An extensive radiation of the genus *Crassicantharus* Ponder, 1972 (Gastropoda: Buccinoidea) in French Polynesia, with description of nine new species

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ABSTRACT. *Crassicantharus aureatus* sp. nov., *C. beslui* sp. nov., *C. boutetorum* sp. nov., *C. feioides* sp. nov., *C. letourneuxi* sp. nov., *C. magnificus* sp. nov., *C. metallicus* sp. nov., *C. nexus* sp. nov. and *C. perlatus* sp. nov. are described from French Polynesia and compared to *C. norfolkensis* Ponder, 1972. Two more specimens are recorded as *Crassicantharus* species 1 and *Crassicantharus* species 2. The placement of *Crassicantharus* in Buccinidae or Fasciolariidae is questioned and briefly discussed.

INTRODUCTION

The genus *Crassicantharus* was described to accomodate the single species *Crassicantharus norfolkensis* Powell, 1972. So far that species and genus were only confirmed from Norfolk Island. Examination of small buccinid shells from French Polynesia lead to the discovery of several additional *Crassicantharus* species. The shells of these species are ornamented with bright colour and usually have a pretty pattern, but due to their small size they remained unnoticed until now. The material studied in the present paper originates partly from the BENTHAUS expedition conducted by MNHN in deep-water along the Austral Archipelago and from a dedicated team of keen collectors collecting along the beaches of the numerous islands of French Polynesia. As a result, nine *Crassicantharus* species are described as new to science and added to the fauna of the West Pacific. *Crassicantharus auratus* sp. nov., *C. nexus* sp. nov. and *C. perlatus* sp. nov. belong to the deep-water fauna while *C. beslui* sp. nov., *boutetorum* sp. nov., *C. letourneuxi* sp. nov., *C. feioides* sp. nov., *C. metallicus* sp. nov., *C. magnificus* sp. nov. and two further unnamed species are all from shallow water. A possible congeneric species from Australia, *Fusus lincolnensis* Crosse & Fischer, 1865 is briefly discussed. The radula figured by Ponder (1972) and the morphology of the protoconch of *Crassicantharus* is discussed and the placement of the genus in Buccinidae or Fasciolariidae is demonstrated to be questionable.

Abbreviations

AMS: Australian Museum Syndey, Australia
CB: Collection Christian Beslu, Tahiti, French Polynesia
JL: Collection Jean Letourneux, Tahiti, French Polynesia
KF: Collection Koen Fraussen, Belgium
MHB: Collection Michel & Hélène Boutet, Tahiti, French Polynesia
MNHN: Muséum national d'Histoire naturelle, Paris, France
PS: Collection Peter Stahlschmidt, Germany
RG: Collection Robert Gourguet, Tahiti, French Polynesia
RS: Collection Richard Salisbury, USA

DW: Drague Warén (Warén dredge)
dd: empty shell, dead collected
lv: specimen collected alive
jv: juvenile or subadult specimen/shell

SYSTEMATICS

BUCCINOIDEA Rafinesque, 1815
Genus ***Crassicantharus*** Ponder, 1972

Crassicantharus Ponder, 1972: 262. Type species *Crassicantharus norfolkensis* Ponder, 1972 (by original designation).

Species included

Crassicantharus aureatus sp. nov. (Rimatara Island and Président Thiers Banc, lower bathyal).

Crassicantharus beslui sp. nov. (Moruroa Atoll, shallow water).
Crassicantharus boutetorum sp. nov. (Moruroa Atoll, shallow water).
Crassicantharus feioides sp. nov. (Moruroa Atoll, shallow water).
Crassicantharus letourneuxi sp. nov. (Rurutu Island and Raivavae Island, shallow water).
Crassicantharus magnificus sp. nov. (Aukena Island, shallow water).
Crassicantharus metallicus sp. nov. (Aukena Island, shallow water).
Crassicantharus nexus sp. nov. (Rimatara Island, deep water).
Crassicantharus norfolkensis Ponder, 1972 (Norfolk Island).
Crassicantharus perlatus sp. nov. (Neilson Reef, deep water).
C*rassicantharus* species 1 (Vahanga Atoll, shallow water).
C*rassicantharus* species 2 (Aukena Island, shallow water).

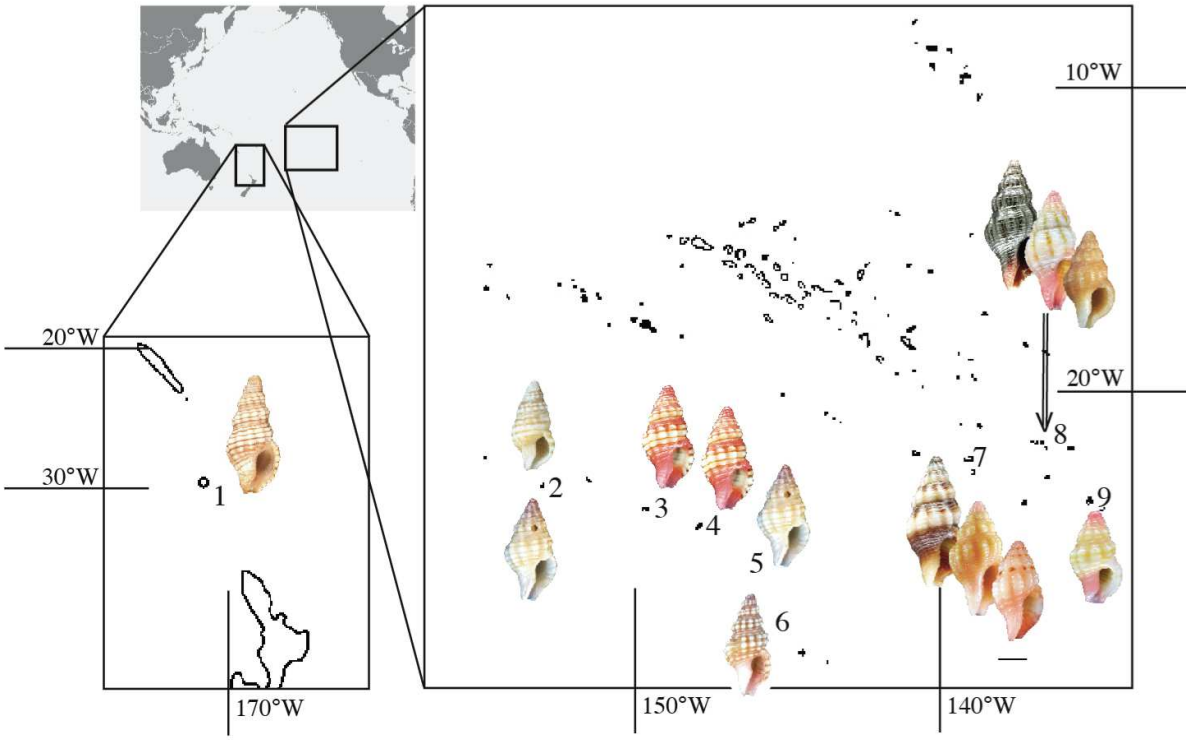


Fig. 1. Map with geographic distribution of *Crassicantharus* species, from west to east:
1. Norfolk Island (*Crassicantharus norfolkensis* Ponder, 1972)
2. off Rimatara Island (*Crassicantharus aureatus* sp. nov. and *C. nexus* sp. nov.)
3. Rurutu Island (*Crassicantharus letourneuxi* sp. nov.)
4. Raivavae Island (*Crassicantharus letourneuxi* sp. nov.)
5. Président Thiers Banc (*Crassicantharus aureatus* sp. nov.)
6. Neilson Reef (*Crassicantharus perlatus* sp. nov.)
7. Tuamotu Archipelago, Moruroa Atoll (*Crassicantharus beslui* sp. nov., *C. boutetorum* sp. nov. and *C. feioides* sp. nov.)
8. Gambier Archipelago, Aukena Island (*Crassicantharus magnificus* sp. nov., *C. metallicus* sp. nov. and *Crassicantharus* species 2)
9. Tuamotu Archipelago, Vahanga Atoll (*Crassicantharus.* species 1)

Remarks. The genus *Crassicantharus* is characterized by the presence of strong axial riblets on the last part of the protoconch whorls, the presence of a large to moderately large parietal knob within the aperture, the presence of columellar knobs, the rather small size and the usually bright colour.

The shape of the shell varies from broadly fusiform to moderately slender, highest variability is seen in the spiral sculpture that may consist of broad, flat primary spiral cords with narrow interspaces where a few minute secondary spiral cords appear, to rather fine and sharp with broad interspaces that are filed with fine but well visible secondary spiral cords.

The radula of *C. norfolkensis* is figured by Ponder (1972: 257, fig. 14): the rachidian tooth is rectangular with 3 minute cusps, the lateral teeth are elongated triangular with a narrow base and a sharp, bifurcated tip (Fig. 2).

Both the presence of axial riblets on the protoconch and the atypical radular morphology indicate that the placement of the genus *Crassicantharus* in Buccinidae is doubtfull. A placement in Fasciolariidae may seem possible when considering the axial riblets on the protoconch, a characteristic also seen in *Teralatirus*, but the radula is highly unusual for this family too. Also a placement in Turbinellidae is probable when considering the conchological similarities with *Teralatirus noumeensis* (Crosse, 1870), a species placed in *Crassicantharus* by Wilson (1994: 67), but probably belonging to Turbinellidae (Vermeij & Snyder, 2006: 414). The shape of the lateral teeth is not fitting in any of the families known to us and it is impossible to decide a familial placement. With the present knowledge, based on a limited number of morphological differences, we do not want to elevate the group to a new family level Crassicanthariidae, but both above mentioned differences in protoconch and radula morphology are too important for being neglected. Pending further study we assign *Crassicantharus* to an incertae sedis group in Buccinoidea rather than to a specific family.

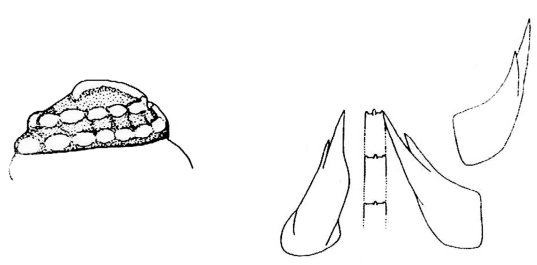


Fig. 2. Type figures, protoconch (eroded) and radula of *Crassicantharus norfolkensis* Ponder, 1972. (Taken from Ponder 1972: respectively 259, fig. 22 and 257, fig. 14.)

Species belonging to *Chauvetia* Monterosato 1884 [type species : *Nesaea mamillata* Risso, 1826 (see Gofas & Oliver, 2010: 26), from Italy, Sicily] have a similar small size and can be ornamented with a spiral pattern and/or bright colour but differ by the finer axial sculpture (when present) on the last part of the teleoconch whorls, the rounder aperture without a parietal knob and without columellar folds, the usually shorter siphonal canal and the buccinid radula with tricuspid lateral teeth. Species of *Chauvetia* are restricted to the NE Atlantic Ocean (revised by Oliver & Rolan, 2008 and 2009; Gofas & Oliver, 2010) and the Mediterranean Sea.

Species belonging to *Teralatirus* Coomans, 1965 [type species: *Latirus ernesti* Melvill, 1910 by original designation (Coomans, 1965: 12), Fasciolariidae] have a similar protoconch (Simone, 2013: figs 13-15) and apertural denticulation (Simone et al., 2013: figs 1, 5-6) but differ by the presence of internal spiral folds along the columella (Simone et al., 2013: fig. 16) while the columella of *Crassicantharus* is smooth (Fig. 33). *Turbinella noumeensis* Crosse, 1870 was placed in *Crassicantharus* by Wilson (1994: 67). It differs from *Crassicantharus*, however, by the bulbous protoconch without axial riblets, the presence of an umbilical fasciole on the siphonal canal and the absence of a parietal knob within the aperture. This species was also excluded from *Teralatirus* by Simone et al (2013: 216) and may belong to *Dolicholatirus* Bellardi, 1884 [type species: *Fusus bronni* Michelotti, 1847 by subsequent designation (Cossmann, 1901: 23], from the Miocene of Italy), a genus that probably belongs to Turbinellidae (Vermeij & Snyder, 2006: 414).

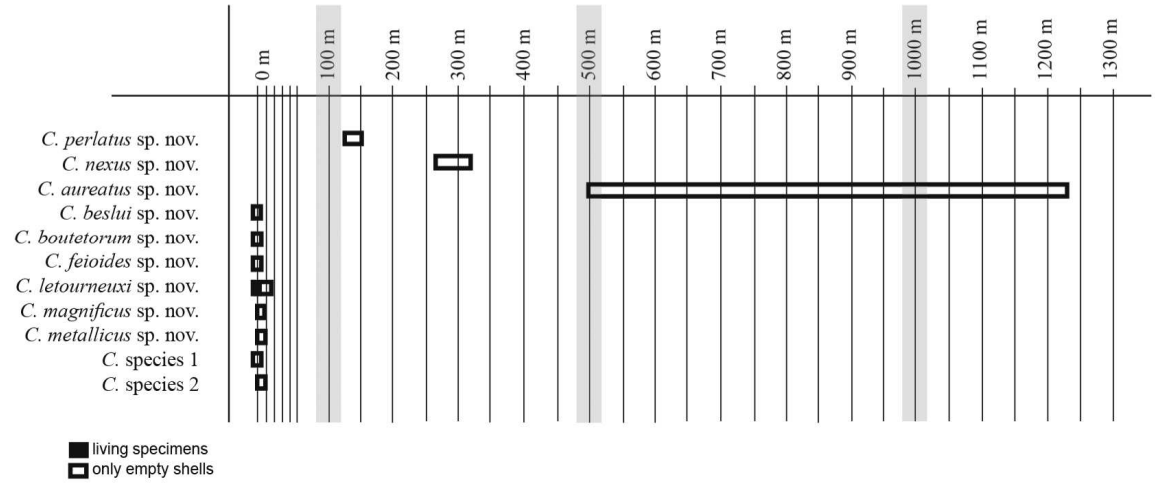


Fig. 3. Bathymetric distribution of *Crassicantharus* species.

Shells of *Fusus lincolnensis* Crosse & Fischer, 1865 [type locality: "Port-Lincoln" (Crosse & Fischer, 1865: 53)] from West Australian shallow water are usually placed in synonymy with *Microcolus dunkeri*

(Jonas, 1846) [*Fusus dunkeri* Jonas, 1846; type locality: "in litore occidentali Novae Hollandiae" (Jonas, 1846: 129), type species of *Microcolus* Cotton & Godfrey, 1932, by original designation (Cotton & Godfrey, 1932: 72)]. Those shells, however, are distinct from *Microcolus dunkeri* (Wilson, 1994: 72). We had not the possibility to study those specimens but we confirm that *F. lincolnensis* is distinct from *M. dunkeri* and may belong to *Crassicantharus*. (Fig. 4)

Fig. 4. *Fusus lincolnensis* Crosse & Fischer, 1865. (Taken from Crosse & Fischer, 1865: pl. 2, fig. 4.)

Crassicantharus norfolkensis Ponder 1972
Figs 1, 2, 5A

Crassicantharus norfolkensis Ponder, 1972: 262-264, text figs 14, 22, pl. 24, fig. 4. Type locality: Norfolk Island.

Remarks. *Crassicantharus norfolkensis* is characterized by the presence of broad spiral cords all over the surface, the slender shape with high spire, the pale yellowish brown spiral cords separated by reddish brown spiral interspaces and the short siphonal canal.

Crassicantharus aureatus sp. nov.
Figs 1, 5B-E, 7A-B

Type material. Holotype MNHN IM-2000-27899, 7.7 mm, French Polynesia, Rimatara Island, BENTHAUS stn DW2021, 22°37'S, 152°49'W, 1200-1226 m.
Paratype 1, MNHN IM-2000-27900, 7.8 mm, Rimatara Island, BENTHAUS stn DW2020, 22°37'S, 152°49'W, 920-930 m; paratype 2, MNHN IM-2000-27901, 6.2 mm, Président Thiers Banc, BENTHAUS stn DW1933, 24°41'S, 146°01'W, 500-850 m.

Type locality. French Polynesia, Austral Archipelago, Rimatara Island, BENTHAUS stn DW2021, 22°37'S, 152°49'W, 1200-1226 m.

Material examined. BENTHAUS: French Polynesia, stn DW1933, Président Thiers Banc, 24°41'S, 146°01'W, 500-850 m, 1 dd; stn DW2020, Austral Archipelago, Rimatara Island, 22°37'S, 152°49'W, 920-930 m, 1 dd; Stn DW2021, 22°37'S, 152°49'W, 1200-1226 m, 1 dd.

Range and habitat. Until now known only from the type material listed above. All specimens are empty shells from the lower bathyal zone between 500 and 1226 m.

Description. Shell small, up to 7.7 mm in length. Shape semi-oval, broad, spire fusiform, base rather short.
Protoconch consisting of 1 ¼ to 1 ½ whorls, exact number uncertain because transition to teleoconch indistinct; size at 1 ½ whorls 0.7 mm in diameter; tip flattened, weakly inclined; colour bordeau-red; first whorl smooth, glossy; last ¼ or ½ whorl with abapically opisthocline orientated axial ribs, at first weak, becoming broader, rather pronounced along last part.
Teleoconch with 4 ¼ moderately convex whorls. Suture distinct. Subsutural slope broad, concave. Colour golden-yellow; sculpture with white knobs, forming broad white spiral bands with fine, golden-yellow interspaces; aperture white, apex dark red.
First teleoconch whorl with 3 spiral cords: 2 adapical (subsutural) finer cords with narrow interspace, abapical spiral cord slightly stronger, separated from other cords by broader interspace. First interspace gradually becoming broader along second whorl, with 2 or 3 fine secondary spiral threads; adapical subsutural primary spiral cord staying fine while both other primary spiral cord growing broader and stronger. Penultimate whorl with 1 fine subsutural spiral cord separated from other cords by broad interspace; 2 other spiral cords broad, flat; a third spiral cord appearing, partly concealed under suture with subsequent whorl. Subsutural cord growing broader along penultimate whorl. Body whorl with 5 broad primary spiral cords: 1 broad, flat, rather bilirate subsutural, 4 or 5 broader spiral cords ornamented with white knobs, numerous fine spiral cords on base of which 3 slightly stronger. Spiral interspaces with 3 fine secondary spiral threads.
First whorl with 8 axial ribs, lower spire whorls with 9 broad but rather weak ribs. On first whorl broad with narrow interspaces, running from suture to suture but weaker on subsutural slope. Axial ribs gradually growing weaker on subsutural slope, almost smooth on third whorl. Axial ribs slightly sharper along body whorl.
Aperture ovate. Outer lip thick, broken in all studied specimens, with 8 fine internal lirae. Columella concave, parietal knob big, columellar fold(s) eroded or absent. Siphonal canal short, broad, open. Aperture and siphonal canal together larger than 2/5 of total shell length.

Comparison. *Crassicantharus aureatus* sp. nov. is characterized by its broad shape with weak subsutural

concavity, the strong and sharp axial ribs, the constricted base with a moderately long siphonal canal and by the pale colour in combination with a dark apex.
Crassicantharus norfolkensis, the type species of the genus, is similar in sculpture but differs by the primary spiral cords that are present along the subsutural slope and on the base, the slender shape without subsutural concavity, the broader base with weaker concavity and the shorter siphonal canal.
Crassicantharus letourneuxi sp. nov. differs by the straighter axial riblets on the protoconch, weaker and broader axial ribs, the more oval shape, the straight subsutural slope (rather that concave), the slightly narrower base, the much darker colour, the thick sculpture within the aperture and the slightly shorter siphonal canal. *C. letourneuxi* sp. nov. is a shallow water species while *C. auratus* is found in the lower bathyal zone.

Etymology. *Crassicantharus aureatus* sp. nov. is derived from the Latin *aureus* (golden) in the form of *aureatus* it means "decorated with gold", what refers to the bright golden spiral bands.

Crassicantharus beslui sp. nov.
Figs 1, 6C-D, 7M-O

Type material. Holotype MNHN IM-2000-30066, 5.2 mm, French Polynesia, Tuamotu Archipelago, Moruroa Atoll, intertidal.
Paratype 1, CB, 5.1 mm; paratypes 2-3, KF-7350, 7351, 5.2-5.4 mm; paratype 4, PS, 5.8 mm; paratypes 5-8, CB, 5.1-5.4 mm; paratype 9, RS, 5.5 mm, (all from type locality).

Type locality. French Polynesia, Tuamotu Archipelago, Moruroa Atoll, intertidal.

Material examined. The type material listed above.

Range and habitat. Known from Moruroa Atoll only. All specimens are empty shells collected intertidal.

Description. Shell small, up to 5.8 mm in length. Shape semi-oval, moderately broad, spire fusiform, base rather short.
Protoconch consisting of 1 ½ whorls, 0.6 mm in diameter; colour pink; first whorl smooth, glossy; tip weakly curled inwards, first ½ whorl smooth but with strong folds, resulting in flattened, rather hollow tip; flattened slope gradually becoming narrower along first whorl; last ½ whorl convex with fine, weakly diagonally orientated, axial riblets, at first weak, becoming broader, rather pronounced along last part. Transition to teleoconch indistinct, traceable only by appearance of spiral sculpture of teleoconch whorl.
Teleoconch with 3 ½ weakly convex whorls. Suture distinct. Colour pink with slighlty paler axial ribs along body whorl, base and siphonal canal darker, with dark brown dots on subsutural spiral cord according to axial sculpture.
First teleoconch whorl with 3 rather big spiral cords, interspaces narrow. Spiral cords gradually growing broader but flatter, interspaces growing broader with a fine secondary spiral cords appearing. Second whorl with 3 broad, flat spiral cords, interspace moderately broad with 2 or 3 fine secondary spiral threads. Penultimate whorl with weak subsutural spiral cord; 2 other spiral cords stronger, broad, flat; a fourth spiral cord partly concealed under suture of subsequent (body) whorl. Body whorl with 4 broad, prominent primary spiral cords along periphery, in addition a single fine but moderately sharp subsutural spiral cord, 3 fine spiral cords on base. Spiral interspaces with 3-5 fine secondary spiral threads, adapical spiral interspace woth 5 or 6 such threads.
First teleoconch whorl with 10 or 11 big, axial ribs with narrow interspaces. Second whorl with 9 broader but slightly flatter axial ribs, running from suture to suture but weaker on subsutural slope. Axial ribs gradually growing weaker on subsutural slope, almost smooth on body whorl.
Aperture ovate, laterally weakly flattened. Outer lip thick, coloured according to outer pattern, edge sharp, with 4 - 6 fine internal lirae. Columella weakly concave, parietal knob big and prominent, callus glossy with 3 big columellar folds. Siphonal canal short, broad, open. Aperture and siphonal canal together slightly larger than 1/2 of total shell length.

Comparison. *Crassicantharus beslui* sp. nov. is characterized by the somewhat flattened protoconch whorls, the low number of teleoconch whorls, the broad, oval shape, the broad and flattened spiral cords, the thick knobs inside the aperture, the soft pattern consisting of pastel colours and the dark dots on the subsutural spiral cord.
Crassicantharus letourneuxi sp. nov. differs by the convex protoconch whorls, the higher number of teleoconch whorls, the lower number of axial ribs along the first whorl, the lower number of secondary spiral cords along the body whorl, the weaker subsutural cord, the somewhat more elongate shape, the weaker columellar knobs, the darker and brighter colour, the pattern consisting of spiral bands and spiral lines and the slightly larger adult size.
Crassicantharus feioides sp. nov., also occuring in Moruroa, differs by the finer primary spiral cords, the somewhat longer base with narrower siphonal canal, the brighter orange colour without pattern and the larger adult size.

Etymology. *Crassicantharus beslui* sp. nov. is named to honour Mr. Beslu (Tahiti) for his enthousiasm and his dedication to the French Polynesian fauna. Until present he's the only person that collected shells of this species.

Crassicantharus boutetorum sp. nov.
Figs 1, 6I-J

Type material. Holotype MNHN IM-2000-30067, 9.1 mm, French Polynesia, Tuamotu Archipelago, Moruroa Atoll, intertidal.
Paratype, KF-7349, 7.3 mm juvenile, same locality.

Type locality. French Polynesia, Tuamotu Archipelago, Moruroa Atoll, intertidal.

Material examined. The type material listed above.

Range and habitat. Known from Moruroa Atoll only. Both specimens are empty shells collected intertidal in shell gritt.

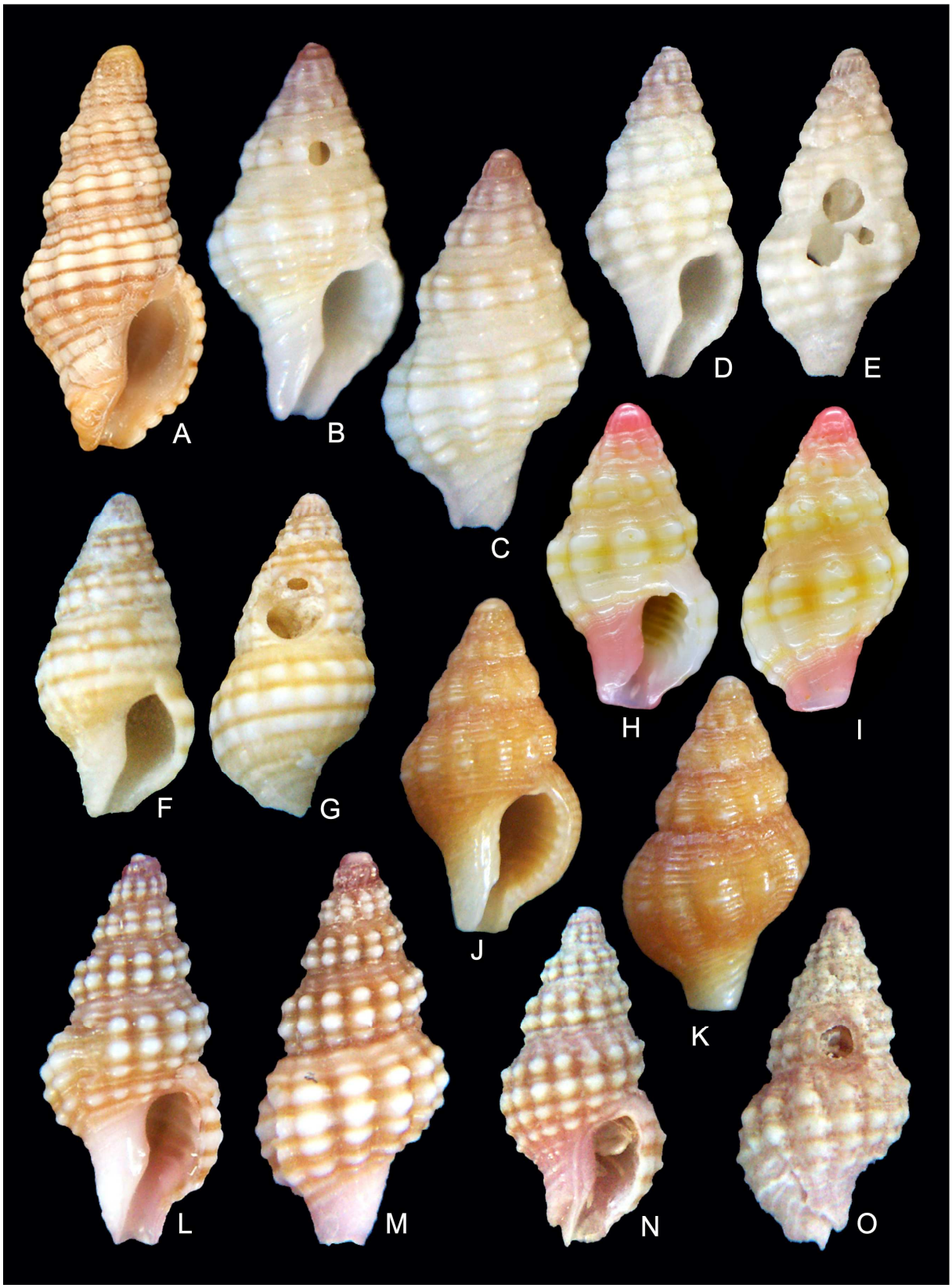
Description. Shell small, up to 9.1 mm in length. Shape moderately slender, fusiform, base rather short.
Protoconch eroded in both studied specimens, consisting of 1 ½ whorls by estimation, 0.7 mm in diameter; colour dark brown to black; first whorl smooth, glossy; last ¼ whorl with fine, rather straight, axial riblets. Transition to teleoconch indistinct, traced by appearance of teleoconch sculpture consisting of diagonally orientated axial riblets with fine spiral lines.
Teleoconch with 5 rather convex, weakly angulated whorls. Suture distinct. Pattern chocolate brown along subsutural slope and base; with broad, white spiral band along periphery. Part of axial ribs on subsutural slope occasionally paler or white coloured, resulting in an alternating pattern. Spiral cords along subsutural slope occasionally slightly darker on top, accentuating the alternating pattern. Spiral cords along white peripheral band occasionally slightly darker on top. Spiral band along base always plain brown. Aperture coloured according to pattern of outer surface, siphonal canal pale yellowish to white.
First teleoconch whorl with 3 spiral cords. Second whorl with 5 fine spiral cords. Penultimate whorl with 8 spiral cords, all of equal strength; interspaces twice as broad with 3 fine secondary spiral threads. Strength of spiral cords slightly increasing along body whorl. Body whorl with about 15 slightly broader primary spiral cords; interspace of equal size or broader with 3 microscopic spiral threads, on base with 5, fine, microscopic spiral threads of which middle one stronger.
Upper spire whorls with 11 or 12 strong axial ribs, running from suture to suture; interspaces rather narrow. Penultimate and body whorls with 10 such ribs. Adapical part of axial ribs on subsutural slope of last ¼ part of body whorl slightly weaker.
Aperture ovate. Outer lip thick, edge eroded in both studied specimens, with 11 fine internal lirae corresponding to outer spiral cords. Columella almost straight with 4 columellar folds in transition to siphonal canal, parietal part concave with sharp knob; callus narrow, rather thin, glossy. Siphonal canal moderately short, broad, open. Aperture and siphonal canal together slightly smaller than 2/5 of total shell length.

Comparison. *Crassicantharus boutetorum* sp. nov. is characterized by the rather simple sculpture of moderately fine spiral cords that are equally spaced along the whole whorl, the dark brown to black apex and by the peculiar pattern of a broad, white spiral band and a white siphonal canal in combination with a chocolate brown suture and base.
Crassicantharus metallicus sp. nov. differs by the much weaker columellar knobs, the finer spiral cords, the broader spiral interspaces often with a fine secondary spiral cord, the slightly higher number of spiral cords on the subsutural slope with a somewhat stronger subsutural cord, a slightly higher number of axial ribs, a slightly narrower siphonal canal, a concaver base and a darker colour without white bands.

Etymology. *Crassicantharus boutetorum* sp. nov. is named to honour Mrs. and Mr. Boutet (Tahiti) for their enthousiasm and dedication to the French Polynesian fauna.

Figure 5A-O

A. *Crassicantharus norfolkensis* Ponder, 1972, holotype AMS- C.59418a, 10.2 mm, Norfolk Island.
B-E. *Crassicantharus aureatus* sp. nov. **B-C.** Holotype MNHN IM-2000-27899, 7.7 mm, Australes Archipelago, Rimatara Island, BENTHAUS stn DW2021, 22°37'S, 152°49'W, 1200-1226 m. **D-E.** Paratype 2, 6.2 mm MNHN IM-2000-27901, Président Thiers Banc, BENTHAUS, stn DW1933, 24°41'S, 146°01'W, 500-850 m.
F-G. *Crassicantharus nexus* sp. nov., holotype MNHN IM-2000-27907, 7.0 mm, Australes Archipelago, Rimatara Island, BENTHAUS, stn DW 2012, 22°28'S, 152°49'W, 270-320 m.
H-I. *Crassicantharus* species 1, 5.5 mm, Tuamotu Archipelago, Acteon Group, Vahanga Atoll, JL.
J-K. *Crassicantharus* species 2, 7.5 mm, Gambier Archipelago, Aukena Island, 1-2 m deep, JL.
L-O. *Crassicantharus perlatus* sp. nov. **L-M.** Holotype MNHN IM-2000-27904, 6.8 mm, Australes Archipelago, Neilson Reef, BENTHAUS, stn CP1918, 27°03'S, 146°04'W, 130-140 m. **N-O.** Paratype 1 MNHN IM-2000-27905, 6.3 mm, Australes Archipelago, Neilson Reef, BENTHAUS, stn CP1918, 27°03'S, 146°04'W, 130-140 m.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Crassicantharus feioides sp. nov.
Figs 1, 6G-H, 7P-Q

Type material. Holotype MNHN IM-2000-30070, 6.8 mm, French Polynesia, Tuamotu Archipelago, Moruroa Atoll, beach.
Paratypes 1-2, MHB, 6.6-6.0 mm; paratype 3, KF-7346, 6.3 mm; paratype 4, PS, 6.4 mm (all from type locality).

Type locality. French Polynesia, Tuamotu Archipelago, Moruroa Atoll, beach.

Material examined. The type material listed above.

Range and habitat. Known from Moruroa Atoll only. All specimens are empty shells collected intertidal in shell gritt.

Description. Shell small, up to 6.8 mm in length. Shape semi-oval, broad, with moderately angulated whorls, spire fusiform, base rather short.
Protoconch consisting of 1 ¼ whorls, 0.9 mm in diameter; colour pink. First 1/2 whorl, including tip, round, smooth, glossy; last ¾ whorl with axial riblets, first riblet fine, straight, subsequent riblets stronger, gradually more diagonally orientated. Transition to teleoconch indistinct, traceable only by appearance of spiral sculpture of teleoconch whorl.
Teleoconch with 4 weakly angulated whorls. Suture distinct. Colour orange, axial knobs along periphery occasionally slightly paler; aperture orange, apex pink, siphonal canal pale pink.
First teleoconch whorl with 3 spiral cords of equal strength, forming big pearled knobs on top of axial ribs, interspaces narrow. Subsubsural spiral cord growing weaker while adapical interspace gradually growing broader along first whorl. A single secondary spiral cords appearing in middle of both spiral interspaces along end of first whorl. Those secondary spiral cords gradually stronger along second whorl, becoming as strong as primary spiral cords. Second whorl with 5 or 6 fine spiral cords (primary and secondary together), on subsutural slope thin. Penultimate whorl with 8 moderately fine spiral cords, 4 subsutural ones finer; interspaces rather broad with 1-3 fine, obscure, tertiary, spiral threads visible under magnification only. Body whorl with about 24 fine primary spiral cords of which 7 or 8 on siphonal canal, spiral cords along periphery slightly broader and flattened; interspaces moderately broad with 2 or 3 fine, obscure, secondary spiral threads visible under magnification only; interspace on subsutural slope slightly broader.
All whorls with 10 or 11 strong axial ribs, running from suture to suture but weak along subsutural slope; interspaces narrow. Axial ribs growing stronger along first whorl. Axial ribs weaker below midwhorl, shell base almost smooth.
Aperture ovate. Outer lip thick; edge sharp, with 9 fine internal lirae. Columella concave, parietal knob fine but sharp, callus glossy with 2 columellar folds. Siphonal canal short, broad, open. Aperture and siphonal canal together about 1/2 of total shell length.

Comparison. *Crassicantharus feioides* sp. nov. is characterized by the rather angulated whorls, the many fine primary spiral cords of almost equal strength and the orange colour without additional pattern in combination with a pink apex and siphonal canal.
Crassicantharus norfolkensis, the type species of the genus, is similar in sculpture but differs by the broader primary spiral cords, the higher number of axial ribs, the pattern with spiral lines, the axial interspaces without pattern, the slenderer shape, the shorter base.
Crassicantharus aureatus sp. nov. differs by the weakly opisthocline axial riblets on the protoconch, stronger and sharper axial ribs, the broader shape, the deeper constricted base, the concave subsutural slope (rather that straight), the paler colour and the slightly longer siphonal canal.

Etymology. *Crassicantharus feioides* sp. nov. is named after the cultivated ‘orange banana’ *Musa troglodytarum* Linnaeus 1753 that may have a similar vivid orange colour when ripe. The local name in eastern French Polynesia is Fe’i Aiuri or Fe’i Tatia, also spelled Fehi or Fei banana.

Crassicantharus letourneuxi sp. nov.
Figs 1, 6A-B, 7R-T

Type material. Holotype MNHN IM-2000-27902, 6.2 mm, French Polynesia, Austral Archipelago, Rurutu Island, intertidal.
Paratype 1, MNHN IM-2000-27903, 6.4 mm; paratypes 2-4, JL, 6.0-7.1 mm; paratype 5, PS, 5.9 mm; paratype 6, KF-7341, 5.6 mm; paratype 7, KF-7342, 5.0 mm juvenile (all from type locality).

Type locality. French Polynesia, Australes Archipelago, Rurutu Island, intertidal.

Material examined. The type material listed above, in additon a single subadult from 20 m deep at Raivavae Island, JL.

Range and habitat. Known from the Australes Archipelago (Rurutu, “Island of Whales”) and from Raivavae Island (“At the dawning of the world”). All specimens are empty shells collected intertidal or in shallow water under pieces of dead corals or in sediment.

Description. Shell small, up to 7.1 mm in length. Shape semi-oval, moderately broad, spire fusiform, base rather short.
Protoconch consisting of 1 ¼ whorls, 0.7 mm in diameter; colour dark bordeau-red; first whorl smooth,

glossy; last ½ whorl with fine, rather straigth, axial riblets, at first weak, becoming broader, rather pronounced along last part. Transition to teleoconch indistinct, traceable only by appearance of spiral sculpture of teleoconch whorl.
Teleoconch with 4 ¼ weakly convex whorls. Suture distinct. Colour bordeau-red with 4 spiral rows of big white knobs, interspaces reddish brown; aperture bordeaux-red, apex dark red, siphonal canal bordeaux-red.
First teleoconch whorl with 3 spiral cords: 2 adapical (subsutural) cords finer with narrow interspace, abapical spiral cord slightly stronger, separated from other cords by broader interspace. First interspace gradually becoming broader along second whorl, with 2 or 3 fine secondary spiral threads; adapical subsutural primary spiral cord staying fine while both other primary spiral cord growing stronger. Penultimate whorl with 1 fine but sharp subsutural spiral cord separated from other spiral cords by broad interspace; 2 other spiral cords broad, flat. Body whorl with 4 broad primary spiral cords situated along periphery, in addition a single fine but sharp subsutural spiral cord and 3 fine spiral cords on base. Spiral interspaces with 3 fine secondary spiral threads, adapical spiral interspace with 5 such threads.
All whorls with 9 broad but rather flat axial ribs; on first whorl running from suture to suture but weaker on subsutural slope; interspaces narrow. Axial ribs gradually growing weaker along subsutural slope of first whorl, almost smooth on subsutural slope of second whorl. Axial ribs slightly sharper along body whorl.
Aperture ovate, laterally weakly flattened. Outer lip thick, coloured according to outer pattern, edge sharp, with 5 or 6 fine internal lirae. Columella concave, parietal knob big, callus glossy with 2 columellar folds in transition to siphonal canal. Siphonal canal short, broad, open. Aperture and siphonal canal together slightly larger than 2/5 of total shell length.

Comparison. *Crassicantharus letourneuxi* sp. nov. is characterized by the oval shape, the thick inner sculpture of the aperture and the bright reddish colour.
Crassicantharus beslui sp. nov. differs by the rather angular protoconch whorls, the low number of teleoconch whorls, the higher number of axial ribs along the first whorl, the higher number of secondary spiral cords along the body whorl, the slightly stronger subsutural cord, the broader shape, the strong columellar knobs, the soft colour, the pattern of dark dots on the subsutural spiral cord and the slightly smaller adult size.
Crassicantharus norfolkensis, the type species of the genus, is similar in sculpture but differs by the primary spiral cords that are present along the subsutural slope and on the base, the slightly higher number of axial ribs, the paler pattern, the axial interspaces without pattern, the slenderer shape, and the shorter base.
Crassicantharus aureatus sp. nov. differs by the weakly opisthocline axial riblets on the protoconch, stronger and sharper axial ribs, the broader shape, the deeper constricted base, the concave subsutural slope (rather that straight), the paler colour and the slightly longer siphonal canal.

Etymology. *Crassicantharus letourneuxi* sp. nov. is named to honour Mr. Jean Letourneux (Tahiti) for his enthousiasm and his dedication to the French Polynesian fauna.

Crassicantharus metallicus sp. nov.
Figs 1, 6K-L, 7C-D

Type material. Holotype MNHN IM-2000-30068, 9.1 mm, French Polynesia, Gambier Archipelago, Aukena Island, 1-2 m.
Paratype 1, JL, 7.1 mm; paratype 2, KF-7348, 7.6 mm (both from type locality).

Type locality. French Polynesia, Gambier Archipelago, Aukena Island, 1-2 m.

Material examined. The type material listed above.

Range and habitat. Known from Aukena Island only. All specimens are empty shells collected intertidal in shell grit.

Description. Shell small, up to 9.3 mm in length. Shape moderately slender, spire fusiform, base rather short.
Protoconch eroded in all studied specimens, transition to teleoconch not traceable; remains of fine, rather straight, axial riblets traceable on last part of protoconch whorls.
Teleoconch with about 5 rather convex, weakly angulated whorls. Suture distinct; margin of adjacent subsequent whorl moderately thickened by weakly raised subsutural spiral cord. Colour dark brown, almost black, fresh shells with metallic gloss; aperture with tip of siphonal canal dark reddish brown.
First teleoconch whorl with 3 broad spiral cords. Interspaces narrow but gradually becoming broader along second whorl with 1 fine secondary spiral cord growing as strong as subsutural cord along second whorl. Subsutural primary spiral cord situated on weakly elevated subsutural ridge that accentuate suture. Number of spiral cords increasing; interspaces growing slightly broader with 3-5 finer spiral threads; middle spiral thread stronger. Penultimate whorl with 10 or 11 fine spiral cords; 5 of them on subsutural slope, all slightly finer except subsutural spiral cord. Body whorl with about 23 fine spiral cords (primary and secundary together), subsutural cord slightly stronger than spirals on subsutural slope; interspaces rather broad, with 3 to 5 fine (tertiary) spiral threads, middle ones in interspaces along periphery slightly

stronger. Siphonal canal covered with numerous fine spiral cords.
Upper spire whorls with 15 strong axial ribs, running from suture to suture; interspaces rather narrow. Axials becoming weaker on subsutural slope along third whorl. Penultimate whorl with 13 such axial ribs. Body whorl with 11 axial ribs, strong at periphery, weak on subsutural slope, base almost smooth.
Aperture ovate. Outer lip thick; edge glossy, weakly curled outwards; with 10 fine internal lirae. Columella almost straight with 2 weak columellar knobs at transition to siphonal canal, parietal part concave with small parietal knob; callus narrow, rather thin, glossy. Siphonal canal moderately short, broad, open. Aperture and siphonal canal together slightly larger than 2/5 of total shell length.

Comparison. *Crassicantharus metallicus* sp. nov. is characterized by the fine spiral sculpture with slightly thinner cords on the subsutural slope but a moderately thick subsutural elevation that accentuate the suture, the rather smooth columella with 2 weak columellar knobs only, the weak parietal knob and the uniform dark colour without pattern.
Crassicantharus boutetorum sp. nov. differs by the presence of 4 columellar knobs, the spiral cords that all have about the same strength, a slightly lower number of spiral cords on the subsutural slope, a slightly higher number of axial ribs, a slightly broader siphonal canal with a weaker concavity of the base and a paler colour with a white spiral band.

Etymology. *Crassicantharus metallicus* sp. nov. is named after the Latin *metallicus*, meaning "made from metal", for the peculiar, dark, shiny appearance of the shell.

Crassicantharus magnificus sp. nov.
Figs 1, 6E-F, 7I-L

Type material. Holotype MNHN IM-2000-30069, 8.5 mm, French Polynesia, Gambier Archipelago, Aukena Island, 1-2 m.
Paratype 1, JL, 8.2 mm; paratype 2, KF-7347, 8.1 mm (both from type locality).

Type locality. French Polynesia, Gambier Archipelago, Aukena Island, 1-2 m.

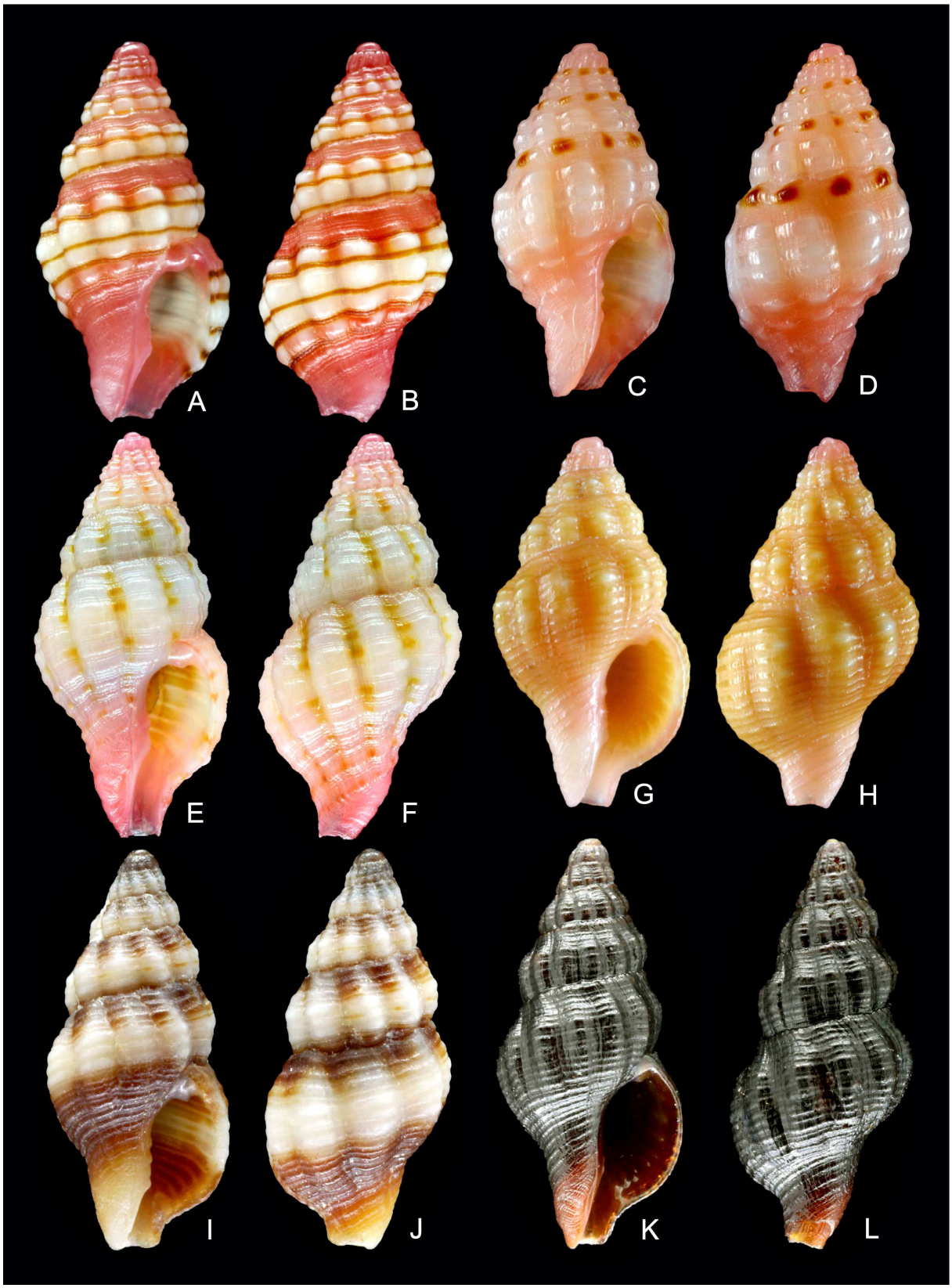
Material examined. The type material listed above.

Range and habitat. Known from Aukena Island only. The holotype was collected alive, proving the bathymetric range as shallow.

Description. Shell small, up to 8.5 mm in length. Shape semi-oval, moderately broad, spire fusiform, base rather short.
Protoconch consisting of 1 ¼ whorls, 0.7 mm in diameter; colour purplish pink; tip weakly curled inwards, first ½ whorl smooth, glossy, convex; last whorl adapically strongly folded, resulting in flattened, rather hollow tip; last 1/8 whorl with 3 weak, rather straight, axial riblets. Transition to teleoconch indistinct, traceable only by appearance of spiral sculpture of teleoconch whorl.
Teleoconch with 4 ¾ weakly convex whorls. Suture distinct. Colour pale yellowish to white, axial interspaces pale brown; aperture coloured according to pattern of outer surface but with pink parietal knob, apex and siphonal canal bright purplish pink.
First teleoconch whorl with 3 spiral cords that form big pearled knobs on top of axial ribs, interspaces narrow. Interspaces growing broader along last part of first whorl, showing traces of fine secondary spiral threads. Adapical interspace (below subsutural cord) gradually becoming broader along second whorl, with 2 or 3 fine secondary spiral threads; subsutural primary spiral cord weaker than both other primary spiral cord growing stronger. One secondary spiral thread in adapical spiral interspace growing stronger along third whorl, becoming as strong as subsutural cord. Penultimate whorl with 4 moderately strong spiral cords, 2 subsutural ones slightly weaker; interspaces broad with 3 or 4 fine secondary spiral threads. Body whorl with 11 primary spiral cords, 2 subsutural ones weak; interspaces broad with 3 or 4 fine secondary spiral threads; interspaces on siphonal canal broader, abapical interspace with 5 secondary spiral threads.

Figure 6A-L

A-B. *Crassicantharus letourneuxi* sp. nov., holotype MNHN IM-2000-27902, 6.2 mm, Australes Archipelago, Rurutu Island, Rurutu Island, intertidal.
C-D. *Crassicantharus beslui* sp. nov., holotype MNHN IM-2000-30066, 5.2 mm, Tuamotu Archipelago, Moruroa Atoll, intertidal.
E-F. *Crassicantharus magnificus* sp. nov., holotype MNHN IM-2000-30069, 8.5 mm, Gambier Archipelago, Aukena Island, 1-2 m.
G-H. *Crassicantharus feioides* sp. nov., holotype MNHN IM-2000-30070, 6.8 mm, Tuamotu Archipelago, Moruroa Atoll, intertidal.
I-J. *Crassicantharus boutetorum* sp. nov., holotype MNHN IM-2000-30067, 9.1 mm, Tuamotu Archipelago, Moruroa Atoll, intertidal.
K-L. *Crassicantharus metallicus* sp. nov., holotype MNHN IM-2000-30068, 9.1 mm, Gambier Archipelago, Aukena Island, 1-2 m.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All whorls with 13 strong axial ribs, running from suture to suture; interspaces narrow. Axial ribs growing stronger along second whorl, with slightly broader interspaces. Penultimate and body whorls with 9 strong axial ribs, running from suture to base, weaker on siphonal canal.
Aperture ovate. Outer lip thick; edge sharp, with orange dots according to spiral sculpture, with 7 fine internal lirae. Columella concave, parietal knob big, callus glossy with 2 columellar folds in transition to siphonal canal. Siphonal canal short, broad, open. Aperture and siphonal canal together slightly lesser than 1/2 of total shell length.

Comparison. *Crassicantharus magnificus* sp. nov. is characterized by the angulated protoconch (in fresh specimens, paratype 1 is slightly eroded and its protoconch whorls look much more convex), the strong axial ribs running from suture to along the base up to the siphonal canal, the pattern of brown axial strikes on a pale yellowish to white background in combination with a bright purplish pink apex and siphonal canal.
Crassicantharus feioides sp. nov. differs by the weakly opisthocline axial riblets on the protoconch, stronger and sharper axial ribs, the broader shape, the deeper constricted base, the concave subsutural slope (rather that straight), the paler colour and the slightly longer siphonal canal.

Etymology. *Crassicantharus magnificus* sp. nov. is derived from the Latin *magnificus*, meaning "great, noble, splendid", for the magnificent visual beauty exhibited by this shell.

Crassicantharus nexus sp. nov.
Figs 1, 5F-G

Type material. Holotype MNHN IM-2000-27907, 7.0 mm, French Polynesia, Austral Archipelago, Rimatara Island, BENTHAUS stn DW2012, 22°28'S, 152°49'W, 270-320 m.

Type locality. French Polynesia, Austral Archipelago, Rimatara Island, BENTHAUS stn DW2012, 22°28'S, 152°49'W, 270-320 m.

Material examined. BENTHAUS: French Polynesia, stn DW2012, Rimatara Island, 22°28'S, 152°49'W, 270-320 m, 1 dd.

Range and habitat. Until now known only from the unique holotype, an empty shell from between 270 and 320 m.

Description. Shell small, 7.0 mm in length. Shape semi-oval, slender, spire fusiform, base short.
Protoconch eroded, consisting of 1 ¼ whorls by estimating remaining traces.
Teleoconch with 4 ½ whorls, laterally flattened. Suture distinct. Subsutural slope narrow, straight. Colour golden-yellow; sculpture with white knobs, forming broad white spiral bands with fine, golden-yellow interspaces; apex reddish.
First teleoconch whorl with 3 spiral cords: 2 adapical (subsutural) cords finer, interspaces narrow. Subsutural spiral cord staying weak while 2 other (abapical) spiral cord gradually grow broader. Third whorl with 3 broad primary spiral cords: subsutural spiral cord weak, hardly detectable; other 2 spiral cords more pronounced. Body whorl with 6 broad primary spiral cords: 1 weak subsutural, 3 strong at periphery, 2 weaker on base.
Upper spire whorls with 12 broad but rather weak axial ribs. Their number increasing to 15 on penultimate whorl. Body whorl with 15 axial ribs. Axial interspaces narrow.
Aperture ovate, eroded, internal sculpture not tracable. Siphonal canal short, broad, open. Aperture and siphonal canal sligthly larger than 2/5 of total shell length.

Comparison. *Crassicantharus nexus* sp. nov. is charactarized by the rather conical spire, the spiral cords that are broad and low in number, the large number of weak axial ribs, the rather narrow subsutural slope and the small adult size.
Crassicantharus norfolkensis differs by the slightly larger protoconch when compared to shell size, the two subsutural spiral cords (rather than 1) and the lower number of axial ribs.
Crassicantharus auratus sp. nov. differs by the axial ribs that are more accentuated with broader interspaces and fewer in number, the broad subsutural slope that is concave (rather than straight), the broader shape, the constricted base, the paler pattern in combination with a darker apex and by the slightly larger adult size.
Crassicantharus letourneuxi sp. nov. differs by the broad spiral cords along the peripheral area of the whorls only, leaving the broad subsutural slope and the base ornamented with fine secondary spiral threads only, the broad subsutural slope, the constricted base, the axial ribs that are weaker and fewer in number, the dark red colour, the occasional presence of pattern in the axial interspaces and the strongly sculptured aperture.

Etymology. *Crassicantharus nexus* sp. nov. is derived from the Latin *nexus*, meaning "that what ties together", in the past also used for a "link" as a means of communication, to express the intermediate aspect of this species between the already known *C. norfolkensis* and the new *C. auratus* described above.

Crassicantharus perlatus sp. nov.
Figs 1, 5L-O, 7E-H

Type material. Holotype MNHN IM-2000-27904, 6.8 mm, French Polynesia, Austral Archipelago, Neilson Reef, BENTHAUS, stn CP1918, 27°03'S, 146°04'W, 130-140 m.
Paratype 1, MNHN IM-2000-27905, 6.3 mm, Neilson Reef, BENTHAUS stn CP1918, 27°03'S, 146°04'W, 130-140 m; paratype 2, MNHN IM-2000-27906, 4.7 mm subadult, Neilson Reef, BENTHAUS stn DW1914, 27°03'S, 146°04'W, 150 m; paratype 3, KF-7340, 6.3 mm, same locality.

Type locality. French Polynesia, Austral Archipelago, Neilson Reef, BENTHAUS stn CP1918, 27°03'S, 146°04'W, 130-140 m.

Material examined. BENTHAUS: French Polynesia, stn DW1914, Neilson Reef, 27°03'S, 146°04'W, 150 m, 2 dd (1 jv); stn CP1918, Neilson Reef, 27°03'S, 146°04'W, 130-140 m, 2 dd.

Range and habitat. Until now known only from the type material listed above, all empty shells from between 130 and 150 m.

Description. Shell small, up to 6.8 mm in length. Shape semi-oval, moderately broad, spire fusiform, base rather short.
Protoconch consisting of 1 ¾ whorls, 0.8 mm in diameter; tip flattened, weakly incleaned; colour dark bordeau-red; first whorl smooth, glossy; last ¾ whorl with rather strongly opisthocline orientated axials, at first weak, becoming broader, rather pronounced along last part. Transition to teleoconch indistinct, traceable only by appearance of spiral sculpture of teleoconch whorl.
Teleoconch with 4 weakly convex whorls. Suture distinct. Colour pinkish-brown with 2 spiral rows of big white knobs, apex dark red, aperture with siphonal canal pink.
First teleoconch whorl with 3 spiral cords: 2 primary cords broad, sculptured with big white knobs; in addition 1 finer subsutural spiral cord, along first part of whorl running smooth or with weak knobs of orange-brown ground colour or only slightly paler, becoming weaker towards second whorl. Interspaces initially narrow, gradually growing broader with 1 fine secondary spiral. Uppermost secondary spiral cord, thus in adapical interspace, growing stronger along second whorl, as big as relative weak subsutural cord on third whorl. Spiral interspaces growing broader, with an increasing number of secondary spiral cords. Penultimate whorl with 2 broad primary spiral cords with big white knobs on axial ribs; a third similar spiral cord appearing, partly concealed under suture of subsequent whorl; subsutural slope with 2 fine, weak spiral cords; all interspaces with 5-9 fine secondary spiral threads of different strength, some only visible under strong magnification. Body whorl with 10 spiral cords: 2 fine subsutural, 4 broader spiral cords ornamented with white knobs, 4 weaker spiral cords on base and siphonal canal.
All whorls with 12 big axial ribs, interspaces rather narrow. On first whorl running from suture to suture but weaker on subsutural slope. From second whorl on almost absent on subsutural slope, detectable by presence of knobs only.
Aperture ovate, laterally weakly flattened. Outer lip rather thin, edge sharp, with 4 or 5 fine internal lirae. Columella concave, with 2 columellar folds in transition to siphonal canal. Siphonal canal short, broad, open. Aperture and siphonal canal together slightly lesser than 2/5 of total shell length.

Comparison. *Crassicantharus perlatus* sp. nov. is characterized by the pronounced sculpture consisting of strong, snow white knobs on a pinkish brown background.
Crassicantharus norfolkensis, the type species of the genus, is similar in shape but differs by the smoother sculpture with spiral cords that are broader and weaker, rather than forming strong knobs, with narrower spiral interspaces, without secondary spiral cords, the lower number of axial ribs, the broader base ornamented with broad spiral cords, rather than constricted and ornamented with fine threads, the convex outer lip, without concavity at transition to siphonal canal and the slightly shorter siphonal canal.
Crassicantharus aureatus sp. nov. differs by the straighter axial riblets on the protoconch, the smoother sculpture with spiral cords that are broader, weaker, rather than forming strong knobs, with narrow spiral interspace, without secondary spiral cords, the lower number of axial ribs, the axial interspaces without pattern, the broader shape with shorter and more conical spire, the broad subsutural concavity and the paler colour.
Crassicantharus letourneuxi sp. nov. differs by the straighter axial riblets on the protoconch, smoother sculpture with spiral cords that are broader and weaker, rather than forming strong knobs, with narrow spiral interspaces, by the lower number of axial ribs, the shorter siphonal canal, the darker colour and the slightly smaller adult size.

Etymology. *Crassicantharus perlatus* sp. nov. is derived from the Latin *perlaetus*, meaning "very happy" to express the great feeling when looking at this beautiful shell. *Perlaetus* is an adjective, the two letters "ae" are here contracted to a single "a" to prevent deviating pronunciation. This name also conjures up the English adjective *pearled*, being the best expression to describe the sculpture of this shell.

***Crassicantharus* species 1**
Figs 1, 5H-I

Remarks. The single shell from Vahanga Atoll (Tuamotu Archipelago, Acteon Group) looks similar to *Crassicantharus magnificus* sp. nov. in pattern and colour but differs by the (weak) subsutural concavity, the spiral cords that are lower in number and much finer, the higher number of whorls and the larger adult size. It is much similar to *C. letourneuxi* sp. nov. in pattern but differs by the bright yellow colour and the slightly broader shape. The shell is eroded and that may be the reason for the shorter siphonal canal. Further study on fresh shells will reveal if this species is conspecific with *C. letourneuxi* or if it belongs to a yet undescribed species.

***Crassicantharus* species 2**
Figs 1, 5J-K

Remarks. The single shell from Aukena Island, collected together with *Crassicantharus metallicus* sp. nov., differs from that species by the broader shape, the slightly broader siphonal canal, the denticulated aperture with 3 eroded but still tracable columellar knobs seperated by a moderately broad interspace and with internal knobs inside the outer lip, the presence of a white spot on some knobs along the peripheral spiral cords and a slightly smaller adult size. It is much similar to *C. feioides* sp. nov. in sculpture and apertural denticulation but differs by the slightly slenderer shape and the more convex whorls. Further study on fresh shells may reveal if this shell is conspecific with *C. feioides* sp. nov or if it belongs to a yet undescribed species.

CONCLUSION

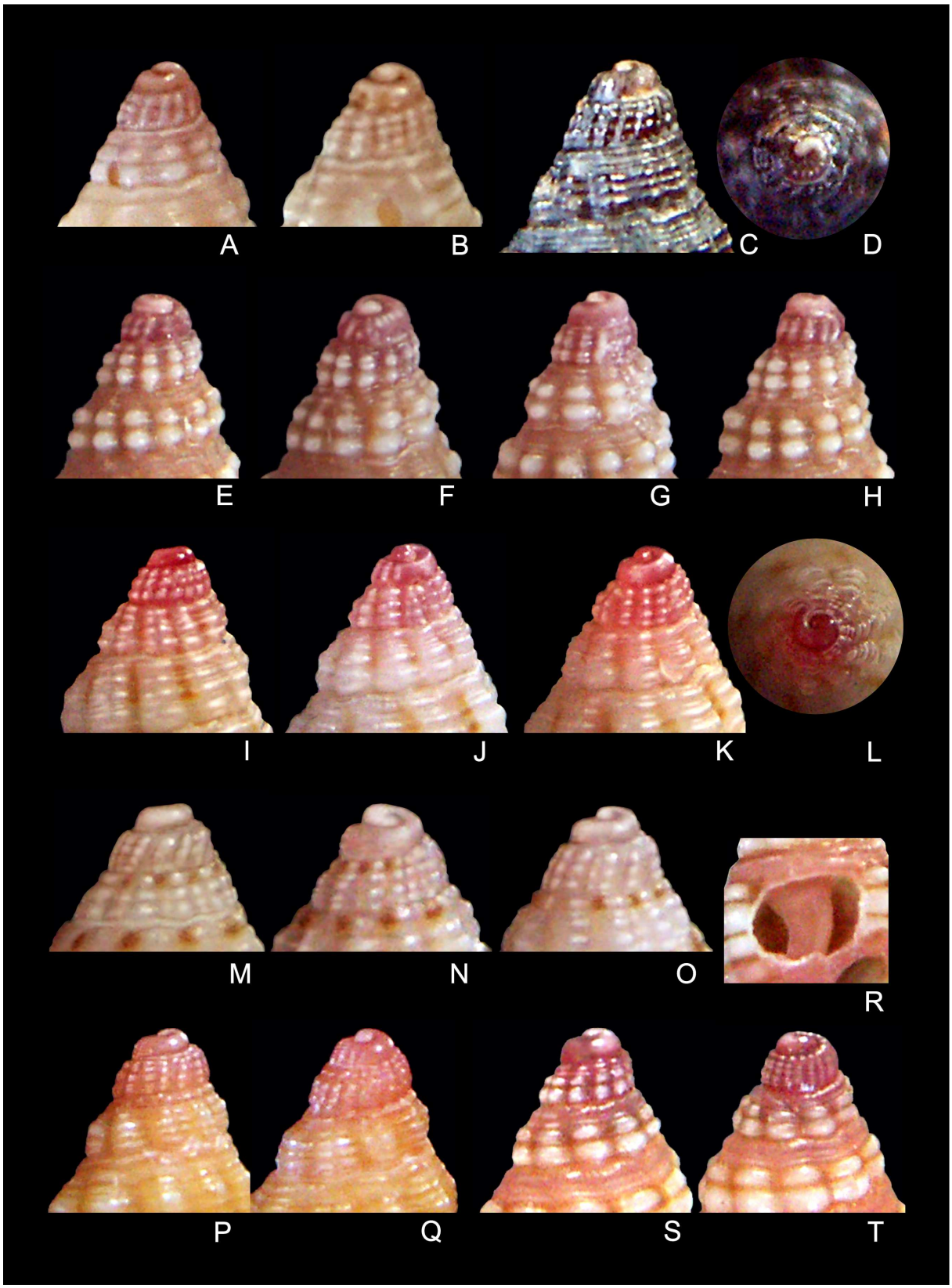
The discovery of 11 species of a genus known so far by a single one is remarkable and unexpected. The buccinid fauna of other areas in the Indo-pacific is better known and no similar species were recorded or are known from the rich material from numerous expedition performed by MNHN (Fraussen, unpublished data). It is, therefore, very probably that all of them are endemic to French Polynesia. It has already been demonstrated that the marine fauna of French Polynesia is clearly differentiated from the remaining biogeographic provinces in the Western-Central Pacific, showing a high percentage of endemism (e.g. Macpherson et al., 2010). It is even suggested that French Polynesia is one of the centers of diversity in the Pacific Ocean that have evolved independently (Macpherson et al., 2010) and, therefore, it is probable that this area is the origin of the genus *Crassicantharus*.

The Buccinidae are heterogenous, accomodating a moderately high diversity of groups belonging to distinct families. The multi-familial status was already proposed by Finlay in 1928 (Finlay, 1928: 250-251) and followed by Powell (1929: 57-59, 1954: 131-132). In addition a few small families have been demonstrated as being distinct, for an example see Belomitridae (Kantor et al., 2012). It is probable that more of such small and obscure groups are still hidden within the Buccinidae. By only considering morphological characteristics, without molecular data, we have not sufficient evidence for deciding if *Crassicantharus* is such a group or not. Further study will bring molecular evidence for a better taxonomy and stability in Buccinoidea.

The two main reasons for why those *Crassicantharus* species have stay unnoticed are, at first, their small size and, secondly, the difficulties to assign those shells to a proper genus or family. Paying more attention to microshells, in the field as well as in literature, will reveal many more such species in many other families. Obscure species are hitherto unpublished nor figured, but they may become the subject of communication, hence study, when such material is figured and accessible for a wide public (by means of websites or scientific literature). This starts with handling morphospecies rather than determinated species (Bouchet et al., 2008: 19-20). For example iconographic works that figure morphospecies (undeterminated specimens with a numeric label) will make it easier to cross the bridge between the vast amount of still (un-)determined specimens and our knowledge of the marine biodiversity.

Figure 7A-T

A-B. *Crassicantharus aureatus* sp. nov., protoconch of holotype.
C-D. *Crassicantharus metallicus* sp. nov., protoconch of paratype 1, Gambier Archipelago, Aukena Island, 1-2 m, JL.
E-H. *Crassicantharus perlatus* sp. nov., protoconch of holotype.
I-L. *Crassicantharus magnificus* sp. nov., protoconch of holotype.
M-O. *Crassicantharus beslui* sp. nov., protoconch of paratype 2, Tuamotu Archipelago, Moruroa Atoll, intertidal, KF-7350.
P-Q. *Crassicantharus feioides* sp. nov., protoconch of paratype 3, Tuamotu Archipelago, Moruroa Atoll, intertidal, KF-7346.
R-T. *Crassicantharus letourneuxi* sp. nov., columella and protoconch of paratype 7, Australes Archipelago, Rurutu Island, intertidal, KF-7342.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