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Pyreneola martae n. sp.

algae wash, Halimeda kanaloana bed, 6-14 m. About 3.5 km north of Hekili Point, Maui, Hawaii.

Photo: Cory Pittman & Pauline Fiene, Hawaii

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Columbellidae (Mollusca: Gastropoda) from French Polynesia

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Abstract: Fifty-eight species of **Columbellidae** are recorded from French Polynesia: 32 species were previously known and 26 are described as new species. The genus *Mitropsis* Pease, 1868 is re-established as valid. Twenty of the new species are deep-water species, 3 other are endemic species from the Austral Islands with a limited bathymetrical range, one species is only known from the Marquesas and the last 2 are species also from moderate depths with a Pacific range further than Polynesia. Of the known species, 22 have a wide Indo-Pacific range of which 19 are from moderate depths, 5 of them have a more limited Pacific range, with 3 of them from moderate depths and 5 of the known species are Polynesian endemics.

Introduction: This present paper is the continuation of our study on the Indo-Pacific **Columbellidae** based on the extensive material collected by the MNHN-IRD *Tropical Deep-Sea Benthos* expeditions conducted in different parts of French Polynesia, including the Austral Islands, Marquesas, Society Islands and Tuamotus since 1990. We did not limit this paper to the deeper water species, but included all species found, no matter what depth they are found at. The resulting collection comprises no fewer than 58 species of columbellids of which 32 are known species and of which the remaining 26 are recognised as new to science and described herein.

In addition, the collection includes a further 10 specimens that cannot be unambiguously identified, and are therefore not included in this paper.

Of the 26 new species, 20 are deep-water species, most of which have paucispiral protoconches and very limited ranges. The genus *Pleurifera* Drivas & Jay, 1997 is an exception and has a longer larval stage, which also explains the larger distribution of species within this genus; several of the species described in our former paper from New Caledonia (2016) are here confirmed from Polynesia and *Pleurifera suzannae* Drivas & Jay,

1997 (described from Reunion) is also confirmed from Polynesia.

Three other new species are endemics from the Austral Islands found at moderate depths. Together with the other endemics from the Austral Islands, it is clear that these islands have a significant level of endemism, which is explained by their geographical location on the edge of the tropical zone with more moderate temperatures. In addition, many of the tropical species of **Columbellidae** found in the Austral Islands - represented by single or a very limited number of specimens - appear to result from the occasional recruitment of larvae from tropical populations, rather than from local self-recruitment of resident populations. Conversely, *Euplica turturina* (Lamarck, 1822), *Zafrona striatula* (Dunker, 1871), *Aesopus clausiliformis* (Kiener, 1834) and *Mitrella philia* (Duclos, 1846) are tropical species that seem to be well-established on the Austral Islands.

One new species has until now only been found on Nuku Hiva (Marquesas), in two nearby stations.

The last 2 new species are also species found at moderate depths, but with a wider range than only Polynesia. Both were already found during other MNHN-IRD expeditions, but have not been subject of a paper yet.

In French Polynesia up to 16 species co-occur at the same station: MUSORSTOM 9 stn DR1247, 1150-1250 m (Marquesas). These represent only dead-found specimens, often washed down, thus not representative of actual biodiversity patterns. One station on the Marquesas has nine species (MUSORSTOM 9 DW1287) and four stations have seven species (MUSORSTOM 9 DW1162, MUSORSTOM 9 DW1204, MUSORSTOM 9 DW1218, MARQUISES 1999 stn 02), all these stations are in the 0-200 m interval. In the Austral Islands the highest number of co-occurring species at one station (Atelier RAPA 2002 stn 4, stn 11, stn 15, stn 17, stn 28, stn 32) is nine, and several other stations from the Atelier

RAPA 2002 expedition (all from moderate depths) with seven and eight species. This is significantly fewer than observed in other near-shore stations in the tropical West Pacific, where 20 or more columbellid species is not rare (unpublished data, based on material from the Santo, Panglao and New Caledonia expeditions). From the Society islands there are only 16 stations (all TARASOC from deeper water) with **Columbellidae**, with only four stations with two co-occurring species, the other 14 stations with only one species. In the Tuamotus (with only 23 stations with **Columbellidae**), the highest number of co-occurring species is five (TUAM'2011 stn THA01 and stn TTAK01) at moderate depths. The stations deeper than 200 m only have 2 co-occurring species or just one species.

In comparison with the **Columbellidae** from New Caledonia, both the near-shore and the deeper water stations have a smaller species diversity.

Materials and methods: The material originates from a number of expeditions carried out throughout French Polynesia between 1997 and 2013, three of which as part of the MNHN-IRD *Tropical Deep-Sea Benthos* programme on board RV *Alis* (see Bouchet *et al.* 2008 for background information on the programme; and <https://expeditions.mnhn.fr/> for station lists, list of participants, etc.):

MUSORSTOM 9, PI Bertrand Richer de Forges, explored the Marquesas Islands by dredging and trawling in 1997;

BENTHAUS, PI Bertrand Richer de Forges, explored the chain of the Austral Islands by dredging and trawling in 2002;

TARASOC, PI Philippe Bouchet, explored the chain of the Tarava seamounts, the westernmost Tuamotus, and the Society Islands by dredging and trawling in 2009.

Two additional research cruises were conducted on RV *Alis* by Cécile Debitus to the Tuamotus and Australs in 2011 and 2013 - respectively TUAM'2011 and TUHAA PAE 2013 - and sampled the outer slopes by diving.

Two shore-based expeditions sampled the shore and near-shore of Ua Huka (Marquesas) and Rapa (Australs) by intertidal collecting, snorkelling / diving and light dredging. The 1997 Ua Huka survey was conducted by Jean Tröndlé, Jean Tardy and Rudo von Cosel. The 2002 Atelier Rapa, PI Claude Payri, was conducted by Pierre Lozouet and colleagues from MNHN.

PAKAIHI I TE MOANA, conducted by Agence des Aires Marines Protégées in 2013, sampled the near-shore

depths of the Marquesas by diving, including the use of a brushing basket and vacuum cleaner.

For completeness' sake, a few other sources that generated mollusc samples included in the present report should be added to these:

In the 1980s, the Service Mixte de Contrôle Biologique (SMCB) took benthic samples throughout French Polynesia on board RV *Marara* under the direction of Joseph Poupin.

In October 1999, an expedition surveyed Nuku Hiva and Ua Pou by diving (Bryce, 2000) and some residues were donated to MNHN; in the lists of Material Examined, these are referred to as "Atelier MARQUISES 1999".

Finally, during the REMARQ (for REcifs MARQuises) cruise on board RV *Alis*, PI Guy Cabioch, conducted in the Marquesas in 2002, a few benthic samples were taken as a by-product of geological sampling.

Altogether, these different sources generated 770 samples (= species x station) of **Columbellidae**, representing 6381 specimens (live-taken and empty shells). This represents an average of 110 specimens and 13 samples per species. In fact, however, 16 species (28%) are represented by 100 specimens or more (*Ascalista letourneuxi* is even represented by 1373 specimens), and as many as 21 species (36%) are represented by five specimens or fewer.

The descriptions are based on the shells (protoconch and teleoconch) of the type material.

Abbreviations:

ANSP: Academy of Natural Sciences, Philadelphia
IRD: Institut de Recherche pour le Développement (formerly ORSTOM)
MNHN: Muséum national d'Histoire naturelle, Paris
SMCB: Service Mixte de Contrôle Biologique, Papeete

Specimens

dd: dead-collected specimen(s), empty shell(s)
juv: juvenile
lv: live-collected specimen(s)

Station data

Stn: station

The **prefix to station number** denotes:

CAS: traps
CP: beam trawl
D: dredge
DR: rock dredge
DW: Warén dredge

SYSTEMATIC ACCOUNT

Family **COLUMBELLIDAE** Swainson, 1840
 Subfamily **COLUMBELLINAE** Swainson, 1840
 Genus *Euplica* Dall, 1889
 Type species: *Euplica turturina* (Lamarck, 1822) (by original designation)

Euplica ionida (Duclos, 1840)
 Plate 1A, B

Columbella ionida Duclos, 1840

Material Examined: Australes. Atelier RAPA 2002: stn 17, 27°34.6'S, 144°22.7'W, 9 m, 1 dd juv. — Stn 41, 27°36.3'S, 144°22.7'W, 5 m, 1 dd juv.; **Marquesas.** MUSORSTOM 9: stn DR1223, 9°45'S, 138°51'W, 90-150 m, 1 dd. — Stn DR1231, 9°42'S, 139°05'W, 270-285 m, 1 dd. — Stn DR1244, 10°28'S, 138°42'W, 1015-1020 m, 1 dd. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 10 dd, 1 dd juv. — Stn DR1293, 8°54.3'S, 139°37.5'W, 50 m, 5 dd. — Stn DW1143, 9°20.9'S, 140°02.7'W, 18-55 m, 1 lv, 1 dd. — Stn DW1148, 9°19'S, 140°06'W, 300 m, 1 dd. — DW1162, 8°56.2'S, 140°06.1'W, 45-64 m, 1 dd. — Stn DW1201, 9°51'S, 139°09'W, 275-300 m, 1 dd. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 2 dd juv. — Stn DW1218, 09°45'S, 138°51'W, 125-135 m, 1 dd, 1 dd juv. — Stn DW1281, 7°48'S, 140°21'W, 450-455 m, 1 dd. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 1 dd. — Atelier MARQUISES 1997: stn 12, 8°56.00'S, 139°32.80'W, 3 dd. — Stn 18, 8°56.45'S, 139°33.50'W, 6 dd, 1 dd juv. — Stn 23, 8°55.90'S, 139°31.45'W, 37 dd, 7 dd juv. — Stn 24, 8°53.60'S, 139°37.00'W, 9-25 m, 3 dd. — Stn 24bis, 8°53.60'S, 139°37.00'W, 25-34 m, 12 dd. — Stn 29, 8°55.70'S, 139°32.00'W, 7-11 m, 2 dd. — Stn 30, 8°56.10'S, 139°32.00'W, 20-30 m, 9 dd, 1 dd juv. — Stn 32, 8°56.10'S, 139°32.70'W, 12-17 m, 3 dd. — Stn 33, 8°55.60'S, 139°33.90'W, 15 m, 5 dd. — Stn 34, 8°56.80'S, 139°35.70'W, 10-15 m, 5 dd, 1 dd juv. — Stn 35, 8°55.90'S, 139°21.20'W, 24-25 m, 6 dd. — MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20m, 44 dd, 142 dd juv. — Stn 03, 8°56.17'S, 140°06.66'W, 10-20 m, 1 dd, 8 dd juv. — Stn 13, 8°57.16'S, 140°11.69'W, 10-15 m, 3 dd, 5 dd juv. — Stn 15, 8°56.16'S, 140°05.60'W, 15-30 m, 3 dd, 4 dd juv. — Stn 19, 9°20.82'S, 140°05.81'W, 10-20 m, 12 dd, 8 dd juv. — Stn 20, 9°20.81'S, 140°05.81'W, 10-15 m, 7 dd juv. — SMCB: stn D47, 09°54'S, 139°07'E, 48 m, 8 dd juv. — Stn D86, 10°29'S, 138°40'W, 49 m, 28 dd juv.; **Society.** TARASOC: stn DW3419, 16°33'S, 151°48'W, 798-830 m, 1 dd. — Stn DW3429, 16°43'S, 150°38'W, 493-540 m, 1 dd. — Stn DW3486, 17°48'S, 149°22'W, 660-920 m, 1 dd. — Stn DW3502, 17°35'S, 149°17'W, 430-580 m, 1 dd. — Stn DW3503, 17°34'S, 149°18'W, 350 m, 1 dd.; **Tuamotu.** TARASOC: stn DW3401, 15°51'S, 148°18'W, 789-831 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Euplica livescens (Reeve, 1859)
 Plate 1C, D

Columbella livescens Reeve, 1859

Material Examined: Australes. BENTHAUS: stn DW1879, 27°55'S, 143°30.1'W, 52 m, 1 dd.; **Marquesas.** MUSORSTOM 9: stn DW1143, 9°20.9'S, 140°02.7'W, 18-55 m, 1 dd juv. — PAKAIHI I TE MOANA: stn MQ11-II-16, 8°51.8'S, 139°35.6'W, 45 m, 1 lv. — Atelier MARQUISES 1997: stn 22, 8°56.60'S, 139°34.25'W 6-10 m, 1 dd. — MARQUISES 1999: stn 23, 9°20.82'S, 140°05.81'W, 10-20 m, 1 dd.; **Society.** TARASOC: stn DW3465, 17°34'S, 149°51'W, 600-650 m, 1 dd.

Distribution: From southern Indonesia (Flores and Banda Sea) to French Polynesia and also reported from Hawaii (Severns, 2011).

Euplica loisae Rehder, 1980
 Plate 1E, F

Material Examined: Australes. BENTHAUS: stn DW1866, 28°59'S, 140°14.8'W, 50-120 m, 1 lv. — Stn DW1879, 27°55'S, 143°30.1'W, 52 m, 1 lv. — Stn DW1955, 23°19'S, 149°26'W, 750-850 m, 1 dd. — Stn DW2001, 22°27'S, 151°20'W, 200-550 m, 1 dd. — Atelier RAPA 2002: stn 3, 27°34'S, 144°19.7'W, 21 m, 2 dd. — Stn 4, 27°34.3'S, 144°22.1'W, 18 m, 2 dd, 7 dd juv. — Stn 5, 27°05.6'S, 144°18.5'W, 8 m, 9 dd, 11 dd juv. — Stn 6, 27°36.8'S, 144°16.7'W, 42 m, 1 dd juv. — Stn 8, 27°36.5'S, 144°17.7'W, 52-57 m, 1 dd, 3 dd juv. — Stn 9, 27°37.3'S, 144°22.2'W, 3-24 m, 4 dd, 6 dd juv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 6 lv, 3 lv juv, 5 dd juv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 3 lv, 1 lv juv, 3 dd, 7 dd juv. — Stn 13, 27°36.1'S, 144°18.9'W, 2 m, 3 dd juv. — Stn 14, 27°35.8'S, 144°13.6'W, 2 m, 2 lv, 3 dd, 2 dd juv. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 3 lv, 2 lv juv, 3 dd juv. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 1 lv juv, 5 dd, 6 dd juv. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 3 lv, 1 lv juv. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 5 lv, 1 lv juv, 2 dd, 4 dd juv. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 20 dd. — Stn 21, 27°34.2'S, 144°20.6'W, 5 m, 4 dd juv. — Stn 22, 27°33.9'S, 144°21.7'W, 18-22 m, 4 lv, 5 dd juv. — Stn 25, 27°38.4'S, 144°18.9'W, 3 m, 2 dd, 3 dd juv. — Stn 27, 27°38.7'S, 144°19.2'W, 6 m, 9 lv, 1 lv juv, 3 dd juv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 1 dd, 3 dd juv. — Stn 29, 27°34.3'S, 144°21.0'W, 4-2 m, 4 lv, 3 dd juv. — Stn 30, 27°38.2'S, 144°18.2'W, 16-20 m, 5 dd. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 25 lv, 7 lv juv, 24 dd, 13 dd juv. — Stn 32, 27°35.0/35.8'S,

144°22.7/23.0'W, 15-20 m, 4 lv, 3 dd, 4 dd juv. — Stn 34, 27°34.8'S, 144°19.0'W, 2-8 m, 1 dd juv. — Stn 38, 27°37.4'S, 144°18.4'W, 2 m, 4 lv, 1 lv juv, 2 dd, 4 dd juv. — Stn 42, 27°37.2'S, 144°18.3'W, 2 m, 1 dd. — Stn 44, 27°36.3'S, 144°18.2'W, 30 m, 2 dd, 9 dd juv. — Stn 58, 27°35.8'S, 144°18.5'W, 2-3 m, 2 lv juv. — Stn 59, 27°36.2'S, 144°18.8'W, 2 m, 1 lv juv, 1 dd. — Stn 60, 27°37.2'S, 144°18.8'W, 1-1.5 m, 1 dd juv. — Stn 61, 27°37.0'S, 144°18.6'W, 10-15 m, 2 lv, 10 dd, 1 dd juv. — Stn 69, 27°37.8'S, 144°18.7'W, 3-4 m, 1 dd juv. — Stn 74, 27°38.7'S, 144°20.0'W, 0-1 m, 1 lv. — Stn 78, 27°36.6'S, 144°18.9'W, 0-1 m, 1 dd, 1 dd juv. — Stn 80, 27°36.5'S, 144°18.2'W, 0-1 m, 1 dd juv. — Stn 81, 27°35.9'S, 144°18.5'W, 0-1 m, 28 lv, 3 lv juv, 4 dd, 7 dd juv. — Stn 82, 27°37.1'S, 144°18.5'W, 0-1 m, 1 dd. — Stn 87, 27°36.4'S, 144°22.6'W, 0-1 m, 11 lv, 2 lv juv. — Stn 88, 27°36.4'S, 144°18.6'W, 0-1 m, 4 lv, 5 dd, 2 dd juv. — Stn 89, 27°35.9'S, 144°18.5'W, 0-1 m, 1 lv juv, 1 dd juv. — Stn 93, 27°34.6'S, 144°20.6'W, 0-1 m, 2 lv, 4 lv juv, 7 dd, 11 dd juv. — TUHAA PAE 2013: stn AM04, 27°52.7'S, 143°29.1'W, 15 m, 1 dd.

Distribution: Only known from Easter Island (type locality) and the Australes Islands.

Euplica turturina (Lamarck, 1822)

Plate 1G, H

Columbella turturina Lamarck, 1822

Material Examined: Australes. BENTHAUS: stn DW1917, 27°03.3'S, 146°03.8'W, 50-60 m, 3 dd. — Stn DW1926, 24°38.2'S, 146°00.8'W, 50-90 m, 1 dd. — Stn DW1932, 24°41'S, 146°02'W, 500-800 m, 1 dd. — Stn DW1957, 23°19'S, 149°29'W, 558-1000 m, 1 dd, 1 dd juv. — Stn DW1958, 23°20'S, 149°30'W, 80-150 m, 1 dd. — Stn DW1977, 23°22.3'S, 150°43.5'W, 90-95 m, 1 dd. — Stn DW1978, 23°22'S, 150°43'W, 120-180 m, 2 dd. — Stn DW1984, 23°26.4'S, 150°43.9'W, 40 m, 2 lv. — Stn DW1996, 22°29'S, 151°22'W, 489-1050 m, 3 dd. — Stn DW1997, 22°29'S, 151°22'W, 700-1350 m, 1 dd. — Stn DW2001, 22°27'S, 151°20'W, 200-550 m, 4 dd. — Stn DW2018, 22°37'S, 152°49'W, 770-771 m, 1 dd. — Stn DW2020, 22°37'S, 152°49'W, 920-930 m, 1 dd. — Stn DW2021, 22°37'S, 152°49'W, 1200-1226 m, 3 dd. — TUHAA PAE 2013: stn AM04, 27°53'S, 143°29'W, 15 m, 1 dd. — Stn ARAI09, 23°49.6'S, 147°40.9'W, 26 m, 1 dd, 2 dd juv. — Stn ARAI13, 23°49.8'S, 147°36.8'W, 23 m, 1 lv, 2 dd. — Stn ARU02, 22°26.5'S, 151°20.5'W, 19 m, 1 dd, 1 dd juv. — Stn ARU09, 22°26.7'S, 151°20.7'W, 1 m, 8 lv, 1 lv juv, 3 dd juv. — Stn AT02, 23°25.4'S, 149°27.4'W, 30 m, 2 lv, 2 lv juv. — Stn AT06, 23°25.5'S, 149°25.6'W, 20 m, 3 lv, 1 lv juv. — Stn AT16, 23°20.3'S, 149°30.4'W, 24 m, 3 lv, 1 dd.; **Marquesas.** MUSORSTOM 9: stn DR1182, 8°46'S, 140°04'W, 90-120 m, 1 dd. — Stn DR1223, 9°45'S, 138°51'W, 90-150 m, 2 dd. — Stn DR1244, 10°28'S,

138°42'W, 1015-1020 m, 1 dd juv. — Stn DR1292, 8°54.1'S, 139°37.8'W, 95-100 m, 1 dd. — Stn DW1218, 9°45'S, 138°51'W, 125-135 m, 1 dd. — Stn DW1224, 9°45'S, 138°51'W, 115-120 m, 1 dd. — Stn DW1281, 7°48'S, 140°21'W, 450-455 m, 1 dd. — Atelier MARQUISES 1997: stn 12, 8°56.00'S, 139°32.80'W, 2 dd juv. — Stn 19, 8°55.65'S, 139°32.40'W, 0-3 m, 1 dd. — Stn 23, 8°55.90'S, 139°31.45'W, 1 lv, 3 dd, 12 dd juv. — Stn 24bis, 8°53.60'S, 139°37.00'W, 20-34 m, 1 dd. — Stn 25, 8°55.70'S, 139°36.70'W, 6-15 m, 11 lv, 4 lv juv, 3 dd, 1 dd juv. — Stn 32, 8°56.10'S, 139°32.70'W, 12-17 m, 1 dd juv. — Stn 33, 8°55.60'S, 139°33.90'W, 15 m, 1 dd. — Stn 34, 8°56.80'S, 139°35.70'W, 10-15 m, 12 lv, 4 lv juv, 5 dd, 1 dd juv. — Stn 35, 8°55.90'S, 139°21.20'W, 25 m, 1 dd, 1 dd juv. — MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20 m, 3 dd juv. — Stn 03, 8°56.17'S, 140°06.66'W, 10-20 m, 1 lv, 1 lv juv, 2 dd juv. — Stn 04, 8°57.82'S, 140°11.35'W, 10-25 m, 1 dd juv. — Stn 11, 8°55.52'S, 140°04.22'W, 10-25 m, 1 lv. — Stn 19, 9°20.82'S, 140°05.81'W, 10-20 m, 1 lv juv, 1 dd. — Stn 20, 9°20.81'S, 140°05.81'W, 10-15 m, 2 lv, 1 dd. — PAKAIHI I TE MOANA: stn MQ11-II-21, 8°56.4'S, 139°33.3'W, 20 m, 1 lv. — Stn MQ11-II-22, 9°26.3'S, 138°56.2'W, 25 m, 3 lv, 1 lv juv.; **Society.** TARASOC: stn DW3425, 16°43'S, 151°03'W, 557 m, 1 dd.; **Tuamotu.** TUAM'2011: stn TH02bis, 19°52.5'S, 145°00.4'W, 25 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Euplica varians (G.B. Sowerby I, 1832)

Plate 1I, J

Columbella varians G.B. Sowerby I, 1832

Material Examined: Australes. BENTHAUS: stn DW2021, 22°37'S, 152°49'W, 1200-1226 m, 2 dd. — Atelier RAPA 2002: stn 11, 27°37.2'S, 144°18.2'W, 2 m, 1 dd. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 2 lv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 1 dd juv. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 10 lv, 3 dd juv. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 2 dd, 2 dd juv. — Stn 36, 27°33.5'S, 144°20.8'W, 27 m, 1 lv juv, 2 dd juv. — Stn 81, 27°35.9'S, 144°18.5'W, 0-1 m, 9 lv, 1 lv juv, 4 dd juv. — Stn 85, 27°38.5'S, 144°19.0'W, 0-1 m, 1 lv. — Stn 88, 27°36.4'S, 144°18.6'W, 0-1 m, 1 lv, 1 lv juv. — TUHAA PAE 2013: stn AM04, 27°52.7'S, 143°29.1'W, 15 m, 9 dd. — Stn ARAP11, 27°35.8'S, 144°23.1'W, 60 m, 1 dd.; **Marquesas.** MUSORSTOM 9: stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 1 dd. — Stn DR1299, 8°49'S, 140°17'W, 405-418 m, 1 dd. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 1 dd. — Atelier MARQUISES 1997: stn 18, 8°56.45'S, 139°33.50'W, 0-1 m, 1 dd. — Stn 23, 8°55.90'S, 139°31.45'W, 7 dd, 2 dd juv. — Stn 24bis, 8°53.60'S, 139°37.00'W, 25-34 m, 2 dd. — Stn 29, 8°55.70'S,

139°32.00'W, 7-11 m, 1 dd. — Stn 36, 8°55.60'S, 139°32.17'W, 0-1 m, 2 lv.

Distribution: Throughout the entire tropical Indo-Pacific region.

Genus *Zafrona* Iredale, 1916

Type species: *Zafrona isomella* (Duclos, 1840) (by original designation)

Zafrona isomella (Duclos, 1840)

Plate 1K, L

Columbella isomella Duclos, 1840

Material examined : Marquesas. MUSORSTOM 9: stn DR 1247, 10°34'S, 138°42'W, 1150-1250 m, 7 dd. — Stn DW1154, 7°59'S, 140°44'W, 102 m, 8 dd. — Stn DW1162, 8°56.2'S, 140°06.1'W, 45-64 m, 1dd. — Stn DW1203, 9°52.7'S, 139°02.2'W, 60-61 m, 2 dd. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 10 lv, 7 dd. — Stn DW1281, 7°48'S, 140°21'W, 450-455 m, 1 dd. — MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20 m, 9 dd, 15 dd juv. — Stn 03, 8°56.17'S, 140°06.66'W, 10-20 m, 2 dd, 1 dd juv. — Stn 13, 8°57.16'S, 140°11.69'W, 10-15 m, 1 dd juv. — Stn 15, 8°56.16'S, 140°05.60'W, 15-30 m, 1 dd. — Stn 19, 9°20.82'S, 140°05.81'W, 10-20 m, 1 lv, 2 dd, 4 dd juv. — Stn 20, 9°20.81'S, 140°05.81'W, 10-15 m, 1 lv. — Atelier MARQUISES 1997: stn 22, Baie de Vaipae, 8°56.60'S, 139°34.25'W, 6-10 m, 1 dd. — Stn 30, 8°56.10'S, 139°32.00'W, 20-30 m, 1 dd. — SMCB: stn D86, 10°29'S, 138°40'W, 49 m, 4 dd juv. **Society.** TARASOC: stn DW3486: 17°48'S, 149°22'W, 660-920 m, 1 dd. **Tuamotu.** TUAM'2011: stn TTAK01, 14°27.7'S, 145°02.4'W, 50 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Zafrona fatuhiva n. sp.

Plate 1 M, N

Type material: **Holotype** (dd) MNHN IM-2000-33627 and **paratype** (dd) MNHN IM-2000-33628.

Type locality: French Polynesia, Marquesas, Fatu Hiva, 10°34'S, 138°42'W, 1150-1250 m [MUSORSTOM 9: stn DR1247].

Material examined: Marquesas. MUSORSTOM 9: stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 1 dd (Holotype MNHN IM-2000-33627). — Stn DW1287, 7°55S, 140°40'W, 163-245 m, 1 dd (paratype MNHN

IM-2000-33628).

Distribution: French Polynesia, Marquesas.

Description: Shell of moderate size for the genus; fusiform, elongate, with slightly shouldered whorls. Suture slightly impressed. Protoconch multispiral, about 4.5 smooth whorls. Transition to teleoconch clearly visible. Teleoconch with about 4 whorls. Axial sculpture of strong ribs on all whorls, interspaces between ribs as wide as the ribs. 17-20 ribs on each whorl. Final axial rib near the aperture much stronger. Spiral sculpture of close-set spiral cords, running over the axial ribs. 5-6 cords on early teleoconch whorls, 12 on the body whorl (basal cords not included). Ventrally, the basal cords range to the adapical end of the columella. Outer lip thickened on the outside, bearing continuation of the spiral sculpture and basal cords. Inside of the outer lip denticulate, with 3-4 denticles below the posterior canal, diminishing in strength abapically and 1 denticle on the transition from the lip to the siphonal canal. Columellar callus and parietal callus thickened. Columella with a rim of 5-6 denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white, without any pattern. First protoconch whorls cream, later whorls white. Aperture and columella white.

Holotype height 5.8 mm.

Remarks: *Zafrona fatuhiva* n. sp. is closest to *Z. isomella*. It differs in its bigger size, higher number of teleoconch whorls, more shouldered whorls and thicker shell.

Etymology: Named after the type locality Fatu Hiva.

Zafrona pleuriferoides n. sp.

Plate 1O, P

Type material: **Holotype** (dd) MNHN IM-2000-33629.

Type locality: French Polynesia, Society Islands, Huahine, 16°43'S, 151°04'W, 430-620 m [TARASOC: stn DW3422].

Material examined: Only known from the holotype.

Distribution: French Polynesia, Society Islands, Huahine.

Description: Shell of moderate size for the genus; fusiform, elongate, with slightly rounded whorls. Suture slightly impressed. Protoconch multispiral, about 4 whorls with close-set axial ribs. Transition to teleoconch clearly visible. Teleoconch with about 4 whorls. Axial

sculpture of strong ribs on all whorls, interspaces between ribs as wide as the ribs. About 20 ribs on each whorl. Spiral sculpture seems to be absent on first teleoconch whorls, but clearly present on the body whorl, consisting of about 20 weak, close-set spiral cords (basal cords not included). The basal cords ventrally range up to the adapical end of the columella. Outer lip thickened on the outside, bearing continuation of the spiral sculpture and basal cords. Inside of the outer lip denticulate, with 11 spiral ribs of which the 5-6 adapical-most show a clear denticle near the edge of the aperture. Posterior canal present. Columellar callus and parietal callus thickened. Columella with 3-4 denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white with irregular creamy brown marks, some stronger brown spots are present in a subsutural band. Protoconch whorls off-white. Aperture and columella white.

Holotype height 5.9 mm.

Remarks: *Zafrona pleuriferoides* n. sp. stands out from the other congeners by its protoconch with axial ribs, while most other congeners have a smooth protoconch. *Z. pleuriferoides* is also more bulbous, has more spiral cords and has spiral ribs inside the aperture, this last feature has not yet been seen in any other *Zafrona*.

Etymology: Named after the columbellid genus *Pleurifera* Drivas & Jay, 1997, with which it shares the typical protoconch, although this species is a typical *Zafrona*.

Zafrona striatula (Dunker, 1871)

Plate 1Q, R

Amycla striatula Dunker, 1871

Material examined: Australes. BENTHAUS: stn CP1906, 27°25'S, 144°02'W, 110-127 m, 1 dd. — Stn CP1922, 27°04'S, 146°04'W, 150-163 m, 1 lv. — Stn DW1866, 28°59'S, 140°14.8'W, 50-120 m, 3 dd. — Stn DW1876, 28°59'S, 140°15'W, 150-160 m, 1 dd juv. — Stn DW1877, 28°59'S, 140°15.1'W, 59-150 m, 2 lv, 6 dd, 6 dd juv. — Stn DW1879, 27°55'S, 143°30.1'W, 52 m, 1 dd. — Stn DW1880, 27°55'S, 143°29.4'W, 90-94 m, 1 dd. — Stn DW1888, 27°51'S, 143°31'W, 100-120 m, 1 dd. — Stn DW1894, 27°40'S, 144°22'W, 100 m, 1 dd. — Stn DW1917, 27°03.3'S, 146°03.8'W, 50-60 m, 1 dd. — Stn DW1985, 23°26'S, 150°44'W, 100-107 m, 1 dd. — Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 1 lv, 1 dd juv. — Stn 6, 27°36.8'S, 144°16.7'W, 42 m, 8 lv, 5 lv juv. — Stn 8, 27°36.5'S, 144°17.7'W, 52-57 m, 23 dd, 18 dd juv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 2 lv juv. — Stn 22, 27°33.9'S, 144°21.7'W, 18-22 m, 2 lv, 3 dd juv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 2 dd, 1 dd juv. — Stn

32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 1 dd juv. — Stn 36, 27°33.5'S, 144°20.8'W, 27 m, 2 lv, 1 lv juv, 3 dd, 1 dd juv. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 1 dd, 3 dd juv.

Distribution: Throughout the entire tropical Indo-Pacific region.

Subfamily **ATILIINAE** Cossmann, 1901

Genus *Aesopus* Gould, 1860

Type species: *Aesopus japonicus* (Gould, 1860) (by monotypy)

Aesopus clausiliformis (Kiener, 1834)

Plate 2A, B

Buccinum clausiliforme Kiener, 1834

Material examined: Australes. BENTHAUS: stn DW1879, 27°55'S, 143°30.1'W, 52 m, 4 dd, 1 dd juv. — Stn DW1881, 27°55'S, 143°29'W, 112-121 m, 1 dd. — Stn DW1926, 24°38.2'S, 146°00.8'W, 50-90 m, 2 dd. — Stn DW1932, 24°41'S, 146°02'W, 500-800 m, 1 dd. — Stn DW1937, 24°40'S, 145°56'W, 469-500 m, 2 dd. — Stn DW1958, 23°20'S, 149°30'W, 80-150 m, 1 dd. — TUHAA PAE 2013: stn AM04, 27°52.7'S, 143°29.1'W, 15 m, 1 dd juv. — Stn ARAP14, 27°33.6'S, 144°21.1'W, 17 m, 1 lv juv. — Stn AT02, 23°25.4'S, 149°27.4'W, 30 m, 1 dd. — Stn AT06, 23°25.5'S, 149°25.6'W, 20 m, 1 dd. — Atelier RAPA 2002: stn 1, 27°22.9'S, 144°20.1'W, 24 m, 1 dd juv. — Stn 5, 27°05.6'S, 144°18.5'W, 8 m, 1 dd juv. — Stn 6, 27°36.8'S, 144°16.7'W, 42 m, 3 dd juv. — Stn 8, 27°36.5'S, 144°17.7'W, 52-57 m, 1 dd, 7 dd juv. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 1 dd, 1 dd juv. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 4 lv juv, 1 dd, 4 dd juv. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 1 dd, 2 dd juv. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 1 lv juv. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 3 lv. — Stn 25, 27°38.4'S, 144°18.9'W, 3 m, 2 dd. — Stn 26, 27°33.0'S, 144°19.1'W, 53 m, 1 lv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 1 dd. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 1 dd. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 5 dd, 20 dd juv. — Stn 38, 27°37.4'S, 144°18.4'W, 2 m, 2 lv, 1 lv juv. — Stn 41, 27°36.3'S, 144°22.7'W, 5 m, 2 dd juv. — Stn 46, 27°36.8'S, 144°19.2'W, 10-42 m, 1 dd, 2 dd juv. — Stn 47, 27°36.7'S, 144°19.1'W, 33 m, 1 dd juv. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 2 dd juv. — Stn 56, 27°36.7'S, 144°18.1'W, 25-30 m, 1 dd. — Stn 69, 27°37.8'S, 144°18.7'W, 3-4 m, 2 dd juv. — Stn 76, 27°36.9'S, 144°20.4'W, 0-1 m, 3 dd. — Stn 78, 27°36.6'S, 144°18.9'W, 0-1 m, 4 lv. — Stn 93, 27°34.6'S, 144°20.6'W, 0-1 m, 1 lv juv, 1 dd juv.

Distribution: Throughout the entire tropical Indo-Pacific region.

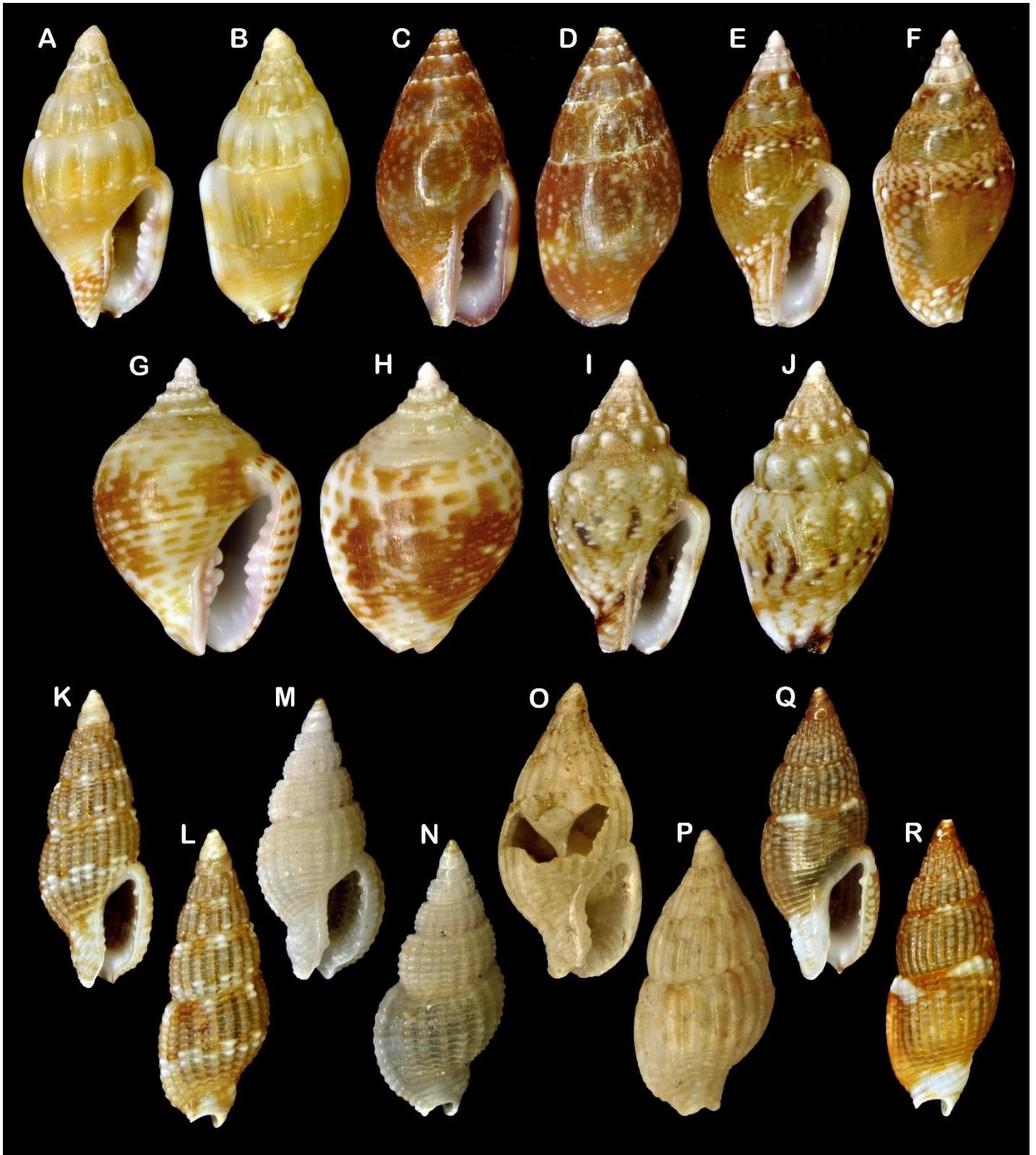


PLATE 1

Euplica ionida (Duclos, 1840); **A**, shell (6 mm), atelier MARQUISES 1997 stn 23; **B**, dorsal view.

Euplica livescens (Reeve, 1859); **C**, shell (11.8 mm), PAKAIHI I TE MOANA stn MQ11-II-16, 45m; **D**, dorsal view.

Euplica loisae Rehder, 1980; **E**, shell (10.4 mm), atelier RAPA 2002 stn 20, 5m; **F**, dorsal view.

Euplica turturina (Lamarck, 1822); **G**, shell (9.1 mm), TUHAA PAE 2013 stn ARAI13, 23m; **H**, dorsal view.

Euplica varians (Sowerby, 1832); **I**, shell (9.7 mm), atelier RAPA 2002 stn 85, 0-1m; **J**, dorsal view.

Zafrona isomella (Duclos, 1840); **K**, shell (4.8 mm), MUSORSTOM 9 DW1204, 60-62m; **L**, dorsal view.

Zafrona fatuhivai n. sp.; **M**, holotype (5.8mm) MNHN IM-2000-33627, French Polynesia, Marquesas, MUSORSTOM 9 stn DR1247, 1150-1250 m; **N**, dorsal view of holotype.

Zafrona pleuriferoides n. sp.; **O**, Holotype (5.9 mm) MNHN IM-2000-33629, French Polynesia, Society Islands, TARASOC stn DW3422, 430-620m; **P**, dorsal view of holotype.

Zafrona striatula (Dunker, 1871); **Q**, shell (6.3 mm), atelier RAPA 2002 stn 6, 42m; **R**, dorsal view.

Genus *Anachis* H. Adams & A. Adams, 1853
 Type species: *Anachis scalarina* (Sowerby I, 1832) (by subsequent designation)

Anachis barazeri n. sp.

Plate 2C, D

Type material: **Holotype** (dd) MNHN IM-2000-33630 and **paratype** (dd) MNHN-IM-2000-33631

Type locality: French Polynesia, Tuamotus, between Tikehau & Rangiroa, 15°05'S, 148°03'W, 976-997 m [TARASOC: stn DW3349].

Material examined: Only known from the types.

Distribution: French Polynesia, Tuamotus.

Description: Shell size rather small for the genus; fusiform, elongate, rounded and globose whorls. Suture slightly impressed. Protoconch paucispiral, about 1.3 smooth whorls. Transition to teleoconch clearly visible. Teleoconch with about 4 whorls. Axial sculpture of strong ribs on all whorls, interspaces between ribs a bit wider than the ribs. 12-13 ribs on each whorl. No spiral sculpture, except for the basal cords on the body whorl, which ventrally range to the adapical end of the columella. Outer lip slightly thickened with last axial rib on the outside, bearing continuation of the spiral cords. Inside of the outer lip not denticulate. Columellar callus thickened and slightly raised. Parietal callus weak. Columella with a weak rim of merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white, without any pattern. Protoconch white. Aperture and columella white.

Holotype height 4.5 mm.

Remarks: *Anachis barazeri* n. sp. is closest to *Anachis inferiorentata* K. Monsecour & D. Monsecour, 2016 from New Caledonia. It differs in its smaller size, different protoconch with fewer whorls and more globose teleoconch whorls.

Etymology: Named in honour of Jean-François Barazer, first captain on R.V. *Alis* during the TARASOC cruise and many other expeditions in the South Pacific.

Anachis inopinatus n. sp.

Plate 2E, F

Type material: **Holotype** (dd) MNHN IM-2000-33632

Type locality: French Polynesia, Tuamotu, Kaukura, 15°39'S, 146°56'W, 970-1060 m [TARASOC: stn

DW3380].

Material examined: Only known from the type.

Distribution: French Polynesia, Tuamotu, Kaukura.

Description: Shell size rather small for the genus; fusiform, elongate, slightly shouldered and straight whorls. Suture slightly impressed. Protoconch paucispiral, about 1.3 whorls with microscopic correlation. Transition to teleoconch clearly visible. Teleoconch with 4.8 whorls. Axial sculpture of strong ribs on all whorls, interspaces between ribs a bit wider than the ribs. 15 ribs on body whorls, 14 ribs on penultimate whorl. No spiral sculpture, except for the basal cords on the body whorl, which ventrally range to just below the upper end of the columella. Uppermost basal cord much weaker. Outer lip slightly thickened on the outside, bearing continuation of the spiral cords. Inside of the outer lip not denticulate. Columellar callus thickened. Parietal callus weak. Columella without denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls white, without any pattern. Protoconch semi-translucent white. Aperture and columella white.

Holotype height 5.6 mm.

Remarks: *Anachis inopinatus* n. sp. is at this moment unique in shell-shape in the Pacific and can readily be distinguished from all other columbellid species from the region. It is very close to the West-Indian and Brazilian deep-water species *Anachis strix* (Watson, 1882), but differs in the smaller size, lower number of teleoconch and protoconch whorls and the lack of dentition on the outer lip.

Etymology: Latin adjective *inopinatus* meaning: surprising, unexpected as this species looks so close to some Brazilian deep-water species and was not expected in the Pacific.

Anachis ragivarui n. sp.

Plate 2G, H

Type material: **Holotype** (dd) MNHN IM-2000-33633.

Type locality: French Polynesia, Tuamotus, between Tikehau & Rangiroa, 15°05'S, 148°03'W, 976-997 m [TARASOC: stn DW3349].

Material examined: Only known from the type.

Distribution: French Polynesia, Tuamotus.

Description: Shell size small for the genus; fusiform,

elongate, slightly rounded whorls. Suture slightly impressed. Protoconch paucispiral, about 1.3 smooth whorls. Transition to teleoconch clearly visible. Teleoconch with about 3 whorls. Axial sculpture of strong ribs on all whorls, interspaces between ribs a bit wider than the ribs. 16-17 ribs on each whorl. No spiral sculpture, except for the basal cords on the body whorl, which ventrally range to the adapical end of the columella, adapicalmost basal cords weaker. Outer lip thickened, bearing continuation of the spiral cords. Inside of the outer lip not denticulate. Columellar callus thickened and slightly raised. Parietal callus weak. Columella with a weak rim. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white, without any pattern. Protoconch white. Aperture and columella white.

Holotype height 3.4 mm.

Remarks: *A. ragivarui* n. sp. is found together with *A. barazeri* n. sp.. It differs in its smaller size, lower number of teleoconch whorls, less globose whorls and higher number of axial ribs.

Etymology: Named in honour of Lucien Ragivaru, French Polynesia.

Genus *Aoteatilia* Powell, 1939

Type species: *Oteatilia substriata* (Suter, 1899) (by original designation)

Aoteatilia rimatara n. sp.

Plate 2I, J

Type material: **Holotype** (dd) MNHN IM-2000-33634 and 2 **paratypes** MNHN IM-2000-33635-36 (as listed below).

Type locality: French Polynesia, Australes, Rimatara, 22°37'S, 152°49'W, 920-930 m [BENTHAUS: stn DW2020].

Material examined: **Australes.** BENTHAUS: stn DW1999, 22°25'S, 151°22'W, 270-500 m, 1 dd (paratype MNHN IM-2000-33635). — Stn DW2018, 22°37'S, 152°49'W, 770-771 m, 1 dd (paratype MNHN IM-2000-33636). — Stn DW2020, 22°37'S, 152°49'W, 920-930 m, 1 dd (Holotype MNHN IM-2000-33634).

Distribution: French Polynesia, Australes. Rimatara and Rurutu.

Description: Shell size typical of the genus; fusiform, elongate, slightly rounded whorls. Suture slightly impressed. Protoconch paucispiral, about 1.3 smooth whorls. Transition to teleoconch almost invisible. Teleo-

conch with about 4.6-4.7 whorls. Axial sculpture of weak axial riblets on the first whorl and first half of second whorl. Spiral sculpture of broad, flattened spiral cords with narrow interspaces, lacking on first whorl, with 11 cords on second and penultimate whorl and 22 cords on final whorl. The basal cords on the body whorl are stronger and more rounded and ventrally range to the adapical end of the columella. Outer lip thickened, bearing continuation of the spiral sculpture and basal cords. Inside of the outer lip denticulate with 7 denticles. Columellar callus thickened. Parietal callus weak. Columella with a weak rim of semi-merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls white to cream, without any pattern. Protoconch white. Aperture and columella white.

Holotype height 6.2 mm.

Remarks: *A. rimatara* n. sp. is closest to *Aoteatilia caledonica* K. Monsecour & D. Monsecour, 2016 with which it shares the axial sculpture on the early teleoconch whorls. It differs in its larger size, the higher number of spiral cords and the presence of denticles on the inside of the outer lip.

Etymology: Named after the type locality, Rimatara Island.

Genus *Ascalista* Drivas & Jay, 1990

Type species: *Ascalista polita* (G. Nevill & H. Nevill, 1875) (by original designation)

Ascalista letourneuxi

K. Monsecour & D. Monsecour, 2015

Plate 2K, L

Material examined: **Australes.** BENTHAUS: stn CP1906, 27°25'S, 144°02'W, 110-127 m, 2 dd. — Stn DW1880, 27°55'S, 143°29.4'W, 90-94 m, 1 dd. — Stn DW1901, 27°25'S, 144°02'W, 115-120 m, 1 dd. — Stn DW1939, 23°50'S, 147°42'W, 100 m, 1 dd. — Stn DW1958, 23°20'S, 149°30'W, 80-150 m, 1 dd. — Stn DW1968, 23°23'S, 150°44'W, 120-100 m, 2 dd. — TUHAA PAE 2013: stn ARAP11, 27°35.8'S, 144°23.1'W, 60 m, 3 dd. — Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 3 lv, 1 lv juv. — Stn 5, 27°05.6'S, 144°18.5'W, 8 m, 5 lv, 5 lv juv, 5 dd. — Stn 6, 27°36.8'S, 144°16.7'W, 42 m, 2 lv, 7 lv juv. — Stn 8, 27°36.5'S, 144°17.7'W, 52-57 m, 148 dd, 11 dd juv. — Stn 9, 27°37.3'S, 144°22.2'W, 3-24 m, 13 lv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 51 lv, 5 lv juv, 21 dd, 1 dd juv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 4 lv, 2 dd. — Stn 13, 27°36.1'S, 144°18.9'W, 2 m, 14 dd, 5 dd juv. — Stn 14, 27°35.8'S, 144°13.6'W, 2 m, 3 lv, 1 lv juv, 5 dd, 2 dd juv. — Stn 15, 27°38.1'S, 144°21.1'W, 20

m, 2 dd. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 4 dd. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 41 lv, 6 lv juv, 19 dd, 1 dd juv. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 11 dd, 6 dd juv. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 4 lv, 1 lv juv, 4 dd, 1 dd juv. — Stn 21, 27°34.2'S, 144°20.6'W, 5 m, 22 lv, 5 lv juv, 18 dd, 1 dd juv. — Stn 22, 27°33.9'S, 144°21.7'W, 18-22 m, 15 lv, 4 dd, 2 dd juv. — Stn 25, 27°38.4'S, 144°18.9'W, 3 m, 2 lv, 2 dd. — Stn 27, 27°38.7'S, 144°19.2'W, 6 m, 6 lv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 2 lv, 3 dd. — Stn 29, 27°34.3'S, 144°21.0'W, 4-2 m, 8 lv, 4 lv juv, 3 dd, 3 dd juv. — Stn 30, 27°38.2'S, 144°18.2'W, 16-20 m, 3 lv, 2 lv juv, 1 dd juv. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 26 lv, 2 lv juv, 4 dd. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 31 lv, 4 lv juv, 9 dd, 4 dd juv. — Stn 33, 27°34.8'S, 144°18.6'W, 30 m, 1 lv, 1 lv juv, 2 dd juv. — Stn 34, 27°34.8'S, 144°19.0'W, 2-8 m, 32 lv, 2 lv juv, 63 dd, 25 dd juv. — Stn 35, 27°34.8'S, 144°19.0'W, 2 m, 5 lv, 5 lv juv, 1 dd juv. — Stn 36, 27°33.5'S, 144°20.8'W, 27 m, 4 lv, 1 lv juv, 2 dd. — Stn 38, 27°37.4'S, 144°18.4'W, 2 m, 11 lv, 4 lv juv, 3 dd, 3 dd juv. — Stn 41, 27°36.3'S, 144°22.7'W, 5 m, 2 lv juv. — Stn 43, 27°36.8'S, 144°18.3'W, 45 m, 118 dd, 13 dd juv. — Stn 44, 27°36.3'S, 144°18.2'W, 30 m, 236 dd, 14 dd juv. — Stn 45, 27°36.7'S, 144°18.9'W, 35 m, 3 dd. — Stn 47, 27°36.7'S, 144°19.1'W, 33 m, 24 dd, 2 dd juv. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 78 dd, 18 dd juv. — Stn 51, 27°36.3'S, 144°20.6'W, 1-1.5 m, 9 dd, 2 dd juv. — Stn 52, 27°36.8'S, 144°19.9'W, 23-25 m, 2 dd. — Stn 53, 27°36.6'S, 144°20.3'W, 1.5 m, 1 lv. — Stn 54, 27°36.6'S, 144°19.3'W, 12-20 m, 2 dd. — Stn 56, 27°36.7'S, 144°18.1'W, 25-30 m, 1 lv. — Stn 60, 27°37.2'S, 144°18.8'W, 1-1.5 m, 2 dd. — Stn 61, 27°37.0'S, 144°18.6'W, 10-15 m, 34 dd, 1 dd juv. — Stn 62, 27°36.6'S, 144°20.5'W, 20 m, 1 dd. — Stn 64, 27°38.4'S, 144°18.9'W, 1.5-2 m, 1 dd. — Stn 67, 27°34.7'S, 144°21.7'W, 3-4 m, 21 dd, 3 dd juv. — Stn 68, 27°34.7'S, 144°21.1'W, 1-4 m, 3 dd. — Stn 70, 27°36.6'S, 144°19.5'W, 15-20 m, 3 dd. — Stn 77, 27°37.2'S, 144°19.8'W, intertidal, 2 lv. — Stn 81, 27°35.9'S, 144°18.5'W, intertidal, 1 lv.

Distribution: Only known from the Australes Islands.

Genus *Graphicomassa* Iredale, 1929

Type species: *Graphicomassa ligula* (Duclos, 1840) (by original designation)

Graphicomassa adiostina (Duclos, 1840)

Plate 2M, N

Columbella adiostina Duclos, 1840

Material examined: Society. TARASOC: stn DW 3474, 17°28'S, 149°50'W, 720 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Graphicomassa margarita (Reeve, 1859)

Plate 2O, P

Columbella margarita Reeve, 1859

Material examined: Australes. TUHAA PAE 2013: stn ARAI09, 23°49.6'S, 147°40.9'W, 26 m, 1 dd. — Stn ARU09, 22°26.7'S, 151°20.7'W, 1 m, 1 dd. — Stn AT16, 23°20.3'S, 149°30.4'W, 24 m, 8 lv, 1 dd.

Distribution: Only known from French Polynesia and Hawaii (Severns, 2011).

Genus *Indomitrella* Oostingh, 1940

Type species: *Indomitrella puella* (G. B. Sowerby I, 1844) (by original designation)

Indomitrella conspersa (Gaskoin, 1852)

Plate 2Q, R

Columbella conspersa Gaskoin, 1852

Material examined: Marquesas. MUSORSTOM 9: stn CP1156, 7°59.0'S, 140°43.7'W, 80 m, 1 lv, 1 lv juv. — Stn CP1157, 7°59.2'S, 140°44.2'W, 100 m, 1 dd juv. — Stn CP1158, 7°59'S, 140°44'W, 109-110 m, 2 dd, 1 dd juv. — Stn CP1188, 8°48.6'S, 140°03.4'W, 35-55 m, 1 dd. — Stn CP1212, 9°49.9'S, 139°02.2'W, 50-80 m, 2 dd. — Stn CP1228, 9°45'S, 138°52'W, 107-108 m, 5 dd, 1 dd juv. — Stn CP1237, 9°42'S, 139°04'W, 95-305 m, 1 dd. — Stn CP1304, 8°54.4'S, 140°13.9'W, 50-58 m, 3 dd. — Stn DR1150, 9°18'S, 140°05'W, 450-480 m, 1 dd. — Stn DR1181, 8°46'S, 140°03'W, 102-130 m, 5 dd, 4 dd juv. — Stn DR1182, 8°46'S, 140°04'W, 90-120 m, 1 dd. — Stn DR1200, 9°49.9'S, 139°08.9'W, 96-100 m, 1 dd, 16 dd juv. — DR1223, 9°45'S, 138°51'W, 90-150 m, 14 dd, 3 dd juv. — Stn DR1244, 10°28'S, 138°42'W, 1015-1020 m, 2 dd. — Stn DR1245, 10°29'S, 138°36'W, 85-130 m, 2 dd. — Stn DR1246, 10°29'S, 138°36'W, 90-130 m, 1 dd juv. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 2 dd. — Stn DR1292, 8°54.1'S, 139°37.8'W, 95-100 m, 5 dd. — Stn DR1293, 8°54.3'S, 139°37.5'W, 50 m, 3 lv, 1 lv juv, 17 dd, 8 dd juv. — Stn DR1297, 8°54'S, 139°37'W, 90-150 m, 1 dd. — Stn DR1298, 8°49'S, 140°17'W, 305 m, 7 dd juv. — Stn DR1305, 8°54'S, 140°15'W, 90-155 m, 22 dd, 7 dd juv. — Stn DW1143, 9°20.9'S, 140°02.7'W, 18-55 m, 1 dd. — Stn DW1144, 9°19.9'S, 140°03.8'W, 85-95 m, 1 lv. — Stn DW1154, 7°59'S, 140°44'W, 102 m, 1 dd juv. — Stn DW1161, 8°55.6'S, 138°06.1'W, 30-37 m, 6 dd, 1 dd juv. — Stn DW1162, 8°56.2'S, 140°06.1'W, 45-64 m, 3 dd. — Stn DW1184, 8°49.3'S, 140°03.6'W, 23-30 m, 4

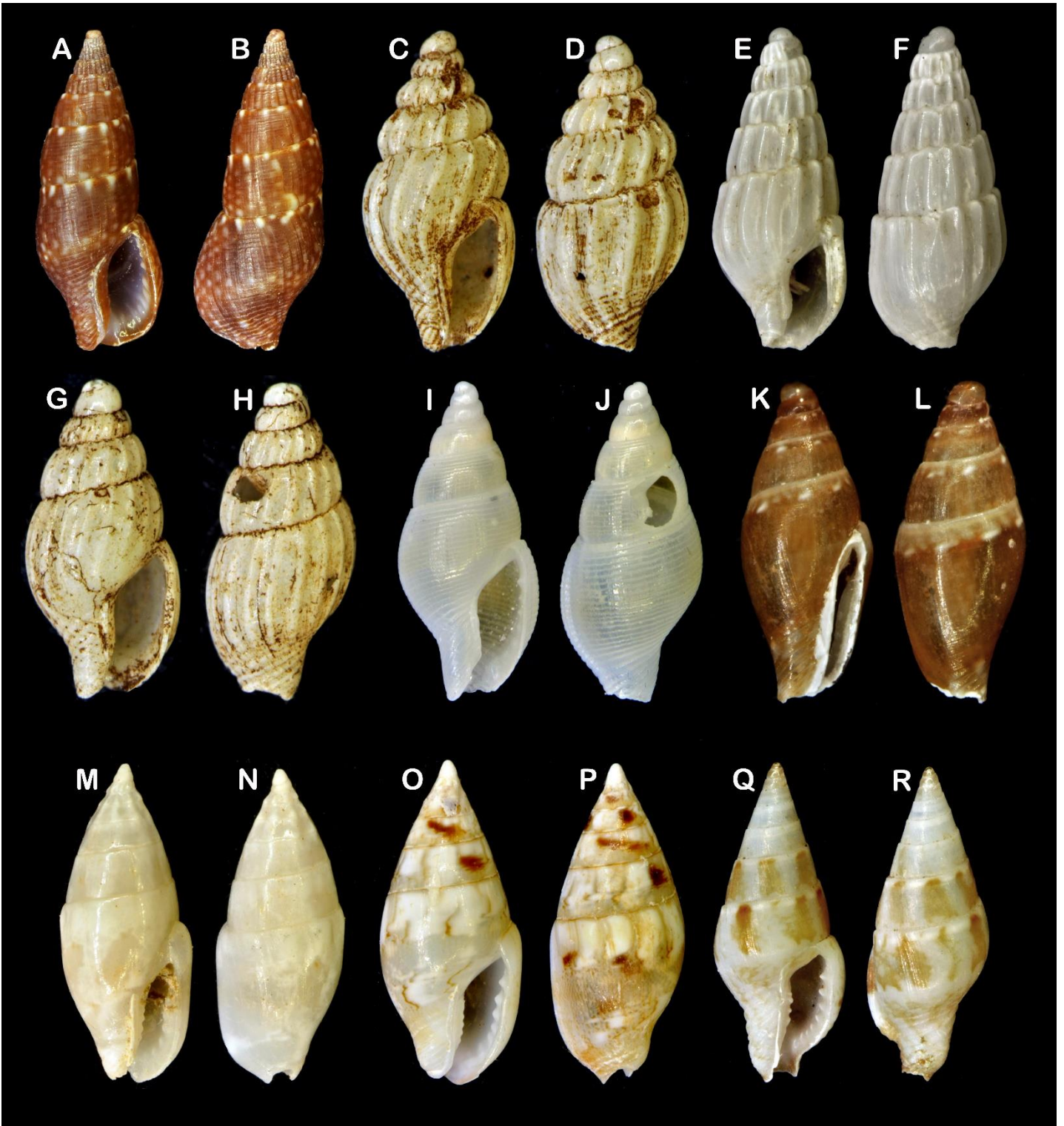


PLATE 2

Aesopus clausiliformis (Kiener, 1834); **A**, shell (12.2 mm), atelier RAPA 2002 stn 78, 0-1m; **B**, dorsal view.

Anachis barazeri n. sp.; **C**, Holotype (4.5 mm) MNHN IM-2000-33630, French Polynesia, Tuamotus, TARASOC stn DW3349, 976-997 m; **D**, dorsal view of holotype.

Anachis inopinatus n. sp.; **E**, Holotype (5.6 mm) MNHN IM-2000-33632, French Polynesia, Tuamotus, TARASOC stn DW3380, 970-1060 m; **F**, dorsal view of holotype.

Anachis ragivarui n. sp.; **G**, Holotype (3.4 mm) MNHN-IM-2000-33633, French Polynesia, Tuamotus, TARASOC stn DW3349, 976-997 m; **H**, dorsal view of holotype.

Aoteatilia rimatara n. sp.; **I**, Holotype (6.2 mm) MNHN IM-2000-33634, French Polynesia, Australes, BENTHAUS stn DW2020, 920-930 m; **J**, dorsal view of holotype.

Ascalista letourneuxi K. Monsecour & D. Monsecour, 2015; **K**, shell (3.3 mm), TUHAA PAE 2013 ARAP11, 60m; **L**, dorsal view.

Graphicomassa adiostina (Duclos, 1840); **M**, shell (8.4 mm), TARASOC stn DW3474, 720m; **N**, dorsal view.

Graphicomassa margarita (Reeve, 1859); **O**, shell (8.5 mm), TUHAA PAE 2013 stn AT16, 24m; **P**, dorsal view.

Indomitrella conspersa (Gaskoin, 1852); **Q**, shell (8.1 mm), MUSORSTOM 9 stn DW1209, 85m; **R**, dorsal view.

dd, 25 dd juv. — Stn DW1203, 9°52.7'S, 139°02.2'W, 60-61 m, 1 lv, 1 dd juv. — Stn DW1209, 9°50.2'S, 139°02.5'W, 85 m, 3 dd. — Stn DW1210, 09°50.4'S, 139°00.5'W, 98-100 m, 23 dd, 1 dd juv. — Stn DW1213, 09°50.3'S, 140°03.2'W, 18-20 m, 1 lv. — Stn DW1218, 9°45'S, 138°51'W, 125-135 m, 8 dd, 58 dd juv. — Stn DW1224, 09°45'S, 138°52'W, 115-120 m, 5 dd. — Stn DW1225, 09°45.2'S, 138°52.6'W, 42-70 m, 1 dd. — Stn DW1230, 09°43.6'S, 139°06.6'W, 95-100 m, 6 dd. — Stn DW1242, 10°28'S, 138°41'W, 119-122 m, 2 dd juv. — Stn DW1281, 7°48'S, 140°21'W, 450-455 m, 1 dd juv. — UA HUKA. Atelier MARQUISES 1997: stn 24bis, 8°53.60'S, 139°37.00'W, 20-34 m, 14 lv, 2 lv juv, 8 dd, 3 dd juv. — Stn 30, 8°56.10'S, 139°32.00'W, 20-30 m, 2 dd. — Stn 34, 8°56.80'S, 139°35.70'W, 10-15 m, 1 lv. — Stn 35, 8°55.90'S, 139°21.20'W, 24-25 m, 2 dd. — Stn 38, Baie de Vaipae, 8°56.9'S, 139°34.23'W, 10-25 m, 1 lv. — PAKAIHI I TE MOANA: stn MQ11-II-18, 8°56.5'S, 139°36.1'W, 24 m, 9 lv juv. **Australes.** Atelier RAPA 2002: stn 72, 27°36.6'S, 144°22.7'W, 5-10 m, 2 lv. — Stn 81, 27°35.9'S, 144°18.5'W, intertidal, 1 dd juv.

Distribution: Throughout the entire tropical Indo-Pacific region.

Genus *Mitrella* Risso, 1826

Type species: *Mitrella flaminea* Risso, 1826 = *Mitrella scripta* (Linnaeus, 1758) (by subsequent designation)

Mitrella alofa (Hedley, 1899)
Plate 3A, B

Columbella alofa Hedley, 1899

Material examined: Marquesas. MUSORSTOM 9: stn CP1177, 8°45'S, 140°15'W, 108-112 m, 1 dd. — Stn DR1182, 8°46'S, 140°04'W, 90-120 m, 1 dd. — Stn DR1183, 8°45.5'S, 140°03.8'W, 86-120 m, 1 dd. — Stn DR1244, 10°28'S, 138°42'W, 1015-1020 m, 1 dd. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 1 dd. — Stn DW1145, 9°19'S, 140°06'W, 150-180 m, 1 dd. — Stn DW1208, 9°50'S, 139°10'W, 117 m, 1 dd. — Stn DW1224, 09°45'S, 138°52'W, 115-120 m, 2 dd. — Stn DW1242, 10°28'S, 138°41'W, 119-122 m, 2 dd. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 1 dd juv.

Distribution: From French Polynesia westwards to the coast of Queensland, Australia.

Mitrella cuspidata Lussi, 2009
Plate 3C, D

Material examined: Marquesas. MUSORSTOM 9: Stn DR 1247, 10°34'S, 138°42'W, 1150-1250m, 1 dd juv. —

Stn DW 1288, 8°54'S, 139°38'W, 200-220m, 2 dd, 1 dd juv.

Distribution: This species was already known from South Africa (type locality), New Caledonia (Monsecour & Monsecour, 2016) and is now confirmed from French Polynesia.

Mitrella gourgueti

K. Monsecour & D. Monsecour, 2015
Plate 3E, F

Material examined: Australes. Atelier RAPA 2002: stn 6, 27°36.8'S, 144°16.7'W, 42 m, 2 lv, 1 lv juv, 2 dd juv. — Stn 9, 27°37.3'S, 144°22.2'W, 3-24 m, 1 dd. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 2 lv, 3 dd, 1 dd juv. — Stn 13, 27°36.1'S, 144°18.9'W, 2 m, 7 dd, 7 dd juv. — Stn 14, 27°35.8'S, 144°13.6'W, 2 m, 1 dd. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 1 dd. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 2 dd. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 1 lv, 2 dd. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 22 lv, 16 dd, 2 dd juv. — Stn 21, 27°34.2'S, 144°20.6'W, 5 m, 3 dd. — Stn 25, 27°38.4'S, 144°18.9'W, 3 m, 1 lv, 3 dd, 4 dd juv. — Stn 27, 27°38.7'S, 144°19.2'W, 6 m, 3 dd. — Stn 34, 27°34.8'S, 144°19.0'W, 2-8 m, 1 dd, 1 dd juv. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 1 dd, 6 dd juv. — Stn 51, 27°36.3'S, 144°20.6'W, 1-1.5 m, 2 lv, 11 dd, 1 dd juv. — Stn 54, 27°36.6'S, 144°19.3'W, 12-20 m, 1 lv, 1 lv juv, 2 dd juv. — Stn 56, 27°36.7'S, 144°18.1'W, 25-30 m, 1 dd. — Stn 57, 27°36.8'S, 144°19.5'W, 20-30 m, 12 dd, 4 dd juv. — Stn 58, 27°35.8'S, 144°18.5'W, 2-3 m, 1 lv, 1 dd. — Stn 59, 27°36.2'S, 144°18.8'W, 2 m, 27 lv, 15 lv juv, 6 dd, 1 dd juv. — Stn 60, 27°37.2'S, 144°18.8'W, 1-1.5 m, 3 lv, 3 lv juv, 2 dd, 4 dd juv. — Stn 61, 27°37.0'S, 144°18.6'W, 10-15 m, 4 lv, 2 lv juv, 37 dd, 7 dd juv. — Stn 63, 27°34.6'S, 144°19.5'W, 2-3 m, 3 lv, 1 lv juv, 3 dd, 1 dd juv. — Stn 67, 27°34.7'S, 144°21.7'W, 3-4 m, 9 dd, 7 dd juv. — Stn 70, 27°36.6'S, 144°19.5'W, 15-20 m, 3 dd. — Stn 72, 27°33.6'S, 144°22.7'W, 10-15 m, 5 lv, 1 lv juv, 1 dd juv. — Stn 73, 27°36.4'S, 144°22.7'W, 2-3 m, 1 dd juv. — Stn 76, 27°36.9'S, 144°20.4'W, intertidal, 1 lv. — Stn 78, 27°36.6'S, 144°18.9'W, intertidal, 1 lv, 1 dd. — Stn 82, 27°37.1'S, 144°18.5'W, 1 dd, 1 dd juv. — Stn 85, 27°38.5'S, 144°19.0'W, 1 dd juv. — Stn 93, 27°34.6'S, 144°20.6'W, 1 dd.

Distribution: Only known from Rapa Island.

Mitrella loyaltiensis (Hervier, 1900)
Plate 3G, H

Columbella loyaltiensis Hervier, 1900

Material examined: Tuamotu. TUAM'2011: stn THA01, 18°03.8'S, 140°59.5'W, 55 m, 8d d, 1 dd. —

Stn TTAK01, 14°27.7'S, 145°02.4'W, 50 m, 1 dd.

Distribution: Only found in the Pacific islands. From New Caledonia to the east. Also found in Hawaii (Severns, 2011).

Mitrella moleculina (Duclos, 1840)

Plate 3I, J

Columbella moleculina Duclos, 1840

Material examined: **Australes.** BENTHAUS: stn DW1928, 24°39'S, 146°01'W, 200 m, 1 dd. — Stn DW1933, 24°41'S, 146°02'W, 500-850 m, 1 dd. — Stn DW1939, 23°50'S, 147°42'W, 100 m, 1 dd. — Stn DW1978, 23°22'S, 150°43'W, 120-180 m, 1 dd. — Stn DW1996, 22°29'S, 151°22'W, 489-1050 m, 1 dd. — Atelier RAPA 2002: stn 6, 27°36.8'S, 144°16.7'W, 42 m, 1 dd. — TUHAA PAE 2013: stn ARAI13, 23°49.8'S, 147°36.8'W, 23 m, 1 dd. — Stn ARAP05, 27°36.5'S, 144°17.6'W, 55 m, 1 dd. — Stn ARAP11, 27°35.8'S, 144°23.1'W, 60 m, 1 dd juv. — Stn ARU09, 22°26.7'S, 151°20.7'W, 1 m, 1 dd. — Stn AT16, 23°20.3'S, 149°30.4'W, 24 m, 1 dd juv. **Marquesas.** Atelier MARQUISES 1997: stn 12, 8°56.00'S, 139°32.80'W, 0-1 m, 1 dd. — Stn 18, 8°56.45'S, 139°33.50'W, 2 dd. — Stn 23, 8°55.90'S, 139°31.45'W, 2 dd, 1 dd juv. — Stn 24bis, 8°53.60'S, 139°37.00'W, 20-34 m, 2 dd. — Stn 30, 8°56.10'S, 139°32.00'W, 20-30 m, 3 dd. — Stn 34, 8°56.80'S, 139°35.70'W, 10-15 m, 1 dd. — Stn 35, 8°55.90'S, 139°21.20'W, 25 m, 1 dd juv. — MUSORSTOM 9: stn CP1157, 8°00'S, 140°44'W, 100 m, 1 dd juv. — Stn CP1159, 7°58'S, 140°44'W, 145 m, 3 dd, 1 dd juv. — Stn CP1177, 8°45'S, 140°15'W, 108-112 m, 8 lv, 2 lv juv, 2 dd. — Stn DR1200, 9°49.9'S, 139°08.9'W, 96-100 m, 8 dd, 19 dd juv. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 3 dd. — Stn DR1305, 8°54'S, 140°15'W, 90-155 m, 1 dd. — Stn DW1154, 7°59'S, 140°44'W, 102 m, 8 dd, 4 dd juv. — Stn DW1203, 9°52.7'S, 139°02.2'W, 60-61 m, 1 dd. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 9 lv, 1 lv juv, 3 dd. — Stn DW1208, 9°49'S, 139°10'W, 117 m, 4 dd. — Stn DW1210, 09°50.4'S, 139°00.5'W, 98-100 m, 3 dd. — Stn DW1218, 9°45'S, 138°51'W, 125-135 m, 1 dd, 1 dd juv. — Stn DW1274, 7°55'S, 140°40'W, 100-120 m, 1 dd. — Stn DW1288, 8°54'S, 139°38'W, 200-220 m, 6 dd. — MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20 m, 50 dd, 20 dd juv. — Stn 11, 8°55.52'S, 140°04.22'W, 10-25 m, 1 dd. — Stn 13, 8°57.16'S, 140°11.69'W, 10-15 m, 1 lv, 3 lv juv, 2 dd. — Stn 15, 8°56.16'S, 140°05.60'W, 15-30 m, 2 lv, 1 dd. — Stn 19, 9°20.82'S, 140°05.81'W, 10-20 m, 4 lv, 3 lv juv, 10 dd, 7 dd juv. — Stn 20, 9°20.81'S, 140°05.81'W, 10-15 m, 3 dd, 1 dd juv. — SMCB: stn D86, 10°29'S, 138°40'W, 49 m, 2 dd juv. **Tuamotu.** TUAM'2011: stn TH02ter, 19°52.5'S, 145°00.4'W, 15 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Mitrella moorea n. sp.

Plate 3K, L

Type material: Holotype (dd) MNHN IM-2000-33637.

Type locality: French Polynesia, Society Islands, Moorea, 17°28'S, 149°48'W, 485-560 m [TARASOC: stn DW3459].

Material examined: Only known from the type.

Distribution: French Polynesia, Society Islands, Moorea.

Description: Shell size rather small for the genus; fusiform, elongate, slightly rounded and shouldered whorls. Suture slightly impressed. Protoconch multi-spiral, about 2.5 whorls with microscopic correlation. Teleoconch with 4.75 whorls. No axial or spiral sculpture, except for the basal cords on the body whorl, which ventrally range to the upper end of the columella. Outer lip clearly thickened on the outside, bearing continuation of the spiral cords. Inside of the outer lip denticulate, with 7 denticles, the middle ones markedly stronger, the posterior one very small and close-set just below the posterior canal. Columellar callus thickened. Parietal callus weak. Columella with rim of 6 semi-merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white to cream. Spiral band of orangish brown flames just above the suture. On the body whorl, this band is continued at midwhorl. A second such band is present on the posterior side of the basal cords on the body whorl. Protoconch white. Aperture and columella white.

Holotype height 5.1 mm.

Remarks: At first sight, *Mitrella moorea* n. sp. looks close to *Mitrella bellonae* K. Monsecour & D. Monsecour, 2016, with which it shares the general shell shape and shouldered whorls. *M. moorea* is smaller, has more strongly shouldered and more rounded whorls and has a different colour pattern.

Etymology: Named after the type locality, Moorea.

Mitrella nainai n. sp.

Plate 3M, N

Type material: Holotype (dd) MNHN IM-2000-33638

and 2 paratypes (dd) MNHN IM-2000-33639 (as listed below).

Type locality: French Polynesia, Society Islands, Huahine, 16°42'S, 151°03'W, 700-785 m [TARASOC: stn DW3434].

Material examined: Society. TARASOC: stn DW3434, 16°42'S, 151°03'W, 700-785 m, 1 dd (holotype MNHN IM-2000-33638) — Stn DW3459, 17°28'S, 149°48'W, 485-560 m, 2 dd (paratypes MNHN IM-2000-33639).

Distribution: French Polynesia, Society Islands, Huahine and Moorea.

Description: Shell size small for the genus; fusiform, elongate, slightly rounded whorls. Suture slightly impressed. Protoconch multispiral, about 2.3 smooth whorls. Teleoconch with about 3.2 whorls. No axial sculpture. Spiral sculpture consisting of a weak sub-sutural band on the last 1.5 teleoconch whorl and the basal cords on the body whorl, which ventrally range to the upper end of the columella. Outer lip clearly thickened on the outside, bearing continuation of the spiral cords. Inside of the outer lip not denticulate. Columellar callus thickened. Parietal callus very weak. Columella without denticles, except for one small denticle at the edge of the siphonal canal. Siphonal canal short, open, slightly recurved.

Teleoconch whorls semi-translucent white, without pattern. Substural band greyish on penultimate whorl. Protoconch white. Aperture semi-translucent and columella white.

Holotype height 3.2 mm.

Remarks: *Mitrella nainai* looks close to *Mitrella subtilicostata* K. Monsecour & D. Monsecour, 2016. It differs in its smaller size, multispiral protoconch and the lack of the weak sculpture. It is found together with *M. moorea* n. sp., but *M. nainai* is smaller, has fewer teleoconch whorls and lacks the denticles on both lip and columella.

Etymology: Tahitian meaning small.

Mitrella philia (Duclos, 1846)
Plate 3O, P

Columbella philia Duclos, 1846

Material examined: Australes. Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 5 dd, 3 dd juv. — Stn 5, 27°05.6'S, 144°18.5'W, 8 m, 1 dd juv. — Stn 8, 27°36.5'S, 144°17.7'W, 52-57 m, 2 dd, 3 dd juv. — Stn 9, 27°37.3'S, 144°22.2'W, 3-24 m, 5 lv, 5 dd, 2 dd juv.

— Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 4 lv, 6 lv juv, 12 dd, 5 dd juv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 2 dd, 4 dd juv. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 3 dd, 3 dd juv. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 1 dd, 2 dd juv. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 1 dd, 9 dd juv. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 1 lv, 1 dd juv. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 5 dd, 1 dd juv. — Stn 21, 27°34.2'S, 144°20.6'W, 5 m, 1 dd juv. — Stn 22, 27°33.9'S, 144°21.7'W, 18-22 m, 3 dd, 2 dd juv. — Stn 25, 27°38.4'S, 144°18.9'W, 3 m, 4 lv, 5 dd, 6 dd juv. — Stn 27, 27°38.7'S, 144°19.2'W, 6 m, 9 lv, 1 lv juv, 6 dd, 4 dd juv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 1 dd, 1 dd juv. — Stn 29, 27°34.3'S, 144°21.0'W, 4-2 m, 2 dd, 3 dd juv. — Stn 30, 27°38.2'S, 144°18.2'W, 16-20 m, 1 dd, 2 dd juv. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 6 lv, 1 lv juv, 2 dd, 4 dd juv. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 3 lv, 10 dd, 8 dd juv. — Stn 34, 27°34.8'S, 144°19.0'W, 2-8 m, 5 lv, 1 lv juv, 9 dd, 5 dd juv. — Stn 41, 27°36.3'S, 144°22.7'W, 5 m, 1 dd juv. — Stn 43, 27°36.8'S, 144°18.3'W, 45 m, 4 dd, 4 dd juv. — Stn 44, 27°36.3'S, 144°18.2'W, 30 m, 4 dd, 5 dd juv. — Stn 47, 27°36.7'S, 144°19.1'W, 33 m, 1 dd juv. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 4 dd, 13 dd juv. — Stn 61, 27°37.0'S, 144°18.6'W, 10-15 m, 3 dd, 1 dd juv. — Stn 93, 27°34.6'S, 144°20.6'W, intertidal, 1 lv, 7 dd, 1 dd juv.

Distribution: Throughout the entire tropical Indo-Pacific region.

Mitrella rorida (Reeve, 1859)
Plate 3Q, R

Columbella rorida Reeve, 1859

Material examined: Australes. Atelier RAPA 2002: stn 9, 27°37.3'S, 144°22.2'W, 3-24 m, 1 lv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 1 lv, 1 lv juv, 1 dd. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 1 lv. — Stn 93, 27°34.6'S, 144°20.6'W, 0-1 m, 1 lv. **Marquesas.** Atelier MARQUISES 1997: stn 18, 8°56.45'S, 139°33.50'W, 1 dd juv. — Stn 23, 8°55.90'S, 139°31.45'W, 1 dd. — Stn 24bis, 8°53.60'S, 139°37.00'W, 20-34 m, 1 dd; 1 dd juv. — Stn 32, 8°56.10'S, 139°32.70'W, 12-17 m, 1 dd. — Stn 36, 8°55.60'S, 139°32.17'W, intertidal, 2 dd juv. — MUSORSTOM 9: stn DR1244, 10°28'S, 138°42'W, 1015-1020 m, 1 dd. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 1 dd. — MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20 m, 1 dd juv.

Distribution: Throughout the entire tropical Indo-Pacific region.

Mitrella rurutu n. sp.

Plate 3S, T

Type material: Holotype (dd) MNHN IM-2000-33640 and 1 paratype (dd) MNHN IM-2000-33641.

Type locality: French Polynesia, Austral Islands, S. coast of Rurutu, 22°32'S, 151°20'W, 320-450 m [BENTHAUS: stn DW2009].

Material examined: Only known from the type material.

Distribution: French Polynesia, Austral Islands, S. of Rurutu.

Description: Shell size small for genus, adult size up to 3.3 mm; fusiform, elongate, slightly rounded whorls. Suture slightly impressed. Protoconch paucispiral, 1.5-1.6 whorls. Teleoconch with 3.5 whorls. No axial or spiral sculpture, except for the basal cords on the body whorl, which ventrally range to the upper end of the columella. Outer lip slightly thickened on the outside, bearing continuation of the spiral cords. Inside of the outer lip denticulate, with 6-7 denticles, the middle ones markedly stronger, the 2 posterior ones very small and close-set just below the posterior canal. Columellar callus thickened and slightly raised. Parietal callus weak. Columella with rim of 5-6 semi-merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls semi-translucent with an off-white base colour. Protoconch white with the apex beige. Aperture and columella white.

Holotype height 3.3 mm.

Remarks: At first sight, *Mitrella rurutu* n. sp. looks close to *M. moleculina* and *M. philia* with which it shares about the same size and shape of the aperture. *M. moleculina* has a multispiral protoconch, is bigger and has a typical colour pattern. *M. philia* shares a paucispiral protoconch, but this protoconch is clearly different. *M. philia* also has an incised suture, is slightly bigger and has a different colour pattern.

Etymology: Named after the type locality, Rurutu.

Mitrella bouteti n. sp.

Plate 3U, V

Type material: Holotype (lv) MNHN IM-2000-33642, 10 paratypes (lv) MNHN IM-2000-33643 (as listed below) and 2 paratypes coll. K. Monsecour

Type locality: French Polynesia, Austral Islands, Bank NE of Rapa Island, 27°25'S, 144°02'W, 115-120 m [BENTHAUS: stn DW1901].

Material examined: Australes. BENTHAUS: stn CP1906, 27°25'S, 144°02'W, 110-127 m, 5 dd, 3 dd juv. — Stn CP1909, 27°39'S, 144°16'W, 783-1000 m, 2 dd. — Stn CP1920, 27°04'S, 146°04'W, 120-203 m, 1 lv. — Stn DW1880, 27°55'S, 143°29.4'W, 90-94 m, 2 lv, 10 dd, 1 dd juv. — Stn DW1881, 27°55'S, 143°29'W, 112-121 m, 6 dd, 3 dd juv. — Stn DW1901, 27°25'S, 144°02'W, 115-120 m, 24 lv (Holotype MNHN IM-2000-33642, 10 paratypes MNHN IM-2000-33643 and 2 paratypes coll. K. Monsecour), 49 dd, 4 dd juv. — Stn DW1905, 27°25'S, 144°03'W, 120-140 m, 1 lv, 13 dd, 2 dd juv. — Stn DW1913, 27°02'S, 146°00'W, 120 m, 7 dd. — Stn DW1926, 24°38.2'S, 146°00.8'W, 50-90 m, 3 dd, 2 dd juv. — Stn DW1936, 24°39.7'S, 145°57.1'W, 80-100 m, 1 dd.

Distribution: French Polynesia, Austral Islands, 115-140 m.

Description: Shell size typical of genus, adult size up to 8.5 mm; fusiform, elongate, slightly shouldered. Suture slightly impressed. Protoconch paucispiral, 1.4-1.6 whorls with microscopic correlation. Teleoconch with 5.7-6.5 whorls. No axial or spiral sculpture, except for the basal cords on the body whorl, which ventrally range to the upper end of the columella. Outer lip thickened on the outside, bearing continuation of the spiral cords. Inside of the outer lip denticulate, with 8-9 denticles, the ones just below the posterior canal markedly stronger. Columellar callus thickened. Parietal callus weaker, but clearly visible. Columella with rim of 5-7 denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls can show a wide range of intraspecific colour varieties. Most specimens are semi-translucent whitish with an irregular pattern of pure white axial flames and a white-striped spiral band just above the suture continuing at midwhorl of the body whorl. In this white band, small brown blotches can occur. Other specimens also show brown flames in between this pattern and some specimens are uniformly brown. Protoconch white. Aperture and columella pink.

Holotype height 7.95 mm.

Operculum and radula not studied.

Remarks: *Mitrella bouteti* n. sp. at first sight looks like *Indomitrella conspersa*, with which it shares the shape and colour of the aperture. It differs in the lack of axial cords on the first teleoconch whorls (a feature typical of *Indomitrella*, so we therefore place this new species in *Mitrella*), the smaller size and the paucispiral protoconch.

Etymology: Named in honour of Mr. Michel Boutet, a passionate collector from French Polynesia. Genus

Genus *Mitropsis* Pease, 1868

Type species: *Mitropsis fusiformis* Pease, 1868 (= *Mitropsis paumotensis* (Tryon, 1883)) (type by monotypy)

Remarks: This genus was erected by Pease within the family **Mitridae** when he described *Mitropsis fusiformis*. With the description, he remarked: “We have no doubt that the above species is a Mitrid, although its sculpture and the distinct sinus on outer lip connect it with the Pleurotomidae. The callosity bordering the inner lip gives it a Columbelloid appearance.” The next mention of this species is by Tryon (1883), who tanked it as *Columbella* (*Mitropsis*) and created the nomen novum *Columbella* (*Mitropsis*) *paumotensis* to replace the now secondary homonym *Columbella fusiformis*. The genus *Mitropsis* is currently placed in synonymy of *Zafra* A. Adams, 1860 (e.g. Rosenberg, 2013). After carefully studying specimens of this species and a photograph of the lectotype (ANSP, Philadelphia), we conclude that this species has no affinities with the genus *Zafra* and the genus *Mitropsis* should be re-established as a valid genus. It differs from *Zafra* by its higher number of teleoconch whorls, narrower aperture, presence of axial sculpture (next to the spiral sculpture) and the incised suture. *Mitropsis* is very close to the Caribbean genus *Metulella* Gabb, 1873, with which it shares exactly the same spire shape with the spiral and axial sculpture and the incised suture. They differ in the shape of the aperture: *Mitropsis* has a much narrower aperture with strong dentition on both outer lip and columella and a clear posterior canal, while *Metulella* has a wider aperture with only weak dentition and without a clear posterior canal.

Mitropsis paumotensis (Tryon, 1883)

Plate 4A, B

Columbella (*Mitropsis*) *paumotensis* Tryon, 1883 [nom. nov. pro *Mitropsis fusiformis* Pease, 1868, by Tryon treated as a junior secondary homonym of *Columbella fusiformis* Hinds, 1844, and *C. fusiformis* Pease, 1868] *Mitropsis fusiformis* Pease, 1868

Material examined: Australes. TUHAA PAE 2013: stn AT02, 23°25.4'S, 149°27.4'W, 30 m, 1 dd. **Tuamotu.** TUAM'2011: stn THA01, 18°03.8'S, 140°59.5'W, 55 m, 1 dd. — Stn TTAK01, 14°27.7'S, 145°02.4'W, 50 m, 2 dd.

Distribution: Only known from French Polynesia.

Genus *Mokumea* Habe, 1991

Type species: *Mokumea divaricata* (Pilsbry, 1905) (by original designation)

Mokumea anceps n. sp.

Plate 4C, D

Type material: Holotype (lv) MNHN IM-2000-33644, 6 paratypes (lv) MNHN IM-2000-33645 (as listed below) and 2 paratypes coll. K. Monsecour

Type locality: French Polynesia, Austral Islands, Rapa Island, Pointe Mei, 27°38.2'S, 144°18.2'W, 6 m [Atelier RAPA 2002: stn 31].

PLATE 3

Mitrella alofa (Hedley, 1899); **A**, shell (13.7 mm), MUSORSTOM 9 CP1177, 108-112m; **B**, dorsal view.

Mitrella cupidata Lussi, 2009; **C**, shell (5.8 mm), MUSORSTOM 9 DW1288, 200-220m; **D**, dorsal view.

Mitrella gourgueti K. Monsecour & D. Monsecour, 2015; **E**, shell (8.4 mm), atelier RAPA 2002 stn 17, 9m; **F**, dorsal view.

Mitrella loyaltiensis (Hervier, 1900); **G**, shell (7 mm), TUAM'2011 stn THA01, 55m; **H**, dorsal view.

Mitrella moleculina (Duclos, 1840); **I**, shell (6.2 mm), MUSORSTOM 9 stn DW1204, 60-62m; **J**, dorsal view.

Mitrella moorea n. sp.; **K**, Holotype (5.1mm) MNHN-IM-2000-33637, French Polynesia, Society Islands, TARASOC stn DW3459, 485-560 m; **L**, dorsal view of holotype.

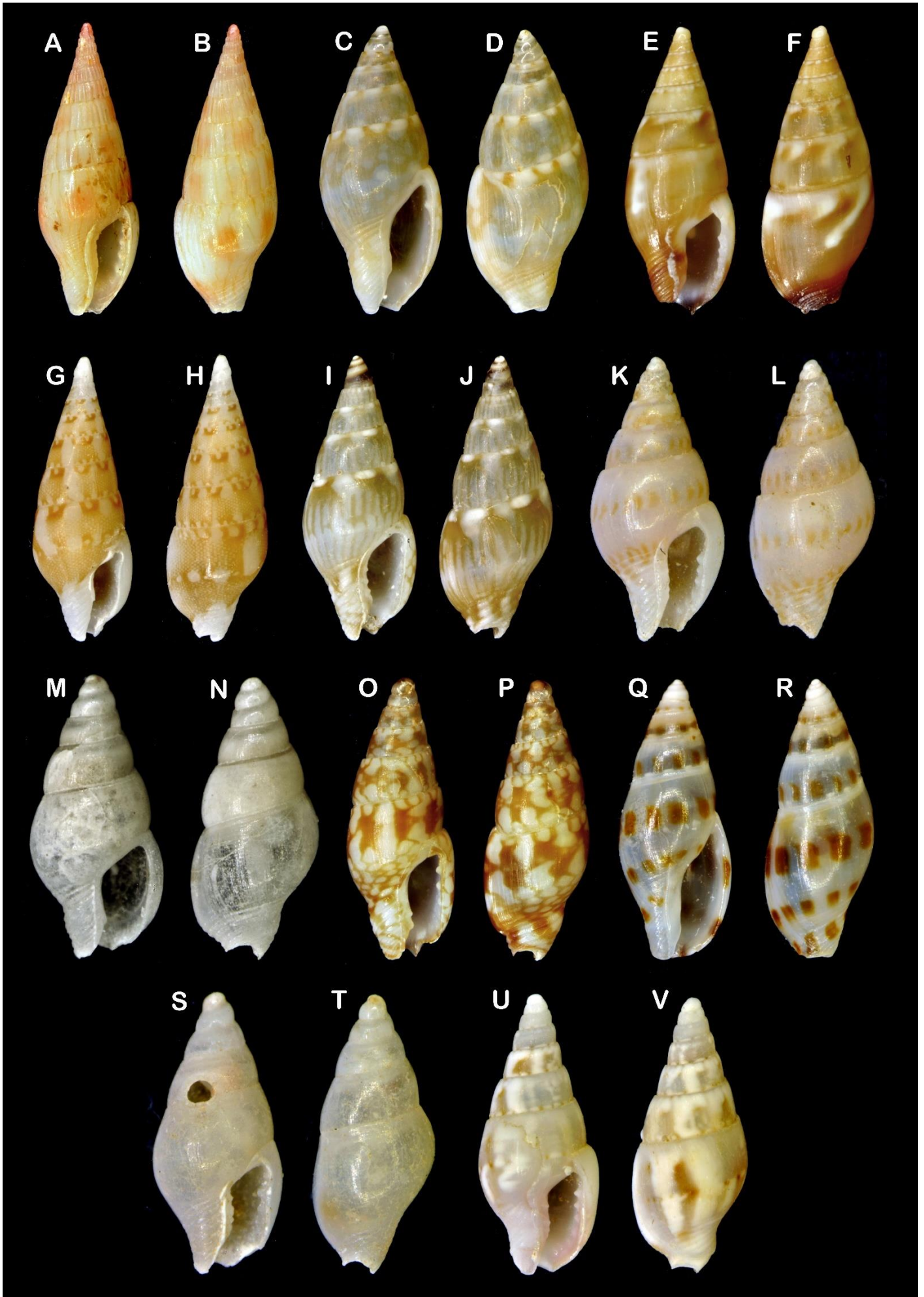
Mitrella nainai n. sp.; **M**, Holotype (3.2mm) MNHN IM-2000-33638, French Polynesia, Society Islands, TARASOC stn DW3434, 700-785 m; **N**, dorsal view of holotype.

Mitrella philia (Duclos, 1846); **O**, shell (7.2 mm), atelier RAPA 2002 stn 27, 6m; **P**, dorsal view.

Mitrella rorida (Reeve, 1859); **Q**, shell (6.1 mm), atelier RAPA 2002 stn 9, 3-24m; **R**, dorsal view.

Mitrella rurutu n. sp.; **S**, Holotype (3.3 mm) MNHN IM-2000-33640, French Polynesia, Austral Islands, BENTHAUS stn DW2009, 320-450 m; **T**, dorsal view of holotype.

Mitrella bouteti n. sp.; **U**, Holotype (7.95mm) MNHN IM-2000-33642, French Polynesia, Austral Islands, BENTHAUS stn DW1901, 115-120 m; **V**, dorsal view of holotype.



Material examined: Australes. BENTHAUS: stn CP1906, 27°25'S, 144°02'W, 110-127 m, 15 dd, 3 dd juv. — Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 8 dd, 3 dd juv. — Stn 5, 27°05.6'S, 144°18.5'W, 8 m, 3 dd, 1 dd juv. — Stn 6, 27°36.8'S, 144°16.7'W, 42 m, 1 dd, 1 dd juv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 4 dd, 2 dd juv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 3 dd. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 5 dd, 3 dd juv. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 2 dd. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 3 dd, 1 dd juv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 7 dd, 4 dd juv. — Stn 29, 27°34.3'S, 144°21.0'W, 4-2 m, 1 dd. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 9 lv (holotype MNHN IM-2000-33644, 6 paratypes MNHN IM-2000-33645 and 2 coll. K. Monsecour), 2 lv juv, 4 dd, 1 dd juv. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 1 dd. — Stn 34, 27°34.8'S, 144°19.0'W, 2-8 m, 1 lv. — Stn 38, 27°37.4'S, 144°18.4'W, 2 m, 1 dd. — Stn 44, 27°36.3'S, 144°18.2'W, 30 m, 1 dd. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 2 dd. — Stn 67, 27°34.7'S, 144°21.7'W, 3-4 m, 1 dd.

Distribution: So far, this species is only known from Rapa Island, live at 2-8 m.

Description: Shell of small size for the genus. adult size up to 2.8 mm; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral with 1.6-1.8 whorls with microscopic correlation. Transition to the teleoconch weak, but clearly visible. Teleoconch with 2.9-3.2 whorls. No axial or spiral sculpture, except for the basal cords. These basal cords ventrally range up to the posterior end of the columella. Outer lip not thickened on the outside, with the continuation of the basal cords. Inside of the outer lip thickened with a rim on the posterior side. Above this rim, a clear posterior canal is present. Columellar callus thickened and semi-detached, parietal callus clearly present. Columella without denticles or rim, just the basal cords shining through the callus. Siphonal canal short, open, slightly recurved.

Teleoconch whorls semi-translucent with an off-white to beige base colour. A clear white-spotted band is present just above the suture and continued at mid-whorl of the final whorl. Faint wavy axial brownish lines are also present on all teleoconch whorls. Protoconch brownish to pink with a white subsutural band. Aperture and columella white with the pattern shining through

Holotype height 2.6 mm.

Remarks: There are some morphs in this species that show a more pronounced pattern of axial wavy lines with just a narrow white band or even without this band. Except for these colour differences, there are no conchological differences between these morphs. These morphs are also found together at the same stations.

The placement in the genus *Mokumea* is tentative. It shares the typical brown axial lines, the smooth shell and the small size. The shell shape is slightly different, so molecular data might one day prove it to belong to another genus.

Etymology: 'anceps', meaning doubtful, thereby referring to the uncertain generic placement of the shell.

Genus *Pleurifera* Drivas & Jay, 1997

Type species: *Pleurifera suzannae* (Drivas & Jay, 1990)

Pleurifera lepida

K. Monsecour & D. Monsecour, 2016

Plate 4E, F

Material examined: Marquesas. MUSORSTOM 9: stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 3 dd. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 1 dd.

Distribution: Until now only known from the eastern coast of New Caledonia and the Loyalty Ridge. The specimens mentioned here mean a considerable range extension to the east, consistent with the multispiral protoconch.

Pleurifera suzannae (Drivas & Jay, 1990)

Plate 4G, H

Mitrella suzannae Drivas & Jay, 1990

Material examined: Australes. BENTHAUS: stn DW1932, 24°41'S, 146°02'W, 500-800 m, 1 dd juv. — Stn DW2020, 22°37'S, 152°49'W, 920-930 m, 3 dd. **Tuamotu.** TARASOC: stn DW3364, 16°07'S, 46°23'W, 550-561 m, 1 dd. — Stn DW3373, 15°41'S, 146°54'W, 507-607 m, 1 dd.

Distribution: Described from Reunion, but also known from New Caledonia (Monsecour & Monsecour, 2016), the specimens mentioned here mean an even larger range than known until now, also consistent with the multispiral protoconch.

Pleurifera flammulata n. sp.

Plate 4I, J

Type material: Holotype (dd) MNHN IM-2000-33646, 4 paratypes (dd) MNHN IM-2000-33647 (as listed below) and 1 paratype coll. K. Monsecour.

Type locality: French Polynesia, Marquesas, Fatu Hiva,

10°34'S, 138°42'W, 1150-1250 m [MUSORSTOM 9: stn DR1247].

Material examined: Marquesas. MUSORSTOM 9: stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 2 dd, 4 dd juv (Holotype MNHN IM-2000-33646, 4 paratypes MNHN IM-2000-33647 and 1 paratype coll. K. Monsecour).

Distribution: French Polynesia, Marquesas, Fatu Hiva.

Description: Shell of typical size for the genus, adult size up to 7.4 mm; fusiform, elongate. Suture slightly impressed. Whorls rounded. Protoconch typical of the genus: multispiral, 3-3.25 whorls with axial ribs. Transition to the teleoconch clearly visible. Teleoconch with 4.25-4.75 whorls. The first teleoconch whorl shows a very weak axial sculpture of close-set riblets and no spiral sculpture. On the second teleoconch whorl, this axial sculpture diminishes more and ultimately disappears. Spiral sculpture starts on the second teleoconch whorl. On this whorl, the first incised spiral lines are formed below the suture and along this whorl these spirals appear along the entire width of the whorl. All other whorls show this spiral sculpture of close-set incised lines. On the body whorl, these lines continue into the basal cords without interruption. The body whorl shows a thick axial rim just before the aperture, with the spiral sculpture continued. Outer lip slightly thickened on the outside; with the spiral sculpture. Inside of the outer lip not thickened and denticulate, with 8 denticles, upper ones markedly stronger. Above the denticles, a weak posterior canal is present. Columellar callus thickened. Parietal callus weak, almost absent. Columella with rim of merged denticles Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white with a pattern of broad, orangish brown axial lines. Protoconch white to cream. Aperture and columella white to off-white.

Holotype height 7.0 mm.

Operculum and radula not studied.

Remarks: This species is closest to *P. suzannae* with which it shares the spiral sculpture of close-set incisions. It differs in its smaller adult size, the pattern of axial flames and the more pronounced spiral incisions on the early teleoconch whorls.

Etymology: Named after one of its distinguishing features: the orangish brown 'flames' on the teleoconch whorls.

Genus *Pyrene* Röding, 1798

Type species: *Pyrene rhombiferum* Röding, 1798 = *Pyrene punctata* (Bruguière, 1789) (by monotypy)

Pyrene flava (Bruguière, 1789)

Plate 4K, L

Buccinum flavum Bruguière, 1789

Material examined: Marquesas. MUSORSTOM 9: stn CP1155, 7°58.9'S, 140°43.3'W, 80 m, 1 lv juv. — Stn CP1178, 8°46.1'S, 140°14.5'W, 74-75 m, 1 lv. — Stn CP1212, 9°49.9'S, 139°02.2'W, 50-80 m, 1 lv. — Stn CP1227, 9°44.2'S, 138°52.5'W, 84-85 m, 2 dd. — Stn DR1182, 8°45.6'S, 140°03.9'W, 90-120 m, 2 dd. — Stn DR1183, 8°45.5'S, 140°03.8'W, 86-120 m, 1 dd juv. — Stn DR 1200, 9°49.9'S, 139°08.9'W, 96-100 m, 1 dd juv. — Stn DW1152, 7°59'S, 140°44'W, 85-150 m, 1 lv. — Stn DW1154, 7°59'S, 140°44'W, 102 m, 1 lv, 1 lv juv. — Stn DW1170, 8°45'S, 140°13'W, 104-109 m, 1 lv, 2 dd. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 1 lv, 4 lv juv, 1 dd. — Stn DW1209, 09°50.2'S, 139°02.5'W, 85 m, 1 dd. — Stn DW1217, 9°44.5'S, 138°49.9'W, 85-87 m, 1 dd. — Stn DW1274, 7°55'S, 140°40'W, 100-120 m, 1 lv. — REMARQ: stn DR11, 8°45.8'S, 140°04.0'W, 82-88 m, 1 dd. **Society.** TARASOC: stn DW3482, 17°29'S, 141°45'W, 440 m, 1 dd juv. **Tuamotu.** SMCB: stn CAS278, 07°59'S, 140°48'W, 50 m, 1 lv. — Stn D82, 08°48.8'S, 140°05'W, 52 m, 1 lv. — Stn D51, 21°53'S, 139°03'W, 140 m, 1 lv juv.

Distribution: Throughout the entire tropical Indo-Pacific region.

Pyrene obtusa (G.B. Sowerby I, 1832)

Plate 4M, N

Columbella obtusa G.B. Sowerby I, 1832

Material examined: Australes. BENTHAUS: stn DW1955, 23°19'S, 149°26'W, 750-850 m, 1 dd juv. — Stn DW1996, 22°29'S, 151°22'W, 489-1050 m, 1 dd. — Stn DW2001, 22°27'S, 151°20'W, 200-550 m, 2 dd, 1 dd juv. — Stn DW2005, 22°28'S, 151°18'W, 680-1800 m, 1 dd. — Stn DW2021, 22°37'S, 152°49'W, 1200-1226 m, 1 dd juv. **Marquesas.** atelier MARQUISES 1999: stn 13, 8°57.16'S, 140°11.69'W, 10-15 m, 2 lv, 4 lv juv. **Society.** TARASOC: stn DW3425, 16°43'S, 151°03'W, 557 m, 1 dd juv.

Distribution: Throughout the southern part of the tropical Indo-Pacific region: from the Pacific Islands to northern Australia and southern Indonesia, the southern Islands of the Indian Ocean to the mainland of Africa,

where it is only found in Mozambique and the northeast of South Africa.

Pyrene rapaensis n. sp.
Plate 4O, P

Type material: Holotype (lv) MNHN IM-2000-33648, 9 paratypes (lv) MNHN IM-2000-33649 (as listed below) and 2 paratypes coll. K. Monsecour.

Type locality: French Polynesia, Austral Islands, Rapa Island, SW of Gotenaonao Point, 27°38.7'S, 144°19.2'W, 6 m [Atelier RAPA 2002: stn 27].

Material examined: Australes. BENTHAUS: stn DW1885, 27°52'S, 143°33'W, 700-800 m, 1 dd juv. — Atelier RAPA 2002: stn 3, 27°34'S, 144°19.7'W, 21 m, 1 lv. — Stn 4, 27°34.3'S, 144°22.1'W, 18 m, 1 dd juv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 1 lv juv, 1 dd juv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 1 dd, 1 dd juv. — Stn 14, 27°35.8'S, 144°13.6'W, 2 m, 1 lv, 1 lv juv, 1 dd. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 1 dd. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 1 dd juv. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 2 lv, 1 dd juv. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 1 dd. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 5 lv, 10 lv juv, 2 dd, 5 dd juv. — Stn 27, 27°38.7'S, 144°19.2'W, 6 m, 12 lv (Holotype MNHN IM-2000-33648, 9 paratypes MNHN IM-2000-33649 and 2 paratypes coll. K. Monsecour), 26 lv juv, 1 dd, 9 dd juv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 1 lv juv, 5 dd juv. — Stn 30, 27°38.2'S, 144°18.2'W, 16-20 m, 2 dd juv. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 5 dd juv. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 2 dd juv. — Stn 34, 27°34.8'S, 144°19.0'W, 2-8 m, 3 dd juv. — Stn 35, 27°34.8'S, 144°19.0'W, 2 m, 1 lv, 2 dd juv. — Stn 41, 27°36.3'S, 144°22.7'W, 5 m, 1 dd. — Stn 47, 27°36.7'S, 144°19.1'W, 33 m, 1 dd. — Stn 78, 27°36.6'S, 144°18.9'W, 0-1 m, 2 lv, 1 dd. — Stn 83, 27°37.3'S, 144°18.1'W, 0-1 m, 1 dd. — Stn 87, 27°36.4'S, 144°22.6'W, 0-1 m, 1 dd. — Stn 93, 27°34.6'S, 144°20.6'W, 0-1 m, 1 lv juv, 1 dd juv.

Distribution: French Polynesia, Austral Islands, Rapa Island, 0–21 m.

Description: Shell size typical of genus, adult size up to 21.0 mm; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral, 1.5-1.75 whorls with microscopic correlation. Teleoconch with 6.25-7.5 whorls. First 1.5-2 postnuclear whorls with a clear spiral subsutural rim, typical of the genus. Other teleoconch whorls without any axial or spiral sculpture, except for the basal cords on the body whorl, which ventrally range to just below the upper end of the columella. Outer lip hardly thickened on the outside, bearing continuation of

the spiral cords. Inside of the outer lip denticulate, with 8-9 denticles, middle ones markedly stronger. Columellar callus thickened. Parietal callus weak, barely visible. Columella with rim of five partially merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls with a pattern of off-white and brown axial lines. Some specimens have a subsutural spiral band with white blotches and another spiral band just below widwhorl of the body whorl. Protoconch pinkish purple. Aperture and columella pale purple.

Holotype height 15.2 mm.

Operculum and radula not studied.

Remarks: At first sight, this species looks very close to *P. flava*, with which it shares its general shape and purplish aperture. *P. flava* has a multispiral protoconch, much stronger basal cords and the outside of the outer lip has a clear rim.

P. obtusa, which is found live in other parts of Polynesia and sometimes dead in the Austral Islands, has a broader shell with a shorter spire, a smaller protoconch, stronger basal cords and a different colour pattern.

Etymology: Named after Rapa Island, the only place this species is known from so far.

Genus *Pyreneola* Iredale, 1918

Type species: *Pyreneola abyssicola* (Brazier, 1870) (by original designation)

Pyreneola martae n. sp.
Plate 4Q, R

Type material: Holotype (lv) MNHN IM-2000-33650, 7 paratypes (lv) MNHN IM-2000-33651 (as listed below) and 1 paratype coll. K. Monsecour.

Type locality: French Polynesia, Marquesas, Ua Huka, 8°56.80'S, 139°35.70'W, 10-15 m [Atelier MARQUISES 1997: stn 34].

Material examined: Marquesas. MUSORSTOM 9: stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 2 dd. — Stn DW1275, 7°53'S, 140°38'W, 627 m, 2 dd. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 4 dd, 2 dd juv. — Atelier MARQUISES 1997: stn 12, 8°56.00'S, 139°32.80'W, 2 dd. — Stn 18, 8°56.45'S, 139°33.50'W, 2 dd. — Stn 23, 8°55.90'S, 139°31.45'W, 0-1 m, 2 lv, 16 dd, 4 dd juv. — Stn 33, 8°55.60'S, 139°33.90'W, 15 m, 1 dd. — Stn 34, 8°56.80'S, 139°35.70'W, 10-15 m, 9 lv (Holotype MNHN IM-2000-33650, 7 paratypes MNHN

IM-2000-33651 and 1 paratype coll. K. Monsecour), 2 lv juv, 2 dd, 1 dd juv.

Distribution: This species has a wide Pacific distribution. Apart from the Marquesas, also known from New Caledonia (MNHN, unpublished data), Vanuatu (MNHN SANTO 2006 stns DB63, DB80 and ZB06) and Hawaii (figured in Severns, 2011: plate 111, fig. 1 as *Pyreneola* sp). Limited bathymetrical range from intertidal to 20-25 m.

Description: Shell size typical of the genus, adult size up to 4.2 mm; fusiform, elongate. Suture almost straight. Protoconch slightly embedded, consisting of 2.9-3.2 whorls with a sculpture of microscopic correlation. Transition to the teleoconch hardly visible. Teleoconch with 5-6 whorls without any axial or spiral sculpture, except for the basal cords on the body whorl, which ventrally range to just below the upper end of the columella. Outer lip not thickened on the outside, smooth. Inside of the outer lip thickened and denticulate, with 8-9 denticles, upper ones markedly stronger. Above the denticles, a clear posterior canal is present. Columellar callus thickened and semi-detached. Parietal callus weak, but clearly visible. Columella with rim of merged denticles. Further inside the aperture there is a clear incision between the columellar and parietal part. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white, semi-translucent with a pattern of small, pale brown blotches. Basal cords pale purple with wavy, white axial lines. Apart from this constant pattern, there is a variable pattern of white which can be limited to just some subsutural blotches and a band of blotches at midwhorl in some specimens, to specimens with a pattern of white axial lines. Protoconch white, not translucent. Aperture and columella white, pattern of shell shining through.

Holotype height 3.5 mm.

Radula not studied.

Remarks: This species can easily be distinguished from other *Pyreneola* by its unique pattern of pale brown blotches on an off-white background, a feature not seen in any other *Pyreneola*.

Etymology: Named in honour of Dr Marta deMaintenon, Marine Science at University of Hawaii at Hilo, for her enthusiastic study of Columbelloidea.

Pyreneola tuamotuensis n. sp.

Plate 4S, T

Type material: Holotype (dd) MNHN IM-2000-33652, 2 paratypes (dd) MNHN IM-2000-33653-54 and 1 paratype coll. K. Monsecour (as listed below).

Type locality: French Polynesia, Tuamotu, Niau, 16°10'S, 146°23'W, 490-560 m [TARASOC: stn DW3363].

Material examined: **Tuamotu.** TARASOC: stn DW3363, 16°10'S, 146°23'W, 490-560 m, 1 dd (Holotype MNHN IM-2000-33652). — Stn DW3373, 15°41'S, 146°54'W, 507-607 m, 1 dd (paratype MNHN IM-2000-33653). — Stn DW3374, 15°39'S, 146°54'W, 703-790 m, 1 dd (paratype coll. K. Monsecour). — Stn DW3401, 15°51'S, 148°18'W, 789-831 m, 1 dd (paratype MNHN IM-2000-33654).

Distribution: French Polynesia, Tuamotu Archipelago, around the islands of Niau, Kaukura and Makatea, 490-831 m.

Description: Shell size large for the genus, adult size up to 7.3 mm; fusiform, elongate, slender. Suture almost straight. Protoconch slightly embedded, about 3 whorls with microscopic correlation. Transition to the teleoconch hardly visible. Teleoconch with 7-7.5 whorls without any axial or spiral sculpture, except for the basal cords on the body whorl, which ventrally range to just above mid-columellar height. Outer lip not thickened on the outside, smooth. Inside of the outer lip thickened and denticulate, with 8-9 denticles, upper ones markedly stronger. Above the denticles, a clear posterior canal is present. Columellar callus thickened and semi-detached. Parietal callus weak, almost absent. Columella with rim of semi-merged denticles. Further inside the aperture, there is a clear incision between the columellar and parietal part. Siphonal canal short, open, slightly recurved.

Holotype height 6.6 mm.

All examined specimens are dead-found and are pure white, if any colouration was present it is not visible anymore.

Remarks: This species can easily be distinguished from other *Pyreneola* by its larger size and very slender shell.

Etymology: Named after the Tuamotu Islands, the only place this species is known from so far.

Genus *Retizafra* Hedley, 1913

Type species: *Retizafra gemmulifera* (Hedley, 1907) (by original designation)

Retizafra helenae n. sp.

Plate 5A, B

Type material: Holotype (dd) MNHN IM-2000-33655, 1 paratype MNHN IM-2000-33656 (dd) and 1 paratype coll. K. Monsecour.

Type locality: French Polynesia, Society, Maupiti, 16°32'S, 152°31'W, 445-645 m [TARASOC: stn DW3407].

Material examined: Only known from the types.

Distribution: French Polynesia, Society Islands, Maupiti.

Description: Shell size typical of the genus, adult size up to 4.5 mm; fusiform, elongate. Suture slightly impressed, whorls slightly rounded. Protoconch paucispiral, 1.3-1.5 whorls with microscopic correlation. Transition to the teleoconch visible. Teleoconch with 3.2-3.5 whorls. Axial sculpture of clear, close-set axial ribs on all whorls. Spiral sculpture of weak, close-set ribs on all whorls, running over the axial ribs. The basal cords on the body whorl are much stronger and wider-spaced than the rest of the spiral sculpture and range until the adapical end of the columella. Outer lip almost not thickened on the outside, with the continuation of the sculpture. Inside of the outer lip not thickened and with 5 weak denticles. Above the denticles, a weak posterior canal is present. Columellar callus thickened. Parietal callus weaker, but clearly present. Columella with a weak rim, without denticles. Siphonal canal short, open, slightly recurved.

The teleoconch whorls are off-white with a wide pale brown spiral band above the suture. On the body whorl there is a second brown spiral band over the basal cords. Protoconch off-white. Aperture and columella white.

Holotype height 4.1 mm.

Remarks: *Retizafra helenae* n. sp. is close to the New Caledonian *Retizafra brevilata* K. Monsecour & D. Monsecour, 2016, but differs in the higher number of weaker axial ribs and the lack of shouldered whorls.

Retizafra zingiber K. Monsecour & D. Monsecour, 2016 has more rounded whorls, a lower number of wider-spaced axial ribs and a different spiral sculpture.

Etymology: Named in honour of H  l  ne Boutet, French Polynesia.

Retizafra meyeri n. sp.

Plate 5C, D

Type material: Holotype (lv) MNHN IM-2000-33657, 7 paratypes (2 lv + 5 dd) MNHN IM-2000-33658 and 2 coll. K. Monsecour.

Type locality: French Polynesia, Society, Tahiti, 17°47'S, 149°23'W, 300-650 m [TARASOC: stn DW3484].

Material examined: Society. TARASOC: stn DW3484, 17°47'S, 149°23'W, 300-650 m, 3 lv, 3 lv juv, 7 dd, 2 dd juv.

Distribution: French Polynesia, Society, Tahiti.

PLATE 4

Mitropsis paumotensis (Tryon, 1883); **A**, shell (4.3 mm), TUAM'2011 TTAK01, 50m; **B**, dorsal view.

Mokumea anceps n. sp.; **C**, Holotype (2.6 mm) MNHN IM-2000-33644, French Polynesia, Austral Islands, Atelier RAPA 2002 stn 31, 6 m; **D**, dorsal view of holotype.

Pleurifera lepida K. Monsecour & D. Monsecour, 2016; **E**, shell (5 mm), MUSORSTOM 9 stn DR1247, 1150-1250m; **F**, dorsal view.

Pleurifera suzannae (Drivas & Jay, 1990); **G**, shell (8.5 mm), TARASOC stn 3364, 550-561m; **H**, dorsal view.

Pleurifera flammulata n. sp.; **I**, Holotype (7.0mm) MNHN IM-2000-33646, French Polynesia, Marquises, MUSORSTOM 9 stn DR1247, 1150-1250 m; **J**, dorsal view of holotype.

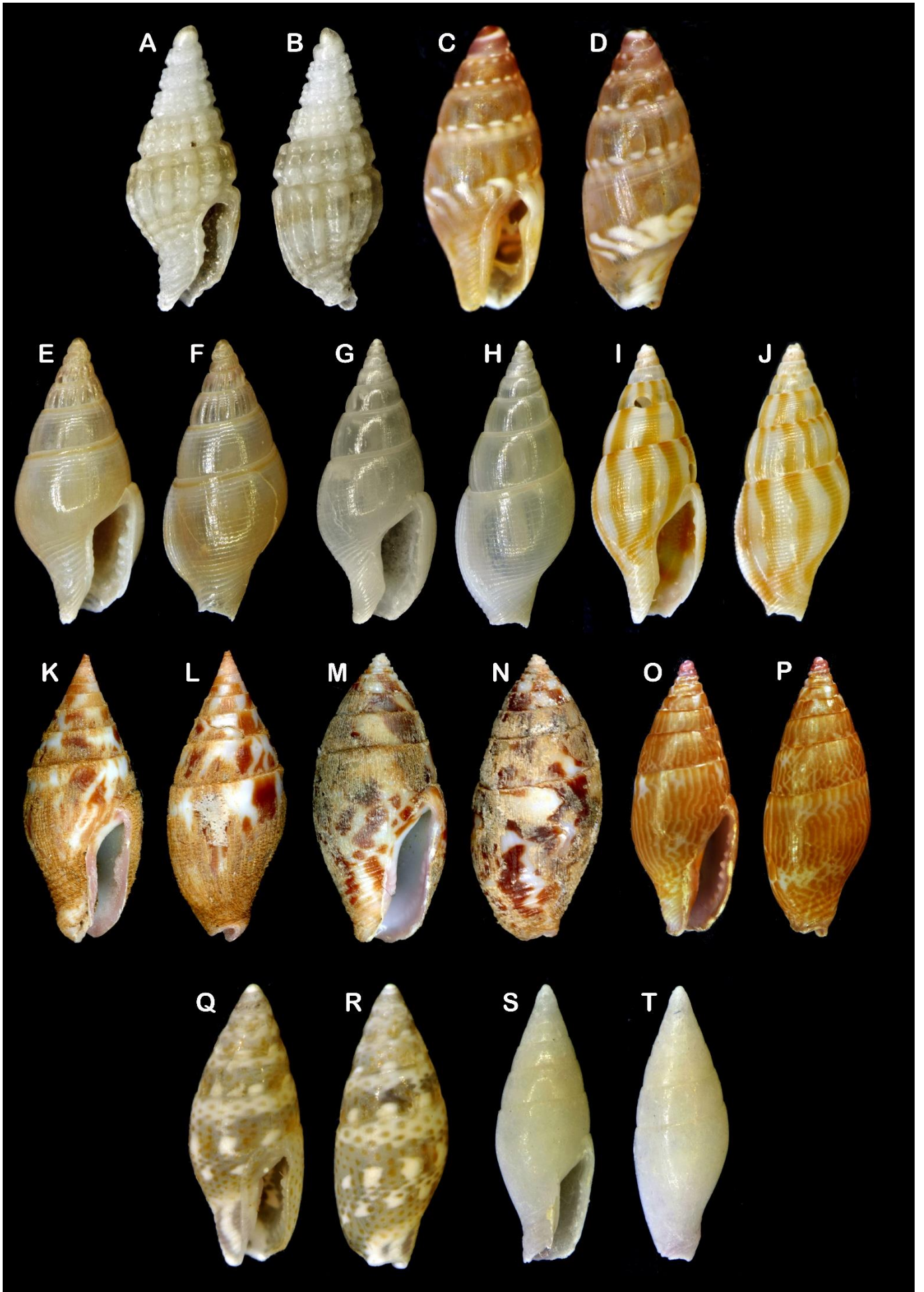
Pyrene flava (Brugui  re, 1789); **K**, shell (24 mm), MUSORSTOM 9 stn DW1152, 85-150m; **L**, dorsal view.

Pyrene obtusa (Sowerby, 1832); **M**, shell (13.1 mm), MARQUISES 1999 stn 13, 10-15m; **N**, dorsal view.

Pyrene rapaensis n. sp.; **O**, Holotype (15.2 mm) MNHN IM-2000-33648, French Polynesia, Austral Islands, Atelier RAPA 2002 stn 27, 6 m; **P**, dorsal view of holotype.

Pyreneola martae n. sp.; **Q**, Holotype (3.5 mm) MNHN IM-2000-33650, French Polynesia, Marquises, Atelier MARQUISES 1997 stn 34, 10-15 m; **R**, dorsal view of holotype.

Pyreneola tuamotuensis n. sp.; **S**, Holotype (6.6 mm) MNHN IM-2000-33652, French Polynesia, Tuamotus, TARASOC stn DW3363, 490-560 m; **T**, dorsal view of holotype.



Description: Shell size typical of the genus, adult size up to 4.7 mm; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral, 1.7-1.8 whorls. First 1.2 whorls with microscopic correlation, later 0.5-0.6 protoconch whorl with faint axial striae at midwhorl. Transition to the teleoconch visible. Teleoconch with 3.5-4.0 whorls. Axial sculpture of clear axial ribs on all whorls, about 18-20 on each whorl. Spiral sculpture missing on the first part of the first teleoconch whorl, all other teleoconch whorls with weak, close-set spiral ribs on all whorls, running over the axial ribs. The basal cords on the body whorl are much stronger and wider-spaced than the rest of the spiral sculpture and range until the adapical end of the columella. Outer lip thickened by some merged axial ribs on the outside, with the continuation of the sculpture. Inside of the outer lip not thickened and with 5-6 denticles. Above the denticles, a posterior canal is present. Columellar callus thickened. Parietal callus weaker, but clearly present. Columella with a weak rim with 4 denticles, in some specimens the abapical 2 are semi-merged. Siphonal canal short, open, slightly recurved.

The teleoconch whorls are brownish with irregularly shaped and placed whitish spots below the suture. Protoconch off-white to cream. Columella off-white to brownish, aperture white.

Holotype height 4.6 mm.

Remarks: *Retizafra meyeri* n. sp. is close to the New Caledonian *R. brevilata* K. Monsecour & D. Monsecour, 2016 with a very similar sculpture, but differs in the different protoconch and the lack of shouldered whorls. *R. helenae* n. sp. has more rounded whorls, a lower number of protoconch whorls and a different protoconch than *R. meyeri*.

Etymology: At the request of Philippe Bouchet, this new species is named after Jean-Yves Meyer, currently Head of the Délégation à la Recherche of the Government of French Polynesia, and a longtime facilitator of biodiversity research in French Polynesia.

Retizafra salvati n. sp.
Plate 5E, F

Type material: Holotype (dd) MNHN IM-2000-33659.

Type locality: French Polynesia, Australes, northern coast of Rurutu, 22°25'S, 151°22'W, 250-302 m [BENTHAUS: stn DW1998].

Material examined: Only known from the type.

Distribution: French Polynesia, Australes, Rurutu.

Description: Shell size typical of the genus; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral, about 1.3 whorls with microscopic correlation. Transition to the teleoconch visible. Teleoconch with 3.6 whorls. Axial sculpture of clear axial ribs on all whorls, about 17-18 on each whorl. Spiral sculpture missing on the first teleoconch whorls, last teleoconch whorl with weak, close-set spiral ribs, running over the axial ribs. Basal cords difficult to distinguish from spiral cords, and ranging until the adapical end of the columella. Outer lip thickened by some merged axial ribs on the outside; with the continuation of the sculpture. Inside of the outer lip not thickened and with 7 denticles. Above the denticles a posterior canal is present. Columellar callus thickened. Parietal callus weaker, but clearly present. Columella with a weak rim, no real dentition visible. Siphonal canal short, open, slightly recurved.

The teleoconch whorls are cream with irregularly shaped and placed whitish spots. Protoconch off-white. Columella and aperture white.

Holotype height 3.7 mm.

Remarks: *Retizafra salvati* n. sp. is close to *R. meyeri* n. sp., but differs in the smaller size, the different protoconch, higher number of denticles on the lip and the lack of clear columellar denticles.

Etymology: Named after Bernard Salvat, the author of "Coquillages de Polynésie", leader and facilitator of marine research and conservation in French Polynesia since the 1970s.

Retizafra tuamotuensis n. sp.
Plate 5G, H

Type material: Holotype (dd) MNHN IM-2000-33660.

Type locality: French Polynesia, Tuamotus, between Tikehau & Rangiroa, 15°05'S, 148°03'W, 976-997 m [TARASOC: stn DW3349].

Material examined: Only known from the type.

Distribution: French Polynesia, Tuamotus.

Description: Shell size small for the genus; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral, about 1.3 whorls with microscopic correlation. Transition to the teleoconch visible. Teleoconch with 3 whorls. Axial sculpture of clear axial ribs on all whorls, about 23 on each whorl. Spiral sculpture of weak, close-set spiral ribs on all whorls, not running over the axial ribs, but this is most likely due to erosion of the specimen. Basal cords difficult to distinguish from spiral cords and ranging until just below the adapical end of the

columella. Outer lip thickened on the outside with a clear rim, with the continuation of the basal cords, rest of the spiral sculpture absent or very weak on this rim. Inside of the outer lip not thickened and with 7 denticles. Above the denticles a posterior canal is present. Columellar callus thickened. Parietal callus weaker, but clearly present. Columella with a weak rim, no real dentition visible. Siphonal canal short, open, slightly recurved.

The teleoconch, protoconch, columella and aperture are white.

Holotype height 2.85 mm.

Remarks: *Retizafra tuamotuensis* n. sp. can easily be distinguished from other congeners by its smaller size, slightly rounded whorls, protoconch and high number of axial ribs.

Etymology: Named after the Tuamotu Islands where this species is found.

Genus *Seminella* Pease, 1868

Type species: *Seminella peasei* (Martens & Langkavel, 1871) (type by monotypy)

Seminella makemoensis

K. Monsecour & D. Monsecour, 2015
Plate 5I, J

Material examined: Australes. BENTHAUS: stn DW1927, 24°39'S, 146°02'W, 105-95 m, 1 dd. — Stn DW2013, 22°38.6'S, 152°49.7'W, 80-93 m, 1 dd. **Society.** TARASOC : stn DW3476, 17°29'S, 149°45'W, 435-490 m, 1 dd. **Tuamotu.** TUAM'2011: stn TAM01, 17°54.5'S, 140°52.5'W, 60 m, 4 dd. — Stn THA01, 18°03.8'S, 140°59.5'W, 55 m, 1 lv. — Stn TN01, 19°16.4'S, 138°47.6'W, 65 m, 1 dd. — Stn TTE01, 21°42.2'S, 140°40.9'W, 65 m, 1 lv. — Stn TTE03, 21°42.6'S, 140°34.0'W, 60 m, 3 dd.

Distribution: The type locality is Tuamotu Islands, Makemo Island. In the type material, there are also specimens from Rangiroa (Tuamotu Islands) and from Tahiti (Society Islands). The present material shows that the species has a more widespread distribution in Polynesia.

Seminella peasei (Martens & Langkavel, 1871)
Plate 5K, L

Columbella (Seminella) peasei Martens & Langkavel, 1871 [nom. nov. pro *Cythara varia* Pease, 1860, junior

secondary homonym of *Columbella varia* G.B. Sowerby I, 1832]

Material examined: Australes. — Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 1 lv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 1 dd. — Stn 43, 27°36.8'S, 144°18.3'W, 45 m, 1 dd. — TUHAA PAE 2013: stn ARU02, 22°26.5'S, 151°20.5'W, 19 m, 1 lv. — Stn ARU09, 22°26.7'S, 151°20.7'W, 1 m, 1 lv juv. — Stn AT02, 23°25.4'S, 149°27.4'W, 30 m, 1 lv. — Stn AT06, 23°25.5'S, 149°25.6'W, 20 m, 2 lv. **Marquesas.** Atelier MARQUISES 1997: stn 12, 8°56.00'S, 139°32.80'W, 8 dd, 1 dd juv. — Stn 18, 8°56.45'S, 139°33.50'W, 0-1 m, 5 dd. — Stn 22, 8°56.9'S, 139°34.23'W, 6-10 m, 1 dd. — Stn 23, 8°55.90'S, 139°31.45'W, 21 dd, 2 dd juv. — Stn 24bis, 8°53.60'S, 139°37.00'W, 25-34 m, 8 dd, 4 dd juv. — Stn 30, 8°56.10'S, 139°32.00'W, 20-30 m, 2 dd. — Stn 32, 8°56.10'S, 139°32.70'W, 12-17 m, 5 lv, 1 lv juv. — Stn 33, 8°55.60'S, 139°33.90'W, 15 m, 1 dd. — Stn 34, 8°56.80'S, 139°35.70'W, 10-15 m, 3 lv, 1 lv juv, 3 dd. — Stn 35, 8°55.90'S, 139°21.20'W, 25 m, 16 dd. — MUSORSTOM 9: stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 10 dd, 1 dd juv. — Stn DW1161, 8°55.6'S, 138°06.1'W, 30-37 m, 1 dd. — Stn DW1162, 8°56.2'S, 140°06.1'W, 45-64 m, 1 dd juv. — Stn DW1184, 8°49.3'S, 140°03.6'W, 23-30 m, 7 dd, 2 dd juv. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 3 dd. — Stn DW1218, 9°45'S, 138°51'W, 125-135 m, 1 dd juv. — Stn DW1275, 07°53'S, 140°38'W, 627 m, 9 dd. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 1 dd. — Atelier MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20m, 6 dd, 10 dd juv. — SMCB: stn D47, 09°54.3'S, 139°06.5'E, 48 m, 3 dd. — Stn D86, 10°29'S, 138°40'W, 49 m, 8 dd, 4 dd juv. **Tuamotu.** TUAM'2011: stn TAM01, 17°54.5'S, 140°52.5'W, 60 m, 6 dd. — Stn TFAK01, 16°04.1'S, 145°41.9'W, 50 m, 1 dd. — Stn TH02bis, 19°52.5'S, 145°00.4'W, 25 m, 1 dd. — Stn TH02ter, 19°52.5'S, 145°00.4'W, 15 m, 2 dd. — Stn TH03, 19°52.5'S, 145°00.4'W, 25 m, 1 dd. — Stn THA01, 18°03.8'S, 140°59.5'W, 55 m, 8 dd, 1 dd juv. — Stn TN01, 19°16.4'S, 138°47.6'W, 65 m, 1 dd. — Stn TTAK01, 14°27.7'S, 145°02.4'W, 50 m, 1 dd. — Stn TTAK04, 14°30.2'S, 145°04.4'W, 50 m, 2 dd. — Stn TTE03, 21°42.6'S, 140°34.0'W, 60 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Seminella virginea (Gould, 1860)
Plate 5M, N

Columbella virginea Gould, 1860

Material examined: Marquesas. MUSORSTOM 9: stn CP1159, 7°58'S, 140°44'W, 145 m, 2 dd. — Stn CP1177, 8°45'S, 140°15'W, 108-112 m, 10 lv, 1 lv juv,

3 dd, 1 dd juv. — Stn DR1181, 8°46'S, 140°03'W, 102-130 m, 3 lv, 8 dd, 1 dd juv. — Stn DR1200, 9°49.9'S, 139°08.9'W, 96-100 m, 25 lv, 87 dd, 27 dd juv. — Stn DR1244, 10°28'S, 138°42'W, 1015-1020 m, 2 dd. — Stn DR1245, 10°29'S, 138°36'W, 85-130 m, 4 lv, 1 lv juv, 10 dd, 3 dd juv. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 24 dd, 2 dd juv. — Stn DR1293, 8°54.3'S, 139°37.5'W, 50 m, 2 dd. — Stn DR1298, 8°49'S, 140°17'W, 305 m, 7 dd, 1 dd juv. — Stn DW1154, 7°59'S, 140°44'W, 102 m, 5 lv, 28 dd. — Stn DW 1162, 8°56.2'S, 140°06.1'W, 45-64 m, 3 dd. — Stn DW1184, 8°49.3'S, 140°03.6'W, 23-30 m, 1 dd juv. — Stn DW1186, 8°48.1'S, 140°03.5'W, 42-45 m, 1 dd. — Stn DW1203, 9°52.7'S, 139°02.2'W, 60-61 m, 2 dd. — Stn DW1204, 9°52.6'S, 139°03.2'W, 60-62 m, 3 lv. — Stn DW1208, 9°49'S, 139°10'W, 117 m, 55 dd. — Stn DW1210, 09°50.4'S, 139°00.5'W, 98-100 m, 24 dd, 3 dd juv. — Stn DW1218, 9°45'S, 138°51'W, 125-135 m, 10 lv, 1 lv juv, 262 dd, 27 dd juv. — Stn DW1234, 9°42'S, 139°06'W, 408 m, 4 dd. — Stn DW1242, 10°28'S, 138°41'W, 119-122 m, 9 dd, 2 dd juv. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 2 dd. — SMCB: stn D86, 10°29'S, 138°40'W, 49 m, 10 dd, 5 dd juv. **Society.** TARASOC : stn DW3476, 17°29'S, 149°45'W, 435-490 m, 1 dd. **Tuamotu.** TUAM'2011: stn TFAK01, 16°04.1'S, 145°41.9'W, 50 m, 1 dd. — Stn THA01, 18°03.8'S, 140°59.5'W, 55 m, 1 dd. — Stn TTAK01, 14°27.7'S, 145°02.4'W, 50 m, 1 dd. — Stn TTAK04, 14°30.2'S, 145°04.4'W, 50 m, 1 dd.

Distribution: Known from the Pacific Islands.

Seminella infirmisculpta n. sp.

Plate 5O, P

Type material: Holotype (lv) MNHN IM-2000-33661, 10 paratypes (lv) MNHN IM-2000-33662 (as listed below) and 2 paratypes coll. K. Monsecour

Type locality: French Polynesia, Tuamotus, Hereheretue atoll, 19°52.5'S, 145°00.4'W, 15 m [TUAM'2011: stn TH02ter].

Material examined: **Tuamotu.** TUAM'2011: stn TH02ter, 19°52.5'S, 145°00.4'W, 15 m, 13 dd (Holotype MNHN IM-2000-33661, 10 paratypes MNHN IM-2000-33662 and 2 paratypes coll. K. Monsecour). — Stn TN01, 19°16.4'S, 138°47.6'W, 65 m, 2 dd. — Stn TTE01, 21°42.2'S, 140°40.9'W, 65 m, 1 dd. — Stn TTE03, 21°42.6'S, 140°34.0'W, 60 m, 5 dd.

Distribution: So far, his species is only known from a few atolls in the Tuamotus: it is reported from Hereheretue atoll, Tematangi atoll and Nukutavake atoll. Found dead between 15-65 m.

Description: Shell size small for the genus, adult size up to 2 mm; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral with 1.7-1.9 whorls with microscopic correlation. Transition to the teleoconch clearly visible. Teleoconch with 2.8 whorls. Axial sculpture of weak, close-set axial ribs on all whorls; clearly visible on the early whorls, but diminishing in strength towards the aperture and almost invisible on last half of body whorl. Spiral sculpture very weak, except for the basal cords on the body whorl, which are well-formed. The basal cords posteriorly range to 4/5 of the apertural height. Outer lip not thickened on the outside, with the continuation of the basal cords. Inside of the outer lip thickened with a rim of merged denticles. Above this rim of denticles a clear posterior canal is present. Columellar callus and parietal callus thickened and semi-detached. Columella with minute rim of merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white, semi-translucent with a pattern of thin, wavy orangish brown lines. A subsutural band and a band at midwhorl are patternless. Protoconch white, not translucent. Aperture and columella white, pattern of shell shining through.

Holotype height 1.85 mm.

Remarks: This species can easily be distinguished from other *Seminella* by its very small size, paucispiral protoconch and very weak spiral sculpture.

Etymology: Adjectival epithet formed from the Latin adjectives *infirmus*, weak and *sculptus*, sculptured; referring to the very weak sculpture of this species.

Genus *Sulcomitrella* Kuroda, Habe & Oyama, 1971
Type species: *Sulcomitrella monodonta* (Habe, 1958) (by original designation)

Sulcomitrella hohonu n. sp.

Plate 5Q, R

Type material: Holotype (dd) MNHN IM-2000-33663.

Type locality: French Polynesia, Marquesas, Fatu Hiva, 10°34'S, 138°42'W, 1150-1250 m [MUSORSTOM 9: stn DR1247].

Material examined: Only known from the type.

Distribution: French Polynesia, Marquesas, Fatu Hiva.

Description: Shell of moderate size for the genus; fusiform, elongate, whorls slightly rounded. Suture slightly impressed. Protoconch paucispiral (partly broken

in the holotype) with 1.5-1.6 smooth whorls. Transition to the teleoconch clearly visible. Teleoconch with 5 whorls. Axial sculpture virtually absent, but with very weak growth lines. Spiral sculpture of numerous close-set, equally-spaced incised grooves on all whorls. On the abapical end of the body whorl these grooves go over in the basal cords, without any visible transition. Outer lip thickened on the outside with a clear axial rim, with the continuation of the basal cords. Inside of the outer lip not thickened and with 7 denticles. Columellar callus and parietal callus thickened. Columella with a rim of 6 small semi-merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls uniform off-white to cream. Protoconch semi-translucent white. Aperture and columella white.

Holotype height 10.0 mm.

Remarks: *Sulcomitrella hohonu* n. sp. is closest to *Sulcomitrella monodonta* (Habe, 1958). The former has more rounded whorls, a weak axial sculpture (missing in *S. monodonta*) and a different colouration.

Etymology: Hohonu meaning deep in in the Tahitian language, referring to the deep habitat it is found in.

***Sulcomitrella humerosa* n. sp.**
Plate 5S, T

Type material: Holotype (lv) MNHN IM-2000-33664, 10 paratypes (lv) MNHN IM-2000-33665 (as listed below) and 2 paratypes coll. K. Monsecour.

Type locality: French Polynesia, Marquesas, Hiva Oa Island, 9°51'S, 139°09'W, 275-300 m [MUSORSTOM 9: stn DW1201].

Material examined: Marquesas. MUSORSTOM 9: stn CP1229, 9°44'S, 138°51'W, 310-320 m, 2 dd. — Stn DR1194, 9°00'S, 139°59'W, 500 m, 4 dd. — Stn DR1197, 9°57'S, 140°02'W, 277-372 m, 1 lv, 1 dd. — Stn DR1198, 9°50'S, 139°09'W, 290-320 m, 4 lv, 1 dd juv. — Stn DR1219, 9°44'S, 138°51'W, 300-320 m, 1 lv, 2 dd, 4 dd juv. — Stn DR1231, 9°42'S, 139°05'W, 270-285 m, 24 lv, 5 lv juv, 6 dd, 1 dd juv. — Stn DR1232, 9°42'S, 139°06'W, 410-413 m, 1 lv, 2 dd. — Stn DR1292, 8°54.1'S, 139°37.8'W, 95-100 m, 1 dd. — Stn DR1299, 8°49'S, 140°17'W, 405-418 m, 1 dd. — Stn DW1146, 9°19'S, 140°06'W, 200 m, 4 dd, 2 dd juv. — Stn DW1172, 8°45'S, 140°15'W, 300-302 m, 3 lv, 2 dd. — Stn DW1201, 9°51'S, 139°09'W, 275-300 m, 94 lv (holotype MNHN IM-2000-33664, 10 paratypes MNHN IM-2000-33665 and 2 paratypes coll. K. Monsecour), 3 lv juv, 6 dd. — Stn DW1222, 9°44'S, 138°51'W, 340-352 m, 12 dd, 3 dd juv. — Stn DW1234, 9°42'S,

139°06'W, 408 m, 1 dd. — Stn DW1287, 7°54'S, 140°40'W, 163-245 m, 5 lv, 2 lv juv, 3 dd, 2 dd juv.

Distribution: French Polynesia, Marquesas, 163-413 m.

Description: Shell of moderate size for the genus, adult size up to 11.5 mm; fusiform, elongate. Suture slightly impressed, whorls shouldered. Protoconch multispiral with 2.8-3.1 whorls with microscopic correlation. Transition to the teleoconch clearly visible. Teleoconch with 4.6-5.4 whorls. No axial sculpture. Spiral sculpture of incised spiral grooves on all teleoconch whorls. On the first whorls there is only one groove just below the suture. After about 2 whorls the other incised spiral grooves become visible and are very clear on the penultimate and the body whorl, the subsutural groove deeper than the others. On the body whorl the basal cords are stronger than the other sculpture and range to about half the parietal callus. Outer lip slightly thickened on the outside, with the continuation of the spiral sculpture and the basal cords. Inside of the outer lip thickened and with 5-6 denticles. Columellar callus and parietal callus thickened. Columella with 4-5 semi-merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white, some specimens (like the holotype) show a pattern of faint brown blotches on the early teleoconch whorl, other specimens lack a pattern. Protoconch semi-translucent with a brown to purple apex. Aperture and columella white.

Holotype height 10.9 mm.

Remarks: *Sulcomitrella humerosa* n. sp. is closest to *Sulcomitrella alisiensis* K. Monsecour & D. Monsecour, 2016 from New Caledonia with which it shares its general appearance. *S. alisiensis* is slightly smaller, has a paucispiral protoconch and has a different spiral sculpture.

Etymology: Latin adjective *humerosa* meaning shouldered, a feature more prominent than in other congeners.

***Sulcomitrella leylae* n. sp.**
Plate 5U, V

Type material: Holotype (dd) MNHN IM-2000-33666, 2 paratypes (dd) MNHN IM-2000-33667-68 (as listed below).

Type locality: French Polynesia, Society Islands, Raiatea, 16°45'S, 151°24'W, 520-572 m [TARASOC: stn DW3457].

Material examined: Australes. BENTHAUS: stn DW1973, 23°24'S, 150°44'W, 200-350 m, 1 dd juv. —

Stn DW2009, 22°32'S, 151°20'W, 320-450 m, 1 dd juv.
Society. TARASOC: stn DW3457, 16°45'S, 151°24'W, 520-572 m, 1 dd (holotype MNHN IM-2000-33666). —
 Stn DW3504, 17°37'S, 149°38'W, 455-650 m, 1 dd
 (paratype MNHN IM-2000-33667) Tuamotu:
 TARASOC: stn DW3382, 15°40'S, 146°54'W, 285-286
 m, 1 dd (paratype MNHN IM-2000-33668).

Distribution: French Polynesia.

Description: Shell of large size for the genus, adult size up to 14 mm; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral with 1.7-1.8 whorls with microscopic correlation. Transition to the teleoconch clearly visible. Teleoconch with about 6 whorls. No axial sculpture. Spiral sculpture of 3 incised spiral grooves below the suture on the last 4 teleoconch whorls. On the first 2 whorls only two of these grooves are visible. The basal cords posteriorly reach until the adapical end of the aperture, strongest near the siphonal canal and losing strength upwards. Outer lip slightly thickened on the outside, with the continuation of the spiral sculpture and the basal cords. Inside of the outer lip thickened, with 6 denticles. Columellar callus and parietal callus thickened. Columella with 4 merged denticles. Siphonal canal short, open, slightly recurved.

Teleoconch whorls brownish, with a white subsutural spiral band. On the first teleoconch whorls darker brown axial lines are present. Protoconch off-white. Aperture and columella white.

Holotype height 14.0 mm.

Remarks: *Sulcomitrella leylae* n. sp. stands out from its congeners by its bigger size, more elongate shell and its typical colour pattern.

PLATE 5

Retizafra helenae n. sp.; **A**, Holotype (4.1 mm) MNHN IM-2000-33655, French Polynesia, Society, TARASOC stn DW3407, 445-645 m; **B**, dorsal view of holotype.

Retizafra meyeri n. sp.; **C**, Holotype (4.6 mm) MNHN IM-2000-33657, French Polynesia, Society, TARASOC stn DW3484, 300-650 m; **D**, dorsal view of holotype.

Retizafra salvati n. sp.; **E**, Holotype (3.7 mm) MNHN IM-2000-33659, French Polynesia, Australes, BENTHAUS stn DW1998, 250-302 m; **F**, dorsal view of holotype.

Retizafra tuamotuensis n. sp.; **G**, Holotype (2.85 mm) MNHN IM-2000-33660, French Polynesia, Tuamotus, TARASOC stn DW3349, 976-997 m; **H**, dorsal view of holotype.

Seminella makemoensis K. Monsecour & D. Monsecour, 2015; **I**, shell (2.6 mm), TUAM'2011 stn TN01, 65m; **J**, dorsal view.

Seminella peasei (Martens & Langkavel, 1871); **K**, shell (3.2 mm), TUAM'2011 stn TFAK01, 50m; **L**, dorsal view.

Seminella virginea (Gould, 1860); **M**, shell (3.2 mm), TUAM'2011 stn TTAK01, 50m; **N**, dorsal view.

Seminella infirmisculpta n. sp.; **O**, Holotype (1.85 mm) MNHN IM-2000-33661, French Polynesia, Tuamotus, TUAM'2011 stn TH02ter, 15 m; **P**, dorsal view of holotype.

Sulcomitrella hohonu n. sp.; **Q**, Holotype (10.0 mm) MNHN IM-2000-33663, French Polynesia, Marqueses, MUSORSTOM 9 stn DR1247, 1150-1250 m; **R**, dorsal view of holotype.

Sulcomitrella humerosa n. sp.; **S**, Holotype (10.9 mm) MNHN IM-2000-33664, French Polynesia, Marqueses, MUSORSTOM 9 stn DW1201, 275-300 m; **T**, dorsal view of holotype.

Sulcomitrella leylae n. sp.; **U**, Holotype (14.0 mm) MNHN IM-2000-33666, French Polynesia, Society Islands, TARASOC stn DW3457, 520-572 m; **V**, dorsal view of holotype.

Sulcomitrella macdonaldensis n. sp.; **W**, Holotype (10.5 mm) MNHN IM-2000-33669, French Polynesia, Austral Islands, BENTHAUS stn DW 1869, 240-440m; **X**, dorsal view of holotype.

Etymology: Named in honour of Leyla Letourneux, French Polynesia.

Sulcomitrella macdonaldensis n. sp.
 Plate 5W, X

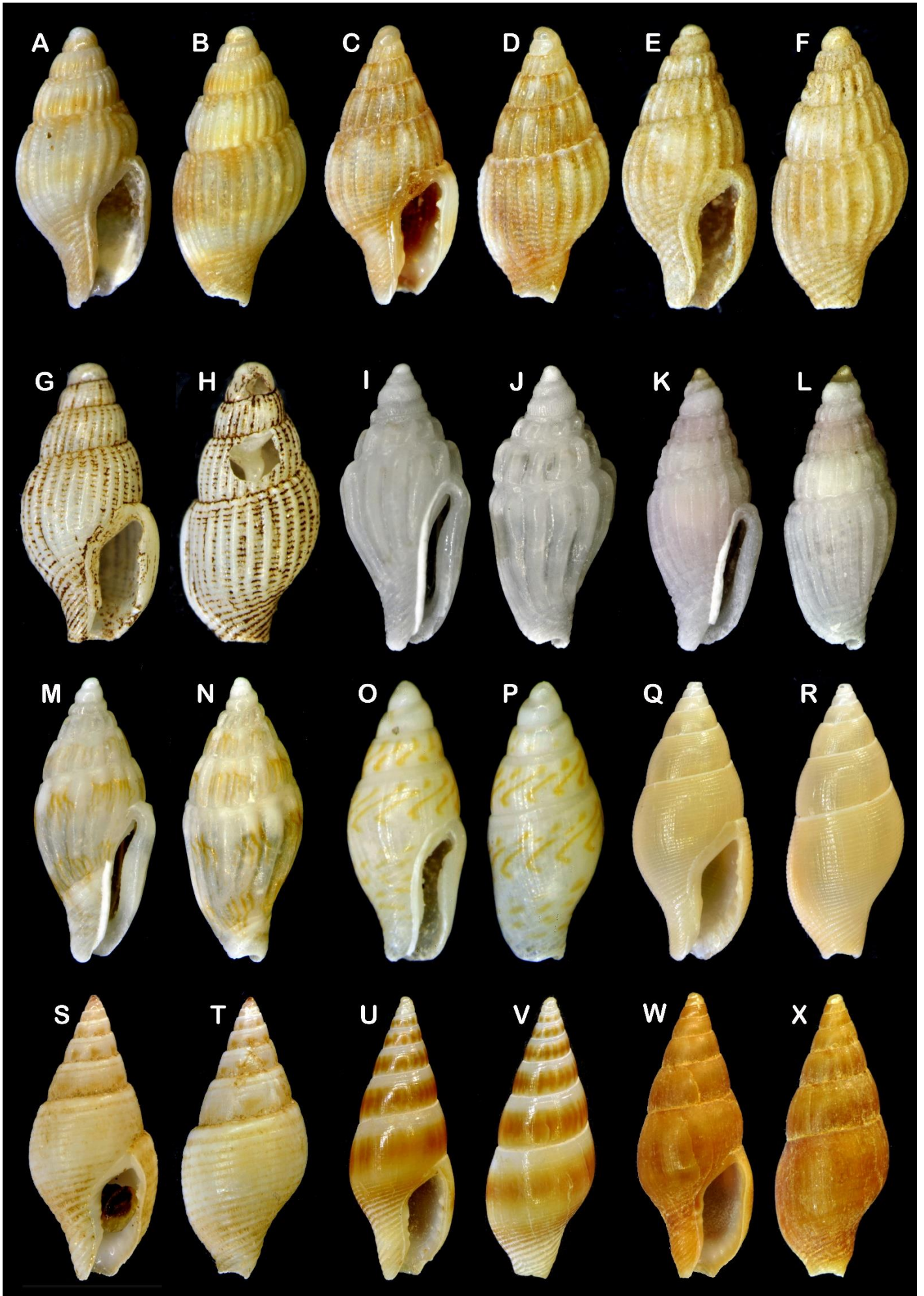
Type material: Holotype (dd) MNHN IM-2000-33669, 10 paratypes (dd) MNHN IM-2000-33670 and 2 paratypes coll K. Monsecour.

Type locality: French Polynesia, Austral Islands, MacDonald Bank, 28°58'S, 140°15'W, 240-440 m [BENTHAUS: stn DW1869].

Material examined: **Australes.** BENTHAUS: stn DW1869, 28°58'S, 140°15'W, 240-440 m, 17 dd (Holotype MNHN IM-2000-33669 and 10 paratypes MNHN IM-2000-33670 and 2 paratypes coll. K. Monsecour), 13 dd juv.

Distribution: Only known from the type locality.

Description: Shell of moderate size for the genus, adult size up to 12 mm; fusiform, elongate. Suture slightly impressed. Protoconch paucispiral with 1.6-1.8 smooth whorls. Transition to the teleoconch clearly visible. Teleoconch with 5.2-5.9 whorls. No axial sculpture. Spiral sculpture of 2 incised spiral grooves below the suture of the first 1-2 teleoconch whorls, absent on the further teleoconch whorls. On the first 2 whorls only two of these bands are visible. The basal cords posteriorly reach until just above the adapical end of the columella, upper 2-3 weak, others clearly present. Outer lip slightly thickened on the outside, with the continuation of the



basal cords. Inside of the outer lip not thickened, with 6-7 weak denticles. Columellar callus and parietal callus thickened. Columella with 3-5 denticles, adapical one much stronger than the others. Siphonal canal short, open, slightly recurved. Teleoconch whorls uniformly brown, with darker brown axial lines on the first teleoconch whorls of some specimens. Protoconch off-white to brown. Aperture and columella white with a brownish edge.

Holotype height 10.5 mm.

Remarks: *Sulcomitrella macdonaldensis* n. sp. shares the disappearing spiral grooves with *Sulcomitrella evanescens* K. Monsecour & D. Monsecour, 2016 and *Sulcomitrella imperfecta* K. Monsecour & D. Monsecour, 2016. *S. evanescens* has more bulbous whorls, a single spiral groove and a different pattern than *S. macdonaldensis*. *S. imperfecta* has shouldered whorls, a smaller protoconch, fewer teleoconch whorls, a different spiral sculpture and a different pattern.

Etymology: Named after MacDonald Bank, the type locality.

Genus *Zafra* A. Adams, 1860

Type species: *Zafra mitriformis* (A. Adams, 1860) (type by monotypy)

Zafra australensis

K. Monsecour & D. Monsecour, 2015

Plate 6A, B

Material examined: Australes. BENTHAUS: stn CP1906, 27°25'S, 144°02'W, 110-127 m, 20 dd, 2 dd juv. — Stn CP1918, 27°03'S, 146°04'W, 130-140 m, 4 lv, 16 lv juv. — Stn DW1917, 27°03.3'S, 146°03.8'W, 50-60 m, 1 dd. — Stn DW1927, 24°39'S, 146°01.6'W, 105-95 m, 1 dd. — Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 5 lv, 2 lv juv, 2 dd, 2 dd juv. — Stn 5, 27°05.6'S, 144°18.5'W, 8 m, 1 dd. — Stn 6, 27°36.8'S, 144°16.7'W, 42 m, 5 lv, 2 dd. — Stn 8, 27°36.5'S, 144°17.7'W, 52-57 m, 4 dd. — Stn 9, 27°37.3'S, 144°22.2'W, 3-24 m, 12 lv, 1 lv juv. — Stn 10, 27°34.8'S, 144°22.8'W, 16-18 m, 19 lv, 3 lv juv, 23 dd, 2 dd juv. — Stn 11, 27°37.2'S, 144°18.2'W, 2 m, 5 lv, 1 lv juv, 2 dd, 1 dd juv. — Stn 13, 27°36.1'S, 144°18.9'W, 2 m, 1 dd. — Stn 14, 27°35.8'S, 144°13.6'W, 2 m, 4 lv, 3 dd. — Stn 15, 27°38.1'S, 144°21.1'W, 20 m, 7 dd, 1 dd juv. — Stn 16, 27°36.3'S, 144°18.4'W, 5 m, 6 lv, 14 dd, 4 dd juv. — Stn 17, 27°34.6'S, 144°22.7'W, 9 m, 15 lv, 20 dd, 7 dd juv. — Stn 19, 27°37.7'S, 144°18.7'W, 3 m, 2 lv, 1 dd. — Stn 20, 27°35.4'S, 144°23.3'W, 5 m, 21 lv, 6 dd, 2 dd juv. — Stn 21, 27°34.2'S, 144°20.6'W, 5 m, 7 lv, 5 lv juv, 18 dd, 3 dd juv. — Stn 22, 27°33.9'S,

144°21.7'W, 18-22 m, 9 lv, 2 lv juv. — Stn 25, 27°38.4'S, 144°18.9'W, 3 m, 3 lv, 2 dd. — Stn 27, 27°38.7'S, 144°19.2'W, 6 m, 1 lv. — Stn 28, 27°38.4'S, 144°20.6'W, 30 m, 4 lv, 1 lv juv. — Stn 29, 27°34.3'S, 144°21.0'W, 4-2 m, 9 lv, 5 lv juv, 8 dd. — Stn 30, 27°38.2'S, 144°18.2'W, 16-20 m, 1 lv, 2 dd, 1 dd juv. — Stn 31, 27°38.2'S, 144°18.2'W, 6 m, 21 lv, 3 lv juv, 9 dd, 3 dd juv. — Stn 32, 27°35.0/35.8'S, 144°22.7/23.0'W, 15-20 m, 11 lv, 9 lv juv, 8 dd, 3 dd juv. — Stn 33, 27°34.8'S, 144°18.6'W, 30 m, 1 dd. — Stn 36, 27°33.5'S, 144°20.8'W, 27 m, 6 lv, 1 lv juv, 3 dd, 1 dd juv. — Stn 38, 27°37.4'S, 144°18.4'W, 2 m, 4 lv, 3 lv juv, 3 dd, 2 dd juv. — Stn 41, 27°36.3'S, 144°22.7'W, 5 m, 1 dd juv. — Stn 43, 27°36.8'S, 144°18.3'W, 45 m, 67 dd, 20 dd juv. — Stn 44, 27°36.3'S, 144°18.2'W, 30 m, 33 dd, 10 dd juv. — Stn 45, 27°36.7'S, 144°18.9'W, 35 m, 1 dd. — Stn 47, 27°36.7'S, 144°19.1'W, 33 m, 14 dd, 13 dd juv. — Stn 48, 27°34.1'S, 144°22.1'W, 36 m, 7 dd, 5 dd juv. — Stn 51, 27°36.3'S, 144°20.6'W, 1-1.5 m, 1 dd. — Stn 56, 27°36.7'S, 144°18.1'W, 25-30 m, 1 dd, 1 dd juv. — Stn 58, 27°35.8'S, 144°18.5'W, 2-3 m, 1 dd. — Stn 61, 27°37.0'S, 144°18.6'W, 10-15 m, 12 dd, 2 dd juv. — Stn 62, 27°36.6'S, 144°20.5'W, 20 m, 3 dd, 1 dd juv. — Stn 65, 27°38.6'S, 144°18.5'W, 2-3 m, 1 dd. — Stn 67, 27°34.7'S, 144°21.7'W, 3-4 m, 45 dd, 3 dd juv. — Stn 69, 27°37.8'S, 144°18.7'W, 3-4 m, 15 dd, 3 dd juv. — Stn 70, 27°36.6'S, 144°19.5'W, 15-20 m, 2 dd. — TUHAA PAE 2013: stn ARAI02, 23°49.7'S, 147°40'W, 16 m, 1 lv. — Stn ARAP11, 27°35.8'S, 144°23.1'W, 60 m, 1 dd. — Stn ARAP14, 27°33.6'S, 144°21.1'W, 17 m, 2 dd juv. — Stn ARU02, 22°26.5'S, 151°20.5'W, 19 m, 1 lv. — Stn ARU09, 22°26.7'S, 151°20.7'W, 1 m, 1 lv. — Stn AT02, 23°25.4'S, 149°27.4'W, 30 m, 3 lv.

Distribution: Only known from the Austral Islands.

Zafra hervieri (Pace, 1903)

Plate 6C, D

Columbella hervieri Pace, 1903

Material examined: Australes. Atelier RAPA 2002: stn 4, 27°34.3'S, 144°22.1'W, 18 m, 1 lv, 3 dd, 1 dd juv.

Distribution: Known from the central Indo-Pacific region. This record is a serious range extension eastwards.

Zafra ocellatula (Hervier, 1900)

Plate 6E, F

Columbella ocellatula Hervier, 1900

Material examined: Marquesas. Atelier MARQUISES

1997: stn 12, 8°56.00'S, 139°32.80'W, 1 dd, 1 dd juv. — Stn 24bis, 8°53.60'S, 139°37.00'W, 20-34 m, 20 dd. — Stn 30, 8°56.10'S, 139°32.00'W, 20-30 m, 1 dd juv. — MUSORSTOM 9: stn DR1200, 09°49.9'S, 139°08.9'W, 96-100 m, 3 dd, 3 dd juv. — Stn DR1245, 10°29'S, 138°36'W, 85-130 m, 1 dd. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 6 dd, 1 dd juv. — Stn DR1293, 8°54.3'S, 139°37.5'W, 50 m, 1 lv. — Stn DW1161, 8°55.6'S, 138°06.1'W, 30-37 m, 1 lv juv, 2 dd. — Stn DW1162, 8°56.2'S, 140°06.1'W, 45-64 m, 1 dd. — Stn DW1184, 8°49.3'S, 140°03.6'W, 23-30 m, 2 dd. — Stn DW1186, 8°48.1'S, 140°03.5'W, 42-45 m, 1 lv. — Stn DW1203, 9°52.7'S, 139°02.2'W, 60-61 m, 1 dd juv. — Stn DW1218, 9°45'S, 138°51'W, 125-135 m, 3 dd, 2 dd juv. — Stn DW1234, 09°42'S, 139°06'W, 408 m, 1 dd. — Stn DW1242, 10°28.1'S, 138°41.1'W, 119-122 m, 1 dd. — Stn DW1275, 07°53'S, 140°38'W, 627 m, 5 dd. — SMCB: stn D47, 09°54.3'S, 139°06.5'E, 48 m, 4 dd, 1 dd juv. — Stn D86, 10°29'S, 138°40'W, 49 m, 22 dd, 4 dd juv. **Society.** TARASOC : stn DW3420, 16°46'S, 151°04'W, 550 m, 1 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Zafra brunneastriata n. sp.

Plate 6G, H

Type material: Holotype (dd) MNHN IM-2000-33671, 4 paratypes (dd) MNHN IM-2000-33672-73 (as listed below).

Type locality: French Polynesia, Marquesas, Nuku Hiva, Taiohae bay, W. Mataupuna, 8°56.22'S, 140°05.68'W, 10-20 m [Atelier MARQUISES 1999: stn 02].

Material examined: **Marquises:** MUSORSTOM 9: stn CP1159, 7°58'S, 140°44'W, 145 m, 1 dd. — Stn DR1247, 10°34'S, 138°42'W, 1150-1250 m, 11 dd. — Stn DW1154, 7°59'S, 140°44'W, 102 m, 2 dd. — Stn DW1234, 09°42'S, 139°06'W, 408 m, 1 dd. — Stn DW1275, 07°53'S, 140°38'W, 627 m, 2 dd. — Stn DW1287, 07°54'S, 140°40'W, 163-245 m, 5 dd. — Atelier MARQUISES 1997: stn 23, 8°55.90'S, 139°31.45'W, 1 dd juv. — Atelier MARQUISES 1999: stn 02, 8°56.22'S, 140°05.68'W, 10-20 m, 4 dd (holotype MNHN IM-2000-33671, 3 paratypes MNHN IM-2000-33672), 9 dd juv. — Stn 15, 8°56.16'S, 140°05.60'W, 15-30 m, 1 dd (paratype MNHN IM-2000-33673). — SMCB: stn D86, 10°29'S, 138°40'W, 49 m, 8 dd (1 coll. K. Monsecour), 4 dd juv. **Tuamotu.** TARASOC : stn DW3389, 14°55'S, 148°15'W, 889 m, 2 dd. — TUAM'2011: stn TTAK04, 14°30.2'S, 145°04.4'W, 50 m, 1 dd.

Distribution: This species is found on several Pacific Islands. In Polynesia it is known from the Marquesas and

Tuamotu Islands. It has also been reported in New Caledonia (MNHN expeditions to Lifou, Koumac and Touho), Vanuatu (MNHN, Santo Marine Biodiversity Project) and on Hawaii (coll. K. Monsecour) at moderate depths.

Description: Shell of large size for the genus, adult size up to 4.2 mm; fusiform, elongate. Suture slightly impressed. Protoconch with 2.2-2.4 whorls with microscopic correlation on the first two whorls. The last 0.2-0.3 protoconch whorl shows a weak spiral carina at midwhorl. Transition to the teleoconch clearly visible. Teleoconch with 4.8-5.3 whorls. Axial sculpture of strong axial ribs on all whorls, ribs wider than the interspaces. 11-12 axial ribs on body whorl. Spiral sculpture consisting of one subsutural cord on all teleoconch whorls and the basal cords on the body whorl. The basal cords ventrally range to just below the upper edge of the aperture. Outer lip not thickened on the outside, with the continuation of the basal cords. Inside of the outer lip thickened with a rim on the posterior side. Above this rim a clear posterior canal is present. Columellar callus and parietal callus thickened and semi-detached. Columella without denticles or rim, just the basal cords shining through the callus. Siphonal canal short, open, slightly recurved.

Teleoconch whorls off-white to cream, semi-translucent with a pattern of thin orangish-brown axial lines. A white spiral band just above the suture and on the body whorl also at midwhorl is present. In most specimens this band is just clearly visible on the axial ribs, looking like a band of white spots. Protoconch white, not translucent. Aperture and columella white.

Holotype height 4.1 mm.

Remarks: *Zafra brunneastriata* n. sp. is closest to *Zafra ocellatula* with which it shares about the same size and high-spired shell shape. *Z. brunneastriata* can easily be distinguished by its whorls without shoulder, lower number of stronger axial ribs, the basal cords which range higher than in *Z. ocellatula* and the completely different pattern.

Etymology: Named after the clear colour pattern of brownish axial lines.

Zafra nukuhiva n. sp.

Plate 6I, J

Type material: Holotype (dd) MNHN IM-2000-33674, 6 paratypes (dd) MNHN IM-2000-33675-76 and 1 paratype coll. K. Monsecour (as listed below).

Type locality: French Polynesia, Marquesas, Nuku Hiva, 8°56.2'S, 140°06.1'W, 45-64 m [MUSORSTOM 9: stn

DW1162].

Material examined: Marquesas. MUSORSTOM 9: stn DW1161, 8°55.6'S, 138°06.1'W, 30-37 m, 5 dd (4 paratypes MNHN IM-2000-33675, 1 paratype coll K. Monsecour). — Stn DW1162, 8°56.2'S, 140°06.1'W, 45-64 m, 2 dd (holotype MNHN IM-2000-33674 and paratype MNHN IM-2000-33676), 1 dd juv.

Distribution: French Polynesia, Marquesas, Nuku Hiva.

Description: Shell of rather small size for the genus, adult size up to 2.8 mm; fusiform, elongate. Suture slightly impressed. Protoconch with 3-3.2 whorls with microscopic correlation. Transition to the teleoconch clearly visible. Teleoconch with 2.5-3.2 whorls. Axial sculpture of strong axial ribs on all whorls, ribs as wide as the interspaces. 16-17 axial ribs on penultimate whorl, strongly continuing on first part of the body whorl, but becoming obsolete on the last quarter of the body whorl. Spiral sculpture consisting of one subsutural cord on all teleoconch whorls and the basal cords on the body whorl. The basal cords ventrally range up to the adapical end of the columella. Outer lip slightly thickened on the outside, with the continuation of the basal cords. Inside of the outer lip thickened, with 5-6 denticles, diminishing in strength towards the siphonal canal. On the adapical side a posterior canal is present. Columellar callus thickened and slightly detached. Parietal callus weaker, but clearly present. Columella showing a denticle on every cord of the basal cords. Siphonal canal short, open, slightly recurved.

Teleoconch whorls brown, without any pattern. Protoconch orangish brown, semi-translucent. Aperture and columella with an orangish-brown edge, paler further inside.

Holotype height 2.4 mm.

Remarks: *Zafra nukuhiva* n. sp. can easily be distinguished from other *Zafra* by its small size, completely brown shell with orange protoconch and the axial ribs disappearing on the last quarter of the body whorl.

Etymology: Named after the type locality Nuku Hiva.

Zafra vercoi (Thiele, 1930)
Plate 6K, L

Material examined: Marquesas: MUSORSTOM 9: stn DW1184, 8°49.3'S, 140°03.6'W, 23-30 m, 3 dd, 1 dd juv. — Atelier MARQUISES 1997: stn 12, 8°56.00'S, 139°32.80'W, 2 dd. — Stn 18, 8°56.45'S, 139°33.50'W, 1 dd. — Stn 23, 8°55.90'S, 139°31.45'W, 5 dd. — Stn

24bis, 8°53.60'S, 139°37.00'W, 25-34 m, 5 dd. — SMCB: stn D86, 10°29'S, 138°40'W, 49 m, 2 dd.

Distribution: Throughout the entire tropical Indo-Pacific region.

Zafra semiclatriata Sleurs, 1987
Plate 6M, N

Material examined: Marquesas: MUSORSTOM 9: stn DW1184, 8°49.3'S, 140°03.6'W, 23-30 m, 1 dd.

Distribution: The type locality of this species is Suaru Bay, Madang Province, Papua New Guinea. In his description Sleurs also mentioned specimens from Lifou, New Caledonia, this locality can also be confirmed with specimens from the MNHN-expeditions (unpublished data). The current record shows that the species is more widespread throughout the Pacific Islands.

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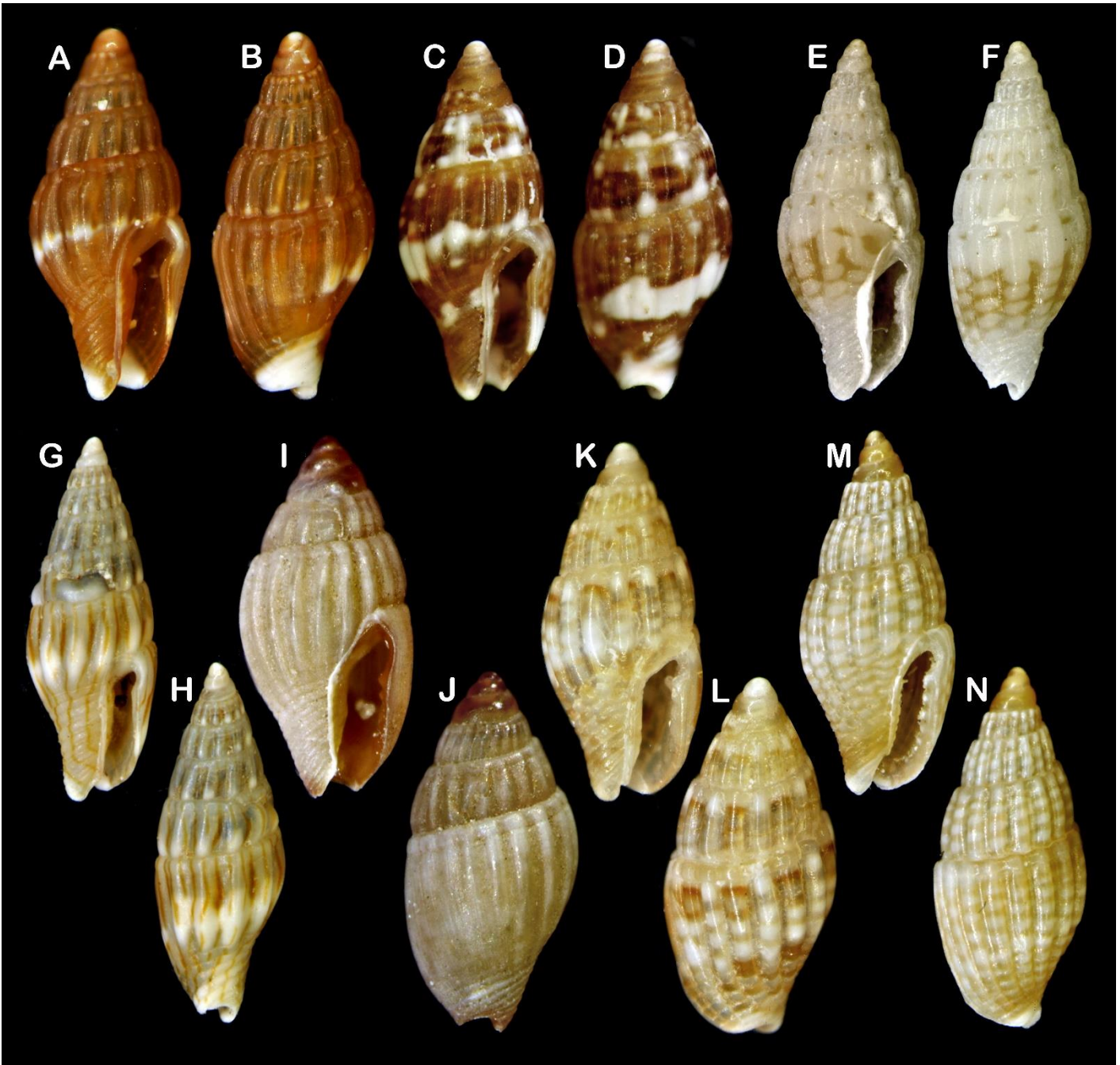


PLATE 6

- Zafra australensis* K. Monsecour & D. Monsecour, 2015; **A**, shell (2.7 mm), TUHAA PAE 2013 stn AT02, 30m; **B**, dorsal view.
Zafra hervieri (Pace, 1903); **C**, shell (2.4 mm), Atelier RAPA 2002 stn 4, 18 m; **D**, dorsal view.
Zafra ocellatula (Hervier, 1900); **E**, shell (4 mm), TARASOC stn DW3420, 550m; **F**, dorsal view.
Zafra brunneastrata n. sp.; **G**, Holotype (4.1 mm) MNHN IM-2000-33671, French Polynesia, Marquesas, MARQUISES 1999 stn 02, 10-20 m; **H**, dorsal view of holotype.
Zafra nukuhiva n. sp.; **I**, Holotype (2.4 mm) MNHN IM-2000-33674, French Polynesia, Marquesas, MUSORSTOM 9 stn DW1162, 45-64 m; **J**, dorsal view of holotype.
Zafra vercoi (Thiele, 1930); **K**, shell (2.6 mm), atelier MARQUISES 1997 stn 23; **L**, dorsal view.
Zafra semiclatrata Sleurs, 1987; **M**, shell (2.8 mm), MUSORSTOM 9 stn DW1184, 23-30 m; **N**, dorsal view.

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LIFE OF THE SOCIETY

KONINKLIJKE BELGISCHE VERENIGING VOOR CONCHYLOGIE

Het kunstmatig verstevigen van fragiele fossiele en recente schelpen, zee-egels en kreeftachtigen in de collectie.

Freddie VAN NIEULANDE en Marcel VERVOENEN

Iedere verzamelaar van fossielen kent zeker het probleem van de breekbaarheid van hun gekoesterde vondsten. Het is dan ook niet verwonderlijk dat ieder op zijn eigen manier zoekt naar methoden om deze voorwerpen te kunnen verstevigen.

Velen zijn al aan de gang gegaan met haarlak, vernis of lijmsorten die dan toch nog niet de verwachte resultaten opleverden.

Maar zelfs voor onervaren verzamelaars is het toch niet zo moeilijk om een zeer efficiënte, veilige en duurzame conserveringsmethode toe te passen.

De ingrediënten die hiervoor nodig zijn:

- Een kleurloze lijmsort die oplosbaar is in Aceton.
- Aceton verkrijgbaar bij drogist of apotheek.

Niet alle willekeurige lijmsorten zijn hiervoor geschikt, of ze lossen te moeilijk op waardoor er kleverige draden kunnen ontstaan of ze laten een blijvend kleverig oppervlak achter.

Goede lijmsorten zijn onder andere de doorzichtige kleurloze "alles lijn" (colle tout), bijvoorbeeld:

- VELPON, alles lijn (colle tout) in tube of in flacon van 25 ml, niet meer in literflacon verkrijgbaar.
- UHU, alles lijn (colle universelle) in tube en in 75 ml. Flacon.
- BISON, alles lijn in flacon van 25 ml.
- COLLALL, lijnt (praktisch) alles in 1 liter flacon, wellicht ook in tube verkrijgbaar.
Bedrijf COLLALL V.O.F. PB 123, 9500 AC Stadskanaal (NL.)
- Er zijn ook korrels (Paraloid - cellulose acetat? , via de groothandel?), die opgelost kunnen worden in aceton, hier hebben we tot nu toe nog geen ervaring mee, wellicht weet iemand meer om ons hier mee verder te helpen.

- Uitgesloten zijn fotolijmen, knutsellijmen, vernis, blanke lak enz.
- Voor Aceton, alle merken zijn bruikbaar als ze glashelder zijn.
- Deze lijmsorten zijn niet toxisch of hinderlijk, maar omdat ze gemengd worden met het zeer vluchtige aceton wat bij inademing wel schade kan veroorzaken moet men steeds werken in een goed geventileerde ruimte. Dit geldt ook voor het drogen en uitharden van de behandelde objecten.
- **Waarschuwing: aceton is zeer vluchtig en de dampen brandbaar explosief, zorg er altijd voor dat er geen vuur of vonkverwekkers in de buurt zijn (geiser, sigaret o.i.d.)**
- Zelfs een haardroger kan gevaar opleveren bij het snel laten drogen van de voorwerpen, omdat ook hier een gloeispiraal inzit. Wil je toch een föhn gebruiken, zet dan op de blaaszijde de slang van de stofzuiger, dit levert door de grotere afstand tot de hittebron minder gevaar op.

Voor het mengsel kan een lege jampot met een goed afsluitbaar deksel (metaal) dienst doen, we noemen dit mengsel gemakshalve "placeton"

Gebruik voor het aanbrengen van de placeton een penseel waarvan de haren of eventueel op de steel aangebrachte verf niet oplossen in aceton. Probeer anders eerst met een schuurpapier de verf er compleet af te schuren. Probeer het resultaat eerst uit in een beetje aceton.

Het beste is een kwast of penseel met ongeverfde blankhouten steel en de haren ingeklemd in een metalen manchet. Maak de lengte van de steel zodanig dat deze iets onder de rand van het deksel komt als hij in de jampot staat.

Bereiding: De jampot tot maximaal de helft vullen met aceton, vervolgens de lijm toevoegen met de verhouding van 1/3 lijm en 2/3 aceton. Nu met het penseel het geheel goed omroeren en binnen enkele seconden is de placeton al gereed voor het gebruik. Het produkt is glashelder en geeft nagenoeg geen kleurverandering aan het te behandelen object.

Verwerking: Bij voorkeur dient het te behandelen object stofvrij en droog te zijn en de ruimte waar men werkt mag geen te hoge vochtigheidsgraad hebben maar toch voldoende ventilatiemogelijkheden hebben (schuur, garage).

Het nu bereide placeton kan met het penseel aangebracht worden op het te verstevigen object. Reeds na enkele minuten zijn kleine oppervlakten reeds stofdroog, omdat de aceton snel verdampt en de lijm een minuscule film achterlaat en tot in de fijnste poriën doorgedrongen begint uit te harden.

Leg onder de te behandelen objecten steeds oude kranten neer om gemorste of afvallende druppels op te vangen, ook kun je de voorwerpen hierop laten drogen en uitharden.

Kleine objecten kunnen echter vastkleven aan het papier, persoonlijk gebruik ik hiervoor een vel gerimpelde aluminiumfolie, wat goede resultaten geeft. Als een object toch vast is gekleefd, ruk het dan niet zomaar los met de kans op breuk, maar laat er een druppeltje pure aceton op los en je kunt het zo weer oppakken.

Kleine objecten kunnen we ook in zijn geheel onderdompelen en zich laten volzuigen in het mengsel, gebruik hiervoor een pincet, of als ze heel breekbaar zijn een oude theezeef, u kent ze wel van die met een metalen handgreep en een halfrond zeefkorfje.

Ook hier geldt geen kunststof en geen verf die in aceton kan oplossen!

Als we hiervan de handgreep haaks naar boven ombuigen heb je zo een handig hulpstuk om meerdere kleine objecten onder te dompelen, steek door het oog van het handvat een stokje dan kun je het zo even laten hangen.

Als er geen luchtbellens meer bovenkomen is het proces klaar en kun je de voorwerpen uitspreiden om te laten drogen.

Nog meer toepassingen: Bij recente schelpen zoals *Arctica*, *Lutraria*, *Ensis* maar ook zoetwaterbivalvia met een periostracum (het dunne vliesje aan de buitenkant) wat normaal na enige tijd bewaren gaat schilferen of afbladderen kan hiermee voorkomen worden. Ook voor landslakken met een harig periostracum is dit de oplossing, ook zeer dunne schelpen krijgen hierdoor meer stevigheid. Het resultaat kan zelfs zijn dat die bepaalde kleuren langer behouden blijven.

Bij recente zee-egels kennen we het probleem van het loslaten van de stekels, besprenkel de zee-egel met een pipet flesje of een injectienaald, of leg ze enige tijd in een

schaaltje met de placeton en u zult ze veel beter kunnen behandelen nadien, zonder dat de stekels er afvallen.

Bij krabben en kreeften zijn vooral de gelede pootjes, de oogsteeltjes en de voelsprietten altijd het meest breekbare punt, dezelfde behandeling al hiervoor genoemd brengt voldoende uitkomst.

Let op: alle uit zee komende objecten dienen eerst ontzilt te worden! Daartoe moeten we deze eerst in zoetwater leggen, bij recente schelpen minsten twee dagen en tussendoor dient het water een aantal malen verversst te worden.

Intermezzo: Bij fossiele schelpen uit zee kan dit proces zelfs langer duren omdat zij door hun porositeit meer zout hebben opgenomen. Bij zoogdierbotten kan dit proces van ontziltelen zelf tot meer dan een maand oplopen waarbij het water minstens eenmaal per dag verversst moet worden. Daarna eerst langzaam laten drogen; leggen in krantensnippers die regelmatig vernieuwd worden kan het drogen versnellen. Gebruik in geen geval verwarmingsbronnen, anders gaan de botten scheuren en barsten.

Daarna kan men de zoogdierresten ook op dezelfde wijze behandelen als hiervoor omschreven, beter is echter om deze langdurig onder te dompelen in een bak gevuld met placeton, waarvan de mengverhouding is 1 deel lijm op 5 delen aceton met het doel om ook het binnenste poreuze deel van de botten met dit mengsel te doordringen.

Er is ook een middel in de handel onder de naam Archeoderm, maar dit is erg duur en moet verdund worden met thinner waardoor er een nog groter risico bestaat voor de gezondheid. Gebruik dit produkt bij voorkeur alleen in de buitenlucht! Archeoderm verspreid een zeer onaangename reuk die wel enkele weken tot een maand gedurende het lange uithardingsproces aan het behandelde voorwerp blijft hangen

Ook wordt er tegenwoordig wel gebruik gemaakt van in water oplosbare houtlijm, nadeel is echter dat dit niet zo diep in de poriën dringt dan voornoemde middelen en een beetje wazige zweem achterlaat, wat direct na de behandeling wel met schoon water kan worden afgewassen.

Anderen zweren weer bij een mengsel van gelijke delen ruwe en gekookte lijnolie; dit moet men dan weer verdunnen met gelijke delen terpentijn om het te kunnen gebruiken. Nadeel is dat op langere termijn de zo behandelde voorwerpen bruin zullen verkleuren.

Nazorg van het mengsel: Doordat de aceton snel verdampt gebeurt dit natuurlijk ook al in de jampot, daarom moeten we de dikte van het mengsel regelmatig in de gaten houden. Na enige tijd zul je merken dat de verhouding lijm met aceton niet meer de juiste is, voorwerpen gaan dan meer glimmen door het gebruik

van teveel lijm. Je kunt heel eenvoudig door wat aceton toe te voegen en goed te roeren het mengsel weer de juiste viscositeit te geven.

Objecten die toch teveel lijm hebben meegekregen kun je eenvoudig met een kwast gedoopt in zuivere aceton weer schoonwassen tot het juiste resultaat na het opdrogen is bereikt.

Ook behandelde preparaten die gemaakt zijn in vochtige omstandigheden gedurende veldwerk zullen er na het drogen niet zo fraai uitzien en zijn meestal wit uitgeslagen. Schoonwassen met zuivere aceton biedt uitkomst, maak hierbij steeds kleine stukjes tegelijk schoon en laat het tussendoor uitharden, zo voorkom je dat de hele boel uiteenvalt.

Grotere zandige objecten verharden: Het uitprepareren en verharden van fossiele levensgemeenschappen in zandige afzettingen, de zogenoemde zeebodemfauna.

Een uiteenzetting hierover en het resultaat ervan is reeds eerder omschreven in de publikatie van;

Vervoenen 1995: TAPHONOMY OF SOME CENOZOIC SEABEDS FROM THE FLEMISCH REGION – Professional paper 1994/5-N.272, uitgave: Geologische Dienst België, Jennerstraat 13, 1040 Brussel.

Werkwijze: Een als compleet blok meegenomen sediment wordt na het drogen voorzichtig uitgeprepareerd waarbij de fossieleninhoud stukje bij beetje wordt vrijgelegd, waarbij een deel steeds in het omliggende sediment ingebed blijft. Telkens word nu dat gedeelte met placeton behandeld en gefixeerd. Dit gaat zo door tot de gehele fossielen horizon is vrijgelegd en gefixeerd.

Als het geheel naar wens is vrijgelegd kan men voorzichtig de hele bovenlaag deel voor deel met placeton laten volzuigen. Pas op bij een doordrenking van de totale oppervlakte ineens, het kan zijn dat de zijkanten van het blok daardoor gaan inzakken. Dit kan alleen als het blok nog stevig is ingetaped, waardoor inzakken wordt voorkomen. Anders is het beter het oppervlak in stroken rijkelijk van placeton te voorzien en deze dan weer eerst te laten drogen. Het uiteindelijke resultaat is dan een verhard sedimentpakket van enkele centimeters dikte. Als dit na enkele dagen voldoende is uitgehard, kun je voorzichtig deze verharde schijf rondom het blok lossteken met mes of spatel tot de plaat in zijn geheel van het blok loskomt. Nu komt het kritieke moment, het omkeren van de plaat om de onderkant te verstevigen. Enkele mogelijkheden worden hier apart behandeld.

- Tip; Marcel Vervoenen, voorzichtig wordt de plaat opgelicht en verticaal tegen de bodem van een zeer platte houten kist (fruitkist) gezet met de reeds geprepareerde zijde naar de bodem van de kist gekeerd. Daarna het geheel voorzichtig kantelen tot de verharde plaat nu in de kist horizontaal ligt met de


ongeprepareerde zijde nu aan de bovenkant. Het verharden kan ook met placeton, maar alleen steeds met kleine oppervlakken tegelijk. Omdat als er teveel placeton in het blok zuigt het sediment weer slap word, smelt als het ware en ineens stort. Werk steeds in gedeelten of in stroken.

- Tip; Eric Wille, de onderzijde kan ook verhard worden met een (witte) houtlijm op waterbasis. Maak een mengsel van ½ deel lijm en ½ deel water en je brengt dit in ruime hoeveelheid aan op de onderzijde van het blok. Dit geeft geen nadelige reacties met het reeds door placeton verharde deel. Het drogen en uitharden kan een tot enkele dagen duren maar is daarna geheel bikkelhard.
- Tip: Freddie van Nieulande, als je besluit het blok om te keren, dan kun je het blok rondom met brede plastic tape voorzichtig afplakken, zodanig dat er rondom de onderzijde een verhoogde plakrand van een á twee centimeter ontstaat. Stop kieren in de rand dicht met wat vochtig zand, zodat er een dicht bakje boven de onderzijde ontstaat. Nu mengen we wat vormgips met water, voldoende om het bakje te vullen met een laag van minstens een centimeter dik. Giet het mengsel nu over de onderkant tot alles is afgedekt. Na enkele uren is het geheel al gehard en hanteerbaar. Het volgende is ook mogelijk. Maak een bakje met een bodem van triplex o.i.d. met zijkanten van met plakband vastgezette stroken triplex, ongeveer twee a drie centimeter hoog, het blok moet hierin kunnen passen met rondom ruim een centimeter ruimte. Leg onder in dit bakje een paar kleine stukjes hout van acht tot tien millimeter dik. Het is de bedoeling dat het geprepareerde blok daar straks met de onderkant op komt te rusten. Voordeel is dat je het blok hierbij niet moet omkeren. Plaats het blok in het vooraf gemaakte bakje en giet met dunne vloeibare vormgips de ruimte onder en net naast het blok vol zodat er een rechthoekige bodem om en onder het blok ontstaat. Maak na verharding de zijkanten van het bakje los en steek met een spatel de bodem voorzichtig los van het triplex. Het lossen gaat gemakkelijker als je de delen die met het gips in contact komen eerst goed met kaarsvet (stearine) inwrijft, ook kan een vel plastic als scheidingslaag gebruikt worden.
- Het resultaat is dat je deze blokken ook op zijn kant kunt plaatsen voor exposeerdoeleinden. Als je bij het gieten gelijktijdig een oog voor het ophangen mee ingiet, hang je ze daarna gewoon aan de wand, eventueel kan er nog een lijst rond.

Wij wensen u veel succes.

Dit artikel werd reeds eerder gepubliceerd in Afzettingen (1999), maar werd hier hernomen met toestemming van de auteurs.

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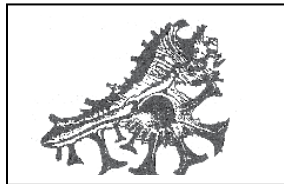
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