Comments on a group of small *Morula* s.s. species (Gastropoda: Muricidae: Rapaninae) from the Indo-West Pacific with the description of two new species

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ABSTRACT. From a total of twenty-three Recent *Morula* s.s. species, eight are revised and two are described as new: *M. peasei* n. sp. from French Polynesia and *M. albanigra* n. sp. from Guam and Okinawa. The type material was examined for each species and is illustrated. The species differ mainly in detail of spiral sculpture, internal apertural denticles, and color. A lectotype is selected for *Morula parva* (Reeve, 1846). The twenty-three species are illustrated.

RESUME. Pour un total de vingt-trois espèces actuelles de *Morula* s.s., huit espèces sont révisées et deux sont décrites pour la première fois: *M. peasei* n. sp. de Polynésie Française et *M. albanigra* n. sp. de Guam et d'Okinawa. Le matériel type a été examiné pour chaque espèce et est illustré. Les espèces se distinguent surtout par leur sculpture spirale, par la position, le nombre et la forme des dents internes de l'ouverture et par la couleur de la coquille. Un lectotype est sélectionné pour *Morula parva* (Reeve, 1846). Les vingt-trois espèces sont illustrées.

INTRODUCTION

Three recent studies have led me to start this review: Kool's (1993) review classification, Johnson's (1994) compilation of taxa named by W.H. Pease, and Merle's (1999) clarification of terminology to be used to determinate the position of spiral cords, of the internal apertural denticles and other shell characters in Muricidae.

Although ontogeny is unknown for most of the species examined herein, a careful examination of the sculpture of all whorls and of the denticles of the inner side of the outer lip in both young and adult specimens was sufficient to determinate the position and the nomenclature of the spiral cords and of the apertural denticles for 7 species. The remaining 3 species are described but with some doubt about the position and the terminology of the spiral cords.

The morphology of the radula and of the operculum in Rapaninae tends to differ strongly from genus to genus, for example between *Thais* s.s., *Rapana*, *Drupella* and *Morula*. The radulae of *Morula* and *Habromorula* species are rather similar in all the examined species. However, some minor differences, such as strength of marginal denticles, and/or shape of the central cusp may be observed in some species. A study based on more living material should reveal if these differences are stable, intraspecifically variable, or sexually dimorphic as recorded in some *Morula* species (Fujioka, 1985). The operculum is similar in all species of *Morula*, being narrowly ovate with a lateral nucleus in lower right.

To my knowledge, 23 living *Morula* s.s. species are known, which are listed below. Names in bold are revised in the present paper.

***M. albanigra* n.sp.**
M. anaxares (Kiener, 1835), Indo-West Pacific (Fig. 61)
***M. angulata* (Sowerby, 1893)**
M. aspera (Lamarck, 1816), Indo-West Pacific (Fig. 49)
***M. cernohorskyi* Houart & Tröndle, 1997**
= *Engina parva* Pease, 1868 (not *Ricinula parva* Reeve, 1846)
M. consanguinea (Smith, 1890), Island of Saint Helena, Eastern Atlantic (Fig. 54)
***M. echinata* (Reeve, 1846)**
= *Engina monilifera* Pease, 1860
M. fimicolata (Reeve, 1846), Indonesia, South China Sea, South Japan (Fig. 52)
M. granulata (Duclos, 1832), Indo-West Pacific (Fig. 58)
= *Purpura tuberculata* Blainville, 1832
= *Purpura cingulifera* Kiener, 1835
= *Morulina ceylonica* Dall, 1923
M. marginalba (Blainville, 1832), Eastern Australia (Fig. 60)
M. musiva (Kiener, 1835), Indo-West Pacific (Fig. 59)
***M. nodicostata* (Pease, 1868)**
= *Morula parvissima* Cernohorsky, 1987

M. nodulosa (C.B. Adams, 1845), Eastern and Western Atlantic (Fig. 53)
= *Ricinula ferruginosa* Reeve, 1846
M. oparense (Melvill, 1912), French Polynesia, Tuamotu and Rapa (Figs 56-57)
***M. parva* (Reeve, 1846)**
***M. peusei* n.sp.**
M. praecipua Rehder, 1980, Easter Island (Fig. 55)
***M. purpureocincta* (Preston, 1909)**
***M. rolgersi* Houart, 2000**
M. rumphiusi Houart, 1996, Indo-West Pacific (Figs 50-51)
M. striata (Pease, 1868)[1], Indo-West Pacific (Fig. 62)
M. uva (Röding, 1798), Indo-West Pacific (Fig. 48)
= *Murex morum* Fischer, 1807
= *Ricinula nodus* Lamarck, 1816
= *Morula papillosa* Schumacher, 1817
= *Ricinula morus* Lamarck, 1822
= *Purpura sphaeridia* Duclos, 1832
= *Ricinula alba* Mörch, 1852
***M. variabilis* (Pease, 1868)**

Depth and Habitat

Morula species live in the intertidal zone or in shallow water, to approximately 10 m depth, among rocks, coral boulders or dead coral.

Distribution

Most of the *Morula* species have a planktotrophic larval life with characteristic protoconch morphology (Fig. 7) (Bouchet, 1987, Kool, 1983, Middelfart, in litt.). Many species occur throughout the Indo-West Pacific, but some appear to have a narrower geographical range. Others are known from scattered, widely separated localities, presumably due either to the poor knowledge or scarcity of the species only. Two species, *M.consanguina* and *M. nodulosa*, occur in the Atlantic.

An intricate history

Problems began when Pease (1868) described three species in the buccinid genus *Engina* from the Tuamotu Archipelago (then known as Paumotus): *E. nodicostata*, *E. variabilis* and *E. parva*, all of which actually belong to *Morula* (Muricidae). Problems were compounded by the fact that they have been subsequently misidentified many times.
In selecting a lectotype for *E. variabilis* from the three syntypes (MCZ), Cernohorsky (1987) noted that "Tryon (1883) considers *Engina variabilis* to be a synonym of *E. nodicostata* described by Pease (1868) one page earlier. However, Dautzenberg & Bouge (1933) insist that *Morula variabilis* is a good species and they cite several Polynesian localities where the species has been collected". Cernohorsky did not make any decision regarding *E. nodicostata*.
Cernohorsky (1987) also illustrated one of the four syntypes of *Engina parva* in ANSP, adding that all four specimens are greatly worn. The name *Engina parva* Pease, 1868 is a secondary homonym of *Ricinula parva* Reeve, 1846, both being included in *Morula*. Because all syntypes of *E. parva* are worn and faded also because Pease's description is rather conflicting with his illustration and with the specimens, rather to give a new name for *Engina parva* Pease (non Reeve, 1846), Cernohorsky decided to describe it as a new species with clearly recognizable holotype and paratypes. He described it as *Morula parvissima* Cernohorsky, 1987. Unfortunately, as we will see below, he wrongly identified *E. parva* and *E. nodicostata*, as a consequence of which *M. parvissima* becomes a synonym.
Tröndle & Houart (1992) concluded that *E. nodicostata* and *E. variabilis* were synonyms because I then personally examined a specimen received from ANSP labelled "type" with the note "matches the description but not the figure" (Houart & Tröndle, 1992: figs 85-86). I then examined both the "type" (ANSP 34543) and six syntypes (then MCZ 178941). When returning the loan to MCZ I indicated that the 6 syntypes of *E.nodicostata* are in fact *E. parva* Pease, 1868 = *Morula parvissima* Cernohorsky, 1987, following the conclusion of Cernohorsky (1987). In fact, the specimen labelled *E. nodicostata* which I received in loan from ANSP labelled as "type", and illustrated as the holotype in Tröndle & Houart (1992), is identical to *E. variabilis* and is certainly not a type specimen of *E. nodicostata*. The material was probably mixed at some time.
Cernohorsky (1987) illustrated the holotype of *Morula angulata* (Sowerby, 1893), and a specimen from Mururoa Atoll, Tuamotu Archipelago, which he considered to be conspecific. Having observed differenees between the holotype of *M. angulata* and the specimen from Tuamotu illustrated by Cernohorsky (1987), Houart & Tröndle (1997) described the latter as *Morula cernohorskyi*. In doing that they also wrongly identified *R. parva*, but without any negative consequence. In fact, *E. parva* is the species subsequently named *M. cernohorskyi*, and *M. parvissima* is conspecific with *E. nodicostata*.
Johnson (1994) selected a lectotype for *E. nodicostata* (now MCZ 260614). He mentioned also a paralectotype (MCZ 260617) where it was noted "matches the description but not the figure". These specimens are part of the above material I received in loan from MCZ (then MCZ 178941).
Wishing to classify all these species once and for all correctly, I decided to examine the whole type material in ANSP and MCZ and to compare everything, together with recently collected material. The result is given below.

[1] Not *Habromorula striata* (Pease, 1868)

All of the 10 species examined differ in shell morphology and color (see also Table 1 and 2).

Text conventions (after Merle, 1999 and 2001)
See Text Figs A and B

P1 : Shoulder spiral cord.
P2-P6 : Primary spiral cords of the convex part of the teleoconch whorl.
IP : Infrasutural primary spiral cord (primary spiral cord on shoulder).
ID : Infrasutural apertural dentiele.
D1-D5 : Abapical apertural dentieles.
ADP : Adapertural primary spiral cord on the siphonal canal.
s: secondary spiral cord.

Abbreviations

AIM: Auckland Institute & Museum, Wellington, New Zealand.
ANSP: Academy of Natural Sciences of Philadelphia, U.S.A.
BM(NH): The Natural History Museum, London, U.K.
EPHE: Ecole Pratique des Hautes Etudes, Perpignan, France.
IRSNB: Institut royal des Sciences naturelles de Belgique.
MCZ: Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A.
MHNG: Muséum d'Histoire Naturelle, Geneva, Switzerland.
MNHN: Muséum national d'Histoire naturelle, Paris, France.
NM: Natal Museum, Pietermaritzburg, South Africa.
NMNZ: Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
RMNH: Nationaal Natuurhistorisch Museum, Leiden, The Netherlands.

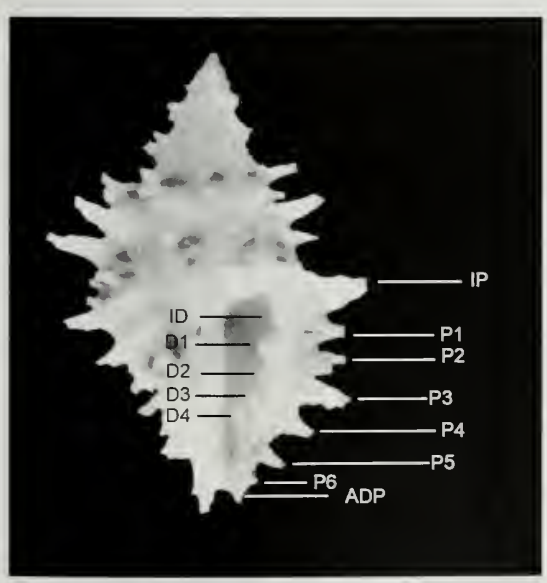
SYSTEMATICS

Family **MURICIDAE** Rafinesque, 1815
Subfamily: **RAPANINAE** Gray, 1853
Genus: ***Morula*** Schumacher, 1817
Subgenus: ***Morula*** Schumacher, 1817
Type species by monotypy: *Morula papillosa* Schumacher, 1817 (non Philippi, 1849) = *Morula uva* (Röding, 1798). Indo-West Pacific.
= *Tenguella* Arakawa, 1965 [type species by original designation: *Morula granulata* (Duelos, 1832)].
Subgenus: ***Morula***

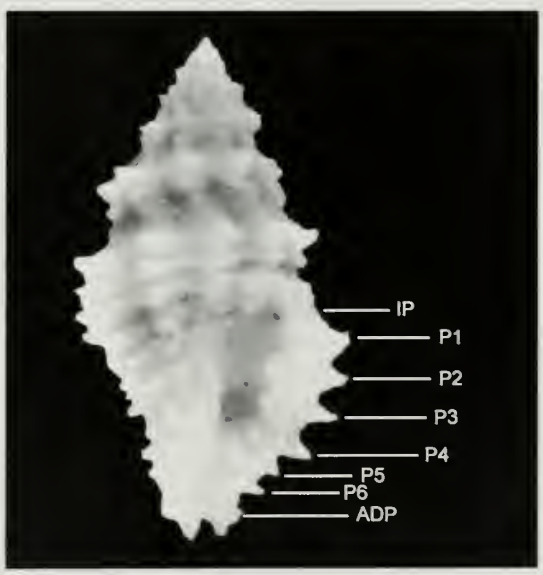
Morula (Morula) albanigra n.sp.
Figs 1-2, 6, 11-13, Text Fig. C

Type material. Guam, Piti Lagoon, 1.5-2 m, among silty dead coral, holotype IRSNB IG 29532.
Paratypes: **Guam**, tip of Glass breakwall, near Mouth of Apra Harbor, 4.5-7.5 m, in rubble: 1ANSP 409825, 1 MCZ 327680, 1 RH; Piti Reef, 3.8-4.5 m, in rubble, 1 AMS C.204975, 1 NMNZ M.273163; Agat Cemetary, 3.8-4.5 m, in rubble, 1 MNHN; Glass breakwall, near Mouth of Apra Harbor, 3-6 m, among rocks, 1 BM(NH) 20020111, 1 NM L5696/1881, Glass breakwall, near Mouth of Apra Harbor, 6m, under rubble, 1 RH.

Type locality. Guam, Piti Lagoon, 1.5-2 m, among silty dead coral.



Text fig. A. Spiral sculpture and apertural dentieles of *Morula angulata* (Sowerby, 1893)



Text fig. B. Spiral sculpture of *Morula echinata* (Reeve, 1846)

Other localities. Japan, northern part of Okinawa Island, Cape Bise; Okinawa, Ishigaki Island, Kabira Bay, under dead coral, reef edge, 1 m (Hirofumi Kubo coll.).

Distribution. Central West Guam and Okinawa, living at 1-7.5 m.

Description. Shell small, up to 7.5 mm in length at maturity (holotype), biconical, spinose. Spire high with 4-4¼ protoconch whorls and up to 5 weakly convex, spinose teleoconch whorls. Suture impressed. Protoconch large, conical, with a narrow, weak, single keel abapically, otherwise smooth. Terminal varix heavy, raised, strongly curved, of sinusigera type.
Axial sculpture of teleoconch whorls consisting of high, broad, spinose varices: 9 or 10 on first whorl, 7-9 from second to fourth, last whorl with 7 varices. Other axial sculpture of numerous growth lamellae. Spiral sculpture of broad, sharp cords. First to third whorls with IP and P1 visible, fourth with IP, P1 and P2, last whorl with IP, P1-P6. IP-P1-P3-P4 broader. Presence of small, acute, narrowly open spinelets where axial ribs cross spiral cords. Other spiral sculpture consisting of narrow, numerous threads covering whole shell.
Aperture narrowly-ovate. Columellar lip narrow, smooth or with a single, weak knob abapically; small parietal node adapically. Rim weakly partially erect, adherent at adapical extremity. Anal notch broad, deep. Outer lip weakly erect, with 5 denticles within: DI very low, small, D1 and D2 broad, high, D3 and D4 small, low; D1 largest. Siphonal canal short, weakly dorsally recurved, broadly open, with P6.
White with dark brown band on top of P1, P3 and P5 and small dark brown blotches on tip of siphonal canal.
Operculum light brown with lateral nucleus in lower right. Radula with long central cusp, short lateral denticle and long lateral cusp on each side. Occasionally with a low marginal denticle between lateral and marginal cusps.
Animal white with black blotches (Text Fig. C).

Remarks. *M. albanigra* n.sp. differs from the similar *M. nodicostata* Pease in having a more strongly shouldered, broader and spinose rather than nodose shell, with narrower spiral cords occasionally half as wide and sharper. The columellar lip of *M. albanigra* is white or with darker coloured tip or edge (black or dark brown abapically in *M. nodicostata*), narrower abapically, and the protoconch whorls are entirely glossy white or occasionally only with a very narrow brown line on penultimate and last whorl, compared to the broad brown band in *M. nodicostata*. See also Table 1.

Etymology. *albanigra*: from *alba* (L): white and *nigra* (L): black, in relation to the white and black spiral cords.

Morula (Morula) angulata (Sowerby, 1893)
Figs 18-19; Text Fig. A

Sistrum angulatum Sowerby, 1893: 46, pl.4, fig.3

Morula angulata – Kaicher, 1980: card 2446 (holotype); Cernohorsky, 1987: 100 (in part), fig. 19 (holotype).

NOT *Morula angulata* – Cernohorsky, 1987: 100 (in part), figs 16, 17-18, 20-21; Houart & Tröndle, 1987: 99, fig. 76 [= *Morula cernohorskyi* Houart & Tröndle, 1997]

Type locality. Mauritius

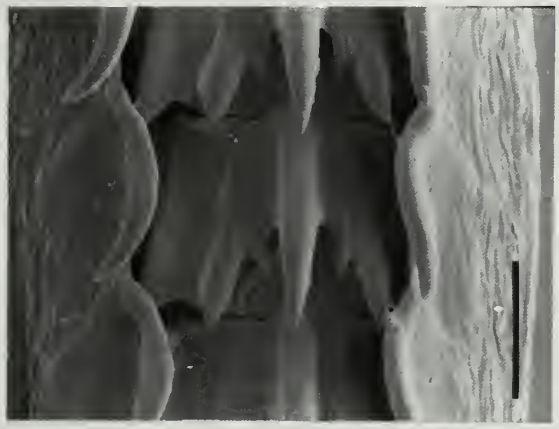
Type material. Holotype BM(NH) 1902.11.26.72

Distribution. Currently known from Mauritius (type locality), Society and Tuamotu Archipelago, and Guam.

Description. Shell small, up to 8.5 mm in length at maturity, biconical, spinose, delicate. Spire high with 3.5 protoconch whorls and up to 5 broad, angulate, weakly shouldered teleoconch whorls. Suture impressed. Protoconch large, conical, acute, whorls smooth. Terminal varix strongly curved, of sinusigera type.
Last teleoconch whorl with 6 axial ribs crossed with spiral cords (IP, P1-P5). IP broad, P1 and P2 small, P3 broad, P4 and P5 decreasing in strength abapically. IP forming longest spine at intersection with axial ribs, P1 and P2 short, P3 long, P4 and P5 short.
Aperture narrowly ovate. Columellar lip narrow, weakly flaring, with 2 elongate, strong knobs abapically, rim partially erect, adherent at adapical extremity. Anal notch broad, deep. Outer lip weakly erect with 5 strong denticles within: ID, D1-D4. D1 strongest, D2-D4 of approximately similar size, D2 weakly stronger.
Siphonal canal short, straight, broadly open with P6 and ADP.
Milky-white with dark brown, almost black blotches on P1 on penultimate whorl, on P1 and P2 on last whorl, and on P6. Earlier whorls unformly milky-white. Aperture white.
Operculum light brown with lateral nucleus in lower right. Radula unknown.

Remarks. *Morula angulata* is a delicate, beautiful, but poorly known and probably rare species. It is unusual in having a strongly developed infrasutural cord (IP), starting on the penultimate whorl and giving rise to the longest spine on last teleoconch whorl. P1 is clearly visible on the early teleoconch whorls, but it is almosalf the size of IP on the penultimate and last whorls. See also Table 1.

1



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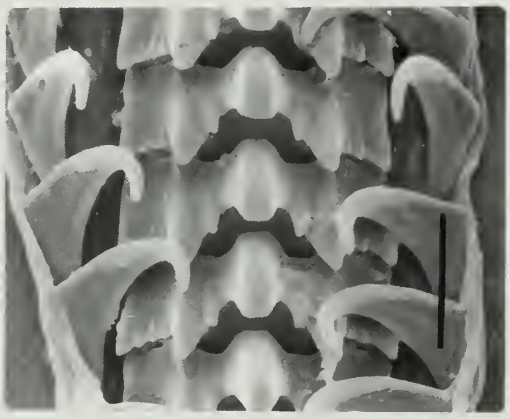

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6

Figures 1-6

1-2. *Morula albanigra* n.sp., radula (scale bar 10 µm); **3.** *M. purpureocincta* (Preston, 1909), radula (scale bar 20 µm); **4.** *M. echinata* (Reeve, 1846), radula (scale bar 20 µm); **5.** *M. parva* (Reeve, 1846), radula (scale bar 0.20 µm); **6.** *M. albanigra* n.sp., operculum (scale bar 0.5 mm)

Morula (Morula) cernohorskyi
Houart & Tröndle, 1997
Figs 20-26

Engina parva Pease, 1868: 276, pl.23, fig. 11 (not *Ricinula parva* Reeve, 1846)
Morula cernohorskyi Houart & Tröndle, 1997: 4, fig. 3

Morula angulata – Cernohorsky, 1987: 100 (in part), figs 16, 17-18 (holotype of *Engina parva* Pease, 1868), 20-21; Tröndle & Houart, 1992: 99, fig. 76 (not *Sistrum angulatum* Sowerby, 1903)

Type locality. *E. parva*: Paumotus (Tuamotu Archipelago); *M. cernohorskyi*: French Polynesia, Tuamotu Archipelago, Mururoa Atoll, 22°00' S, 140°00' W.

Type material. *E. parva*: lectotype ANSP 34542, selected by Johnson (1994); *M. cernohorskyi*: holotype MNHN.

Distribution. Tuamotu Archipelago.

Description. Shell small, up to 6.3 mm in length, biconical, stout, weakly spinose. Spire high with 3-3.5 protoconch whorls, and up to 4 shouldered teleoconch whorls. Suture impressed. Protoconch conical, acute, smooth, glossy. Terminal varix strong, curved, of sinusigera type.
Last teleoconch whorl with 8-10 axial ribs crossed with spiral cords (IP, P1-P5 and s2). IP broad, forming small nodules at intersection with axial sculpture. P1-P5 approximately similar in size; P1 weakly larger. Intersection of axial ribs and spiral cords giving rise to small, blunt spinelets. P1 weakly longer; P5 shortest.
Aperture narrow, ovate. Columellar lip narrow with 2 or 3 weak knobs abapically; rim adherent. Anal notch broad, deep. Outer lip weakly erect with 5 denticles within (ID, D1-D4). ID weak, D1 strongest, D2-D4 almost of similar strength.
Siphonal canal short, straight, broadly open, with P6 and ADP.
Light orange, yellow-tan or tan with P1, P3, P5, and tip of siphonal canal dark brown. IP, P2, s2 and P4 light orange. Aperture glossy white with dark brown, narrow bands inside.
Radula and operculum unknown.

Remarks. *Morula angulata* was confused with *M. cernohorskyi* by Cernohorsky (1987) both, however have very different axial and spiral ornamentation (see descriptions) and color. See also Table 1.

***Morula (Morula) echinata* (Reeve, 1845)**
Figs 4, 27-31; Text Fig. B

Ricinula echinata Reeve, 1846: pl.6, fig. 54
Engina monilifera Pease, 1860: 142

Morula echinata – Cernohorsky, 1975: 207 (remarks), figs 72 & 73; 1978: 69, pl. 20, fig. 2; Drivas & Jay, 1988: 72, pl. 21, fig. 14; Tröndle & Houart, 1992: 100, fig. 77; Okutani, 2000: 391, pl. 194, fig. 137.
Morula parva – Cernohorsky, 1969: 309, pl. 49, fig. 21; 1972: 128, pl. 36, fig. 4 (not *Engina parva* Reeve, 1846).
Morula benedictus – Kay, 1979: 246, fig. 87 (k) (not *Murex benedictus* Melvill & Standen, 1895).
Morula funiculata – Kay, 1979: 247, fig. 87 (l) (not *Ricinula funiculata* Reeve, 1846).
Morula geummulifera –Kaicher, 1980: card 2484[2]

Type locality. *R. echinata*: unknown; *E. monilifera*: Sandwich Islands (Hawaiian Archipelago).

Type material. *R. echinata*: holotype BM(NH) 1968456; *E. monilifera*: lectotype BM(NH) 1961460, selected by Kay (1965).

Distribution. Throughout the Indo-Pacific, from Tulear (Madagascar) to the Hawaiian Archipelago. Specimens are known also from the Holocene of Hurghada, Egypt (coll. B. Landau).

Description. Shell small, up to 9 mm in length at maturity, lanceolate, spinose. Spire high, acute, with 3.5 protoconch whorls and up to 5 convex, spinose teleoconch whorls. Suture weakly adpressed.
Protoconch large, conical, acute; whorls smooth. Terminal varix strongly curved, of sinusigera type.
Last teleoconch whorl with 7 or 8 axial ribs crossed with 6 spiral cords (IP, P1-P5). Small, acute spines occuring at intersection of spiral and axial sculpture. Spiral cords similar in size.
Aperture large, narrowly ovate. Columellar lip narrow with 2 or 3 narrow, elongate lirae within adapically. Rim adherent or weakly erect abapically. Outer lip weakly erect with 4 strong denticles within (D1-D4). Occasional presence of a low infrasutural denticle (ID).
Siphonal canal short, weakly dorsally curved at tip, broadly open, with P6 and ADP.
Creamy-white with orange coloured nodes on IP, at intersection of axial ribs; dark brown between each node. Spinelets in P1, P4, P5 and ADP, occasionally also in P2, orange. Dark brown between spinelets and between spiral cords. P3, or P2 and P3 white, forming a white spiral band.
Operculum dark brown with lateral nucleus in lower right. Radula with projecting, long central cusp, short lateral denticle and long lateral cusp on each side.

[2] That name was not reported by Kay & Clench (1975)

Figures 7-10
7. *Morula parva* (Reeve, 1846), protoconch (scale bar 0.5 mm); **8.** *M. nodicostata* (Pease, 1868), original illustration from Pease (1868); **9.** *M. variabilis* (Pease, 1868), original illustration from Pease (1868); **10.** *M. purpureocincta* (Preston, 1909) original illustration from Preston (1909)

Occasionally low marginal denticles between lateral and marginal cusps.

Remarks. *Morula echinata* is apparently very common, occuring throughout the Indo-Pacific. Its distinctive color and the low, acute spines and rounded spiral cords of approximately similar size distinguish it from any other *Morula* species. See also Table 1.

***Morula (Morula) nodicostata* (Pease, 1868)**
Figs 8, 14-17

Engina nodicostata Pease, 1868: 274, pl. 23, fig.8
Morula parvissima Cernohorsky, 1987: 99, figs. 14-15 (n.n. for parva Pease, not Reeve)

Engina nodicostata –JOHNSON, 1994: 18, pl. 23, fig. 8 (lectotype).
Morula parva –CERNOHORSKY, 1978: 77, figs 24, 25; SPRINGSTEEN & LEOBRERA, 1986: 140, pl. 38, fig. 7 (not *Engina parva* Reeve, 1846).
Morula parvissima –TRÖNDLE & HOUART, 1992: 103, fig. 78; OKUTANI, 2000: 391, pl. 194, fig. 138.
NOT *Morula nodicostata* – CERNOHORSKY, 1969: 399, pl. 49, fig. 20, text fig. 17; CERNOHORSKY, 1972: 127, pl. 36, fig. 5; WELLS et al, 1990: 44, pl. 21, fig. 144; WILSON, 1994: 44, text fig [= *Morula purpureocincta* (Preston, 1909)]; TRÖNDLE & HOUART, 1992: 101 (in part), figs 84-86 [= *Morula variabilis* (Pease, 1868)]; TRÖNDLE & HOUART, 1992: 101 (in part), fig. 83 (= *Morula peasei* n.sp.); OKUTANI, 2000: 393, pl. 195, fig. 142 (= unknown species).

Type locality. *E. nodicostata*: Paumotus (Tuamotu Archipelago); *M. parvissima*: Mururoa Atoll, Tuamotu Archipelago.

Type material. *E. nodicostata*: lectotype MCZ 260614, selected by Johnson (1994); *M. parvissima*: holotype AIM TM-1374 (not examined).

Distribution. Society and Tuamotu Archipelago.

Description. Shell small, up to 6.2 mm in length at maturity, slender, lanceolate, heavy, tuberculate. Spire high with 4-4 ¾ protoconch whorls and up to 4 weakly convex, nodose, teleoconch whorls. Suture impressed.
Protoconch large, conical, acute; whorls smooth, glossy. terminal varix heavy, strongly curved, of sinusigera type, partially covered with first teleoconch whorl in all examined specimens.
Last teleoconch whorl with 9 broad, rounded axial ribs crossed with 6 broad, rounded spiral cords (1P, P1-P5), forming broad knobs at intersection of axial ribs and spiral cords. 1P broadest, P1-P4 almost similar in size and strength; P5 lower and narrower. In addtition shell covered with numerous spiral lirae.
Aperture large, narrow, ovate. Columellar lip narrow, with 1 weak knob abapically and small parietal tooth adapically. Lip completely adherent. Anal notch broad, deep. Outer lip with 4 strong denticles within: D1-D2 broad, strong; D3 and D4 lower, narrower, elongate within the aperture. Occasional presence of weak 1D.
Siphonal canal very short, straight, broadly open, smooth except spiral lirae.
White with dark brown or black P1, P3 and P5. P2 and P4 white. Protoconch glossy white with narrow adapical brown band on penultimate and last whorls. Aperture white with dark brown blotch on adapical extremity of columellar lip and brown bands within.

Operculum and radula unknown.

Remarks. This is the species described as *Morula parvissima* by Cernohorsky (1987: 99) due to a misidentification of *Morula nodicostata* (Pease, 1868). See also Table 1.

***Morula (Morula) parva* (Reeve, 1846)**
Figs 5, 7, 44-47

Ricinula parva Reeve, 1846: pl.6, fig. 43

Morula parva –Cernohorsky, 1978: 78, fig. 26; Houart, 1996: 388, figs 22-25.
NOT *Morula parva* –Cernohorsky, 1969: 309, pl. 49, fig. 21; 1972: 128, pl. 36, fig. 4 [= *Morula echinata* (Reeve, 1846)]; Springsteen & Leobrera, 1986: 140, pl. 38, fig. 7 [= *Morula nodicostata* (Pease, 1868)].

Type locality. Luzon, Philippines.

Type material. 2 syntypes BM(NH) 1968471, here selected as lectotype and paralectotype.

Distribution. Okinawa (Ishigaki Island), Philippine Islands (Cebu and Luzon) and Ambon, Indonesia.

Description. Shell small, up to 9.4 mm in length at maturity, lanceolate, heavy, nodose. Spire high with 3 ½+ whorls (first whorl broken in examined specimens), up to 5 broad, convex, nodose teleoconch whorls. Suture impressed.
Protoconch large, conical; whorls glossy, with a narrow single keel adapically, otherwise smooth. Terminal varix strongly curved, of sinusigera type.
Last teleoconch whorl with 8 rounded, broad axial ribs, crossed by IP, P1-P5. P1 duplicated from penultimate whorl; other spiral cords of approximately same size, P5 weakly narrower.
Aperture narrowly ovate. Columellar lip weakly erect, smooth or with a small denticle abapically. Outer lip with strong denticles within: D1 broad and strong, D2-D4 decreasing in strength abapically.
Siphonal canal short, straight, broadly open, with P6.
White or creamy-white with colored nodes at intersection of axial and spiral sculpture. IP with bright orange nodes, P1 with blackish-brown nodes, P2 with orange, P3 with blackish-brown, P4 with orange, P5 with blackish-brown, P6 with orange. Aperture white.
Radula with short central cusp, short, narrow, lateral denticle and long lateral cusp at each side. Presence of low, serrated marginal denticles between lateral and marginal cusps.

Remarks. Besides the differences in shell morphology and color, *M. parva* also differs from all other *Morula* species of this group in having a splitted P1 on penultimate and last whorls. See also Table 2.

***Morula (Morula) peasei* n.sp.**
Figs 32-34

Type material. Arue, Tahiti, Society Archipelago, French Polynesia, holotype and 1 paratype MNHN, 7 paratypes J. Tröndlé.

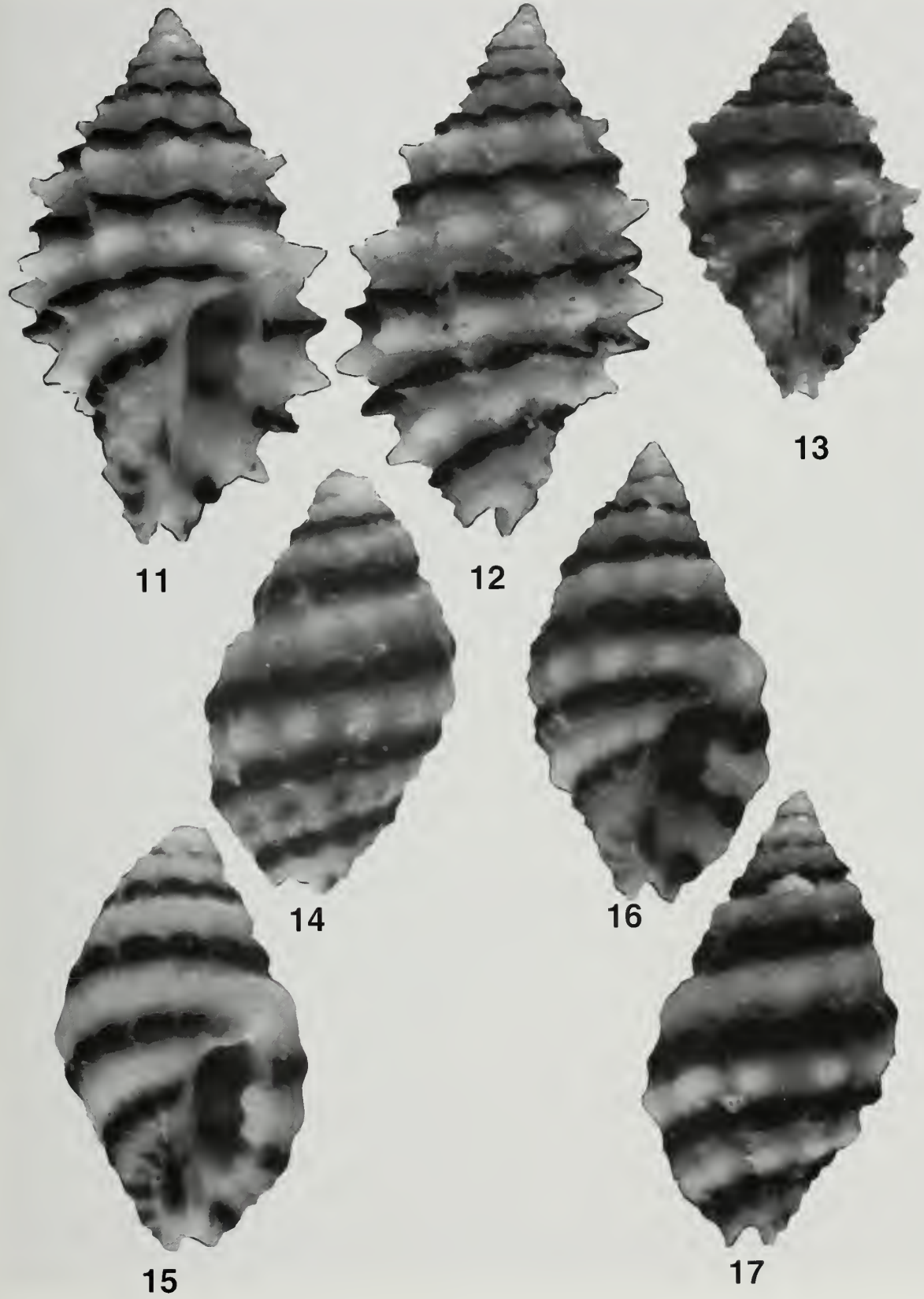
Other material. Papara, Tahiti, 2 sp., coll. R. Houart; Pueu, Tahiti, 1 sp., coll. R. Gourguet; Tubuaï Island, 1 sp. coll. R. Houart.

Type locality. Arue, Tahiti, Society Archipelago, French Polynesia, on reef flats.

Distribution. French Polynesia, Tubuaï and Tahiti, Society Archipelago, on reef flats.

Description. Shell small, up to 8.9 mm in length (holotype), lanceolate, heavy, nodose. Spire high with 4 protoconch whorls and up to 4+ broad, convex, weakly shouldered, nodose teleoconch whorls. Suture adpressed.
Protoconch large, conical, smooth. terminal varix raised, strongly curved, of sinusigera type, partially covered by first teleoconch whorl.
Axial sculpture of teleoconch whorls consisting of high, strong, broad, rounded ribs: 11 on first whorl, 9 or 10 on second, 10 or 11 on third, 9 on fourth and 8 on last whorl. Spiral sculpture of low, broad cords: first to penultimate whorls with IP and P1 visible; last whorl with IP, P1, P2-P4. Shell covered with additional low spiral threads.
Aperture broadly ovate. Columellar lip narrow, smooth or with a single weak knob abapically. Rim completely adherent. Small parietal node adapically. Anal notch broad, deep. Outer lip with 6 weak denticles within: ID, D1, D2 (probably splitted), D3 (probably splitted). ID low, D1 weakly stronger than other denticles. Siphonal canal very short, straight, broadly open.
Dark brown with white knobs at intersection of spiral and axial sculpture. Aperture light mauve.
Operculum and radula unknown.

Figures 11-17
11-13. *Morula albanigra* n.sp.
11-12. Guam, lagoon, 1.5-2 m, among silty dead coral, holotype IRSNB IG 29532, 7.5 mm; 13. Guam, Glass breakwall, near Mouth of Apra Harbor, 6m, under rubble, paratype coll. R. Houart, 6.9 mm.
14-17. *M. nodicostata* (Pease, 1868)
14-15. French Polynesia, Paumotus, Lectotype MCZ 260614, 6 mm; 16-17. French Polynesia, Tahiti, coll. R. Houart, 6.4 mm.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Remarks. *Morula peasei* n.sp. differs from *M. variabilis* (Pease) in being more weakly shouldered, in having a higher spire, more similar-sized spiral cords, a broader aperture with smaller (probably split) denticles within, and an abapically broader columellar lip. The shell also lacks orange colored nodes and has a lighter colored aperture.
The lack of growth series, from very young specimens to adults have not allowed me to be more precise as to the position of the spiral cords of the last whorl, and about the internal denticles of the aperture. A redescription will be necessary when such a material becomes available. See also Table 2.

Etymology. Named after William Harper Pease.

***Morula (Morula) purpureocincta* (Preston, 1909)**
Figs 3, 10, 41-43

Engina purpureocincta Preston, 1909: 136, pl. 22, fig. 13

Morula purpureocincta –Cernohorsky, 1975: 209 (remarks), fig. 75 (holotype); Okutani, 2000: 391, pl. 194, fig. 139.
Morula nodicostata –Cernohorsky, 1969: 399, pl. 49, fig. 20, text fig. 17; Cernohorsky, 1972: 127, pl. 36, fig. 5; Fujioka, 1985: 248, pl. 4, figs 39-40 (radula); Wells et al, 1990: 44, pl. 21, fig. 144; Wilson, 1994: 44, text fig; Houart, 1996: 388 (not *Engina nodicostata* Pease, 1868).

Type locality. Ceylon (Sri Lanka).

Type material. Holotype BM(NH) 1915.1.6.28.

Distribution. Indo-West Pacific. Sri Lanka, Indonesia, northern Japan, Queensland (Australia) and New Caledonia.

Description. Shell small, up to 10.1 mm in length, heavy, broadly biconical, nodose. Spire high with 3+ protoconch whorls and up to 5 broad, strongly nodose teleoconch whorls. Suture impressed. Protoconch conical, acute; number of whorls unknown, covered with thick chalcky layer in the unique specimen examined with intact protoconch.
Last whorl with 6-7 broad axial ribs crossed by 3 broad cords, probably P1-P2, P3-P4, P5-P6 merged (ontogeny unknown). Shell also covered by numerous rounded, smooth threads on and between spiral cords. Infrasutural sculpture present but indeterminate.
Aperture large, broadly ovate; columellar lip narrow with 1-3 weak knobs adapically. Rim completely adherent. Anal notch broad, deep. Outer lip weakly erect with 6 weak, narrow denticles within: ID weak, D1 largest, D2-D5 weak and lower, approximately similar in size.
Siphonal canal very short, straight, broadly open, probably with ADP.
Milky-white with narrow broan band between spiral cords, often with rough, thick chalcky layer. Aperture pale lavender.
Radula with long central cusp, short, narrow, lateral denticle and long lateral cusp at each side. Presence of low, serrated marginal denticles between lateral and marginal cusps (Fujioka, 1985).

Remarks. The careful observation of a serie of specimens has led me to the conclusion that the primary spiral cords of the last teleoconch whorls (P1-P6) are merged in pairs (P1-P2, P3-P4, P5-P6). This particularity was not observed in any other species of the studied group. See also Table 2.

***Morula (Morula) rodgersi* Houart, 2000**
Figs 38-40

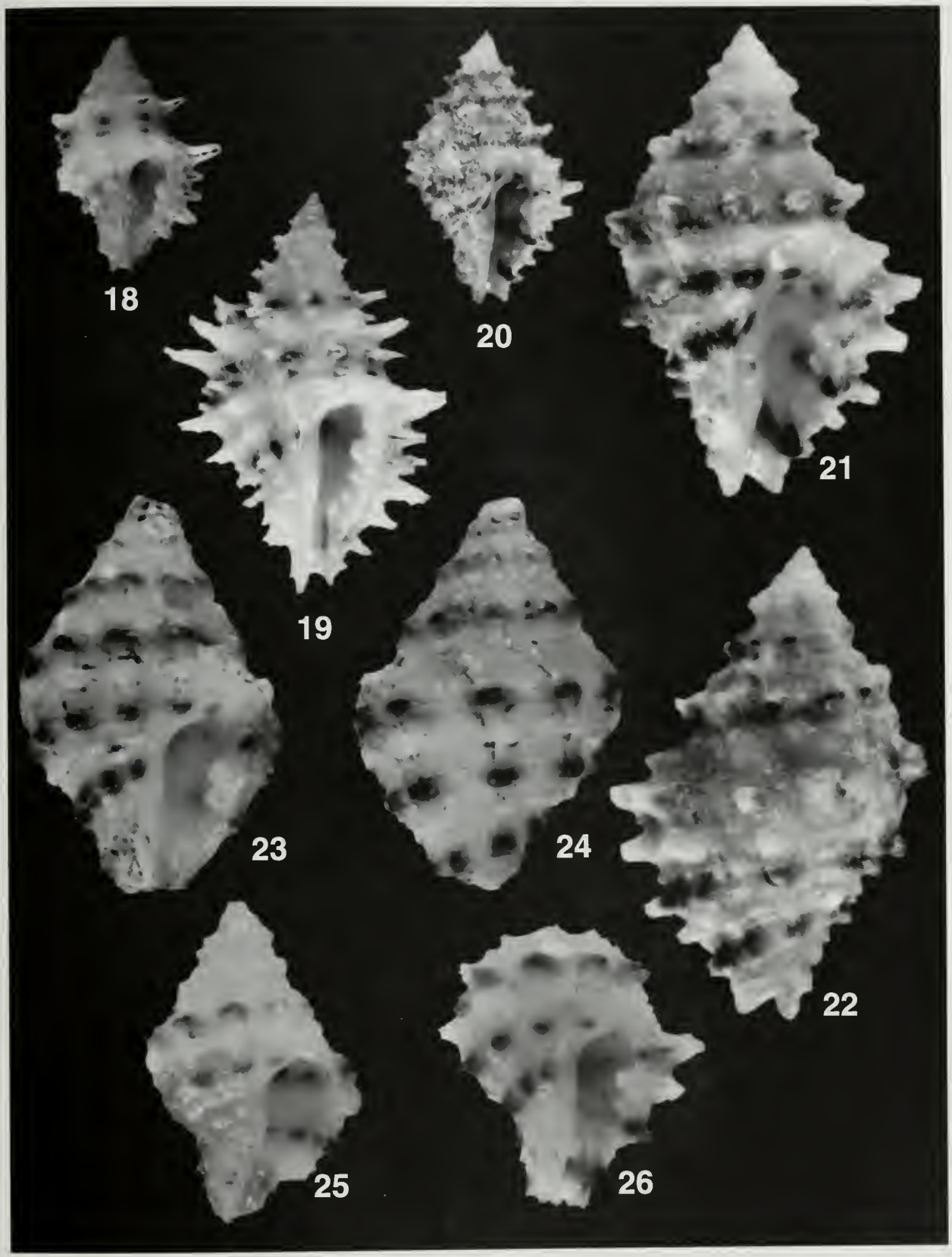
Morula rodgersi Houart, 2000: 101, figs 1-3

Type locality. Guam, Piti Lagoon, 6-9 m, among rocks

Type material. Holotype MNHN.

Distribution. Western Guam, Agat Bay and Piti Lagoon, 6-9 m. Two specimens have also been seen from South Mozambique, trapped alive in 70-120 m, near Maeanza (coll. Manuel Amorim). Two other specimens have been collected dead in Tahiti (M. Boutet).

Figures 18-26
18-19. *Morula angulata* (Sowerby, 1893)
18. Mauritius, holotype BM(NH) 1902.11.26.72, 6.8 mm; 19. Guam, Piti Lagoon, among silty dead coral, 1.5-4.6 m, coll. R. Houart, 7.6 mm.
20-26. *Morula cernohorskyi* Houart & Tröndlé, 1997
20. French Polynesia, Tuamotu Archipelago, Mururoa Atoll, holotype MNHN, 6 mm; 21-22. French Polynesia, Tuamotu Archipelago, Mururoa Atoll, beach sand, paratype coll. R. Houart, 5.8 mm; 23-24. Lectotype of *Engina parva* Pease, 1868, French Polynesia, Paumotus (Tuamotu), ANSP 34542, 5.8 mm; 25. Paralectotype of *Engina parva* Pease, 1868, French Polynesia, Paumotus (Tuamotu), MCZ 049995, 4.7 mm; 26. Paralectotype of *Engina parva* Pease, 1868, French Polynesia, Paumotus (Tuamotu), ANSP 34542, 3.9 mm (damaged).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Description. Shell small, up to 12 mm in length at maturity, biconical, spinose. Spire high, acute, with 3.25 - 3.5 protoconch whorls and up to 6 broad, strongly shouldered, spinose teleoconch whorls. Suture strongly adpressed. Protoconch small, conical, acute, with a narrow keel abapically on penultimate and last whorl. On last whorl, keel overlapped by first teleoconch whorl. Terminal varix heavy, high, of sinusigera type.
Axial sculpture of teleoconch whorls consisting of low, broad varices, each with short spines. Other axial sculpture of numerous growth lamellae. Last teleoconch whorl with 9-11 axial ribs crossed with 4 low, broad, squamous spiral cords (P1-P4) and numerous threads on and between cords. IP starting only from penultimate axial rib of last whorl. Short, acute, flattened, open spines produced at intersection of spiral cords and axial ribs.
Aperture small, narrow, ovate. Columellar lip narrow, flaring, with 3 or 4 elongate, weak knobs abapically; rim partially erect, adherent at adapical extremity. Weak parietal tooth. Anal notch broad, deep. Outer lip erect, weakly crenulate, with strong denticles within : ID low, D1-D3 high, gradually smaller and lower abapically. D1 strongest, D3 splitted. Siphonal canal short, narrow, straight, weakly dorsally bent at tip, broadly open, with P6, ADP and many threads : 6 or 7 threads between P4 and P6; 4 or 5 between P6 and ADP.
Creamy-white or pale tan, occasionally with small brown blotches at base of spines. Aperture white.
Operculum and radula not studied.

Remarks. *M. angulata* has longer, broader spines, narrower spiral threads, narrower and straighter shoulder, and five cords (P1-P5) on the convex part of the last teleoconch whorl. *M. echinata* is comparatively smaller with shorter spines, five similar cords on the convex part of the last teleoconch whorl, and one broad cord on shoulder (IP) with orange coloured nodules; the spiral threads are also more numerous and narrower. *M. cernohorskyi* has four spiral cords on the convex part of the last teleoconch whorl, fewer threads, and one broad, light orange coloured cord on shoulder (IP) with broad nodules. As for *M. angulata* which is known from two very distant localities (eastern Indian Ocean and Central Pacific), it seems likely that *M. rodgersi* occurs in other parts of the Indo-Pacific. See also Table 2.

Morula (Morula) variabilis (Pease, 1868)
Figs 9, 35-37

Engina variabilis Pease, 1868: 275, pl. 23, fig. 9

Morula variabilis –Cernohorsky, 1987: 99, figs 12-13 (lectotype).
Engina variabilis –Johnson, 1994: 27, pl. 7, fig. 5 (lectotype).
Morula nodicostata –Tröndle & Houart, 1992: 101 (in part), figs 84-86 (not *Engina nodicostata* Pease, 1868).

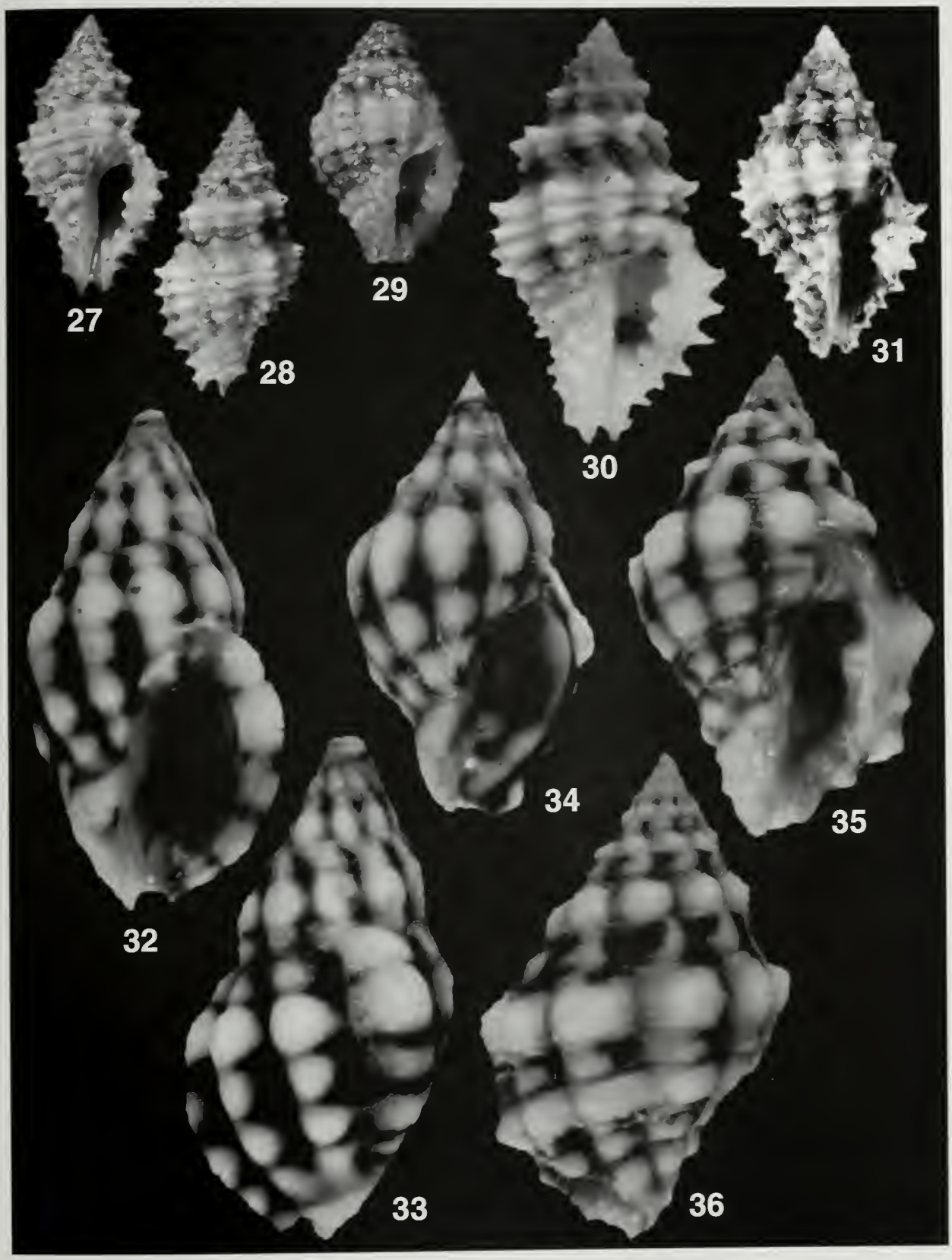
Type locality. Paumotus (Tuamotu Archipelago).

Type material. Lectotype MCZ 260618, selected by Cernohorsky (1987).

Distribution. Tuamotu Archipelago and Tubuaï.

Description. Shell small, up to 8.5 mm in length at maturity, biconical, heavy, nodose. Spire high with 4 protoconch whorls and up to 4 broad, shouldered, nodose teleoconch whorls. Suture adpressed.
Protoconch large, conical, with a narrow, single keel abapically, otherwise smooth. Terminal varix erect, strongly curved, of sinusigera type.
Last teleoconch whorl with 8 rounded axial ribds crossed by IP, P1-P6 (ontogeny unknown). Shell covered by narrow, low, rounded, additional threads. IP low on penultimate and last whorls, almost flat in some specimens, P1 broad, high, strong, followed by narrow P2, broad, high P3, narrow P4, broad P5, narrow s5, broad P6. P1-P3 and P5 decreasing in strength abapically.
Aperture narrow, ovate. Columellar lip narrow, smooth or with 1 or 2 low, narrow nodes abapically. Rim completely adherent. Small parietal tooth adapically. Anal notch very broad, deep. Outer lip with strong denticles within: ID weak, D1 strong, high, D2-D4 smaller, almost similar in size. Siphonal canal very short, straight, broadly open, with P6.

Figures 27-36
27-31. *Morula echinata* (Reeve, 1846)
27-28. Holotype BM(NH) 1968456, 9 mm, photo courtesy E.H. Vokes; 29. Lectotype of *Engina monilifera* Pease, 1860, Sandwich Islands (Hawaii), BM(NH) 1961460, 7.4 mm, photo courtesy E.H. Vokes; 30. Guam, Piti Lagoon, among dead coral, 3.7 m, coll. R. Houart, 8.2 mm; 31. French Polynesia, Tahiti, coll. R. Houart, 7.1 mm.
32-34. *M. peasei* Houart, n.sp. French Polynesia, Tahiti, Arue.
32-33. Holotype MNHN, 8.9 mm; 34. Paratype coll. J. Tröndlé, 6.9 mm.
35-36. *M. variabilis* (Pease, 1868), French Polynesia, Paumotus (Tuamotu), lectotype MCZ 260618, 6.9 mm.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Shell white, black and orange as follows: nodes resulting from crossing of P1, P3 and P5 with axial ribs white; nodes of IP, P2 and P4 orange; interspaces black. Aperture entirely mauve. Operculum and radula unknown.

Characters	*M. albanigra*	*M. angulata*	*M. cernohorskyi*	*M. echinata*	*M. nodicostata*
Maximum length	7.5 mm	8.5 mm	6.3 mm	9 mm	6.2 mm
Number and size of spiral cords of last whorl including siphonal canal	IP, P1-P6. IP-P1-P3-P4 broader.	IP, P1-P6 and ADP. IP broad, P1 and P2 small, P3 broad, P4 and P5 decreasing in strength abapically	IP, P1-P6 and s2, and ADP. IP broad, forming small nodules at intersection with axial sculpture. P1-P5 similar in size; P1 slightly larger.	IP, P1-P6 and ADP, similar in size and strength	IP, P1-P5. IP broadest, P1-P4 similar in size and strength; P5 lower and narrower. Covered with numerous spiral lirae
Number of axial ribs of last whorl	7	6	8-10	7 or 8	9
Form of spiral cords	sharp	sharp	sharp	sharp	rounded
Spines nodes	Small, acute, narrowly open spinelets where axial ribs cross spiral cords.	IP forming longest spine at intersection with axial ribs, P1 and P2 short, P3 long, P4 and P5 short	Intersection of axial ribs and spiral cords giving rise to small, blunt spinelets. P1 weakly longer; P5 shortest	Small, acute spines occuring at intersection of spiral and axial sculpture	broad knobs at intersection of spiral and axial sculpture
Columellar lip	smooth or with a single, weak know abapically; small parietal node adapically	with 2 elongate, strong knobs abapically	with 2 or 3 weak knobs abapically	with 2 or 3 narrow, elongate lirae within adapically	with 1 weak knob abapically and small parietal tooth adapically
Denticles of the inner side of the aperture	5 denticles within: Dl very low, small, D1 and D2 broad, high, D3 and D4 small, low; D1 largest	5 strong denticles within: ID, D1-D4. D1 strongest, D2-D4 of approximately similar size, D2 slightly stronger	5 denticles within (ID, D1-D4). ID weak, D1 strongest, D2-D4 of similar strength	4 strong denticles within (D1-D4). Occasional presence of a low infrasutural denticle (ID)	4 strong denticles within: D1-D2 broad, strong; D3 and D4 lower, narrower, elongate within the aperture. Occasional presence of weak ID
Color	White with dark brown band on top of P1, P3 and P5 and small dark brown blotches on tip of siphonal canal	Milky-white with dark brown, almost black blotches on P1 on penultimate whorl; on P1 and P2 on last whorl, and on P6. Earlier whorls unformly milky-white. Aperture white	Light orange, yellow-tan or tan with P1, P3 and P5, and tip of siphonal canal dark brown. IP, P2, s2 and P4 light orange. Aperture glossy white with dark brown, narrow bands inside	Creamy-white with orange coloured nodes on IP, at intersection of axial ribs; dark brown between each node. Spinelets in P1, P4, P5 and P6, occasionally also in P2, orange. Dark brown between these spinelets and between spiral cords. P3, or P2 and P3 white, forming a white spiral band.	White with dark brown or black P1, P3 and P5. P2 and P4 white. Protoconch glossy white with narrow adapical brown band on penultimate and last whorls. Aperture white with dark brown blotch on adapical extremity of columellar lip and brown bands within
Distribution	Central West Guam, living at 1.5-7.5 m and Okinawa (Ishigaki Id)	Mauritius, Society and Tuamotu Archipelagos, Guam	Tuamotu Archipelago	Indo-Pacific, from Tulear (Madagascar) to the Hawaiian Archipelago	Society and Tuamotu Archipelago

Table 1. Comparisons of *Morula* species

Characters	*M. parva*	*M. peasei*	*M. purpureocincta*	*M. rodgersi*	*M. variabilis*
Maximum length	9.4 mm	8.9 mm	10.1 mm	12 mm	8.5 mm
Number of spiral cords of last whorl including siphonal canal	IP, P1-P6. P1 duplicated from penultimate whorl; other spiral cords of approximately same size, P5 weakly narrower.	IP, P1, P2-P4. Shell covered with additional low spiral threads	with 3 broad cords, probably P1-P2, P3-P4, P5-P6 fused (ontogeny unknown), ADP. Shell also covered by numerous rounded, smooth threads on and between spiral cords. Infrasutural sculpture present but indeterminate	with 4 low, broad, squamous spiral cords (P1-P4) and numerous threads on and between cords, P6 and ADP. IP starting only from penultimate axial rib of last whorl.	IP, P1-P6 (ontogeny unknown). Shell covered by narrow, low, rounded, additional threads. IP low on penultimate and last whorls, almost flat in some specimens, P1 broad, high, strong, followed by narrow P2, broad, high P3, narrow P4, broad P5, narrow s5, broad P6. P1-P3 and P5 decreasing in strength abapically
Number of axial ribs of last whorl	8	8	6 or 7	9-11	8
Form of spiral cords	rounded	rounded	rounded	sharp	rounded
Spines/nodes	low nodes	low nodes	high nodes	Short, acute, flattened, open spines produced at intersection of spiral cords and axial ribs	broad nodes
Columellar lip	smooth or with a small denticle abapically	smooth or with a single weak knob abapically. Small parietal node adapically	with 1-3 weak knobs adapically	with 3 or 4 elongate, weak knobs abapically. Weak parietal tooth	smooth or with 1 or 2 low, narrow nodes abapically. Small parietal tooth adapically
Denticles of the inner side of the aperture	strong denticles within: D1 broad and strong, D2-D4 decreasing in strength abapically	6 weak denticles within: ID, D1, D2 (probably split), D3 (probably split). ID low, D1 weakly stronger than other denticles	6 weak, narrow denticles within: ID weak, D1 largest, D2-D5 weak and lower, similar in size	strong denticles within : ID low, D1-D3 high, gradually shrinking abapically. D1 strongest, D3 split	strong denticles within: ID weak, D1 strong, high, D2-D4 smaller, almost similar in size
Color	White or creamy-white with colored nodes at intersection of axial and spiral sculpture. IP with bright orange nodes, P1 with blackish-brown nodes, P2 with orange, P3 with blackish-brown, P4 with orange, P5 with blackish-brown, P6 with orange. Aperture white	Dark brown with white knobs at intersection of spiral and axial sculpture. Aperture light mauve	Milky-white with narrow broan band between spiral cords, often with rough, thick chalcky layer. Aperture pale lavender	Creamy-white or pale tan, occasionally with small brown blotches at base of spines. Aperture white	Shell white, black and orange as follows: nodes resuklting from crossing of P1, P3 and P5 with axial ribs white; nodes of IP, P2 and P4 orange; interspaces black. Aperture entirely mauve
Distribution	Okinawa (Ishigaki Id), Philippine Islands (Cebu and Luzon) and Ambon, Indonesia	French Polynesia, Tubuaï and Tahiti, Society Archipelago, on reef flats	Indo-West Pacific. Sri Lanka, Indonesia, northern Japan, Queensland (Australia) and New Caledonia	South Mozambique, Western Guam, Agat Bay and Piti Lagoon, and Tahiti	Tuamotu Archipelago and Tubuaï

Table 2. Comparisons of *Morula* species

Remarks. It was difficult to determinate precisely the nomenclature of the spiral cords covering the last whorl without studying the ontogeny. However, a careful examination of several specimens and of the internal denticles of the outer apertural lip led to the present conclusion. The similar shell morphology and outline of *M. purpureocincta* has led to the misidentification of that species by several authors, including myself. *M. purpureocincta* differs in having a larger shell with different spiral sculpture, a broader aperture with smaller teeth. See also Table 2.

Text fig. C. *Morula albanigra* n.sp.
Shell: 7.1 x 4.3 mm. Photro courtesy H. Kubo

ACKNOWLEDGEMENTS

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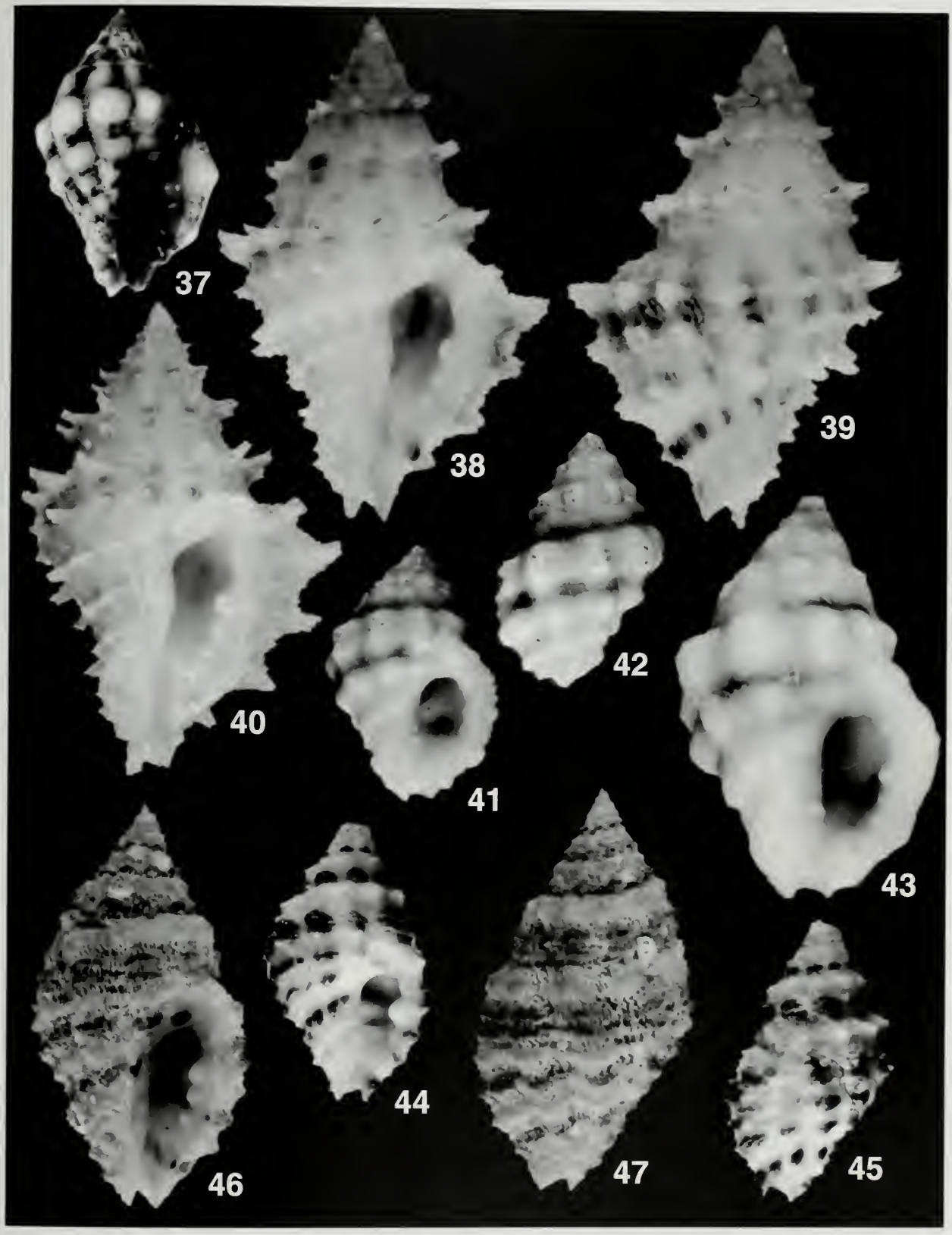
Figures 37-47
37. *Morula variabilis* (Pease, 1868), French Polynesia,Tubuaï, coll. R. Houart, 7 mm.
38-40. *M. rodgersi* Houart, 2000
38-39. Guam, Piti Lagoon, among roeks, 6-9m, holotype MNHN, 11 mm; 40. Guam, North of Alutom Island, coll. R. Houart, 11.9 mm.
41-43. *M. purpureocincta* (Preston, 1909)
41-42. Ceylon (Sri Lanka), holotype BM(NH) 1915.1.6.28, 9.6 mm; 43. Thailand, Phuket, South of Patong Beaeh, coll. R. Houart, 10.1 mm.
44-47. *M. parva* (Reeve, 1846)
44-45. Philippine Isands, Luzon, leetotype BM(NH) 1968471, 8 mm; 46-47. Indonesia, Ambon, S.E. side of Pombo Island, littoral, under eoral, RMNH, 8.5 mm.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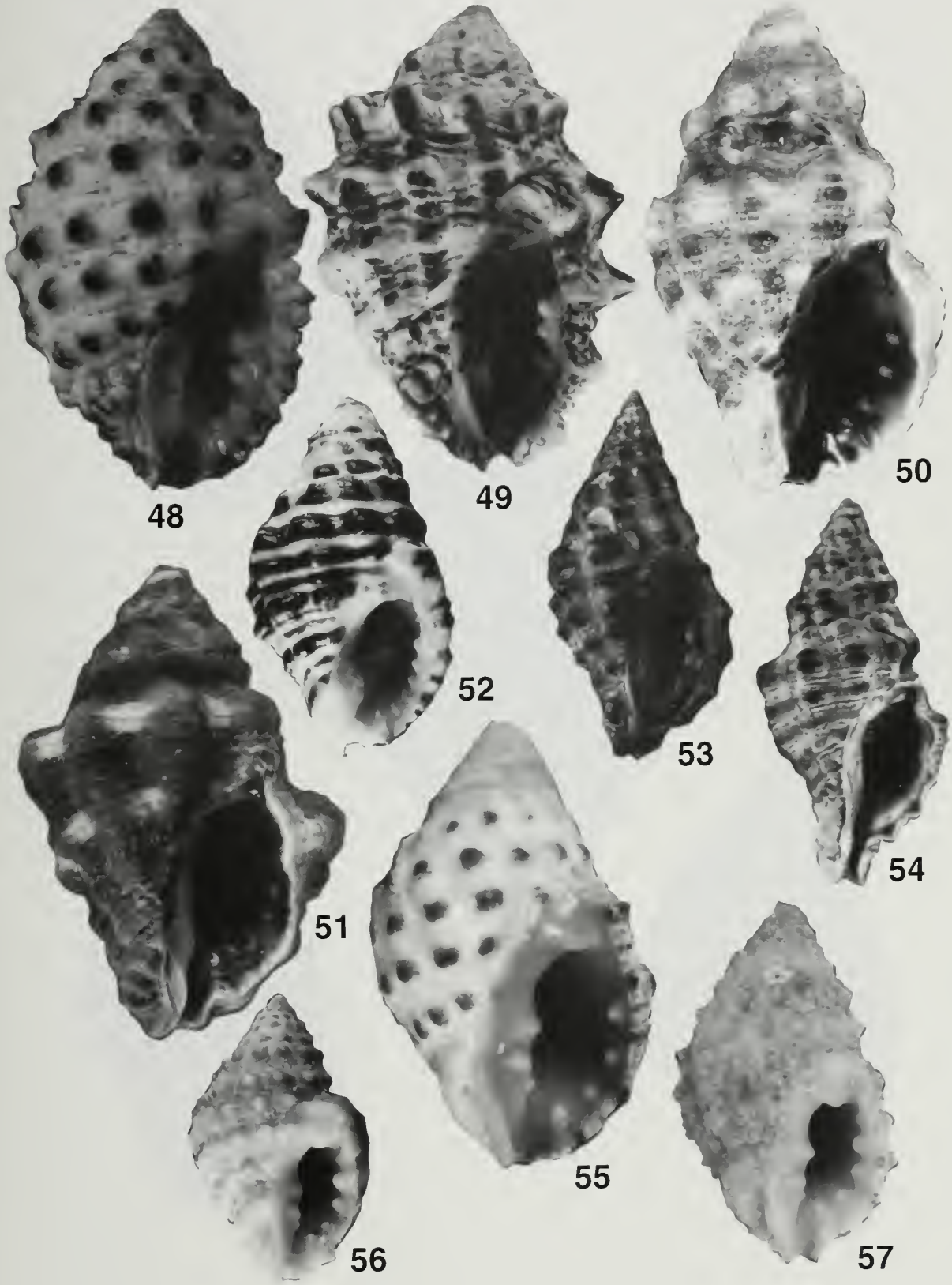
Figures 48-57
48. *Morula uva* (Röding, 1798), Marquesas, coll. J. Tröndle, 24.9 mm; **49.** *M. aspera* (Lamarck, 1816), lectotype MHNG 1101/17/2, 20.5 mm, photo G. Ratton.
50-51. *M. rumphiusi* Houart, 1996
50. Indonesia, Ambon, East side of Laha, holotype RMNH 9443, 21.4 mm; 51. Mozambique Island, rocks in harbour, NM L1463, 18.4 mm; **52.** *M. funiculata* (Reeve, 1846), syntype BM(NH) 1968475, 17 mm.
53. *M. nodulosa* (C.B. Adams, 1845), Gabon, MNHN, 17 mm; **54.** *M. consanguinea* (Smith, 1890), Saint Helena, MNHN, 13.8 mm; **55.** *M. praecipua* Rehder, 1980, Easter Island, coll. R. Houart, 17 mm.
56-57. *M. oparense* (Melvill, 1912)
56. Rapa, syntype BM(NH) 1886.6.9.70-5, 14 mm; 57. Rapa, EPHE, 17.5 mm.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Figures 58-62
58. *Morula granulata* (Duclos, 1831), Tahiti, coll. R. Houart, 24.1 mm; **59.** *M. musiva* (Kiener, 1835), Singapore, East coast, Park Beach, coll. R. Houart, 27.2 mm; **60.** *M. marginalba* (Blainville, 1832), Australia, South Queensland, coll. R. Houart, 28.3 mm; **61.** *M. anaxares* (Kiener, 1835), South Africa, Natal, Durban, coll. R. Houart, 14.5 mm; **62.** *M. striata* (Pease, 1868), Tahiti, coll. R. Houart, 14.5 mm.

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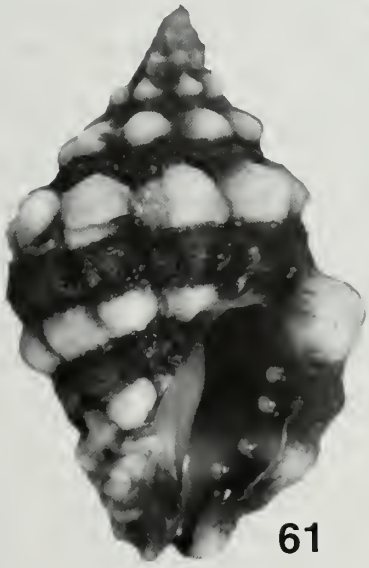

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