solomon Islands area are listed, extending the distribution area of some of them. Seven new species are described and compared with similar species: *Calliostoma (Calliostoma) cochlias* n. sp., *C. (Fantor) aprosceptnm* n. sp., *C. (F.) diaphoros* n. sp., *C. (Benthastelena) hexalyssion* n. sp., *C. (B.) malaita* n. sp., *C. (Ampullotrochus) tropis* n. sp., *C. (A.) aporia* n. sp. A list of the Calliostomatidae of the Indo-Pacific area is provided with their distribution.

RESUME. De nouveaux relevés de 16 espèces connues de Calliostomatidae provenant de Nouvelle-Calédonie et des îles Salomon sont listés, étendant ainsi l'aire de distribution d'un certain nombre d'entre elles. Sept nouvelles espèces sont décrites et comparées avec des espèces similaires : *Calliostoma (Calliostoma) cochlias* n. sp., *C. (Fantor) aprosceptnm* n. sp., *C. (F.) diaphoros* n. sp., *C. (Benthastelena) hexalyssion* n. sp., *C. (B.) malaita* n. sp., *C. (Ampullotrochus) tropis* n. sp., *C. (A.) aporia* n. sp. Une liste des Calliostomatidae d'Indo-Pacifique est fournie avec leur distribution.

INTRODUCTION

New Caledonia, and the adjacent Vanuatu and Fiji Islands, has reveal numerous new calliostomatid species since these 15 last years: Marshall (1995b) described not less than 27 new species (*Calliostoma*, *Thysanodonta*, *Laetifantor*, ...); Vilvens (2005) added 5 *Calliostoma* species to this large list (extending to Tonga Islands); finally Vilvens & Maestrati (2006) described 3 new *Thysanodonta* from this area.

All these descriptions were based on a large material coming from the French expeditions (Héros et al., 2007; Vilvens, 2007; Bouchet et al., 2008; Bouchet et al., 2009) conducted all around this area for the last thirty years by IRD (Institut de Recherche pour le Développement, Paris - ex-ORSTOM) and MNHN (Muséum national d'Histoire naturelle, Paris) : MUSORSTOM and BATHUS, BERYX, BIOCAL, BIOGEOCAL, BORDAU, CALSUB, CHALCAL, CORAIL, HALICAL, HALIPRO, LAGON, LIFOU, LITHIST, MONTROUZIER, NORFOLK, PALEO-SURPRISE, SMIB, VOLSMAR. However, the calliostomatids material brought by the most recent campaigns (NORFOLK 2, CONCALIS) was not yet studied.

Unlike New Caledonia, no regional study about calliostomatids (and even Trochoidea as far as I know) from the Solomon Islands has been published in the last years. The specific campaigns leaded again by MNHN and IRD (especially SALOMON 1 & 2, SALOMONBOA 3) were therefore welcome to fill this gap.

The present paper gives a synthetic report on the Calliostomatidae species collected during these most recent (cited above) expeditions involving MNHN scientists in New Caledonia and Solomon Islands areas. Besides new records for 24 known species, which sometimes extends their distribution and/or introduces some variability of shell characters, 7 new species are described here.

What also makes fundamental the papers of Marshall (1995a, 1995b) is his systematic work, after having created the subfamily Thysanodontinae (Marshall, 1988) : clarification of the numerous subgenera of the genus *Calliostoma* (while placing some of them in synonymy), description of new genera (*Bathyfantor*, *Dactylastele*, *Selastele*, *Fantrix*) and interpretation of *Maurea* as a subgenus of *Calliostoma*. This important works were used, among others, to build a provisional list of the Calliostomatidae of the Indo-Pacific area, with their respective distribution, that is provided as appendix at the end of this paper.

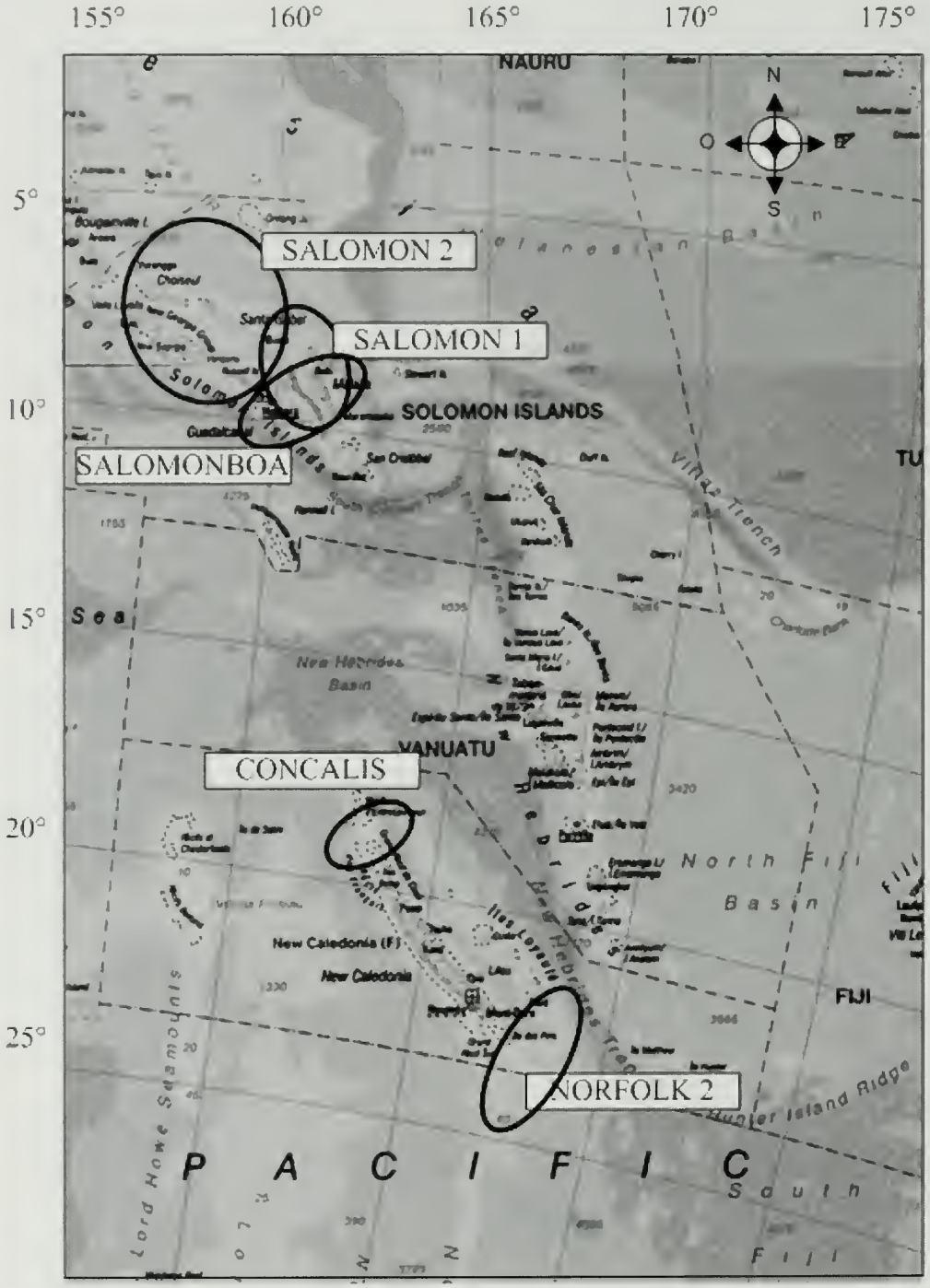
Material and methods

The material studied in the present paper was brought by 5 IRD-MNHN expeditions: NORFOLK 2, CONCALIS, SALOMON 1, SALOMON 2 and SALOMONBOA 3.

As the continuation of the NORFOLK 1 campaign (6/2001), the NORFOLK 2 campaign (10-11/2003) took place around Norfolk Ridge and was mainly dedicated to the study of speciation and endemism phenomena on the seamounts. The CONCALIS cruise

(4-5/2008) took place in the Grand-Passage and Surprises Islands north off New Caledonia's main Island and first focused on deep-water cones for their venom glands. But, among other interesting biological material, it also provided an additional valuable malacological material, among which some Trochoidea (and especially Calliostomatidae) were found.

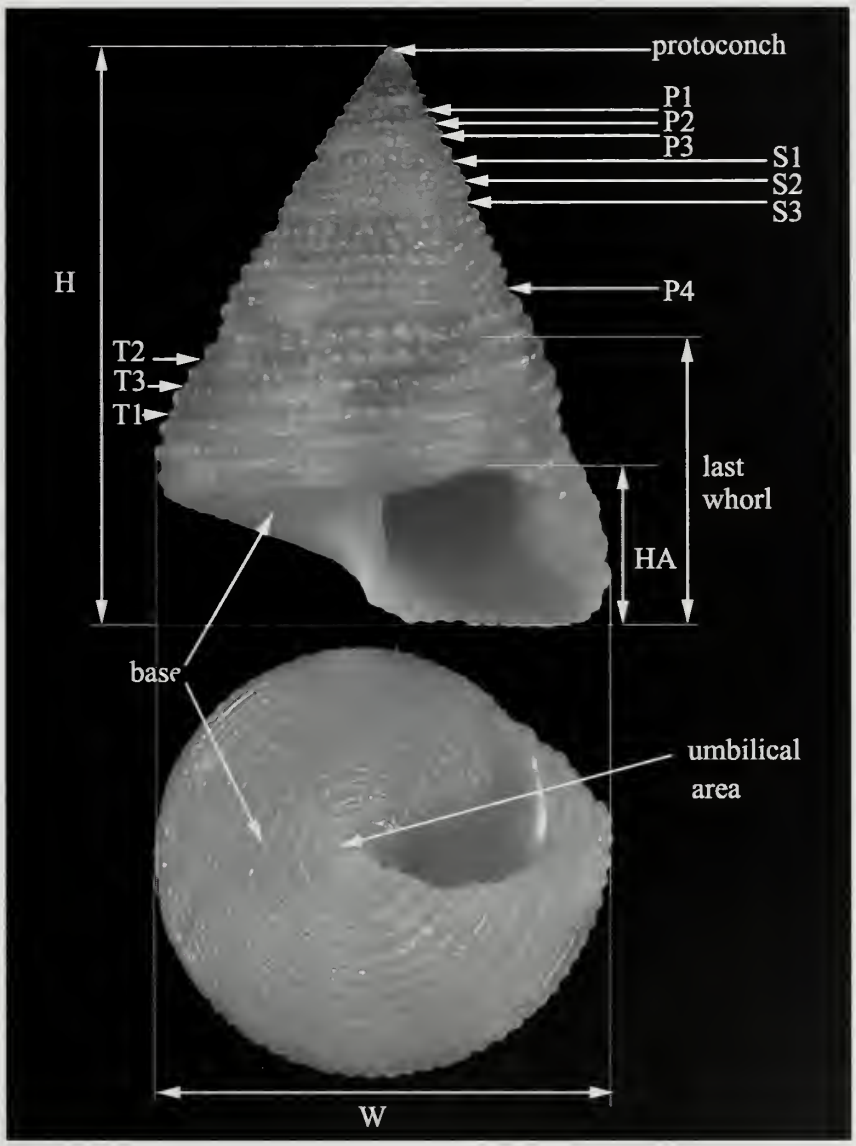
The SALOMON 1 campaign (9-10/2001) surveyed the deep waters off the central part of the Solomon Islands (from Guadalcanal to Malaita and Makira). This survey was continued by SALOMON 2 (10-11/2004) that explored the western part of the Solomon Islands, with special care for the hard bottoms (a bit neglected by SALOMON 1) and for the fauna associated to the "sunken woods". This new interesting topic of the recent years has justified the BOA ("Bois coulés et Organismes Associés [Sunken Wood and Associated Organisms]) cruises series: BOA 0 (11/2004), BOA 1 (9/2005) and SANTOBOA (10/2006) off the larger islands in northern Vanuatu and southern New Caledonia, and SALOMONBOA 3 (9-10/2007) that operated off the larger forested islands of Guadalcanal and Malaita (Samadi, 2009).



Map 1 : Prospecting areas surveyed in this paper - approximate locations of NORFOLK, CONCALIS and SALOMON cruises.

The range of the known and new species is provided for all the available specimens and also for the only living specimens if they have been found; when these ranges are the same, the common range is cited once with the "(living)" annotation; if all the specimens are dead collected, the range is cited with the "(dead)" annotation. Regarding the description methodology, the main conchological features used are (see Text Figure 1 below):

- general shape of the shell (depressed, high spired - conical, cyrtoconoidal, coeloconoidal);
- shape of the whorls (convex, concave, straight - with or without shoulder or keel);
- spiral cords of the whorls (onthogeny, number, beads, strength);
- spiral cords on the base (number, beads, distance between);
- shape of the aperture, the outer and the inner lip.



Text Figure 1 : Features of Calliostomatidae shells; H : height; W : width; HA : height of the aperture; P1, P2, P3, ... : primary cords; S1, S2, S3, ... : secondary cords; T1, T2, ... : tertiary cords (shell : *Calliostoma (Fautor) chlorum* Vilvens, 2005, Fiji, BORDAU 1, stn DW1454. 13.6 x 10.4 mm).

Abbreviations

Repositories

IMT : Institute of Malacology of Tokyo, Tokyo, Japan.

MNHN : Muséum national d'Histoire naturelle, Paris, France.

BMNH : Natural History Museum, London, England.

NSMT : National Museum of Science, Tokyo, Japan.

RMBR : Raffles Museum of Biodiversity Research, Singapore.

ZMA : Zoologisch Museum, Amsterdam, The Netherlands.

Other abbreviations

H : height
W : width
HA : height of the aperture
TW : number of teleoconch whorls
P1, P2, P3,...: primary cords (P1 is the most adapical)
S1, S2, S3,...: secondary cords (S1 is the most adapical)
T1, T2, T3,...: tertiary cords (numbered following appearing order)
stn : station
lv : live-taken specimens present in sample
dd : no live-taken specimens present in sample
sub : subadult specimen
juv : juvenile specimen

SYSTEMATICS

We follow here the classification of Marshall (1995), used by Bouchet & Rocroi (2005), where Calliostomatidae, earlier treated as a subfamily of Trochidae (Hickman & McLean, 1990), are ranked as a family of superfamily Trochoidea (besides true Trochidae and Solariellidae), with the two subfamilies Calliostomatinae and Thysanodontinae.

Superfamily : **TROCHOIDEA** Rafinesque, 1815
Family : **CALLIOSTOMATIDAE** Thiele, 1924
Subfamily : **CALLIOSTOMATINAE** Thiele, 1924
Tribe : **Calliostomatini** Thiele, 1924 [= Ziziphininae Gray, 1847]
Genus : ***Calliostoma*** Swainson, 1840
Subgenus : ***Calliostoma*** *(s. s.)* Swainson, 1840
Type species : *Trochus conulus* Linnaeus, 1758 (by s.d. Herrmannsen, 1846) – Recent, Mediterranean Sea.

Calliostoma (Calliostoma) cochlias n. sp.
Colour Figs B1-B2, Figs 1-2

Type material. Holotype (17.0 x 15.8 mm) MNHN (MNHN 22073).

Type locality. Solomon Islands, South of Malaita, SALOMONBOA 3, stn CP2816, 09°49'S, 161°32'E, 464-819 m.

Material examined. Solomon Islands. SALOMONBOA 3: stn CP2816, 09°49'S, 161°32'E, 464-819 m, 1 lv (holotype).

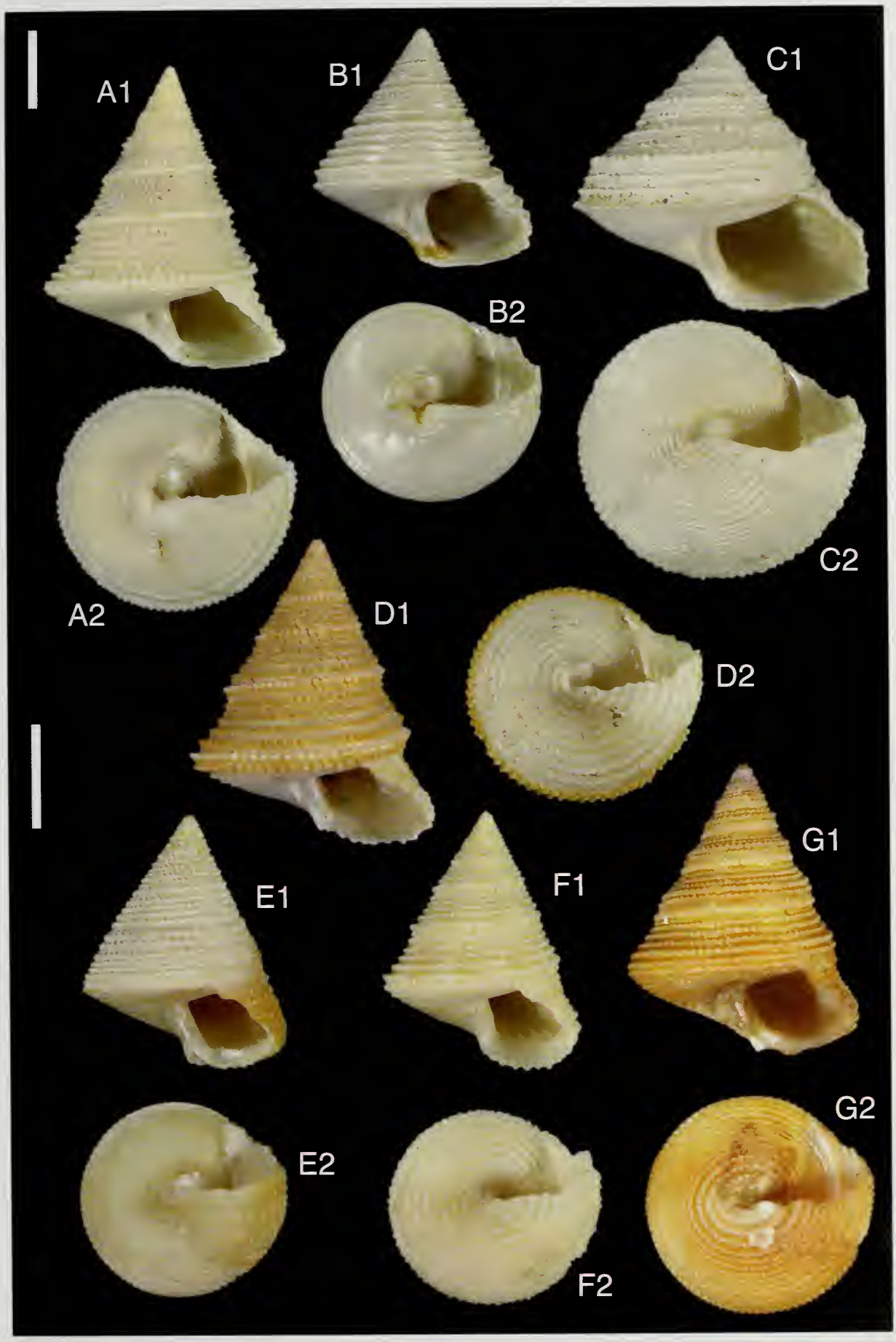
Distribution. Only known from the type locality.

Diagnosis. A typical rather large *Calliostoma* species with a rather elevated, conical spire, six strong, prominent spiral cords on the last whorl, adapical granular cords and abapical smooth cords, an almost flat base with a large median smooth area bordered by an external and three internal spiral cords, without umbilicus.

Description. *Shell* of medium large size for the genus (height 17.0 mm, width 15.8 mm), higher than wide, conical in shape; spire elevated, height 1.1x width, 3.3x aperture height; angulate periphery; anomphalous.
Protoconch 400 µm wide, of 1 whorl, rounded, covered by a network of ridges producing polygonal areas; apical fold nearly straight with a rounded, clearly visible terminal varix.
Teleoconch of 7.0 whorls; whorls straight except convex last whorl, without keel. Suture visible, not canaliculated. First whorl convex, sculptured by axial, weakly prosocline, strong threads and 3 spiral cords; P1, P2 and P3 appearing immediately, all granular by intersection with axial threads; P1 weaker than other cords; P2 closer to P1 than to P3; interspace between threads 2.5x larger than threads; P4 almost completely hidden by succeeding whorl. On second whorl, P1, P2 and P3 similar, granular; axial threads slightly broader, distance between 3x larger than threads. On third whorl, P1 strongest at mid whorl, with large, round beads; P2 weakest; S1 and S2 appearing at end of whorl, thin, granular; S3 absent.
On fourth whorl, beads of P3 and S2 obsolete, the two cords smooth after mid whorl, P3 making keel; P1 strongest, P3 weaker than P1 but stronger than other cords; S1 and P2 similar in strength, granular; axial sculpture weakening and disappearing on abapical part.

Colour plate 1. Figures A1-G2. Holotype MNHN of the new species described. Scale bars: 5 mm.

A1-2. *C. (Benthastelena) hexalyssion* n. sp., Solomon Islands, 460-487 m, 22.2 x 18.1 mm; **B1-2.** *Calliostoma (Calliostoma) cochlias* n. sp, Solomon Islands, 464-819 m, 17.0 x 15.8 mm; **C1-2.** *Calliostoma (Benthastelena) malaita* n. sp., Solomon Islands, 487-541 m, 20.7 x 227 mm; **D1-2.** *Calliostoma (Ampullotrochus) tropis* n. sp., Solomon Islands, 309-328 m, 15.9 x 12.9 mm; **E1-2.** *Calliostoma (Fautor) diaphoros* n. sp., Solomon Islands, 307-310 m, 11.2 x 9.1 mm; **F1-2.** *Calliostoma (Ampullotrochus) aporia* n. sp., Solomon Islands, holotype MNHN (MNHN 20082), 105-128 m [SALOMON 2, stn CP2294], 11.2 x 8.8 mm; **G1-2.** *C. (Fautor) aprosceptum* n. sp., Northern New Caledonia, holotype MNHN (MNHN 20074), 380-430 m [CONCALIS, stn DW2943], 12.5 x 9.9 mm.


A1
B1
C1
B2
C2
A2
D1
D2
E1
F1
G1
G2
E2
F2

On fifth whorl, beads of P2 obsolete; axial sculpture also obsolete on adapical part. On sixth whorl, P2 nearly smooth; beads of S1 weakening. On last whorl, P4 fully visible, peripheral, smooth; S1 nearly smooth.; all spiral cords similar in size, except P1 stronger; P1 still granular, with beads weaker and lower than on preceding whorls; interspace between cords similar in size to cords in abapical part, about 1.5x to 2x size of cords in adapical part.
Aperture subelliptic; outer lip thin, slightly curved; basal part rounded, producing a round angle with outer lip and an obtuse angle at meeting point with inner lip.
Columella weakly arcuated, almost vertical, without tooth; callus completely covering umbilicus.
Base weakly convex, almost flat, with an external subgranular spiral cord, 1 to 3 internal, nearly smooth, closely packed cords around the umbilical area and a large intermediate smooth zone.
Colour of teleoconch and protoconch pinkish white.
Operculum corneous, circular, multispiral with a short growing edge, brown.

Discussion. The placement of the new species in *Calliostoma s. s.* is justified by the strong, mainly smooth or subgranular spiral cords, the weak axial sculpture and the absence of umbilicus.
The combination of conical shape, prominent, smooth spiral cords except P1 and almost flat, smooth base (except 1 external and 3 internal smooth spiral cords) makes the new species rather hard to confuse with other existing species from the same area, except maybe *Calliostoma trotini* Poppe, Tagaro & Dekker, 2006 (Figs 7-8) from the Philippines, but this smaller species has a deep umbilicus and 8 subgranular to nearly smooth, evenly spaced spiral cords on the base.
Calliostoma cochlias n. sp. is resembles *C. (C.) occidentale* (Mighel & A.Adams, 1842) (Figs 9-10) from northern Atlantic, but this slightly smaller species has more convex whorls, usually only 4 strong primary cords, S1 appearing occasionally but much later (5^{th} whorl) and absence of S2, a narrower smooth area on the base with two external cords.
Calliostoma cochlias n. sp. may be compared to *Bathyfautor rapuhia* Marshall, 1995 (Figs 5-6) from New Zealand and Norfolk Ridge, but this taller species has a prominent S3 making keel, a smooth P1 similar in size to other cords except S3, a higher H/W ratio (1.2 to 1.3) with a slightly concave shape.
The new species may be compared to *C. (Benthastelena) margaritissimum* (Habe & Okutani, 1968) (Figs 11-12) from Midway (described as belonging to the subgenus *Tristichotrochus*, synonym of *Benthastelena*), but this similar in size species have primary spiral cords all granular, the primary cords much stronger than secondary ones, a rounded periphery and 8-9 evenly spaced on spiral cords the base.
The general shape of *C. cochlias* n. sp. reminds *Calliostoma (B.) uramipponense* Okutani, 1969 (Figs 3-4) from Japan (originally described in the subgenus *Tristichotrochus*), but although this species has a comparable ontogeny of primary and secondary cords (but S1 and S2 appear later), the spiral cords are all granular, tertiary cords are present and the base has mainly about 12 subgranular, evenly spaced spiral cords.
The new species also reminds *C. (Fautor) taknjii* Kosuge, 1986 (Figs 13-14) from Japan, but if this species has also a P1 that is the most prominent, all the cords are granular, the ontogeny of cords is different (P1 appearing later, S3 present) and the base has about 10 evenly spaced granular spiral cords.

Etymology. Screw (Ancient Greek : χοχλιας), used as a noun in apposition - with reference to the regular spiral sculpture on the whorls.

Calliostoma (Calliostoma) vilvensi Poppe, 2004
Colour Figs I1-I2, Figs 15–18

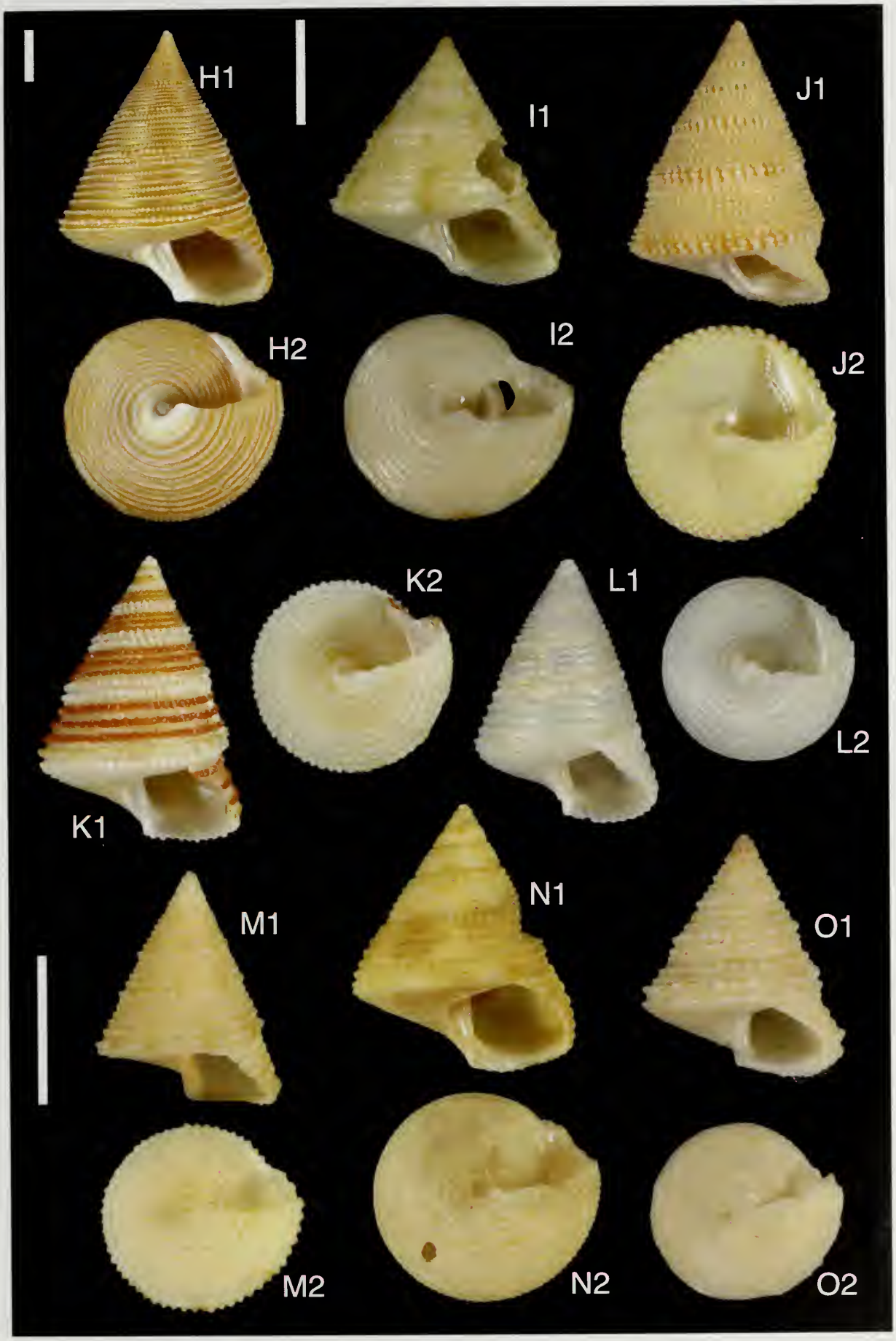
Calliostoma vilvensi Poppe, 2004: 6-8, pl.2, figs 2a-2b-2c. Type locality: Philippines, off Aliguay Island, 80-200 m.
Calliostoma vilvensi – Poppe, Tagaro & Dekker, 2006: 127 pl. 66 figs 1-2.

Material examined. Solomon Islands. SALOMON 2: stn CP2234, 06°51'S, 156°24'E, 182-277 m, 1 dd. – Stn CP2237, 06°53'S, 156°22'E, 400 m, 4 dd, 1 juv dd.

Distribution. Philippines, Aliguay Island, 80-150 m (range computed from Poppe et al., 2006); Salomon Islands, 82-83 m.

Colour plate 2. Figures H1-O2. Species with an extension of the distribution. Scale bars: 5 mm.

H1-2. *Calliostoma (Ampullotrochus) peregrinum* Marshall, 1995, Norfolk Ridge, 370-371 m, 26.0 x 20.6 mm;
I1-2. *Calliostoma (Calliostoma) vilvensi* Poppe, 2004, Solomon Islands, 400 m, 12.0 x 11.4 mm;
J1-2. *Calliostoma (Ampullotrochus) xanthos* Marshall, 1995, Norfolk Ridge, 405-455 m, 14.3 x 10.1 mm;
K1-2. *Calliostoma (Ampullotrochus) philippei* Poppe, 2004, Solomon Islands, about 258-283 m, 14.7 x 10.5 mm; **L1-2.** *Thysanodonta cassis* Vilvens & Maetrati, 2006, Norfolk Ridge, 680-980 m, 13.0 x 8.9 mm;
M1-M2. *Calliostoma (Fautor) scobinatum* (A.Adams *in* Reeve, 1863), Solomon Islands, 82-83 m, 7.5 x 5.9 mm;
N1-2. *Calliostoma (Fautor) boucheti* Marshall, 1995, northern New Caledonia, 350 m, 9.9 x 8.4 mm;
O1-2. *Calliostoma (Fautor) periglyptum* Marshall, 1995, Solomon Islands, 180-187 m, 7.1 x 5.9 mm.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Remarks. The type material of this species was not available but its author has provided accurate pictures of the type material and recently collected specimens. The two shells from the Solomon Is. are smaller (height up to 12.2 mm) than the types from the Philippines (height up to 22.0 mm), but they have about 2 whorls less. They share the same cords ontogeny (P1, P2 and P3 starting immediately, S1 appearing at 2nd whorl, S2 absent and S3 starting at 3rd whorl, the 5 cords quickly of the same size on next whorls). Poppe did not place his new species into a subgenus. Taking the absence of axial sculpture and the blunt shape of the beads of cords into account, it seems that this species belong to the subgenus *Calliostoma* s. str..

Subgenus : ***Fautor*** Iredale, 1924
Type species : *Ziziphinus comptus* A.Adams, 1855 (by o.d.) – Recent, southern Australia.

Calliostoma (Fautor) boucheti Marshall, 1995
Colour Figs N1-N2, Figs 21–24

Calliostoma (Fautor) boucheti Marshall, 1995: 389-392, figs 3, 7-9, 117, 150, 155. Type locality: off southern New Caledonia, 600 m.
Calliostoma (Fautor) boucheti – Vilvens, 2005: 2, figs 7-8.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2057, 24°40'S, 168°39'E, 555-565 m, 1 lv. – Stn DW2060, 24°40'S, 168°38'E, 582-600 m, 7 lv. – Stn DW2084, 24°52'S, 168°22'E, 586-730 m, 4 lv. – Stn DW2087, 24°56'S, 168°22'E, 518-586 m, 3 lv. – CONCALIS: stn DW2979, 18°16'S, 162°54'E, 350 m, 1 dd.

Distribution. South of Ile des Pins, southern New Caledonia and northern Norfolk Ridge, 233-650 m, living at 503-650 m (range computed from Marshall, 1995); northern New Caledonia, 350 m; Vanuatu, 585 m.

Remarks. The dead specimen from northern New Caledonia is eroded, but shows the correct ontogeny. It implies an extension of the distribution, although additional material is clearly needed to draw a firm conclusion.

Calliostoma (Fautor) metivieri Marshall, 1995
Figs 33–34

Calliostoma (Fautor) metivieri Marshall, 1995: 397-398, figs 16-18, 120, 153. Type locality: southern New Caledonia, 400-420 m.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2033, 23°39'S, 167°43'E, 430-450 m, 1 lv. – Stn DW2109, 23°47'S, 168°17'E, 422-495 m, 3 dd.

Distribution. South of Ile des Pins, southern New Caledonia and northern Norfolk Ridge, 390-535 m, living at 415-535 m (range computed from Marshall, 1995).

Calliostoma (Fautor) paradigmatum Marshall, 1995
Figs 25–26

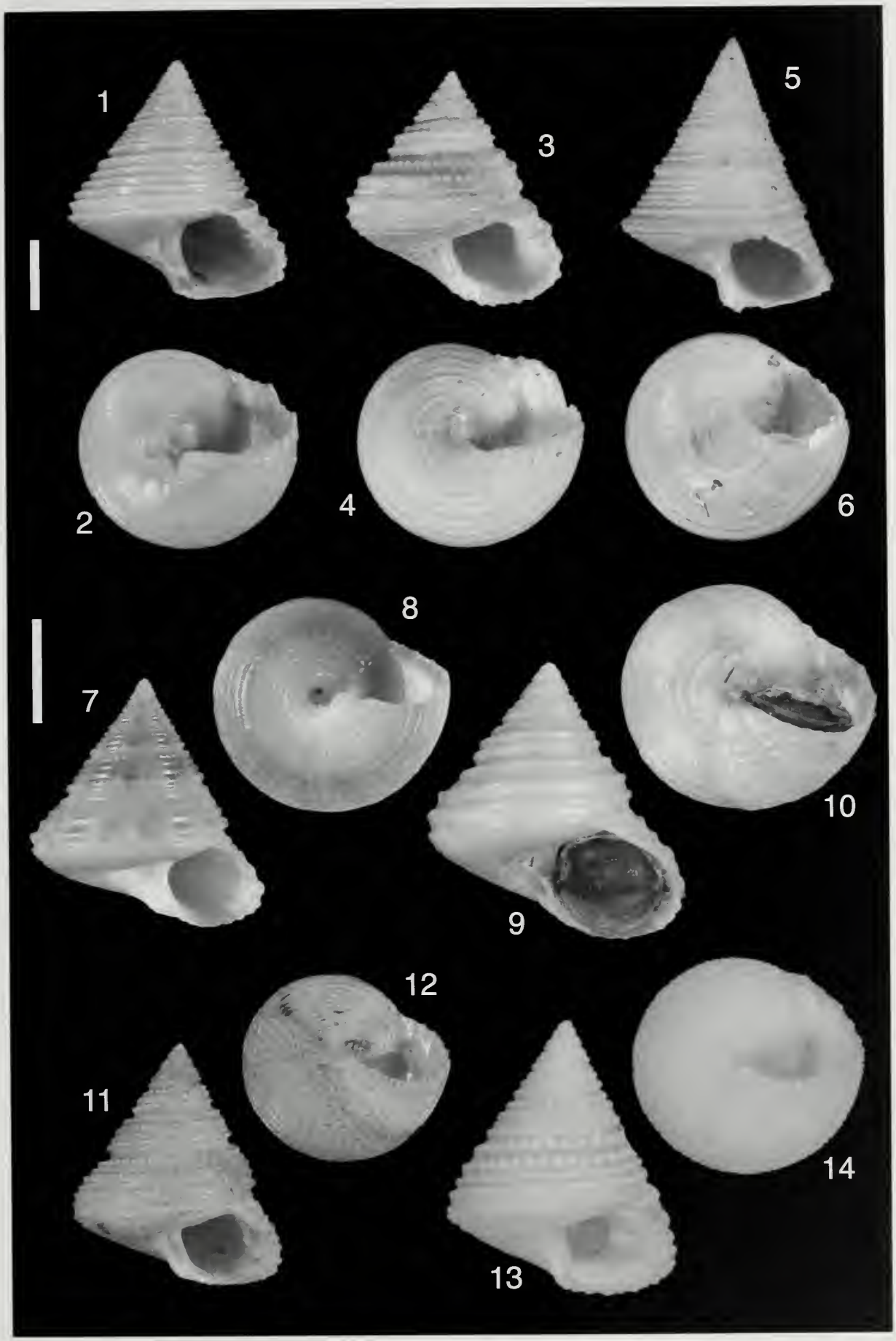
Calliostoma (Fautor) paradigmatum Marshall, 1995: 395-397, figs 13-15, 119, 155. Type locality: southern New Caledonia, 505-550 m.
Calliostoma (Fautor) paradigmatum – Vilvens, 2005: 2.

Material examined. Norfolk Ridge. NORFOLK 2: stn CP2047, 23°43'S, 168°02'E, 759-807 m, 1 lv, 1 juv dd. – Stn DW2069, 25°20'S, 168°58'E, 795-852 m, 1 lv. – Stn DW2106, 23°54'S, 167°42'E, 685-757 m, 1 lv.– Stn DW2110, 23°48'S, 168°17'E, 493-850 m, 1 dd.

Distribution. Off Ile Surprise, northern New Caledonia, 585 m (living); South of Ile des Pins, southern New Caledonia, northern Norfolk Ridge, 470-795 m, living at 550-795 m (range computed using data of Marshall, 1995); Tonga, 342-500 m (dead).

Figures 1-14. Scale bars: 5 mm.

1-2. *Calliostoma (Calliostoma) cochlias* n. sp., holotype MNHN (22073), Solomon Islands, 464-819 m [SALOMONBOA 3, stn CP2816], 17.0 x 15.8 mm; **3-4.** *Calliostoma (Benthastelena) margaritissimus* (Habe & Okutani, 1968), holotype NSMT 38669, Midway Island, 400-460 m, 15.9 x 15.8 mm; **5-6.** *Bathyfautor rapuhia* Marshall, 1995, paratype MNHN, New Caledonia, Wanganella Bank, 660-757 m [NZOI, stn P8], 20.1 x 15.4 mm; **7-8.** *Calliostoma trotini* Poppe, Tagaro & Dekker, 2006, holotype NMP, Philippines, Palawan Is., 11.8 x 11.3 mm (© Conchology, Inc.); **9-10.** *Calliostoma (Calliostoma) occidentale* (Mighel & A.Adams, 1842), eastern Canada (Digby, Nova Scotia), C.Vilvens coll., 12.5 x 11.5 mm; **11-12.** *Calliostoma (Benthastelena) uranipponensis* Okutani, 1969, holotype NSMT (Mo 69544), Japan, depth unknown, 10.1 x 8.8 mm; **13-14.** *Calliostoma (Fautor) takujii* Kosuge, 1986, holotype IMT (IMT-86-1), Japan, Ogasawara (Bonin) Islands, 12.0 x 9.7 mm.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Calliostoma (Fautor) periglyptum Marshall, 1995
Colour Figs O1-O2, Figs 39–44

Calliostoma (Fautor) periglyptum Marshall, 1995: 401-402, figs 25-27, 123, 157. Type locality: southern New Caledonia, 230 m.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2093, 24°44'S, 168°09'E, 230 m, 1 dd. – Stn DW2123, 23°18'S, 168°15'E, 187-197 m, 1 dd. – **Solomon Islands.** SALOMON 1: stn DW1758, 08°49'S, 159°52'E, 180-187 m, 2 dd sub. – SALOMON 2: stn CP2234, 06°51'S, 156°24'E, 182-277 m, 2 dd sub.

Distribution. Loyalty Islands (off Lifou), 280-520 (dead); southern New Caledonia and northern Norfolk Ridge, 197-274 m, living at 230 m (range computed from Marshall, 1995); Solomon Islands, 182-187 m (dead).

Remarks. This species was so far known only from New Caledonia and the Loyalty Islands. The specimens from Solomon Islands are all immature (up to 6 teleoconch whorls for the largest one), having about 12 smooth spiral cords on the base; all match the other distinctive features of the species (mainly S2 appearing at 4th whorl, S1 between 5th and 7th whorl, S3 absent). This is a significant distribution extension that should need confirmation with living specimens.

Calliostoma (Fautor) necopinatum Marshall, 1995
Figs 19–20

Calliostoma (Fautor) necopinatum Marshall, 1995: 394-395, figs 31-33, 121, 155. Type locality: northern New Caledonia, 255 m.

Material examined. Northern New Caledonia. CONCALIS: stn DW2977, 18°15'S, 163°07'E, 326-368 m, 1 dd. – Stn DW2978, 18°16'S, 163°04'E, 360-400 m, 2 dd. – Stn DW3003, 18°34'S, 163°08'E, 450-454 m, 1 dd.

Distribution. Northern New Caledonia, 255-300 m (living) (range computed from Marshall, 1995).

Calliostoma (Fautor) aprosceptum n. sp.
Colour Figs G1-G2, Figs 29-32, Table 1

Type material. Holotype (12.5 x 9.9 mm) MNHN (MNHN 20074). Paratypes: 3 MNHN (MNHN 20075), 1 coll. C.Vilvens.

Type locality. Northern New Caledonia, southern slope of Grand Passage, CONCALIS, stn DW2943, 18°56.8'S, 163°22.7'E, 380-430 m.

Material examined. Northern New Caledonia. CONCALIS: stn DW2943, 18°57'S, 163°23'E, 380-430 m, 1 dd (holotype). – Stn DW2979, 18°16'S, 162°54'E, 350 m, 1 lv (paratype). – Stn DW2980, 18°16'S, 162°57'E, 574-660 m, 1 dd (paratype). – Stn DW3003, 18°34'S, 163°08'E, 450-454 m, 1 dd (paratype). – Stn DW3025, 18°57'S, 163°23'E, 396-400 m, 1 dd, 1 sub lv (with paratype).

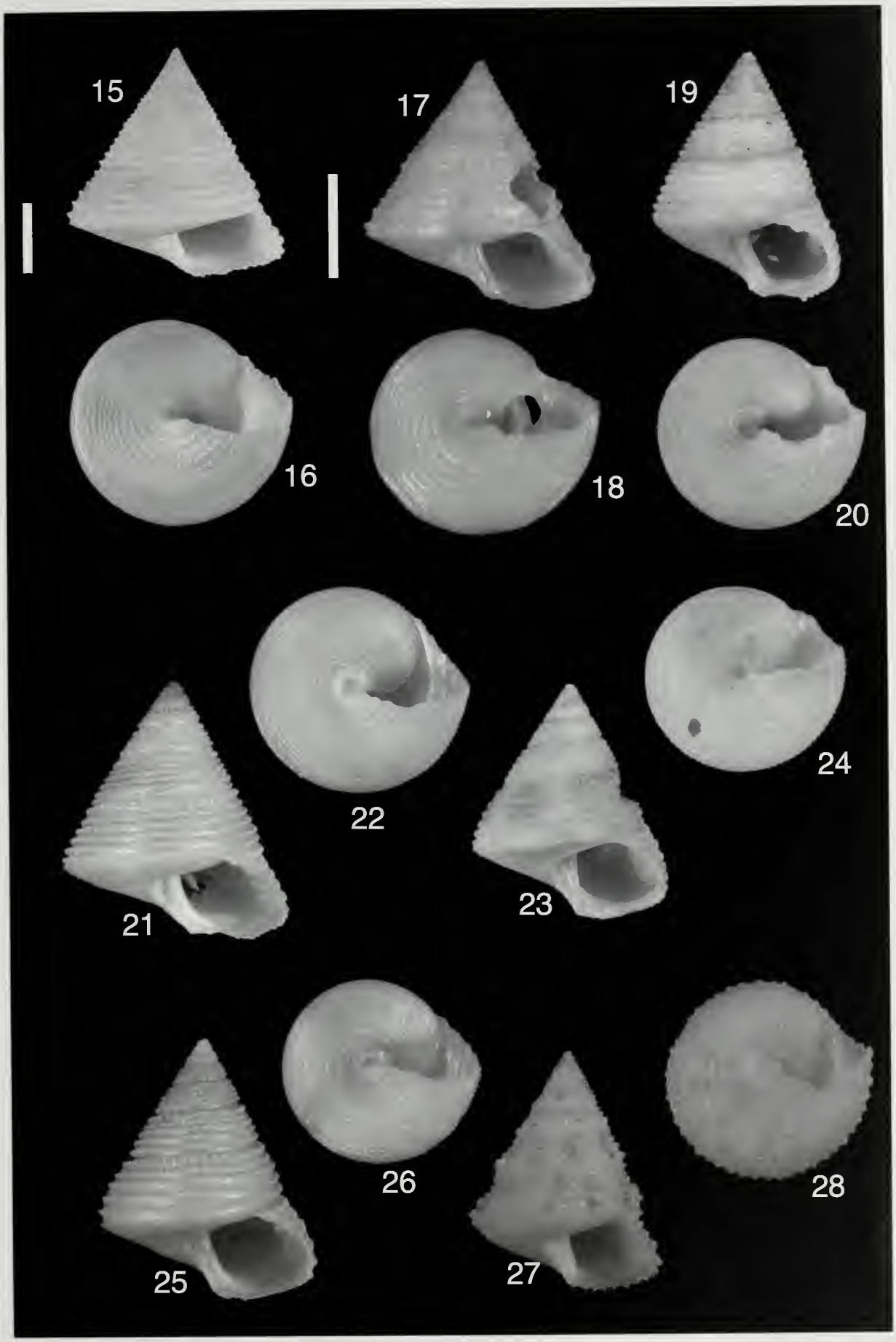
Distribution. Northern New Caledonia, 350-574 m, living at 350-396 m.

Diagnosis. A typical *Calliostoma* species with a rather elevated, more or less conical spire, a strong subsutural granular spiral cord, a second strong granular spiral cord making keel under the middle of the intermediate whorls, last whorls convex with numerous granular spiral cords, a weakly convex base with about 13 granular spiral cords, without umbilicus.

Description. *Shell* of medium size for the genus (height up to 14.2 mm, width up to 11.2 mm), higher than wide, conical in shape; spire rather elevated, height 1.2x to 1.3x width, 3.3x to 3.8x aperture height; angulate periphery; anomphalous.
Protoconch about 250 µm wide, of 1 whorl, rounded, covered by a network of ridges producing polygonal areas; apical fold straight with a very thin rounded terminal varix.

Figures 15-28. Scale bars: 5 mm.

15-18. *Calliostoma (Calliostoma) vilvensi* Poppe, 2004.
15-16. Holotype, Philippines, off Aliguay Island, 80-200 m, 20.3 x 19.2 (© Conchology, Inc.);
17-18. Solomon Islands, 400 m [SALOMON 2, stn CP2234], 12.0 x 11.4 mm.
19-20. *Calliostoma (Fautor) necopinatum* Marshall, 1995, Northern New Caledonia, 326-368 m [CONCALIS, stn DW2977], 11.2 x 8.7 mm.
21-24. *Calliostoma (Fautor) boucheti* Marshall, 1995.
21-22. Norfolk Ridge, 586-730 m [NORFOLK 2, stn DW2084], 12.2 x 10.6 mm; **23-24.** Northern New Caledonia, 350 m [CONCALIS, stn DW2979], 9.9 x 8.4 mm.
25-26. *Calliostoma (Fautor) paradigmatum* Marshall, 1995, Norfolk Ridge, 795-852 m [NORFOLK 2, stn DW2069], 12.5 x 10.4 mm; **27-28.** *Calliostoma (Fautor) honbricki* Marshall, 1995, paratype MNHN, southern New Caledonia, 170 m [Chalcal 2, stn DW84], 10.5 x 8.6 mm.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Teleoconch of up to 7.9 whorls, 2 first whorls convex, 3rd almost flat, the 3 next whorls with a shoulder at P3 producing keel, last whorls convex without shoulder. Suture very poorly visible, not canaliculated. First whorl convex, sculptured by thick axial, almost orthocline ribs and 3 cords P1, P2 and P3 appearing immediately, granular by intersection with axial threads; interspace between threads 1.5x to 2x larger than threads; P1 slightly weaker than other cords; suture visible, not canaliculated. On second whorl, P1 becoming as strong as P2, P3 strongest, producing a keel; distance between P2 and P3 greater than distance between P1 and P2; axial threads broader and more prosocline; suture poorly visible. On third whorl, P2 weakest, P3 strongest; bead of cords well rounded, not sharp, well separated; axial threads weakening, threads between P2 and P3 very prosocline, connecting beads of cords. On fourth whorl, S2 appearing at begin of whorl, S3 and P4 at end, P4 almost completely hidden by succeeding whorl; P3 making shoulder; axial sculpture becoming obsolete. On fifth whorl, S1 appearing; P3 and P1 still strongest, S3 almost as strong as P1. On next whorls, P1, P3 and S3 more or less of the same strength; P2, S1 and S2 much weaker, similar in size. On last whorl, P4 fully visible, peripheral, granular, weaker than other cords; tertiary cords appearing, the first between P1 and S1, the other cords appearing later between S1 and P2, P2 and S2, S2 and P3.

Aperture subquadrangular; outer lip rather thin, curved; basal part rounded, producing a rounded angle with outer lip and an obtuse angle at meeting point with inner lip.

Columella nearly straight, oblique, without tooth; callus completely covering umbilicus.

Base weakly convex, without axial threads and with 11 to 13 granular spiral cords, the cords in area bordering umbilicus stronger.

Colour of teleoconch orange to yellowish brown, P3 and S3 base lighter; protoconch reddish brown.

Operculum corneous, circular, multispiral with a short growing edge, brown.

	TW	H	W	HA	H/W	H/HA
holotype	7.8	12.5	9.9	3.3	1.26	3.79
paratype MNHN 1	7.9	14.2	11.2	3.9	1.27	3.64
paratype MNHN 2	7.4	11.6	9.2	3.1	1.26	3.74
paratype MNHN 3	7.4	10.8	8.4	3.3	1.29	3.27
paratype CV	7.5	11.2	9.2	3.1	1.22	3.61
means	7.6	12.1	9.6	3.3	1.26	3.61

Table 1. – *Calliostoma (Fautor) aprosceptum* n. sp.: Shells measurements in mm for types.

Discussion. Based on the finely beaded cords and the conical shape, the subgenus *Fautor* seems to be the most appropriate for the new species.

Based on the ontogeny of the spiral cords, *Calliostoma (Fautor) aprosceptum* n. sp. resembles *C. (F.) vaubani* Marshall, 1995 (Figs 35-38) from northern New Caledonia, but this species, similar in size for the same number of whorls, has a much more angulate shape and is especially characterized by a concave area between P2 and P3; it has a larger yellowish brown protoconch (from 400 to 430 µm), a spiral cord P1 appearing later than P2 and P3, smaller beads on cord and a flatter base.

The new species resembles *C. (F.) metivieri* Marshall, 1995 (Figs 33-34) from southern New Caledonia, but this similar in size species has a larger protoconch (about 400 µm), a spiral cord P1 appearing later than P2 and P3, lacks the keeled shoulder on the intermediate whorls and has smooth cords on the base except the 3 or 4 inner granular cords.

Etymology. Unexpected (Ancient Greek : απροσχεπτος, Latinized) - with reference to the fact that it was unlikely to discover again a new species in

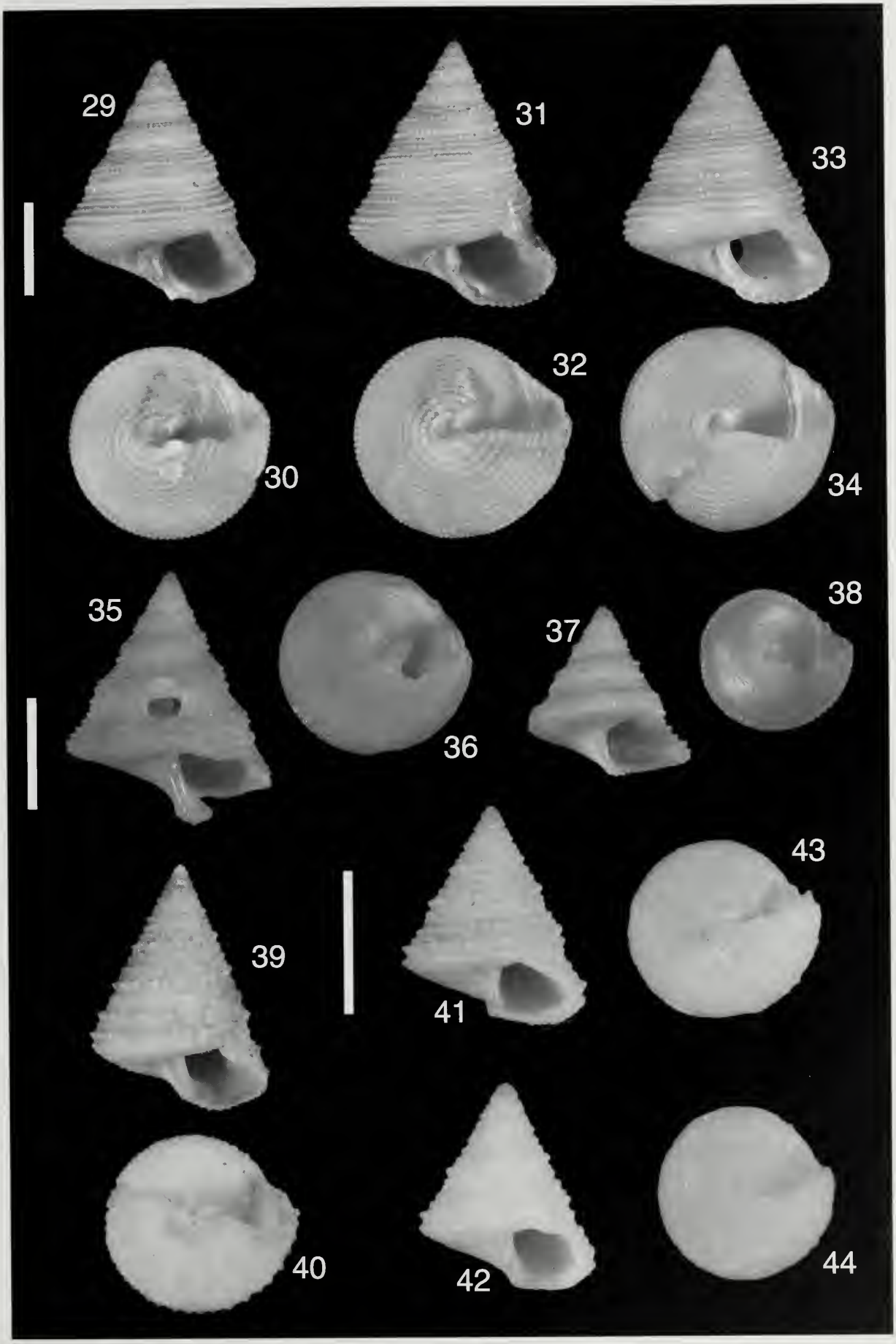
Figures 29-44. Scale bars: 5 mm.

29-32. *C. (Fautor) aprosceptum* n. sp., Northern New Caledonia.
29-30. Holotype MNHN (20074), 380-430 m [CONCALIS, stn DW2943], 12.5 x 9.9 mm;
31-32. Paratype MNHN (20075), 396-400 m [CONCALIS, stn DW3025], 14.2 x 11.2 mm.

33-34. *Calliostoma (Fautor) metivieri* Marshall, 1995. Norfolk Ridge, 430-450 m [NORFOLK 2, stn DW2033], 13.4x10.5 mm.

35-38. *Calliostoma (Fautor) vaubani* Marshall, 1995. Paratypes MNHN, New Caledonia.
35-36. 415-460 m [LAGON, stn 475], 11.4 x 9.1 mm; **37-38.** 350 m [MUSORSTOM 4, stn DW181], 5.9 x 5.5 mm.

39-44. *Calliostoma (Fautor) periglyptum* Marshall, 1995.
39-40. Norfolk Ridge, 230 m [NORFOLK 2, stn DW2093], 11.3 x 8.2 mm; **41-44.** Solomon Islands.
41-42. 180-187 m [SALOMON 1, stn DW1758], 7.1 x 5.9 mm; **43-44.** 182-277 m [SALOMON 2, stn CP2234], 5.9 x 5.1 mm.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New Caledonia area considering the numerous species already described in 1995 (Marshall) and 2005 (Vilvens).

Calliostoma (Fautor) diaphoros n. sp.
Colour Figs E1-E2, Figs 51-52

Type material. Holotype (11.2 x 9.1 mm) MNHN (MNHN 20076).

Type locality. Solomon Islands, New Georgia Sound, off Santa Isabel, SALOMON 2, stn CP2201, 07°43.5'S, 158°29.9'E, 307-310 m.

Material examined. Solomon Islands. SALOMON 2: stn CP2201, 07°44'S, 158°30'E, 307-310 m, 1 dd (holotype).

Distribution. Only known from the type locality.

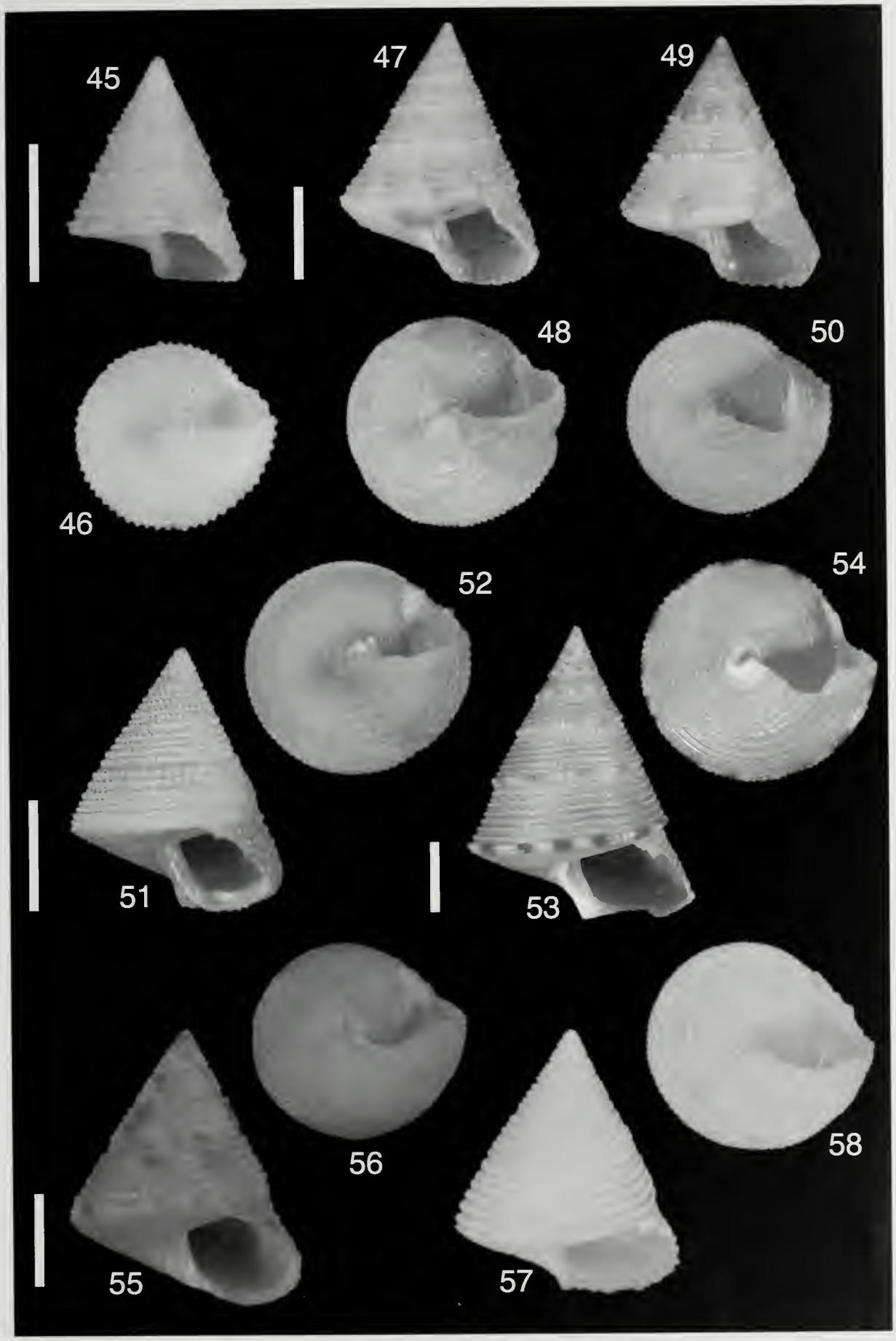
Diagnosis. A typical, rather small *Calliostoma* species with an elevated, conical spire, 9 different in size beaded spiral cords on the last whorl, a stronger susbsutural granular cord, a weakly convex base with 11 granular, stronger in the inner part spiral cords, without umbilicus.

Description. *Shell* of moderate size for the genus (height 11.2 mm, width 9.1 mm), higher than wide, conical to weakly cyrtoconoidal in shape; spire elevated, height 1.2x width, 4.3x aperture height; angulate periphery; anomphalous.
Protoconch 350 µm wide, of 1 whorl, rounded, with a network of ridges giving reticulate shape; apical fold straight, with a rounded terminal varix.
Teleoconch of 7.2 straight whorls, without distinct keel nor shoulder. Suture hard to detect, not canaliculated. First whorl convex, sculptured by axial, weakly prosocline threads and 3 spiral cords, all granular by intersection with axial threads; P2 and P3 appearing immediately, P3 strongest; P1 appearing a end of whorl, weaker than other cords; P4 almost completely hidden by succeeding whorl; distance between threads 1.5x to 2x larger than threads. On second whorl, axial threads strongly more prosocline in adapical part, distance between axial threads 2x larger than threads. On third whorl, P3 strongest, P1 weakest; S3 appearing at end of whorl, smooth, very thin. S2 appearing at begin of fourth whorl, smooth, thin, quickly as strong as S3. On fifth whorl, P1 and P3 strongest, S2 and S3 weakest, similar in size; beads of cords blunt pointed; S1 appearing near mid whorl, smooth, very thin; axial sculpture vanishing except between P3, S3 and P4. On sixth whorl, T1 appearing between S2 and P3; whorl was broken and repaired at first third of whorl on the holotype, making it difficult to trace cords evolution. On last whorl, T2 appearing between S1 and P2, T3 later between P3 and S3; P1 strongest; S3 peripheral, granular, weaker than other cords; no axial sculpture still visible.
Aperture roundly subquadrangular; outer lip rather thin, weakly rounded; basal part rounded, producing a rather acute angle with outer lip and a more obtuse angle at meeting point with inner lip.
Columella straight, oblique, without tooth; callus completely covering umbilicus.
Base weakly convex, almost flat, with 11 granular cords; inner cords stronger than outer ones; interspace between outer cords smaller than cords, similar in size to cords in the inner part.
Colour of teleoconch light orange with white beads on spiral cords; base lighter; protoconch white.
Operculum unknown.

Discussion. The placement of the new species in the subgenus *Fautor* is justified by the beaded cords, the conical and rather elevated shape.
Calliostoma (Fautor) diaphoros n. sp. resembles *C. (F.) necopinatum* Marshall, 1995 (Figs 19-20) from northern New Caledonia, but this species similar in size has more numerous spiral cords on the base and a different ontogeny of cords with S2 appearing first, S1 commencing about 1 whorl later and S3 appearing only as the last at 4th whorl;
The new species resembles *C. (Ampullotrochus) alisi* Marshall, 1995 (Figs 103-104) from Loyalty Islands, but this slightly taller species has P1 commencing at first whorl, S3 being the strongest with white beads, P1 weaker than P3.

Figures 45-58. Scale bars: 5 mm.

45-50. *Calliostoma (Fautor) scobinatum* (A.Adams *in* Reeve, 1863).
45-46. Solomon Islands, 82-83 m [SALOMON 1: stn DW1823], 7.5 x 5.9 mm; **47-48.** India, Bombay, depth unknown, lectotype BMNH 19688277, 15.9 x 12.0 mm; **49-50.** Philippines, Aliguay Island, about 100 m, C.Vilvens coll., 13.7 x 11.1 mm.
51-52. *Calliostoma (Fautor) diaphoros* n. sp., holotype MNHN (20076), Solomon Islands, 307-310 m [SALOMON 2, stn CP2201], 11.2 x 9.1 mm; **53-54.** *Calliostoma(Fautor) belauense* Okutani & Kurata, 1998, holotype NSMT (Mo 71085), Palau Is., 200m, 24.0 x 18.3 mm; **55-56.** *Calliostoma (Fautor) strobilos* Vilvens, 2005, holotype MNHN, Fiji, 300-450 m [BORDAU 1, stn DW1455], 14.4 x 11.9 mm; **57-58.** *Calliostoma simplex* Schepman, 1908, holotype ZMA, Indonesia, 304 m [SIBOGA, stn 253], 14 x 11.5 mm.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The new species shares a similar ontogeny of spiral cords with *C. simplex* Schepman, 1908 (Figs 57-58) from Indonesia and Philippines, but this slightly taller species has similar in size interspaces between the spiral cords on the last whorl and higher, thinner spiral cords on the base with interspaces similar in size to the cords and axial threads between them.
Calliostoma (Fantor) diaphoros n. sp. may be compared to *C. (F.) strobilos* Vilvens, 2005 (Figs 55-56) from Fiji, but this slightly taller species has a different spiral cords ontogeny (with S2 appearing first, S1 coming next and S3 commencing last) and more numerous spiral cords on the base.
The new species may also be compared to *C. (F.) paradigmatum* Marshall, 1995 (Figs 25-26) from New Caledonia, but this slightly taller species has convex whorls and a different spiral cords ontogeny, with S2 appearing first, S1 coming next and S3 commencing last, keeping to be the weaker.
Calliostoma (Fantor) diaphoros n. sp. weakly reminds *C. (F.) takinji* Kosuge, 1986 (Figs 13-14) from Japan, but this similar in size species has only 5 thick spiral cords and a different spiral cords ontogeny, S2 and S3 appearing together at 3rd whorl and S1 absent.
The new species is also different from *C. (F.) kurodai* Azuma, 1975 (the type in the Azuma coll. was not available) from Japan, because this similar in size species has only 4 thick spiral cords with two thin secondary cords between the three adapical cords.

Etymology. Different (Ancient Greek : διαφορος) – allusion to the different in size spiral cords on the last whorl of the shell.

Calliostoma (Fantor) scobinatum
(A.Adams *in* Reeve, 1863)
Colour Figs M1-M2, Figs 45–50

Zizyphinus scobinatus A.Adams *in* Reeve, 1863: pl.V, fig.29. Type locality: Bombay, depth unknown.
Ziziphinus scobinatus – Brazier, J. 1878: 44.
Calliostoma scobinatum – Kaicher, 1986: card TR1-2153.
Calliostoma (Fantor) scobinatum – Marshall, 1995: 399-401.
Calliostoma scobinatus – Subba Rao, 2003: 86, pl. 8, fig. 6.
Calliostoma scobinatum – Poppe, Tagaro & Dekker, 2006: 123 pl. 64 figs 1-3.

Material examined. Solomon Islands. SALOMON 1: stn DW1823, 09°50'S, 160°53'E, 82-83 m, 1 dd.

Distribution. India (Bombay area), depth unknown; Torres Straits, 22 m; Philippines, 81-97 m (range computed from Poppe et al., 2006); Salomon Islands, 82-83 m.

Remarks. This single specimen has the spiral cords ontogeny of *C. scobinatum* but is unusually small (7.5 x 5.9 mm) when comparing to the lectotype for a rather similar number of whorls. Additional material is needed to draw a conclusion from this small size (possible subspecies).

Subgenus : ***Benthastelena*** Iredale, 1936
Type species : *Benthastelena katherina* Iredale, 1936 (by o.d.) – Recent, Australia (Queensland).

Calliostoma (Benthastelena) cristatum
Marshall, 1995
Figs 65–66

Calliostoma (Benthastelena) cristatum Marshall, 1995: 408-409, figs 43, 46-48, 127, 156. Type locality: southern New Caledonia, 200 m.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2023, 23°27'S, 167°51'E, 282-297 m, 2 lv.

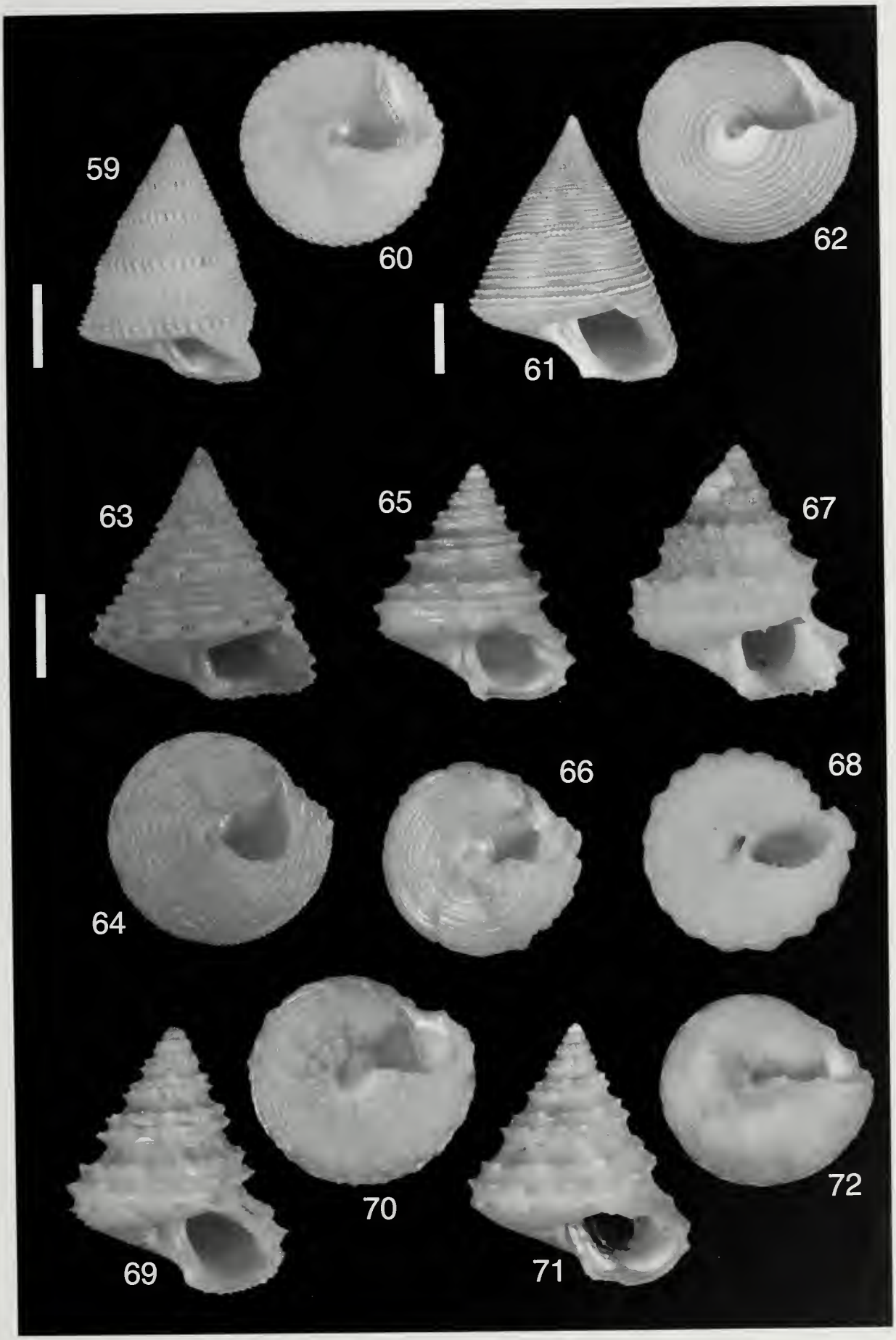
Distribution. Northern New Caledonia, 255-300 m (living); southern New Caledonia, 200-400 m, living at 200-350 m (range computed from Marshall, 1995).

Calliostoma (Benthastelena) kanakorum
Marshall, 2001
Figs 69–72

Calliostoma (Benthastelena) kanakorum Marshall, 2001: 36.
Calliostoma (Benthastelena) coronatum Marshall, 1995: 409-411, figs 49-51, 46, 128, 156. Type locality: southern New Caledonia, 200 m. Not *Calliostoma coronatum* Quinn, 1992.

Figures 59-72. Scale bars: 5 mm.

59-60. *Calliostoma (Ampullotrochus) xanthos* Marshall, 1995, Norfolk Ridge, 405-455 m [NORFOLK 2, stn DW2132], 14.3 x 10.1 mm; **61-62.** *Calliostoma (Ampullotrochus) peregrinum* Marshall, 1995, Norfolk Ridge, 370-371 m [NORFOLK 2, stn DW2024], 26.0 x 20.6 mm; **63-64.** *C. (Benthastelena) pertinax* Marshall, 1995. New Caledonia, 347-375 m [BATHUS 1: stn CP707], 10.4 x 9.3 mm; **65-66.** *Calliostoma (Benthastelena) cristatum* Marshall, 1995, Norfolk Ridge, 282-297 m [NORFOLK 2, stn DW2023], 8.1 x 6.9 mm.
67-68. *Calliostoma (Benthastelena) diadematum* Marshall, 1995, Norfolk Ridge, 187-197 m [NORFOLK 2, stn DW2123], 9.3 x 7.1 mm.
69-72. *Calliostoma (Benthastelena) kanakorum* Marshall, 2001.
69-70. Norfolk Ridge, 313-315 m [NORFOLK 2, stn CP2160], 11.1 x 9.4 mm; **71-72.** Northern New Caledonia, 350 m [CONCALIS, DW2979], 10.2 x 8.9 mm.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Material examined. Northern New Caledonia. CONCALIS: stn DW2946, 19°02'S, 63°27'E, 276-277 m, 1 dd. – DW2979, 18°16'S, 162°54'E, 350 m, 2 lv. – Stn DW2987, 17°58'S, 163°01'E, 310-330 m, 1 dd. – **Norfolk Ridge.** NORFOLK 2: stn CP2160, 22°42'S, 167°10'E, 313-315 m, 1 dd.

Distribution. Northern New Caledonia, 255-355 m (living); southern New Caledonia, 200-313 m (living) (range computed from Marshall, 1995).

Calliostoma (Benthastelena) diadematum
Marshall, 1995
Figs 67-68

Calliostoma (Benthastelena) diadematum Marshall, 1995: 406-408, figs 40-42, 46, 126, 154. Type locality: Chesterfield Islands, 280-295 m.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2123, 23°18'S, 168°15'E, 187-197 m, 1 dd.

Distribution. Chesterfield Islands and southern New Caledonia, 120-580 m, living at 258-320 m (range computed from Marshall, 1995).

Calliostoma (Benthastelena) hexalyssion n. sp.
Colour Figs A1-A2, Figs 73-78, Table 2

Type material. Holotype (22.1 x 18.2 mm) MNHN (MNHN 20077). Paratypes: 8 MNHN (MNHN 20078), 1 RMBR (ZRC.MOL.2900), 1 coll. C.Vilvens.

Type locality. Solomon Islands, Vella Gulf, between Vella Lavella Is. and Kalombangara Is., SALOMON 2, stn CP2262, 07°56'S, 156°51'E, 460-487 m.

Material examined. Solomon Islands. SALOMON 1: stn DW1773, 08°11'S, 160°40'E, 331-397 m, 1 lv (paratype). – Stn CP1792, 09°15'S, 160°09'E, 477-505 m, 1 dd (paratype). – Stn CP1798, 09°21'S, 160°29'E, 513-564 m, 1 dd. – Stn 1806, 09°38'S, 160°50'E, 621-708 m, 1 dd,1 sub dd. – Stn 1808, 09°46'S, 160°53'E, 611-636 m, 1 lv (paratype). – SALOMON 2: stn CP2181, 08°47'S, 159°40'E, 645-840 m, 1 dd. – Stn CP2184, 08°17'S, 160°00'E, 464-523 m, 2 dd. – Stn CP2187, 08°18'S, 160°00'E, 482-604 m, 4 lv (with 3 paratypes). – Stn CP2188, 08°18'S, 160°01'E, 495-677 m, 2 lv (paratypes), 1 sub dd. – Stn CP2214, 07°42'S, 157°44'E, 550-682 m, 2 dd, 1 juv dd. – Stn CP2245, 07°43'S, 156°26'E, 582-609 m, 2 dd. – Stn CP2246, 07°43'S, 156°25'E, 664-682 m, 2 dd. – Stn CP2247, 07°45'S, 156°25'E, 686-690 m, 1 dd. – Stn CP2248, 07°43'S, 156°25'E, 650-673 m, 4 lv (with paratype). – Stn CP2262, 07°56'S, 156°51'E, 460-487 m, 3 lv (with holotype and paratype). – Stn 2297, 09°09'S, 158°16'E, 728-777 m, 2 dd. – SALOMONBOA 3: stn CP2773, 09°25'S, 160°32'E, 619 m, 1 lv, 1 sub. – Stn CP2848, 09°35'S, 160°47'E, 414-456 m, 1 dd. – Stn CP2849, 09°36'S, 160°46'E, 448-523 m, 3 lv, 2 sub, 1 juv.

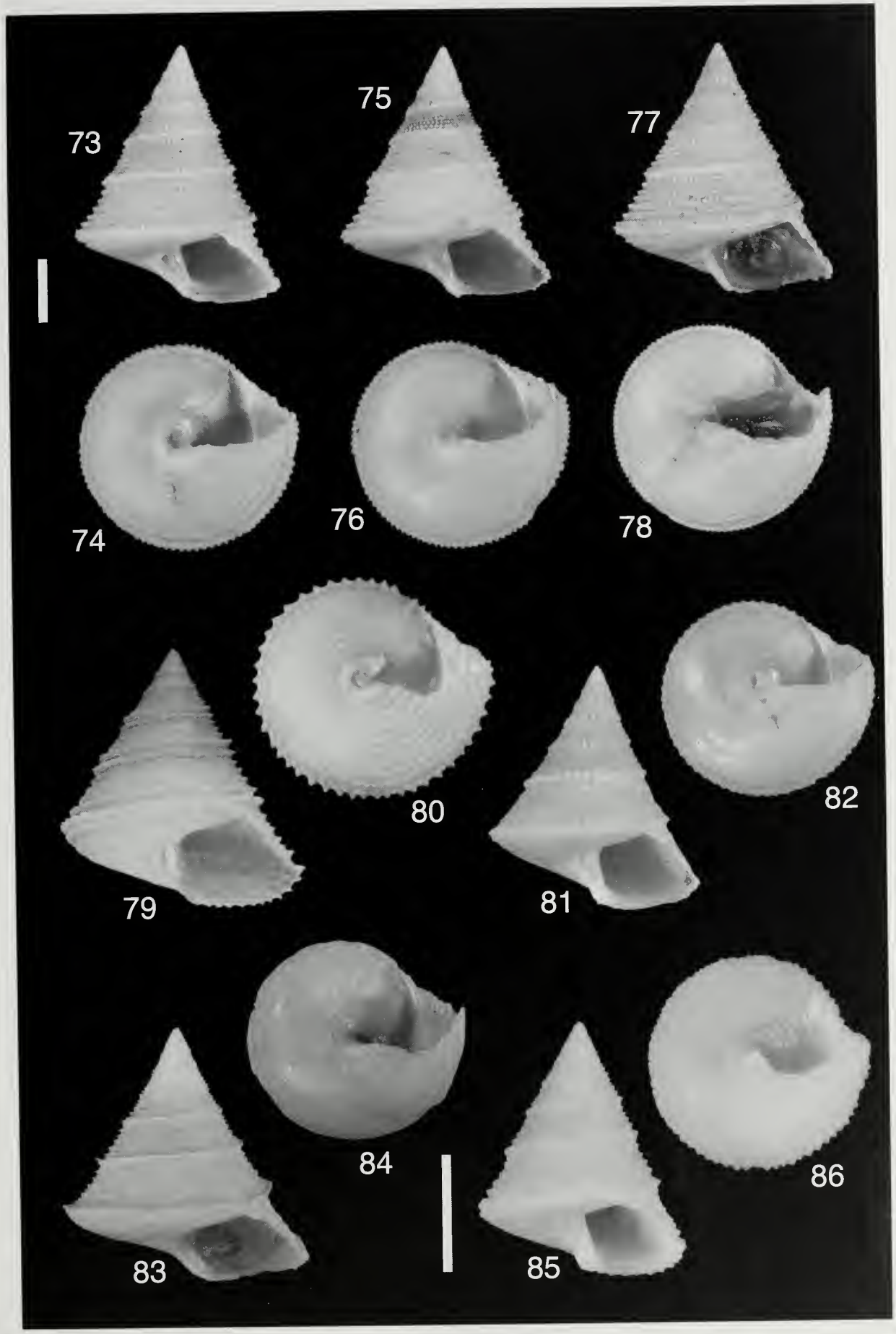
Distribution. Solomon Islands, 397-728 m, living at 397-650 m.

Diagnosis. A typical rather large *Calliostoma* species with an elevated, conical to weakly concave spire, half a dozen spiral cords and a strong suprasutural granular spiral cord making keel, all cords with pointed beads, a weakly convex base with a large median nearly smooth area bordered by an external and a few internal spiral cords, without umbilicus.

Description. *Shell* of rather large size for the genus (height up to 22.1 mm, width up to 18.2 mm), higher than wide, coeloconoidal in shape; spire elevated, height 1.1x to 1.3x width, 4.1x to 5.3x aperture height; angulate periphery; anomphalous.
Protoconch 350 µm wide, of 1 whorl, rounded, covered by a network of ridges producing polygonal areas; apical fold straight with a very thin rounded terminal varix.
Teleoconch of up to 9.1 whorls; whorls nearly straight to weakly concave, with a suprasutural keel except first whorls. Suture very poorly visible, not canaliculated. First whorl convex, sculptured by axial, weakly prosocline threads and 3 cords; P2 and P3 appearing immediately, P1 appearing half whorl later, all granular by intersection with axial threads; P2 closer to P1 than to P3; interspace between threads first 1x, quickly 2x larger than threads; P1 weaker than other cords; P4 completely hidden by succeeding whorl; suture visible, not canaliculated. On second

Figures 73-86. Scale bars: 5 mm.

73-78. *C. (Benthastelena) hexalyssion* n. sp., Solomon Islands.
73-74. Holotype MNHN (20077), 460-487 m [SALOMON 2, stn CP2262], 22.2 x 18.1 mm; **75-76.** Paratype MNHN (20078), 460-487 m [SALOMON 2, stn CP2262], 21.1 x 17.3 mm; **77-78.** Paratype MNHN (20078), 482-604 m [SALOMON 2, stn CP2187], 19.7 x 17.1 mm.
79-80. *C. (Benthastelena) pancicostatum* Kosuge, 1984. Holotype IMT (IMT-84-46), Philipines, Cebu, 19.2 x 18 mm; **81-82.** *Bathyfantor coriolis* Marshall, 1995, MNHN, Fiji, 304 m [MUSORSTOM 10, stn CP1342], 17.x15.9 mm; **83-84.** *Bathyfantor multispinosum* Schepman, 1908. Indonesia, Tanimbar Is., 549-552 m [KARUBAR, stn CC56], 21.8 x 21.0 mm; **85-86.** *Calliostoma swinneni* Poppe, Tagaro & Dekker, 2006, paratype MNHN (5365), Philippines (Aliguay), 60-120 m, 11.2 x 9.0 mm.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whorl, P1 as strong as P2, even stronger at end of whorl, P3 strongest, producing a weak keel; cords becoming widely spaced at end of whorl; axial threads slightly broader, distance between 3x larger than threads. On third whorl, P1 and P3 thickening, P3 strongest with sharp beads; P2 not thickening, weakest; S3 appearing at begin of whorl, thickening quickly to become as strong as P3 at end of whorl; beads of cords widely separated, connected by axial threads giving a reticulate pattern; beads of all cords but P2 sharp. On fourth whorl, S3 stronger than P3, both making keel; S1 and S2 appearing, very thin; beads of P2 also pointed; threads between P2 and P3 very prosocline. On fifth whorl, S3 strongest, making the single keel; P1 and P3 similar; axial sculpture weakening. On sixth whorl, S3 dividing in two cords; all cords weaker than S3, similar in size, all with separated, sharp pointed beads; axial sculpture obsolete. On last whorl, P4 fully visible, peripheral, thin, subgranular, much weaker than other cords; interspace between cords at least 2x size of cords.

Aperture subquadrangular; outer lip thin, straight; basal part weakly rounded, producing an angle with outer lip and an obtuse angle at meeting point with inner lip.

Columella nearly straight, oblique, without tooth; callus completely covering umbilicus.

Base weakly convex, with an external subgranular spiral cord, 1 to 3 internal, nearly smooth cords around the umbilical area and an intermediate zone with up to 8 very low, very thin, poorly visible cords giving to this zone a smooth appearance.

Colour of teleoconch pinkish white, sometimes with light blue large stripe; protoconch white.

Operculum corneous, circular, multispiral with a short growing edge, brown.

	TW	H	W	HA	H/W	H/HA
holotype	9.1	22.1	18.2	4.3	1.21	5.14
paratype MNHN 1	9.1	21.0	17.5	4.0	1.20	5.25
paratype MNHN 2	8.5	19.4	17.0	4.6	1.14	4.22
paratype MNHN 3	9.0	21.5	17.2	4.0	1.25	5.38
paratype MNHN 4	8.3	18.7	16.2	4.0	1.15	4.68
paratype MNHN 5	8.4	19.5	16.9	4.3	1.15	4.53
paratype MNHN 6	8.0	17.4	14.5	4.2	1.20	4.14
paratype MNHN 7	8.5	18.9	15.5	4.3	1.22	4.40
paratype MNHN 8	8.1	17.1	14.2	4.1	1.20	4.17
paratype RMBR	8.6	19.1	15.8	4.5	1.21	4.24
paratype CV	8.5	19.8	17.0	4.6	1.16	4.30
means	8.6	19.5	16.4	4.3	1.19	4.59

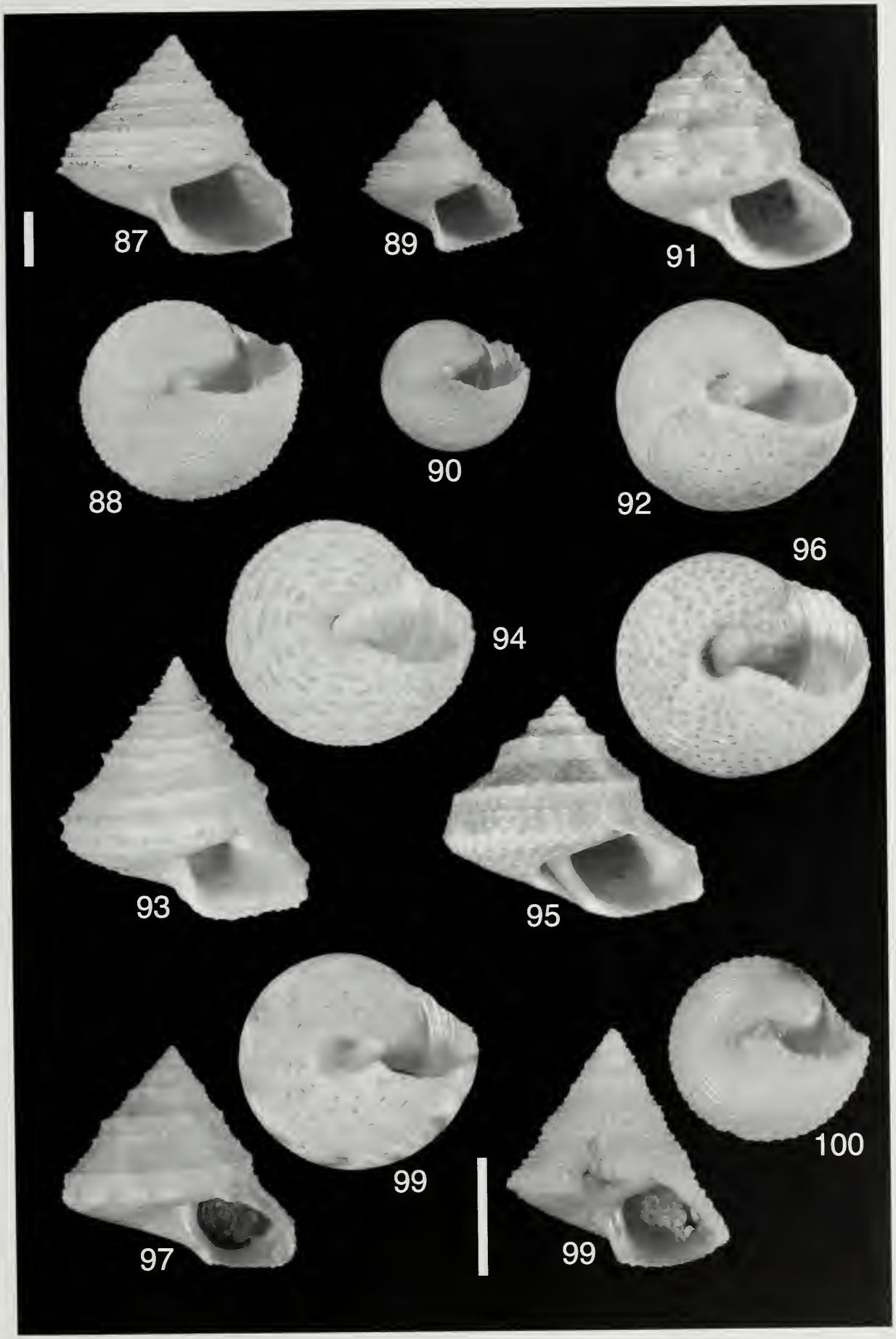
Table 2. – *Calliostoma (Benthastelena) hexalyssion* n. sp. : Shells measurements in mm for types.

Discussion. The placement of the new species in *Benthastelena* subgenus may be provisional, because P1 is growing quickly to be similar in size to P2 and P3 (P1 develops later than the rather strong P2 and P3 in both types of *Benthastelena* and *Tristichotrochus*); but the new species meet all the other criteria of the subgenus (especially sharp nodules of the spiral cords).

Calliostoma (Benthastelena) hexalyssion n. sp. resembles *C. (B.) pancicostatum* Kosuge, 1984 (Figs 79-80) from the Philippines (described as belonging to the subgenus *Tristichotrochus*), but this similar in size species is yellowish brown coloured, has a S1 that appears much earlier (more or less at the same time as S3), a P3 never divided in two parts and a very different base with about 11 granular spiral cords covering all the basal area.

Figures 87-100. Scale bars: 5 mm.

87-90. *Calliostoma (Benthastelena) malaita* n. sp.
87-88. Holotype MNHN (20079), Solomon Islands, 487-541 m [SALOMON 2, stn CP2186], 20.7 x 227 mm; **89-90.** Paratype MNHN (20080), Norfolk Ridge, 795-852 m [NORFOLK 2, stn DW2069], 11.4 x 12.3 mm.
91-92. *Calliostoma (Benthastelena) multiliratum* (Sowerby II, 1875), Japan, C.Vilvens coll., 22.2 x 22.4 mm.
93-94. *Calliostoma (Benthastelena) galea* Sakurai, 1994, Taiwan, holotype NSMT (Mo 70257), 23.5 x 22.1 mm.
95-96. *Calliostoma palmeri* Dall, 1871, Western Mexico (Guaymas), 30 m, C.Vilvens coll., 19.8 x 23.3 mm.
97-98. *Calliostoma (Kombologion) adspersum* (Philippi, 1851), Brasil (Vitoria), 40-50 m, C.Vilvens coll., 18.4 x 20.3 mm; **99-100.** *Calliostoma (Bathyfautor) caledonicum* Marshall, 1995, Northern New Caledonia, 669-683 m [CONCALIS, stn DW3013], 11.0 x 10.8 mm.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The new species also resembles *C. (Bathyfantor) caledonicum* Marshall, 1995 (Figs 99-100) from New Caledonia, but this species is narrowly umbilicate, has a different ontogeny of primary cords (P1 and P2 commencing not before the 2nd whorl), a smaller ratio H/W and roundly conical, not pointed, beads on spiral cords of whorls.
The new species has size and conical shape similar to *Bathyfantor coriolis* Marshall, 1995 (Figs 81-82) from Chesterfield Islands and Fiji, but this species has a clearly more concave shape and the spiral cords other than S3 and P4 obsolete on the last whorls.
Calliostoma (Benthastelena) hexalyssion n. sp. weakly resembles to *C. swinneni* Poppe, Tagaro & Dekker, 2006 (Figs 85-86) from the Philippines, but this somewhat smaller species lacks a S2 spiral cord, has rounded to blunt beads instead sharp beads, a very different base with 10 granular, rather thick, evenly spaced spiral cords.
The new species may be compared to *C. (B.) pertinax* Marshall, 1995 (Figs 63-64) from New Caledonia, but this smaller species has a different ontogeny of the spiral cords, with P1 commencing later (2nd whorl), S1 commencing very late (7th whorl) and S2 appearing before S3; it has a smaller ratio H/W, rounded not pointed beads on cords and a different base with 10-12 spiral cords.
Taking the broad nearly smooth basal band into account, the new species remembers *Bathyfantor multispinosum* Schepman, 1908 (Figs 83-84) from Indonesia and the Philippines, but this similar in size species has a S2 that appears at the same time as S3, a smooth S3 forming a prominent carena giving a concave shape to the whorl and a more convex base.

Etymology. Six thin string-shape necklace (Ancient Greek : εξ and αλυσιου), used as a global noun in apposition - with reference to the six main cords on the whorls of the shell.

Calliostoma (Benthastelena) malaita n. sp.
Colour Figs C1-C2, Figs 87-90, Table 3

Type material. Holotype (20.7 x 22.7 mm) MNHN (MNHN 20079). Paratypes: 2 MNHN (MNHN 20080).

Type locality. Solomon Islands, Indispensable Strait between Santa Isabel and Malaita, SALOMON 2, stn CP2186, 08°17'S, 160°00'E, 487-541 m.

Material examined. Solomon Islands. SALOMON 2: stn CP2186, 08°17'S, 160°00'E, 487-541 m, 1 dd (holotype). – SALOMONBOA 3: stn CP2799, 08°41'S, 161°02'E, 430-653 m, 1 dd (paratype). – **Norfolk Ridge.** NORFOLK 2: stn DW2069, 25°20'S, 168°58'E, 795-852 m, 1 sub dd (paratype).

Distribution. Solomon Islands, 487-541 m and Norfolk Ridge, 795-852 m.

Diagnosis. An atypical, rather large *Calliostoma* species with a moderately elevated, conical spire with a median shoulder, about a dozen uneven spiral cords on last whorls, the spiral cord on the shoulder the strongest with pointed beads, a weakly convex base with about 20 smooth spiral cords, without umbilicus.

Description. *Shell* of large size for the genus (height up to 20.7 mm, width up to 22.7 mm), slightly wider than high, conical in shape with a median shoulder on whorls; spire moderately elevated, height 0.9x to 1.0x width, 2.8x to 2.9x aperture height; angulate periphery; anomphalous.
Protoconch about 450 µm wide, of 1 whorl, rounded, covered by a network of ridges producing polygonal areas; apical fold slightly curved with a thin rounded terminal varix.
Teleoconch of up to 6.3 convex whorls, with a median shoulder. Suture poorly visible, not canaliculated. First whorl convex, sculptured by 4 smooth spiral cords; P2 quickly making shoulder; S1 appearing almost at the same time as primary cords; S2 appearing between begin (holotype) and end (paratype) of whorl; S3 absent; weak axial threads appearing in the last quarter of whorl, intersection with spiral cords making beads; P4 almost completely hidden under succeeding whorl. On second whorl, P1 and P2 strongest, with round nodules like S1; axial threads slightly broader, distance between 1.5x larger than threads. On third whorl, P2 a little stronger than P1; one tertiary cord commencing at mid whorl between P1 and S1; distance between P3 and P4 twice larger than distance between other cords; axial threads wider on abapical part, distance between threads 1.5x larger than threads. On fourth whorl, tertiary cord commencing between P2 and S2 and between S1 and P2; axial sculpture weakening. On fifth whorl, weak tertiary cord appearing between P3 and P4; axial sculpture obsolete. On next whorls, additional thin tertiary cords may appear by intercalation; beads of P2 and P3 clearly pointed. On last whorl, P4 fully visible, peripheral, thin and horizontally compressed, with blunt sharp beads; P2 strongest.
Aperture roundly subquadrangular; outer lip thin, rounded; basal part weakly rounded, producing an angle with outer lip and an obtuse angle at meeting point with inner lip.
Columella curved, slightly oblique, without tooth; callus completely covering umbilicus.
Base weakly convex, with about 20 smooth spiral cords; 10 inner cords thicker than 10 outer cords; distance between cords less or equal to cords.
Colour of teleoconch nacreous white; protoconch white.
Operculum unknown.

	TW	H	W	HA	H/W	H/HA
Holotype	6.1	20.7	22.7	7.2	0.91	2.88
Paratype Solomon Is.	6.3	19.4	19.8	6.7	0.98	2.90
Paratype Norfolk Ridge	5.2	11.4	12.3	4.1	0.93	2.78

Table 3. – *Calliostoma (Benthastelena) malaita* n. sp. : Shells measurements in mm for types.

Discussion. The new species resembles the similar in shape Japanese *Calliostoma consors* (Lischke, 1872) and *Calliostoma multiliratum* (Sowerby II, 1875) (Figs 91-92) (if ever the latter is a different species), but these two species have finer and weaker spiral cords with adapical cords more beaded than those below and smooth or weakly subgranular P2 and P3, a spiral cord S1 appearing only at the fourth whorl, a slightly more convex base with an umbilical depression.

The new species can also be compared to *C. galea* Sakurai, 1994 (Figs 93-94) from Taiwan, but this similar in size species has two distinct keels (not one) on the whorls of the spire and much fewer (about 9), much more spaced spiral cords on the base.

Regarding this proximity and the absence of soft parts, the new species should be placed in the same subgenus as these three species, namely *Tristichotrochus* Ikebe, 1942 (type species : *C. aculeatum* Sowerby, 1912). Marshall (1995) synonymised it with the *Benthastelena* Iredale, 1936 [type species : *Calliostoma granulatum* (Born, 1778)], considering the similarities between the two type species, while admitting that the classification all the species belonging to *Tristichotrochus* need a thorough study (three groups of species are mentioned as needing reclassification). However the placement of the new species (and its related species) in *Benthastelena* subgenus must be considered as provisional, because P1 (like S1) appears at the same time as P1 and P2 (the late developing of P1 is pointed out by Marshall as a feature of the type species of both *Benthastelena* and *Tristichotrochus*) and is growing here quickly to be similar in size to P2 and P3. The new species meet more or less the other criteria of the subgenus (especially pointed nodules of the strongest spiral cords).

Also the subgenus *Kombologion* Clench & Turner, 1960 (type species : *Calliostoma bairdii* Verril & Smith, 1880) could be used for the new species when comparing it to *C. (Kombologion) adspersum* (Philippi, 1851) (Figs 97-98), although the shoulder is made by P3 on the whorls and is not median but at 3rd abapical quarter of the whorl.

Calliostoma (Benthastelena) malaita n. sp. remembers *C. palmeri* Dall, 1871 (Figs 95-96) from north-eastern Mexico and the very closely related *C. bonita* Strong, Hanna & Hertlein, 1933 from eastern Mexico (these two species could be conspecific), but these similar in size species have their shoulder on P3 (not P2), all spiral cords smooth or at most subgranular, a base with a purple umbilical depression bordered and only 10-12 spiral cords.

Despite the large gap between the two distribution areas, I see no reason to separate the available specimens into two subspecies because the ontogeny of the cords is the same on the 5 first teleoconch whorls of all specimens, the New Caledonian shell having only 5.2 whorls and being probably subadult (as the angulate shape of the aperture also suggests). This specimen has only 14 spiral cords on the base, but one can think that it is because it is subadult.

Etymology. Malaita Island (one of the Solomons Is.), used as a noun in apposition - with reference to the type locality.

Subgenus : ***Ampullotrochus*** Monterosato, 1890
Type species : *Trochus granulatus* Born, 1778 (by monotypy) – Recent, Europe.

Calliostoma (Ampullotrochus) xanthos
Marshall, 1995
Colour Figs J1-J2, Figs 59–60

Calliostoma (Ampullotrochus) xanthos Marshall, 1995: 413-415, figs 58-60, 129, 155. Type locality: southern New Caledonia, 470 m.
Calliostoma (Ampullotroclus) xanthos – Vilvens, 2005: 10.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2109, 23°47'S, 168°17'E, 422-495 m, 1 dd. – Stn DW2117, 23°24'S, 168°00'E, 400 m, 1 dd. – Stn DW2132, 23°17'S, 168°14'E, 405-455 m, 2 dd. – **Northern New Caledonia.** CONCALIS: stn DW2979, 18°16'S, 162°54'E, 350 m, 1 dd.

Distribution. Off Lifou, Loyalty Islands, 425 m; northern New Caledonia, 350 m; south of Ile des Pins, southern New Caledonia, 400-470 m, living at 470 m (range computed from Marshall, 1995); off Raoul Island, Kermadec Islands, 390-490 m; Fiji, 168-353 m; Tonga, 500 m.

Remarks. The dead specimen from northern New Caledonia shows the correct ontogeny, except that the spiral cord S1 is lacking. Provisionally, it implies an extension of the distribution, although additional material is clearly needed to draw a firm conclusion about a possibly new subspecies.

Calliostoma (Ampullotrochus) peregrinum
Marshall, 1995
Colour Figs 111-H2, Figs 61-62

Calliostoma (Ampullotrochus) peregrinum Marshall, 1995: 416-417, figs 61-63, 130, 153. Type locality: southern New Caledonia, 235-250 m.
Calliostoma (Ampullotrochus) peregrinum – Vilvens, 2005: 10.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2024, 23°28'S, 167°51'E, 370-371 m, 1 dd. – Stn DW2136, 23°01'S, 168°23'E, 402-410 m, 1 dd, 1 juv dd. – **Northern New Caledonia.** CONCALIS: stn DW2963, 18°22'S, 162°59'E, 220-240 m, 1 dd.

Distribution. South of Loyalty Islands, 255-340 m, living at 255 m; southern New Caledonia, 233-402 m, living at 245-260 (range computed from Marshall, 1995); northern New Caledonia, 220-240 m (dead); northern Three King Rise and northern New Zealand, 841 m (dead); Vanuatu, 319 m (dead); Futuna Island, 441-450 m (dead); and Tonga, 440-487 m, living at 440-487 m.

Remarks. The dead specimen from northern New Caledonia shows the correct ontogeny and this implies an extension of the distribution for this species.

Calliostoma (Ampullotrochus) tropis n. sp.
Colour Figs D1-D2, Figs 101-102

Type material. Holotype (15.9 x 12.9 mm) MNHN (MNHN 20081).

Type locality. Solomon Islands, off northern coast of Guadalcanal, SALOMON 1, stn CP1804, 09°32'S, 160°37'E, 309-328 m.

Material examined. Solomon Islands. SALOMON 1: stn CP1804, 09°32'S, 160°37'E, 309-328 m, 1 lv (holotype).

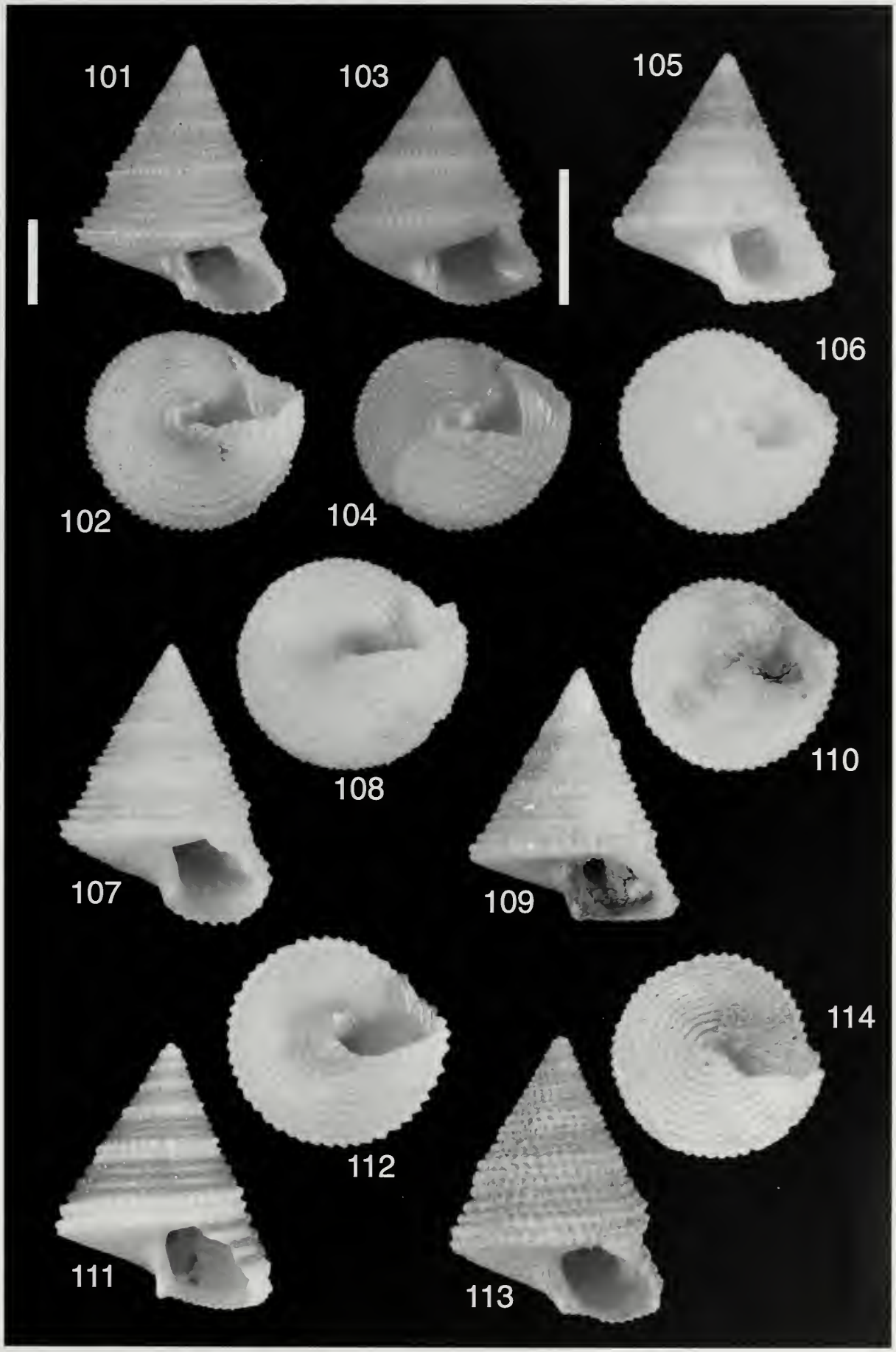
Distribution. Only known from the type locality.

Diagnosis. A typical moderately large *Calliostoma* species with an elevated, conical to weakly concave spire, 7 spiral cords with a strong abapical granular, with blunt pointed beads spiral cord making keel, an almost flat base with 8 granular spiral cords, without umbilicus.

Description. *Shell* of medium size for the genus (height 15.9 mm, width 12.9 mm), much higher than wide, conical in shape; spire elevated, height 1.2x width, 4.8x aperture height; angulate periphery; anomphalous.
Protoconch 280 µm wide, of 0.9 whorl, rounded, with a network of ridges giving reticulate shape; apical fold more or less straight, with a rather thin rounded terminal varix.
Teleoconch of 7.6 whorls; first whorls straight, last whorls weakly concave with a suprasutural keel. Suture hard to detect, not canaliculated. First whorl convex, sculptured by axial, weakly prosocline threads and 3 cords; P2 and P3 appearing immediately, P1 appearing a quarter of whorl later; spiral cords all granular by intersection with axial threads, evenly spaced on the whole whorl; P1 weaker than other cords; P4 completely hidden by succeeding whorl; distance between threads 1.5x to 2x larger than threads. On second whorl, P1 as strong as P2, P3 strongest; S3 appearing above suture; distance between axial threads 2x to 2.5x larger than threads. On third whorl, P3 strongest, S3 thickening, almost as strong as P3; P4 partly visible above suture; S2 appearing at end of whorl, very thin; beads of cords connected by axial threads giving a reticulate pattern. On fourth whorl, S3 as strong as P3, both with sharp beads; S2 as thick as P2, both weaker than P1. On next whorls, S3 strongest, making keel; P1, P2, S2 and P3 more or less similar in strength; beads of P3 and S3 bluntly sharp; S1 appearing at begin of 7th whorl; P4 slightly weaker than all other cords; axial sculpture weakening. On last whorl, P4 fully visible, peripheral, granular, weaker than other cords; interspace between P2, S2 and P3 2x size of cords, similar in size to cords between P1, S1 and P2; S3 and P4 close; axial threads still visible, stronger in P1-S1 and P3-S3 zones.

Figures 101-114. Scale bars: 5 mm.

101-102. *Calliostoma (Ampullotrochus) tropis* n. sp., holotype MNHN (20081), Solomon Islands, 309-328 m [SALOMON 1,stn CP1804], 15.9 x 12.9 mm; **103-104.** *Calliostoma (Ampullotrochus) alisi* Marshall, 1995, holotype MNHN, Loyalty Islands, 430 m [MUSORSTOM 6, stn CP464], 14.4 x 12.5 mm; **105-106.** *Calliostoma katsumakamai* Kosuge, 1998, holotype (IMT-98-2), Indonesia, Sumatra, 9.3 x 8.2 mm.
107-110. *Calliostoma (Ampullotrochus) aporia* n. sp., Solomon Islands.
107-108. Holotype MNHN (MNHN 20082), 105-128 m [SALOMON 2, stn CP2294], 11.2 x 8.8 mm;
109-110. Paratype MNHN (MNHN 20083), 150-175 m [SALOMONBOA 3, stn CP2804], 8.8 x 7.4 mm.
111-114. *Calliostoma (Ampullotrochus) philippei* Poppe, 2004, Solomon Islands.
111-112. 283-305 m [SALOMON 1, stn DW1859], 9.9 x 7.8 mm. **113-114.** 182-277 m [SALOMON 2, stn CP2234], 11.3 x 8.3 mm.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Aperture roundly subquadrangular; outer lip thin, straight; basal part rounded, producing a rather acute angle with outer lip and an more obtuse angle at meeting point with inner lip.
Columella nearly straight, weakly oblique, without tooth; callus completely covering umbilicus.
Base almost flat, with 8 strong granular cords; interspace between cords smaller than cords.
Colour of teleoconch brownish orange with S3 and P4 white; base lighter; protoconch white.
Operculum corneous, circular, multispiral with a rather short growing edge, brown.

Discussion. The placement of the new species in *Ampullotrochus* subgenus is justified by the angulate periphery, the almost flat whorls and the late persistent axial sculpture.
Calliostoma (Ampullotrochus) tropis n. sp. resembles *C. (A.) alisi* Marshall, 1995 (Figs 103-104) from Loyalty Islands, but this similar in size species has a larger protoconch (430 µm), S2 commencing before S3, spiral cords proportionally thicker with a smaller distance between cords, S3 not prominent.
The new species also resembles *C. (Benthastelena) pertinax* Marshall, 1995 (Figs 63-64) from New Caledonia, but this smaller species relative to the number of whorls has a larger protoconch (400 µm), S2 commencing before S3, more numerous spiral cords on the base (10-12 primary cords with additional secondary cords between some primary cords), a different colour and colour pattern.
Calliostoma (Ampullotrochus) tropis n. sp. may be compared to *C. (Fautor) houbricki* Marshall, 1995 (Figs 27-28) from New Caledonia but this slightly smaller species has a slightly larger protoconch (350-370 µm), lacks the S2 cord, has a different colour with a narrow yellowish brown line between the spiral cords.
The new species also reminds *C. (F.) periglyptum* Marshall, 1995 (Figs 39-44) from New Caledonia and Loyalty Islands, but this much smaller species has a larger protoconch (330-380 µm), a very strong, peripheral P3 making keel while S3 is weak or even absent and more numerous cords on the base (10-14).

Etymology. Keel (Ancient Greek : τροπις), used as a noun in apposition - with reference to the prominent S3 on the whorls of the shell.

Calliostoma (Ampullotrochus) aporia n. sp.
Colour Figs F1-F2, Figs 107-110

Type material. Holotype (11.2 x 8.8 mm) MNHN (MNHN 20082). Paratypes: 2 MNHN (MNHN 20083).

Type locality. Solomon Islands, south coast of Tetepare Is., New Georgia Group, SALOMON 2, stn CP2294, 08°47'S, 157°30'E, 105-128 m.

Material examined. Solomon Islands. SALOMON 2: stn CP2294, 08°47'S, 157°30'E, 105-128 m, 1 dd (holotype). – SALOMONBOA 3: stn CP2804, 09°15'S, 161°21'E, 150-175 m, 1 dd. – Stn CP2841, 10°26'S, 161°23'E, 142-260 m, 1 dd.

Distribution. Solomon Islands, 128-150 m (dead).

Diagnosis. A typical rather small *Calliostoma* species with an elevated, conical spire, 6 spiral cords with a strong abapical granular spiral cord making keel, the strongest cords with blunt pointed beads, an almost flat base with 9 thick granular spiral cords and strong axial riblets between them, without umbilicus.

Description. *Shell* of moderate size for the genus (height up to 11.2 mm, width up to 8.8 mm), higher than wide, conical in shape; spire elevated, height 1.2x to 1.3x width, 3.9x aperture height (holotype only, paratype immature); angulate periphery; anomphalous.
Protoconch about 220 µm wide (encrusted on all available specimens), of 1 whorl, rounded, with a network of ridges giving reticulate shape; apical fold more or less straight, without clearly visible terminal varix.
Teleoconch of up to 7.7 whorls; whorls straight, last whorls with a suprasutural keel. Suture poorly visible, not canaliculated. First whorl convex, sculptured by axial, weakly prosocline threads and 3 spiral cords P1, P2 and P3 appearing immediately, all granular by intersection with axial threads; P1 weakest, P3 strongest; P2 closer to P1 than to P3; P4 completely hidden by succeeding whorl; distance between threads 2x larger than threads. At end of second whorl, S3 appearing above suture; S2 absent; distance between axial threads about 2.5x larger than threads. On third whorl, P3 strongest, S3 thickening, as strong as P3; P4 partly visible above suture; beads of cords connected by axial threads giving a reticulate pattern. On fourth whorl, S1 appearing, thin; S3 strongest. On fifth whorl, S3 strongest, making keel with sharp pointed, horizontally oriented beads; P1, S1 and P2 similar in size at end of whorl, weaker than P3; axial sculpture weaker. On last whorl, P4 fully visible, peripheral, granular, weaker than other cords; interspace between cords similar in size to cords; a tertiary cords may be present between P1, S1, P2 and P3; axial threads weak (paratype) to nearly obsolete (holotype) except in abapical part.
Aperture roundly subquadrangular; outer lip thin, straight; basal part rounded, producing an angle with outer lip and an more obtuse angle at meeting point with inner lip.
Columella nearly straight, weakly oblique, slightly swollen in the middle, without tooth; callus completely covering umbilicus.
Base weakly convex to almost flat, with 9 or 10 strong, granular cords; interspace between cords similar in size to cords; low, thick spiral threads visible between spiral cords.

Colour of teleoconch off-white to light grey; brownish flames or shades may be present; protoconch off-white.

Discussion. The placement of the new species in *Ampullotrochus* subgenus is justified by the angulate periphery, the almost flat whorls and the late persistent axial sculpture.
Calliostoma (Ampullotrochus) aporia n. sp. is similar in shape and size for a similar number of whorls to *C. (Fautor) houbricki* Marshall, 1995 (Figs 27-28) from New Caledonia, but this species living at a similar depth shows thin yellowish brown spiral line in the interspaces between spiral cords, has a larger protoconch (350-370 µm) and a subangular (not angulate) periphery.
The new species also resembles *C. katsunakamai* Kosuge, 1998 (Figs 105-106) from Indonesia, but this similar in size species has a S2 spiral cord and no S3.
Calliostoma (Ampullotrochus) aporia n. sp. also resembles *C. (Benthastelena) pertinax* Marshall, 1995 (Figs 63-64) from New Caledonia, but this similar in size species has a larger protoconch (400 µm), has a S2 (commencing before S3) and a different colour pattern.
The new species somewhat resembles *C. (Ampullotrochus) alisi* Marshall, 1995 (Figs 103-104) from Loyalty Islands, but this slightly larger species has a larger protoconch (430 µm), has a S2 (commencing before S3) and a S3 not prominent.
Calliostoma (Ampullotrochus) aporia n. sp. can be compared to *C. simplex* Schepman, 1908 (Figs 57-58) from Indonesia and Philippines, but this slightly larger species has a S2 (commencing before S3), a S1 being the most prominent (not S3) and much thinner spiral cords on the base.
The new species can also be compared to *C. (Fautor) belauense* Okutani & Kurata, 1998 (Figs 53-54) from Palau Islands, but this much larger species with a similar number of whorls has more numerous spiral cords on the whorls, with S2 present, and more numerous, low, smooth basal spiral cords.

Etymology. Absence, deprivation (Ancient Greek : απορια) - with reference to absence of S2 on the whorls of the shell.

Calliostoma (Ampullotrochus) philippei Poppe, 2004
Colour Figs K1-K2, Figs 111–114

Calliostoma philippei Poppe, 2004: 5-6, pl.1. Type locality: Philippines, off Aliguay Island, 80-200 m.
Calliostoma vilvensi – Poppe, Tagaro & Dekker, 2006: 122, pl. 63 fig. 5.

Material examined. Solomon Islands. SALOMON 1: stn DW1859, 09°33'S, 160°37'E, 283-305 m, 1 lv. – SALOMON 2: stn CP2234, 06°51'S, 156°24'E, 182-277 m, 2 dd. – SALOMONBOA 3: stn CP2818, 10°10'S, 161°55'E, 258 m, 1 dd. – unknown station, 1 dd.

Distribution. Philippines, Aliguay Island, 80-150 m (range computed using material of Poppe et al, 2006); Salomon Islands, 258-283 m.

Remarks. This pretty species was only known from the type locality and these records extend its distribution. The author did not rank his new species into a subgenus. Considering the conical shape and the strong, persistent axial sculpture (especially between P3 and S3), it seems likely to place this species into the *Ampullotrochus* subgenus.

Genus : ***Bathyfautor*** Marshall, 1995
Type species : *Bathyfautor rapuhia* Marshall, 1995 (by o.d.) – Recent, New Zealand.

Bathyfautor caledonicum Marshall, 1995
Figs 99–100

Bathyfautor caledonicus Marshall, 1995: 421-423, figs 76-78, 134, 157. Type locality: southern New Caledonia, 775 m.
Bathyfautor caledonicus – Vilvens, 2005: 16.

Material examined. Northern New Caledonia. CONCALIS: stn DW3013, 18°49'S, 163°11'E, 669-683 m, 1 dd.

Distribution. Southern New Caledonia, 700-975 m, living at 680-700 m; northern New Caledonia, 550-669 m, living at 550-668 m; Vanuatu, 450-489 m (dead).

Subfamily : **THYSANODONTINAE** Marshall, 1988
Genus: ***Thysanodonta*** Marshall, 1988
Type species: *Thysanodonta aucklandica* Marshall, 1988 (by o.d.) – Recent, New Zealand.

Thysanodonta boucheti Marshall, 1988
Figs 115-116

Thysanodonta boucheti Marshall, 1988: 219-220, figs 3 G-I. Type locality: northern New Caledonia, 300-350 m.
Thysanodonta boucheti – Vilvens & Maestrati, 2006: 3, figs 1-2.

Material examined. Northern New Caledonia. CONCALIS: stn DW2980, 18°16'S, 162°57'E, 574-660 m, 1 dd. – Stn DW2993, 18°00'S, 163°01.5'E, 700-730 m, 1 dd.

Distribution. Northern New Caledonia, 350-700 m, living at 361-365 m (range computed using data of Marshall, 1988 & 1995 and Vilvens & Maestrati,

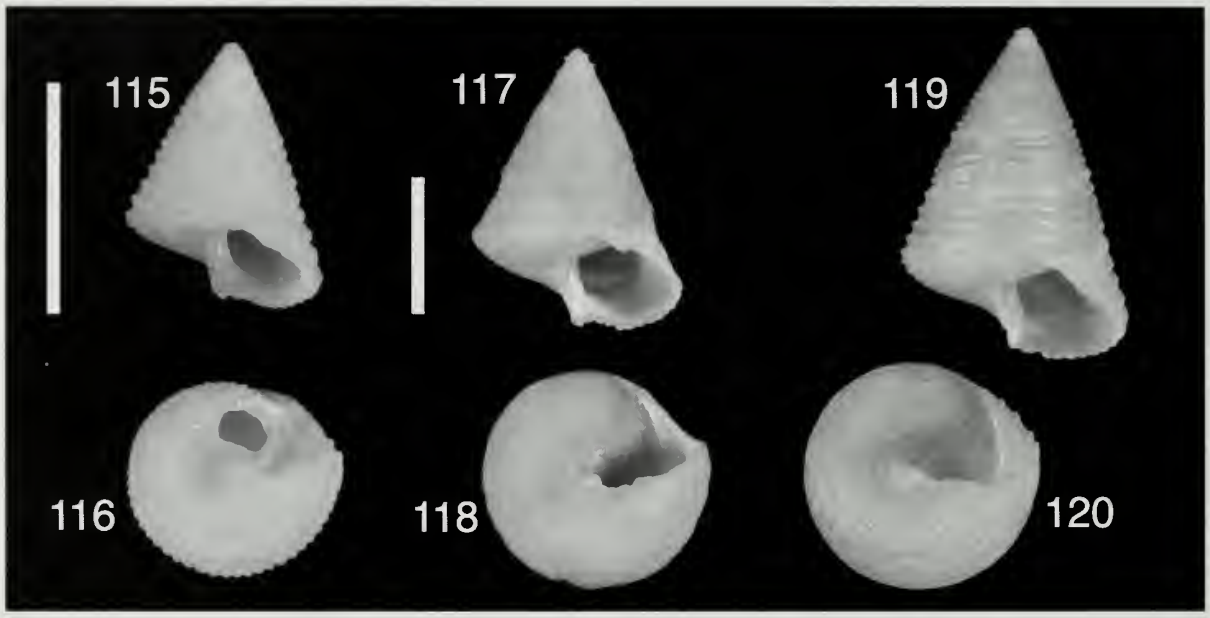
2006); southern New Caledonia, 350-700 m, living at 502-516 m; Wallis et Futuna, 640-730 m (dead).

Thysanodonta eucosmia Marshall, 1995
Figs 117-118

Thysanodonta eucosmia Marshall, 1995:437-439, figs 113-115, 148-149, 158. Type locality: southern New Caledonia, 675-680 m.
Thysanodonta eucosmia – Vilvens & Maestrati, 2006: 3, figs 3-4.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2025, 23°27'S, 167°51'E, 410-443 m, 1 lv. – Stn DW2033, 23°39'S, 167°43'E, 430-450 m, 1 dd. – Stn CP2046, 23°44'S, 168°01'E, 785-810 m, 1 dd. – Stn CP2047, 23°43'S, 168°02'E, 759-807 m, 1 dd.

Distribution. Southern New Caledonia, Northern Norfolk Ridge, 360-785 m, living at 365-680 m (range computed using data of Marshall, 1995 and Vilvens & Maestrati, 2006).



Figures 115-120. Scale bars: 5 mm.

115-116. *Thysanodonta boucheti* Marshall, 1988, northern New Caledonia, 700-730 m [CONCALIS, stn DW2993], 6.4 x 4.9 mm; **117-118.** *Thysanodonta eucosmia* Marshall, 1995, Norfolk Ridge, 759-807 m [NORFOLK 2, stn CP2047], 10.2 x 7.7 mm; **119-120.** *Thysanodonta cassis* Vilvens & Maetrati, 2006, Norfolk Ridge, 680-980 m [NORFOLK 2, stn DW2068], 13.0 x 8.9 mm.

Thysanodonta cassis Vilvens & Maestrati, 2006
Colour Figs L1-L2, Figs 119-120

Thysanodonta cassis Vilvens & Maestrati, 2006: 3-4 figs 7-8, 13. Type locality: southern New Caledonia, Norfolk Ridge, 795-852 m.

Material examined. Norfolk Ridge. NORFOLK 2: stn DW2068, 25°20'S, 168°57'E, 680-980 m, 2 lv, 1 juv dd.

Distribution. South-eastern New Caledonia, Norfolk Ridge, 834-852 m, living at 795-852 m.

Remarks. The newly recorded specimens are especially tall (height up to 13.0 mm) and slender, taller than the types (height up to 11.4 mm in the original description).

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Provisional list of Recent Calliostomatidae of the Indo-West Pacific area s. l. - release 2009.

This list is a first and provisional attempt to provide the available valid names (and their synonyms) for the Calliostomatidae species of the Indo-Pacific area s. l. (from Eastern South Africa to Hawaii and French Polynesia). For each one is provided the distribution with the depth range if it is clearly known, with the note "depth unknown" if only poor indications (such "subtidal" or "offshore" or even none) were found in original descriptions, books, papers and electronical databases.

Used genera and subgenera. Within Calliostomatidae, Marshall (1995) synonymised some genera and subgenera and also ranked other subgenera to a generic status while considering other genera as subgenera of *Calliostoma* or *Astele*. The species here listed belong to the following subfamilies, tribes and genera:

Subfamily : **Calliostomatinae** Thiele, 1924			
	Tribe : Calliostomatini Thiele, 1924		
		Calliostoma Swainson, 1840	synonym: *Ziziphinus* Gray, 1843
		Astele Swainson, 1855	synonym: *Salsipotens* Iredale, 1924
		Bathyfautor Marshall, 1995	
		Dactylastele Marshall, 1995	
		Laetifautor Iredale, 1929	synonym: *Spicator* Cotton & Godfrey, 1935
		Selastele Marshall, 1995	
	Tribe : Fautricini Marshall, 1995		
		Fautrix Marshall, 1995	
Subfamily : **Thysanodontinae** Marshall, 1988			
		Thysanodonta Marshall, 1988	
		Carinastele Marshall, 1988	
		Herbertina Marshall, 1988	

One can note that not all Indo-Pacific *Calliostoma* and *Astele* species has been referred to a subgenus. But many *Calliostoma* subgenera have been defined, authors often using them as genus or subgenus.

I follow here Marshall (1995b) who has synonymised the popular Japanese subgenus *Tristichotrochus* Ikebe, 1942 with the prior *Benthastelena* Iredale, 1936. However, Marshall did not put all the *Tristichotrochus* species in *Benthastelena* subgenus, considering that most of the species belonging to *Tristichotrochus* need a thorough study with three groups of species that could be, at least, subgenera of *Calliostoma*. I don't follow Higo et al. (1999) who synonymised *Tristichotrochus* with *Calliostoma* s. str. (as also *Ampullotrochus*) without justification: therefore all these species have been provisionally kept in the *Tristichotrochus* subgenus.

The popular neo-zelandian genus *Maurea* is here considered as a subgenus of *Calliostoma* following the Marshall's opinion (Marshall, 1995a).

For the other *Calliostoma* species, the following subgenera are used: *Calliostoma* s. str. Swainson, 1840; *Akoya* Habe, 1961; *Ampullotrochus* Monterosato, 1890; *Benthastelena* Iredale, 1936; *Fautor* Iredale, 1924; *Kombologion* Clench & Turner, 1960; *Omphalotukaia* Yoshida, 1948; *Otukaia* Ikebe, 1942; *Sinutor* Cotton & Godfrey, 1935; *Tristichotrochus* Ikebe, 1942 (for the species provionally kept in this subgenus).

For the genus *Astele*, the following subgenera were used: *Astele* s. str. Swainson, 1855; *Coralastele* Iredale, 1924; *Astelena* Iredale, 1924. The subgenus *Callistele* Cotton & Godfrey, 1935 has been removed from Calliostomatidae because its type species is a Cantharidini (Marshall, 1995b).

New combinations. Four *Calliostoma* described without reference to a subgenus (Vilvens, 2000) assigned to a subgenus:

- The conical shape, P1-P4 commencing immediately, the weakness of axial sculpture and the smooth cords or the blunt shape of the beads of other cords, the subquadrangular aperture leads to place *C. poppei* Vilvens, 2000 in *Calliostoma* s. s., although the umbilicus is partly opened.
- Because *Calliostoma houarti* Vilvens, 2000 is conical and anomphalous, has narrow finely beaded cords and lacks axial sculpture, this species is placed in *Fautor*.
- Considering the conical, flat-sided whorls (except first), the absence of an umbilicus, the strong axial sculpture on first whorls and the rounded shape ot the beads of cords, *Calliostoma dedonderi* Vilvens, 2000 and *C. emmanueli* Vilvens, 2000 are assigned to the subgenus *Ampullotrochus*.

Remark about the gender. I have made the adjectives agree with the neutral noun "*Calliostoma*" when the etymology states clearly that the second word of the binominal name of a species is an

adjective, while this second word has been kept in its original form if its grammatical status was not clear (unknown etymology, unknown word in classical latin dictionaries, ...).

Original designation	Present designation or combination (if different)	Distribution
Calliostoma aculeatum Sowerby, 1912 (and subspecies *alignayensis* Poppe, Tagaro & Dekker, 2006)	***Calliostoma (Benthastelena) aculeatum*** Sowerby, 1912	Japan, East China sea, Korea, 50-100 m; Philippines (subspecies *alignayensis*), 150-416 m.
Calliostoma adansi Brazier, 1895	= ***Calliostoma (Fautor) comptum*** A.Adams, 1855	
Calliostoma admirandum E.A. Smith, 1906	***Calliostoma (Fautor) admirandum*** E.A. Smith, 1906	India, depth unknown.
Calliostoma affinis Dall, 1872	= ***Calliostoma (Tristichotrochus) unicum*** (Dunker, 1860)	
Calliostoma africanum Bartsch, 1915		Eastern South-Africa, down to 184 m
Calliostoma(Calotropis) akoya Kuroda in Ikebe, 1942	***Calliostoma (Akoya) akoya*** Kuroda in Ikebe, 1942	Japan, 150-500 m.
Calliostoma (Tristichotrochus) alboreginum Azuma, 1961		Japan, 200-300 m.
Calliostoma (Otukaia) alertae Marshall, 1995		New Zealand (South Is., Chatham Rise), 280–861 m.
Calliostoma (Ampullotrochus) alisi Marshall, 1995		Loyalty Is., 425-430 m.
Coralastele allanae Iredale, 1930	***Astele (Coralastele) allanae*** (Iredale, 1930)	Australia (Queensland), depth unknown.
Zizyphinus allporti Tenison Woods, 1876	***Calliostoma (Fautor) allporti*** (Tenison Woods, 1876)	Australia (Victoria, Tasmania and Southern Australie), 11-400 m.
Calliostoma altena Knudsen, 1970		Eastern Indonesia, about 900 m.
Tristichotrochus amamiensis Sakurai, 1994	***Calliostoma (Tristichotrochus) amamiense*** (Sakurai, 1994)	Japan, Philippines, depth unknown.
Calliostoma anseeuwi Poppe, Tagaro & Dekker, 2006		Philippines, depth unknown.
Calliostoma (Maurea) antipodense Marshall, 1995		New Zealand (Antipodes Is.), 18-103 m.
Calliostoma (Ampullotrochus) aporia n. sp.		Solomon Islands, 128-150 m.
Fautrix aquilonia Marshall, 1995		Southern New Caledonia to northern New Zealand, 525–550 m.
Trochus armillatum Wood, 1828	***Astele armillatum*** (Wood, 1828)	Australia (from New South Wales and Tasmania to Western Australia), down to 5m.
Calliostoma (Benthastelena) arx Vilvens, 2005		Tonga, 483-531 m; Fiji, 450-500 m.
Thysanodonta aucklandica Marshall, 1988		Southern New Zealand, 476-549 m.
Calliostoma (Maurea) auponianum Marshall, 1995		New Zealand (Three Kings Is.), 123-128 m.
Calliostoma australis Broderip, 1835	= ***Astele rubiginosum*** (Valenciennes, 1846)	
Kombologion babelicum Habe, 1961	***Calliostoma (Kombologion) babelicum*** (Habe, 1961)	Japan, 150-200 m.
Calliostoma (Fautor) belauense Okutani & Kurata, 1998	***Calliostoma (Fautor) belauense*** Okutani & Kurata, 1998	Palau Is., 200 m.
Calliostoma (Ampullotrochus) bellatrix Willan, 2002		Arafura Sea, Timor Sea, 250-300 m.

Venustas benthicola Dell, 1950	***Calliostoma (Maurea) benthicola*** (Dell, 1950)	New Zealand (Chatham Rise), 95-129 m.
Venustas blacki Powell, 1950	***Calliostoma (Maurea) blacki*** (Powell, 1950)	New Zealand (South Island), 73-459 m.
Alertalex blacki Dell, 1956	= ***Calliostoma (Otukaia) alertae*** Marshall, 1995	
Calliostoma (Fautor) boucheti Marshall, 1995		Southern New Caledonia, 565-586 m; northern New Caledonia, 350 m; Vanuatu, 585 m.
Thysanodonta boucheti Marshall, 1988		New Caledonia, 350-685 m; Wallis & Futuna 640-730 m.
Trochus broderipi Philippi, 1855	= ***Astele rubiginosum*** (Valenciennes, 1846)	
Astele bularra Garrard, 1961	***Astele (Astele) bularra*** Garrard, 1961	Australia (from central Queensland central to New South Wales), 80-200 m.
Calliostoma burnupi E.A. Smith, 1899	***Dactylastele burnupi*** (E.A. Smith, 1899)	Southern Mozambique and South Africa (Natal), depth unknown.
Bathyfautor caledonicus Marshall, 1995	***Bathyfautor caledonicum*** Marshall, 1995	Southern New Caledonia, 700-975 m; northern New Caledonia, 550-669 m;Vanuatu, 450-489 m.
Calliostoma (Salsipotens) calliope Cotton & Godfrey, 1938	= ***Astele (Astele) ciliare*** (Menke, 1843)	
Tristichotrochus canaliculatus Sasao & Habe, 1973	***Calliostoma (Tristichotrochus) canaliculatum*** (Sasao & Habe, 1973)	Japan, depth unknown.
Fautrix candida Marshall, 1995		Southern New Caledonia to northern New Zealand, 200–805 m.
Calliostoma cornicolor Preston, 1907	= ***Calliostoma (Maurea) selectum*** (Dillwyn, 1817)	
Thysanodonta cassis Vilvens & Maetrati, 2006		South-eastern New Caledonia (Norfolk Ridge), 834-852 m.
Fautor cheni Dong, 2002	***Calliostoma (Fautor) cheni*** (Dong, 2002)	South China Sea (Nansha Is.), 1252 m.
Calliostoma (Fautor) aprosceptum n. sp.		Northern New Caledonia, 350-574 m
Calliostoma cecillei Nomura & Hatai, 1935	= ***Calliostoma (Tristichotrochus) unicum*** (Dunker, 1860)	
Calliostoma (Fautor) chesterfieldense Marshall, 1995		Off Chesterfield Is., 355-410 m.
Thysanodonta chesterfieldensis Marshall, 1995		Chesterfield Is., 305-410 m.
Calliostoma chinoi Poppe, Tagaro & Dekker, 2006		Philippines, 140 m.
Calliostoma (Fautor) chlorum Vilvens, 2005		Fiji, 300-370 m.
Trochus (Calliostoma) sublaevis var. *chuni* von Martens, 1903	***Calliostoma chuni*** (von Martens, 1903)	Somalia, 200-300 m.
Trochus ciliaris Menke, 1843	***Astele (Astele) ciliare*** (Menke, 1843)	Western Australia, 24-31 m.
Calliostoma circus Barnard, 1969		South Africa (off Cape Point), depth unknown.
Calliostoma (Calliostoma) cochlias n. sp.		Solomon Islands, 464-819 m.
Herbertina cognata Marshall, 1988		Eastern South Africa, 85-140 m.
Calliostoma columnarium Hedley & May, 1908	***Calliostoma (Fautor) columnarium*** Hedley & May, 1908	Southern Australia and Tasmania, 182 m.
Ziziphinus comptus A.Adams, 1855	***Calliostoma (Fautor) comptum*** A.Adams, 1855	Australia (from Queensland to New South Wales), New Caledonia, down to 15 m.

Fantor consobrinus Powell, 1958	***Calliostoma (Fantor) consobrinum*** (Powell, 1958)	New Zealand (Raoul Is.), 27-219 m.
Trochus consors Lischke, 1872	***Calliostoma (Benthastelena) consors*** (Lischke, 1872)	From Japan to Korea, 10-100 m
Calliostoma convexa Turton,	= ***Calliostoma africanum*** Bartsch, 1915	
Bathyfantor coriolis Marshall, 1995		Chesterfield Is., Lansdowne Bank, 630-705 m.
Carinastele coronata Marshall, 1988		Northern New Zealand, 805 m
Venustas couperi Vella, 1954	= ***Calliostoma (Maurea) blacki*** (Powell, 1950)	
Calliostoma (Astele) crassicostatum Schepman, 1908	***Calliostoma crassicostatum*** Schepman, 1908	Indonesia, 36 m.
Calliostoma (Benthastelena) cristatum Marshall, 1995		Northern and southern New Caledonia, 282-297m.
Calliostoma crossleyae E.A.Smith, 1910		Eastern South Africa, depth unknown.
Trochus cunninghami Gray, 1834	= ***Calliostoma (Maurea) selectum*** (Dillwyn, 1817)	
Calliostoma deceptum E.A.Smith, 1898	***Laetifantor deceptum*** (E.A.Smith, 1898)	Australia (from Western Australia to Queensland), depth unknown.
Calliostoma dedonderi Vilvens, 2000	***Calliostoma (Ampullotrochus) dedonderi*** Vilvens, 2000 comb. nov.	Philippines, 100-180 m.
Thysanodonta diadema Vilvens & Maetrati, 2006		South-eastern New Caledonia, 310-361 m.
Calliostoma (Benthastelena) diadematum Marshall, 1995		Chesterfield Islands and southern New Caledonia, 120-580 m.
Trochus diaphanus Gmelin, 1791	= ***Calliostoma (Maurea) punctulatum*** (Martyn, 1784)	
Calliostoma (Fantor) diaphoros n. sp.		Solomon Islands, 307-310 m.
Calliostoma (Tristichotrochus) doncorni Kay, 1979		Hawaii, 250-280 m.
Zizyphinus duplicatus A. Adams, 1851	***Dactylastele duplicatum*** (A. Adams, 1851)	India (Bombay area), about 50 m.
Laetifantor elegans Habe, 1960		Japan, down to 50 m.
Ziziphinus elegantulus Adams, 1853	***Calliostoma elegantulum*** (Adams, 1853)	Indonesia, 28 m.
Calliostoma (Maurea) eminens Marshall, 1995		New Zealand (Antipodes Is.),13-20 m.
Calliostoma emmanueli Vilvens, 2000	***Calliostoma (Ampullotrochus) emmanueli*** Vilvens, 2000 comb. nov.	Philippines, 100-215 m.
Herbertina eos Marshall, 1988		Eastern South Africa, 85-420 m.
Calliostoma encosmia Bartsch, 1915	= ***Calliostoma ornatum*** (Lamarck, 1822)	
Thysanodonta encosmia Marshall, 1995		Southern New Caledonia (Northern Norfolk Ridge), 360-775 m.
Calliostoma excellens Thiele, 1930	= ***Astele (Astele) similare*** (Reeve, 1863)	
Thysanodonta festiva Marshall, 1995		Southern New Caledonia (Northern Norfolk Ridge), 230-601 m.
Kombologion filiareginae Sakurai, 1994	***Calliostoma (Kombologion) filiareginae*** (Sakurai, 1994)	Japan, Taiwan, depth unknown.
Calliostoma formosensis E.A.Smith, 1907	***Calliostoma (Benthastelena) formosense*** E.A.Smith, 1907	Japan, Taiwan, 50-300 m.
Venustas foveauxana Dell, 1950	***Calliostoma (Maurea) foveauxanum*** (Dell, 1950)	New Zealand (South Is. and Stewart Is.), 91-220 m.

Trochus fragum Philippi, 1848	***Calliostoma fragum*** (Philippi, 1848)	Persian Gulf, Gulf of Oman, Arabian Sea, depth unknown; Philippines, depth unknown.
Laetifautor fundatus Marshall, 1995		Southern New Caledonia, 59-62 m.
Calliostoma funiculare Melvill, 1906	***Calliostoma (Fautor) funiculare*** Melvill, 1906	from Persic Gulf to Pakistan, depth unknown.
Tristichotrochus galea Sakurai, 1994	***Calliostoma (Benthastelena) galea*** (Sakurai, 1994)	Taiwan, depth unknown.
Calliostoma (Ampullotrochus) gavaldoni Vilvens, 2009		Tahiti, 1 m.
Trochus gemmosus Reeve, 1842	= ***Astele rubiginosum*** (Valenciennes, 1846)	
Calliostoma (Tristichotrochus) gendalli Marshall, 1979	***Calliostoma (Benthastelena) gendalli*** Marshall, 1979	Kermadec Is., 402-366 m.
Calliostoma (Maurea) gibbsorum Marshall, 1995		New Zealand (Three Kings Is., 33-805 m.)
Calliostoma glaucophaos Barnard, 1963		South Africa (off Cape Point), about 2500 m.
Trochus granatum Gmelin, 1791	= ***Calliostoma (Maurea) tigris*** (Gmelin, 1791)	
Maurea (Micrinops) granti Powell, 1931	***Calliostoma (Maurea) granti*** (Powell, 1931)	New Zealand, 0-220 m.
Calliostoma grohi Stratmann & Stahlschmidt, 2007		Saya de Malha Bank, 200 m.
Calliostoma guphili Poppe, 2004		Philippines, 56-90 m.
Calliostoma (Otukaia) hajimeanum Yoshida, 1948	***Calliostoma (Omphalotukaia) hajimeanum*** Yoshida, 1948	Japan, 183 m.
Ziziphinus haliarchus Melvill, 1889	***Calliostoma (Benthastelena) haliarchus*** (Melvill, 1889)	From Japan to Thailand, 50-200 m.
Tristichotrochus hayamanus Kuroda & Habe *in* Kuroda, Habe & Oyama, 1971	***Calliostoma (Tristichotrochus) hayamanus*** (Kuroda & Habe, 1971 *in* Kuroda, Habe & Oyama, 1971)	Japan, 50-200 m.
Calliostoma (Tristichotrochus) hayashi Shikama, 1977		Japan, 350 m.
Herbertina hayesi Herbert, 1995		South Africa, 100-150 m.
Calliostoma hedleyi Pritchard & Gatliff, 1902	***Calliostoma (Fautor) hedleyi*** Pritchard & Gatliff, 1902	Australia (from Victoria to Western Australia), 9-238 m.
Calliostoma (Ampullotrochus) heros Marshall, 1995		Loyalty Is., 255-425 m.
Calliostoma (Benthastelena) hexalyssion n. sp.		Solomon Islands, 397-728 m, living at 397-650 m.
Zizyphinus hodgei Hutton, 1875	= ***Calliostoma (Maurea) selectum*** (Dillwyn, 1817)	
Calliostoma houarti Vilvens, 2000	***Calliostoma (Fautor) houarti*** Vilvens, 2000 comb. nov.	Philippines, 240 m.
Calliostoma (Fautor) houbricki Marshall, 1995		New Caledonia, 73-170 m.
Calliostoma humgerfordi Sowerby, 1888	= ***Calliostoma (Benthastelena) consors*** (Lischke, 1872)	
Otukaia ikukoae Sakurai, 1994	***Calliostoma (Otukaia) ikukoae*** (Sakurai, 1994)	Japan, depth unknown.
Calliostoma imperialis Kosuge, 1979	***Calliostoma imperiale*** Kosuge, 1979	Midway, ca. 1000 m;
Sinutor incertus Reeve, 1863	***Calliostoma (Sinutor) incertum*** (Reeve, 1863)	Australia (from Victoria and Tasmania to Western Australia), 30-270 m.
Calliostoma iridescens Sowerby, 1903		South Africa, down to 184 m.
Tristichotrochus iris Kuroda & Habe *in* Habe, 1961	***Calliostoma (Ampullotrochus) iris*** (Kuroda & Habe *in* Habe, 1961)	Japan, 150-250 m; Philippines, 50-150 m.

Calliostoma ishianum Yokoyama, 1926	= ***Calliostoma (Benthastelena) multiliratum*** (Sowerby II, 1875)	
Calliostoma (Tristichotrochus) iwamotoi Ikebe, 1942		Japan, 100-200 m.
Tristichotrochus iwaotakii Azuma, 1961	***Calliostoma (Tristichotrochus) iwaotakii*** (Azuma, 1961)	Japan, 146-183 m.
Calliostoma (Fantor) jackelynae Bozzetti, 1997		Philippines, 140 m.
Calliostoma (Maurea) jamiesoni Marshall, 1995		New Zealand (Three Kings Is., 5-128 m.
Ziziphinus jucundus Sowerby, 1878 (non *Trochus jucundus* Gould, 1849)	= ***Calliostoma (Benthastelena) haliarchus*** (Melvill, 1889)	
Carinastele jugosa Marshall, 1988		Southern New Zealand, 549 m.
Calliostoma (Benthastelena) kanakorum Marshall, 2001		Northern and southern New Caledonia, 277-350m.
Benthastelena katherina Iredale, 1936	***Calliostoma (Benthastelena) katherina*** (Iredale, 1936)	Australia (New South Wales), 206 m.
Tristichotrochus katoi Sakurai, 1994	***Calliostoma (Tristichotrochus) katoi*** (Sakurai, 1994)	Japan, 60 m.
Calliostoma (Kombologion) katsunakamai Kosuge, 1998		Indonesia (Sumatra), depth unknown.
Calliostoma kiheiziebisu Otuka, 1939	***Calliostoma (Otukaia) kiheiziebisu*** Otuka, 1939	Japan, 200-1000 m; Hawaii, about 1000 m.
Calliostoma (Tristichotrochus) kiiense Ikebe, 1942	***Calliostoma (Tristichotrochus) kiiense*** Ikebe, 1942	Japan, depth unknown.
Tristichotrochus koma Shikama & Habe. 1965	***Calliostoma (Tristichotrochus) koma*** (Shikama & Habe. 1965)	Japan, Yellow Sea, East China Sea, Taiwan, 50-200 m.
Calliostoma kopua Marshall, 1995	***Selastele kopua*** (Marshall, 1995)	New Zealand (South Is.), 424-600 m.
Carinastele kristelleae Marshall, 1988		New Zealand, 126-274 m.
Fantor kurodai Azuma, 1975	***Calliostoma (Fantor) kurodai*** (Azuma, 1975)	Japan, 100-120 m.
Calliostoma layardi Sowerby III, 1897		Eastern South Africa, down to 45 m.
Zizyphinus legrandi Tenison Woods, 1876	***Calliostoma (Fantor) legrandi*** (Tenison Woods, 1876)	Australia (from New South Wales to Western Australia), about 9-366 m.
Tristichotrochus levibasis Kuroda & Habe *in* Kuroda, Habe & Oyama, 1971	***Calliostoma (Tristichotrochus) levibase*** (Kuroda & Habe, 1971 *in* Kuroda, Habe & Oyama)	Japan, depth unknown.
Calliostoma limatulum Marshall, 1995	***Selastele limatulum*** (Marshall, 1995)	New Zealand (North Is., Three Kings Is.), 91-805 m.
Calliostoma (Kombologion) madagascarensis Vilvens, Nolf & Verstraeten, 2004	***Calliostoma (Kombologion) madagascarense*** Vilvens, Nolf & Verstraeten, 2004	Western Madagascar, 410-800 m.
Tristichotrochus margaritissimus Habe & Okutani, 1968	***Calliostoma (Benthastelena) margaritissimum*** (Habe & Okutani, 1968)	Off Midway (Central Pacific), 400-460 m.
Calliostoma mariae Poppe, Tagaro & Dekker, 2006		Philippines, 205-214 m.
Calliostoma (Maurea) mani Marshall, 1995		New Zealand (South Is., Chatham Rise), 140-490 m.
Maurea(Mucrinops) megaloprepes Tomlin, 1948	***Calliostoma (Maurea) megaloprepes*** (Tomlin, 1948)	New Zealand (off Macquarie Is.), 79-113 m.
Calliostoma (Fantor) metabolicum Vilvens, 2005		Vanuatu, 210-320 m.
Calliostoma (Fantor) metivieri Marshall, 1995		Southern New Caledonia, 430-450 m.
Trochus meyeri Philippi, 1848	= ***Astele armillatum*** (Wood, 1828)	

Tristichotrochus mikikoae Kosuge & Oh-Ishi, 1970	***Calliostoma (Tristichotrochus) mikikoae*** (Kosuge & Oh-Ishi, 1970)	East China Sea, 110 m.
Calliostoma(Fantor) monikae Stratmann & Schwabe, 2007		Samoa, depth unknown.
Zizyphinus monile Reeve, 1863	***Astele (Astele) monile*** (Reeve, 1863)	Australia (from Western Australia to Queensland), down to 20 m.
Ziziphinus multigranus Dunker, 1871	***Astele (Astelena) multigranum*** (Dunker, 1871)	Australia (from Southern Australia to Western Australia), 5-40 m.
Ziziphinus multiliratus Sowerby II, 1875	***Calliostoma (Benthastelena) multiliratum*** (Sowerby II, 1875)	Japan, depth unknown.
Bathyfantor multispinosum (Schepman, 1908)		Indonesia, 550-650 m; Philippines, 552-592 m.
Calliostoma (Otukaia) muriellae Vilvens, 2001		Madagascar, 800-1200 m.
Tristichotrochus nakamigawai Sakurai, 1994	***Calliostoma (Tristichotrochus) nakamigawai*** (Sakurai, 1994)	Japan, depth unknown.
Calliostoma nanshaensis Dong, 2002		South China Sea (Nansha Is.), 110-111 m.
Calliostoma (Fantor) necopinatum Marshall, 1995		Northern New Caledonia, 350-450 m.
Calliostoma nevilli Sowerby, 1905	***Dactylastele nevilli*** (Sowerby, 1905)	Sri Lanka, depth unknown.
Basilissa niceterium Hedley & May, 1908	***Carinastele niceterium*** (Hedley & May, 1908)	Tasmania, 183 m.
Astele nobilis Hirase, 1922	***Calliostoma (Omphalotukaia) nobile*** (Hirase, 1922)	Japan, 200-300 m.
Trochus nobilis Philippi, 1848	= ***Astele rubiginosum*** (Valenciennes, 1846)	
Calliostoma onustum Odhner, 1924	***Selastele onustum*** (Odhner, 1924)	New Zealand (North Is., Three Kings Is.), 55-310 m.
Fantor opalinus Kuroda & Habe *in* Kuroda, Habe & Oyama, 1971	***Calliostoma (Fantor) opalinum*** (Kuroda & Habe *in* Kuroda, Habe & Oyama, 1971)	Japan, depth unknown.
Thysanodonta opima Marshall, 1995		Southern New Caledonia, 775-965 m.
Trochus ornatus Lamarck, 1822	***Calliostoma ornatum*** (Lamarck, 1822)	South Africa, 10-50 m.
Calliostoma osbornei Powell, 1926	***Calliostoma (Maurea) osbornei*** Powell, 1926	New Zealand (North Is.), 12-100 m.
Calliostoma (Otukaia) otukai Ikebe, 1942		Japan, 384 m.
Calliostoma pagoda Oliver, 1926	= ***Calliostoma (Maurea) selectum*** (Dillwyn, 1817)	
Calliostoma (Fantor) paradigmatum Marshall, 1995		Northern New Caledonia, 585 m (living); southern New Caledonia, 757-795 m; Tonga, 342-500 m.
Calliostoma (Tristichotrochus) paucicostatum Kosuge, 1984	***Calliostoma (Benthastelena) paucicostatum*** Kosuge, 1984	Philippines, 100-486 m.
Trochus pellucidus Valenciennes, 1846	***Calliostoma (Maurea) pellucidum*** (Valenciennes, 1846)	New Zealand, 0-187 m.
Calliostoma (Maurea) penniketi Marshall, 1995		New Zealand (Three Kings Is.), 55-622 m.
Calliostoma (Ampullotrochus) peregrinum Marshall, 1995		South of Loyalty Islands, 255-340 m; southern New Caledonia, 233-402 m; northern New Caledonia, 220-240 m; northern Three King Rise and northern New Zealand, 841 m; Vanuatu, 319 m; Futuna Island, 441-450 m; Tonga, 440-487 m.

Calliostoma perfragile Sowerby III, 1903		South Africa, down to 318 m.
Calliostoma (Fautor) periglyptum Marshall, 1995		Southern New Caledonia, 230 m; Solomon Islands, 182-187 m.
Calliostoma (Benthastelena) pertinax Marshall, 1995		New Caledonia, 335-460 m.
Calliostoma philippei Poppe, 2004	***Calliostoma (Ampullotroclus) philippei*** Poppe, 2004 comb. nov.	Philippines, Aliguay Island, 80-150 m; Salomon Islands, 258-283 m.
Selastele pictum Marshall, 1995		Loyalty Is., 370 m.
Thysanodonta pileum Vilvens & Maetrati, 2006		South-eastern New Caledonia (Norfolk Ridge), 278-305 m.
Zizyphinus ponderosus Hutton, 1885	= ***Calliostoma (Maurea) selectum*** (Dillwyn, 1817)	
Calliostoma poppei Vilvens, 2000	***Calliostoma (Calliostoma) poppei*** Vilvens, 2000 comb. nov.	Philippines, 150-180 m.
Trochus (Ziziphinus) poupineli Montrouzier *in* Souverbie & Montrouzier, 1875	***Dactylastele poupineli*** (Montrouzier *in* Souverbie & Montrouzier, 1875)	Japan, Philippines, Queensland, New Caledonia, Loyalty Is., 0-350 m.
Calliostoma poupineli Thiele, 1930	= ***Calliostoma (Fautor) comptum*** A.Adams, 1855	
Tristichotrochus problematicus Kuroda & Habe *in* Kuroda, Habe & Oyama, 1971	***Calliostoma (Tristichotroclus) problematicum*** (Kuroda & Habe *in* Kuroda, Habe & Oyama, 1971)	Japan, 100-200 m. 50-150 m.
Eutrochus pulcherrimus Sowerby III, 1914	***Astele (Coralastele) pulcherrimus*** (Sowerby III, 1914)	Japan, Philippines, depth unknown.
Trochus punctulatus Martyn, 1784	***Calliostoma (Maurea) punctulatum*** (Martyn, 1784)	New Zealand, 0-274 m.
Calliostoma purpureocinctum Hedley, 1894	= ***Calliostoma (Fautor) comptum*** A.Adams, 1855	
Calliostoma quadricolor Schepman, 1908	***Calliostoma (Fautor) quadricolor*** Schepman, 1908	Indonesia, 52-69 m.
Bathyfautor rapuhia Marshall, 1995		Northern New Zealand & southern Norrfolk Ridge, 660-790 m.
Calliostoma (Maurea) regale Marshall, 1995		New Zealand (Three Kings Is.), 53-805 m.
Calliostoma retiarium Hedley & May, 1908	***Selastele retiarium*** (Hedley & May, 1908)	Australia (Southern Australia and Tasmania), 173–182 m.
Calliostoma (Fautor) richeri Marshall, 1995		Southern New Caledonia, 30-128 m.
Margarites (Pupillaria) rossica Dall, 1919	***Calliostoma (Otukaia) rossica*** (Dall, 1919)	Northern Japan, eastern Russia (Japan Sea coast), 50-550 m.
Trochus rubiginosus Valenciennes, 1846	***Astele rubiginosum*** (Valenciennes, 1846)	Australia (from Victoria and Tasmania to Western Australia), 16-22 m.
Ziziphinus rubropunctatus A. Adams, 1851	***Laetifautor rubropunctatum*** (A. Adams, 1851)	From Japan to Australia (from Western Australia to northern Queensland), 50-200 m.
Calliostoma rubroscalpta Lee & Wu, 1998	***Calliostoma rubroscalptum*** Lee & Wu, 1998	Taiwan, 200-250 m.
Calliostoma rufomaculatum Schepman, 1908		Eastern Indonesia, 22 m.
Calliostoma sagamianum Yokoyama, 1920	= ***Calliostoma (Benthastelena) consors*** (Lischke, 1872)	
Fautor sagamiensis Ishida & Uchida, 1977	***Calliostoma (Fautor) sagamiensis*** (Ishida & Uchida, 1977)	Japan, depth unkown.
Tristichotrochus sakashitai Sakurai, 1994	***Calliostoma (Tristichotroclus) sakashitai*** (Sakurai, 1994)	Japan, 80-120 m; Philippines, 50-150 m.

Ziziphinus scitulus A.Adams, 1854	***Astele (Astelena) scitulum*** (A.Adams, 1854)	Australia (from New South Wales to Southern Australia), 0-20 m.
Zizyphinum scobinatus A.Adams *in* Reeve, 1863	***Calliostoma (Fautor) scobinatum*** (A.Adams *in* Reeve, 1863)	India (Bombay area), depth unknown; Torres Straits, 22 m; Philippines, 81-97 m; Salomon Islands, 82-83 m.
Calliostoma (Kombologion) scotti Kilburn, 1973		Mozambique, South Africa, 420 -548 m.
Trochus selectus Dillwyn, 1817	***Calliostoma (Maurea) selectum*** (Dillwyn, 1817)	New Zealand, 0-293 m.
Trochus (Calliostoma) shinagawensis Tokunaga, 1906	***Calliostoma (Tristichotrochus) shinagawense*** (Tokunaga, 1906)	Japan, 20-100 m.
Zizyphinus similare Reeve, 1863	***Astele (Astele) similare*** (Reeve, 1863)	Australia (from Eastern Australia to northern Queensland), depth unknown.
Calliostoma (Tristichotrochus) simodense Ikebe, 1942	***Calliostoma (Tristichotrochus) simodense*** Ikebe, 1942	Japan, down to 20 m.
Calliostoma simplex Schepman, 1908	***Calliostoma (Fautor) simplex*** Schepman, 1908	Eastern Indonesia, 304 m; Philippines, 191-192 m.
Calliostoma (Maurea) simulans Marshall, 1994		New Zealand (South Island, Chatham Rise), 183-1006 m.
Calliostoma sowerbyi Pilsbry, 1889	= ***Calliostoma (Benthastelena) haliarchus*** (Melvill, 1889)	
Calliostoma (Tristichotrochus) aculeatum soyoae Ikebe, 1942	***Calliostoma (Tristichotrochus) soyoae*** Ikebe, 1942	Japan, 10-100 m.
Astele speciosum (A.Adams *in* H.&A.Adams, 1854)	***Astele (Astele) speciosum*** (A.Adams *in* H.&A.Adams, 1854)	Australia (from Queensland to New South Wales), Andaman Is., down to 36 m.
Zizyphinus spectabilis A.Adams, 1855	***Calliostoma (Maurea) spectabile*** (A.Adams, 1855)	New Zealand (North Is.), 0-146 m.
Calliostoma spinulosum Tate, 1893	***Laetifautor spinulosum*** (Tate, 1893)	Australia (Southern and Western Austalia), 16-201 m.
Trochus splendidus Philippi, 1855	= ***Astele rubiginosum*** (Valenciennes, 1846)	
Calliostoma (Fautor) strobilos Vilvens, 2005		Fiji, 416 m
Trochus subcarinata Swainson, 1854	***Astele (Astele) subcarinatum*** (Swainson, 1854)	Australia (from New South Wales to Western Australia), 20- 500 m.
Calliostoma sublaeve E.A. Smith, 1895		Southern India, Sri Lanka and Andaman Islands, Somalia, 80-640 m.
Calliostoma (Ampullotrochus) suduirauti Bozzetti, 1997		Philippines, 140 m.
Tristichotrochus sugitanii Sakurai, 1994	***Calliostoma (Tristichotrochus) sugitanii*** (Sakurai, 1994)	Japan, depth unknown.
Calliostoma swinneni Poppe, Tagaro & Dekker, 2006		Philippines, 50-150 m.
Calliostoma (Benthastelena) malaita n. sp.		Solomon Islands, 487-541 m; Norfolk Ridge, 795-852 m.
Calliostoma (Kombologion) syngokamoi Kosuge, 1998		Andaman Sea, depth unknown.
Tristichotrochus takaseanus Okutani, 1972	***Calliostoma (Tristichotrochus) takaseanum*** (Okutani, 1972)	Japan, 100-200 m.
Calliostoma takujii Kosuge, 1986	***Calliostoma (Fautor) takujii*** Kosuge, 1986	Japan, 200 m; Philippines, 50-150 m.
Calliostoma (Benthastelena) thachi Alf & Stratmann, 2007		Vietnam, depth unknown.

Calliostoma thrincoma Melvill & Standen, 1903		Persian Gulf, depth unknown.
Ziziphinus ticaonicus A.Adams, 1851	***Calliostoma ticaonicum*** (A.Adams, 1851)	Philippines, 25-90 m.
Trochus tigris Gmelin, 1791	***Calliostoma (Maurea) tigris*** (Gmelin, 1791)	New Zealand, 0-211 m.
Trochus tornatus Röding, 1798	***Calliostoma tornatum*** (Röding, 1798)	From India to Indonesia (Borneo), depth unknown.
Trochus torquatus Anton *in* Philippi, 1848	= ***Calliostoma (Maurea) pellucidum*** (Valenciennes, 1846)	
Tristichotrochus tosaensis Kuroda & Habe *in* Habe, 1961	***Calliostoma (Benthastelena) tosaense*** (Kuroda & Habe *in* Habe, 1961)	Southern Japan, Philippines, Chersterfield Is., Loyalty Ridge, Kermadec Is., 100-501 m.
Calliostoma (Kombologion) toshiharui Kosuge, 1997		From Philippines to Borneo, depth unknown.
Trochus tranquebaricus Röding, 1798	***Calliostoma tranquebaricum*** (Röding, 1798)	India, Thailand, depth unknown.
Calliostoma trepidum Hedley, 1907	= ***Laetifantor deceptum*** (E.A.Smith, 1898)	
Calliostoma (Ampullotrochus) tropis n. sp.		Solomon Islands, 309-328 m.
Calliostoma trotini Poppe, Tagaro & Dekker, 2006		Philippines, depth unknown.
Tristichotrochus tsuchijai Kuroda & Habe, 1971 *in* Kuroda, Habe & Oyama, 1971	***Calliostoma (Tristichotrochus) tsuchijai*** (Kuroda & Habe, 1971 *in* Kuroda, Habe & Oyama, 1971)	Japan, 50-200 m.
Maurea turnerarum Powell, 1964	***Calliostoma (Maurea) turnerarum*** (Powell, 1964)	New Zealand (North Is, 186-805 m.
Calliostoma undulatum Finlay, 1923	= ***Calliostoma (Maurea) pellucidum*** (Valenciennes, 1846)	
Trochus unicus Dunker, 1860	***Calliostoma (Tristichotrochus) unicum*** (Dunker, 1860)	Japan, 0-150 m.
Tristichotrochus uranipponensis Okutani, 1969	***Calliostoma (Tristichotrochus) uranipponense*** Okutani, 1969	Japan, depth unknown.
Calliostoma (Fantor) vanbani Marshall, 1995		Northern New Caledonia, 300-550 m
Calliostoma (Kombologion) vicdani Kosuge, 1984		Philippines, 100-150 m.
Calliostoma (Calliostoma) vilvensi Poppe, 2004		Philippines, 80-150 m and Salomon Islands, 82-83 m.
Calliostoma (Astele) virgo Schepman, 1908	***Calliostoma virgo*** Schepman, 1908	Indonesia, 1165-1264 m.
Calliostoma (Calliotropis) waikanae Oliver, 1926	***Calliostoma (Maurea) waikanae*** Oliver, 1926	New Zealand, 0-549 m.
Thysanodonta wairua Marshall, 1988		Northern New Zealand, 98-805 m.
Calliostoma (Ampullotrochus) xanthos Marshall, 1995		Off Lifou, Loyalty Islands, 425 m; northern New Caledonia, 350 m; southern New Caledonia, 400-470 m; Kermadec Islands, 390-490 m; Fiji, 168-353 m; Tonga, 500 m.
Calliostoma (Ampullotrochus) xylocinnamomum Vilvens, 2005		Fiji, 360-371 m; area at the north-west of Fiji; 275-295 m; Tonga, 356-367 m.
Calliostoma zietzi Verco, 1905	***Calliostoma (Fantor) zietzi*** Verco, 1905	Australia (from Victoria to Western Autralia), 22-400 m.