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New species of Columbellidae (Mollusca: Gastropoda) from French Polynesia

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Keywords: GASTROPODA, COLUMBELLIDAE, *Ascalista*, *Mitrella*, French Polynesia;

Abstract: Four new species of **Columbellidae**: *Mitrella gourgueti* sp. nov., *Ascalista letourneuxi* sp. nov., *Seminella makemoensis* sp. nov. and *Zafra australensis* sp. nov. are introduced as new to science. All originate from French Polynesia and all are compared with the most closely related species.

Introduction: Most **Columbellidae** from French Polynesia are well-known as they are common species with a wide distribution throughout the Indo-Pacific region. Yet, the number of species is not as high as in the centre of the region, like in most molluscan families. Three local collectors (Michel Boutet, Jean Letourneux and Robert Gourguet) are going to great lengths to list all molluscs occurring in French Polynesia with the goal of publishing a book on them (expected 2016). They collected samples in a lot of places and made material available to specialists on particular families. The **Columbellidae** we could study contain 43 species: 28 of these species are species with a wide Indo-Pacific distribution, 4 are known species with a more limited distribution or endemic to Polynesia, and 11 species are species hitherto not known to science. Unfortunately, 7 of these unknown species have hitherto only been collected in very limited numbers (only 1 or 2 for most of them), and often in bad condition. The 4 remaining species have sufficiently been sampled, including specimens in nice condition. These 4 species are described herein.

Abbreviations :

MNHN: Muséum national d'Histoire naturelle, Paris

CMB: Collection Michel Boutet

CJL: Collection Jean Letourneux

CDM: Collection David Monsecour

CKM: Collection Kevin Monsecour

Systematic account:

Family COLUMBELLIDAE Swainson, 1840
Subfamily *Atiliinae* Cossmann, 1901

Genus *Mitrella* Risso, 1826

Type species by subsequent designation (Cox, 1927): *Mitrella flaminea* Risso, 1826 [= *Mitrella scripta* (Linnaeus, 1758)]. Mediterranean.

Mitrella gourgueti sp. nov.

Plate 1, Figs. 1-4

Type material: Holotype MNHN IM 2000-30795, 3 paratypes CMB, 2 paratypes CKM.

Type locality: French Polynesia, Austral Islands, Rapa Island, Anatakuri Bay.

Distribution: Only known from Rapa Island. Most likely endemic to the region surrounding the type locality.

Description: Shell of rather small size for the genus, adult size 7-9 mm; biconical, elongate. Suture slightly impressed. Protoconch paucispiral, consisting of 1.5 to 1.75 smooth whorls. Transition to teleoconch hardly visible. Teleoconch consisting of 6 to 6.5 whorls. All teleoconch whorls without axial and spiral sculpture, apart from the basal cords, which are clearly present on the last whorl. These cords ventrally range as far as the adapical edge of the columella. Outer lip clearly thickened; on the outside bearing the continuations of the basal cords at the abapical end and with an axial rim near the lip. Inside of outer lip denticulate, with 6 denticles. Columellar callus slightly raised with a distinct rim with 5 denticles. Parietal callus weak or

obsolete. Siphonal canal very short, open, slightly recurved.

There are two major morphs in specimens of *Mitrella gourgueti* sp. nov.: specimens like the holotype are white to off-white on both teleoconch and protoconch whorls, other specimens are caramel brown, with an off-white to brown protoconch. Both morphs share the rest of their colour pattern: they have a subsutural band of pure white blotches on the early teleoconch whorls and some specimens show a very faint pattern of fine axial brownish lines. The basal cords are dark brown with some white blotches. The aperture is white; the columella and the inside of canal show the brown colour of the basal cords.

Operculum and radula not studied.

Height of holotype: 8.0 mm.

Remarks: This species has already been known to collectors in the French Polynesian region for a long time. It is often labelled *Mitrella fuscobasis* Rehder, as Rehder planned to describe this species. Unfortunately, Rehder never got this species published and no unpublished manuscript could be traced.

This species stands out from most other *Mitrella* from the region by its paucispiral protoconch and its typical colour pattern. At this moment, there are only two other known species of *Mitrella* with a paucispiral protoconch and of about the same size in French Polynesia: *Mitrella philia* (Duclos, 1846) and *Mitrella alofa* (Hedley, 1899). *Mitrella philia* has a deeply incised suture, only 4-5 teleoconch whorls, a narrower aperture and a completely different colour pattern. *Mitrella alofa* is larger, has a more elegant shell, axial and spiral sculpture on the early teleoconch whorls, a completely different colour pattern and lives in deeper water.

Etymology: Named in honour of Robert Gourguet from Tahiti for his efforts to catalogue the shells of French Polynesia and for his help.

Genus *Ascalista* Drivas & Jay, 1990

Type species by original designation (Drivas & Jay, 1990): *Zafra polita* G. & H. Nevill, 1875. Mauritius.

Ascalista letourneuxi sp. nov.

Plate 1, Figs. 7-11

Type material: Holotype MNHN IM 2000-30796, 9 paratypes CJL, 3 paratypes CKM, 1 paratype CDM.

Type locality: French Polynesia, Austral Islands, Rapa Island, Ahurei Bay, at 1-5m deep.

Distribution: Only known from the Austral Islands. Apart from Rapa Island, also reported from Rurutu, Raivavae, Tubuai and Rimatara (pers. com. J. Letourneux).

Description: Shell of moderate size for the genus, adult size up to 4.0 mm; biconical, elongate. Suture slightly impressed, with a minor incision in most specimens. Protoconch paucispiral, bulbous, consisting of 1.5 to 1.75 smooth whorls. Transition to teleoconch clearly visible. Teleoconch consisting of 3.5 to 4.0 whorls. All teleoconch whorls virtually without any axial or spiral sculpture, apart from the basal cords, which are clearly present on the last whorl. These cords ventrally range until just above mid-apertural height. Very fine axial and spiral sculpture can be discerned when using a microscope. Aperture elongate and narrow. Outside of outer lip bearing the continuations of the basal cords at the abapical end. Inside of outer lip not denticulate, but with a clear, smooth rim. Columellar callus slightly raised and not denticulate, deeper down the aperture the columella has a rim with a faint incision in the middle of this very rim. Parietal callus clearly present. Siphonal canal very short, half-open, slightly recurved.

Teleoconch whorls of the holotype off-white with a network of white and faint brown axial zigzag lines. A spiral band of white and brown blotches is present just below the suture. Protoconch off-white. Aperture and columella white to off-white. Some of the paratypes show that the species can be variable in colour: there are almost uniformly brown or yellowish brown specimens sharing the subsutural band and specimens with a browner axial pattern.

Radula not studied.

Height of holotype: 3.7 mm.

Remarks: Drivas & Jay (1990) originally assigned two species to the genus *Ascalista*: the type species *Ascalista polita* (G. & H. Nevill, 1875) and *Ascalista parvula* (Viader, 1951). The latter was transferred to *Zafra* (*Mokumea*) Habe, 1991 by Habe (1991) when describing this subgenus which now has full generic status. This means the genus *Ascalista* only included one species until now: *Ascalista polita*.

At first sight, *Ascalista letourneuxi* looks identical to *A. polita* with about the same size and colour morphs, but both can easily be distinguished by their protoconchs: *A. letourneuxi* has a paucispiral protoconch of only 1.5 to 1.75 whorls, whereas *A. polita* has a multispiral proto-

conch of 2.5-3.0 whorls. *A. polita* also has a more elongated shell, whereas *A. letourneuxi* is slightly more swollen.

Etymology: Named in honour of Jean Letourneux from Tahiti for supplying most of the material for this study.

Genus *Seminella* Pease, 1868

Type species by subsequent designation (Iredale, 1916): *Cythara varia* Pease, 1860 (*non* Sowerby, 1832) [= *Seminella peasei* von Martens & Langkavel, 1871]. Indo-Pacific.

Seminella makemoensis sp. nov.

Plate 2, Figs. 15-19

Type material: Holotype MNHN IM 2000-30797, 8 paratypes CJL, 1 paratype CKM.

Type locality: French Polynesia, Tuamotu Islands, Makemo, Arikitamiro passage, 40-47m deep.

Distribution: The holotype and 5 paratypes originate from the type locality. Two paratypes originate from Tuamotu Islands, Rangiroa, at 81-100m and two originate from Society Islands, Tahiti, Arue, at 33-61m. The distribution most likely covers most of the Society Islands and the western and central islands of the Tuamotu Islands.

Description: Shell moderately small for the genus, adult size up to 3.0 mm; biconical, elongate, whorls shouldered. Protoconch multispiral, consisting of 3.25 to 3.50 whorls, with smooth first whorl and weak axial sculpture on further protoconch whorls. Transition to teleoconch clearly visible. Teleoconch consisting of 2.8 to 3.0 whorls. Axial sculpture of 13-14 axial ribs on all whorls, interspaces slightly narrower than ribs. Spiral sculpture absent, apart from the basal cords, which are clearly present on the last whorl. These cords ventrally range till mid-apertural height. Aperture elongate and narrow. Outside of outer lip bearing the continuations of the basal cords at the abapical end, inside not denticulate, but with a clear, smooth rim. Columellar callus raised and not denticulate, deeper down the aperture the columella has a rim with a faint incision just below the middle of this very rim. Parietal callus clearly present. Siphonal canal very short, half-open, slightly recurved.

Teleoconch whorls semi-translucent and pale yellowish brown. A white spiral band is present just below the

suture and in most specimens also at midwhorl. The basal cords are white with some brown lines or spots. Protoconch, aperture and columella white to off-white.

Radula not studied.

Height of holotype: 2.9 mm.

Remarks: Until now, 2 species of *Seminella* have been known to occur in French Polynesia: *Seminella peasei* (Martens & Langkavel, 1871) and *Seminella virginea* (Gould, 1860). *S. peasei* has a widespread distribution, occurring throughout the entire Indo-Pacific region (from the eastern coasts of Africa to French Polynesia) and this species also has a huge number of colour morphs, both leading to the description of a lot of synonyms (see Monsecour, 2015). *S. virginea* has a more limited range: it only occurs on the Islands of the Pacific, including Hawaii (Severns, 2011).

Seminella makemoensis shares the axially sculptured multispiral protoconch with *Seminella peasei*, but differs by its smaller size, the shouldered whorls, the lower number of teleoconch whorls (*S. peasei* has between 3.5 and 4.0 teleoconch whorls), the lower number of axial ribs, which are also stronger (*S. peasei* has about 17-20 ribs) and the absence of spiral sculpture apart from the basal cords (*S. peasei* has weak spiral ribs on all teleoconch whorls).

Seminella virginea can easily be distinguished from both *S. peasei* and *S. makemoensis* by its different protoconch, which is smooth. *S. virginea* is about the same size as *S. peasei*, but also lacks spiral sculpture (apart from the basal cords). Next to the different protoconch and size, *S. virginea* can also be distinguished from *S. makemoensis* by the unshouldered whorls and the more numerous and weaker axial ribs.

S. makemoensis only lives in deeper water (33-100 m) whereas *S. peasei* and *S. virginea* can be found from 2-3 m deep down to 30-40 m deep.

Etymology: Named after the type locality: Makemo, Tuamotu Islands.

Genus *Zafra* A. Adams, 1860

Type species by monotypy: *Zafra mitriformis* A. Adams, 1860. Japan.

Zafra australensis sp. nov.

Plate 2, Figs. 26-29

Type material: Holotype MNHN IM 2000-30798, 9 paratypes CJL, 3 paratypes CKM.

Type locality: French Polynesia, Austral Islands, Rapa Island, Ahurei Bay, 1-5m deep.

Distribution: This species seems to be endemic to the Austral Islands, French Polynesia. Apart from the type locality, paratypes originate from the following other islands belonging to the Austral Islands: Maria, Raivavae, Rimatara and Rurutu.

Description: Shell of moderate size for the genus, adult size up to 4.5 mm; biconical, elongate. Whorls slightly shouldered. Protoconch paucispiral, consisting of 1.4 to 1.6 smooth whorls. Transition to teleoconch clearly visible. Teleoconch consisting of 4.2 to 4.8 whorls. Axial sculpture of 13-14 strong axial ribs on all whorls, interspaces about the same size as the ribs. Spiral sculpture absent, apart from the basal cords, which are clearly present on the last whorl. These cords ventrally range as far as the adapical edge of the columella. Outside of outer lip bearing the continuations of the basal cords at the abapical end, inside not denticulate, but with a thickened nodule under the sinus on the upper half of the lip, abapical end not thickened. Columellar callus raised and not denticulate. Parietal callus clearly present. Deeper down the aperture there is a clear incision between columellar and parietal callus. Siphonal canal very short, half-open, slightly recurved.

Teleoconch whorls brownish orange. Most specimens show a white spiral band at midwhorl, some higher-spired specimens also show this band just above the suture. This band is continuous or blotched, creating a pattern of brown and white flames. Some specimens lack this band and are uniformly coloured. Basal cords brown with white, most abapical end white. Protoconch, aperture and columella paler than rest of the shell, but of the same colour.

Radula not studied.

Height of holotype: 3.2 mm.

Remarks: *Zafra australensis* is closest to *Zafra smithi* (Angas, 1877), a species originally described from Australia (Port Jackson, Sydney). It is also reported from Queensland (Beechey, 2015) and from New Caledonia (collection first author). Other reports are most likely closely related species and cannot be confirmed. *Z. australensis* differs from *Z. smithi* by its protoconch (*Z. smithi* has a protoconch of about 1.8-1.9 whorls), its shouldered whorls, the lower number of axial ribs (in *Z. smithi* there are 16-18 ribs on each whorl) and its slightly different colour pattern (*Z. smithi* has an extra white spiral band just below the suture).

Two other species of *Zafra*, *Z. rufopiperata* (Smith, 1884) and *Z. debilis* (Hedley, 1915), have the same colour pattern, but they can easily be distinguished from *Z. australensis* by their multispiral protoconch and more elegant shape. These two taxa may (prove to) be conspecific, but due to a lack of material, this cannot be confirmed.

Etymology: Named after the Austral Islands, French Polynesia.

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Plate 1

1-4: *Mitrella gourgueti* sp. nov.

1-2: holotype. Austral Islands, Rapa Island, Anatakuri Bay. MNHN. 8.0 mm.

3: Paratype. Austral Islands, Rapa Island, Anatakuri Bay. CMB. 7.7 mm.

4: Paratype. Austral Islands, Rapa Island, Anatakuri Bay. CMB. 6.9 mm.

5: *Mitrella philia* (Duclos, 1846). Austral Islands. Rapa. CMB. 6.2mm. (Photo: P. Bacchet)

6: *Mitrella alofa* (Hedley, 1899) Society Islands, Tahiti. CJL. 9.5 mm. (Photo: P. Bacchet)

7-11: *Ascalista letourneuxi* sp. nov.

7-8, 11: Holotype. Austral Islands, Rapa Island, Ahurei Bay. MNHN. 3.7 mm.

7-8: ventral and dorsal view

11: detail of protoconch

9: Paratype. Austral Islands, Rapa Island, Ahurei Bay. CJL. 4.2 mm.

10: Paratype. Austral Islands, Rapa Island, Ahurei Bay. CJL. 4.0 mm.

12-14: *Ascalista polita* (G. & H. Nevill, 1875). Philippines, Mactan, Punta Engano. CKM. 3.8 mm.

Plate 2

15-19: *Seminella makemoensis* sp. nov.

15-16, 19: Holotype. Tuamotu Islands, Makemo, Arikitamiro passage. MNHN. 2.9 mm.

15-16: ventral and dorsal view

19: detail of protoconch

17-18: Paratype. Society Islands, Tahiti, Arue. CJL. 2.8 mm.

20-22: *Seminella peasei* (Martens & Langkavel, 1871). Society Islands, Tahiti. CJL. 3.6 mm.

20-21: ventral and dorsal view (Photos: P. Bacchet)

22: detail of protoconch

23-25: *Seminella virginea* (Gould, 1860). Society Islands, Tahiti. CJL. 3.6 mm.

23-24: ventral and dorsal view (Photos: P. Bacchet)

25: detail of protoconch

26-29: *Zafra australensis* sp. nov.

26-28: Holotype. Austral Islands, Rapa Island, Ahurei Bay. MNHN. 3.2 mm.

26-27: ventral and dorsal view

28: detail of protoconch

29: Paratype. Austral Islands, Rapa Island, Ahurei Bay. CJL. 4.5mm

30-31: *Zafra smithi* (Angas, 1877). Australia, New South Wales. CKM. 3.2 mm.

30: ventral view

31: detail of protoconch

