

Indo-Pacific Chamidae – Part III

Chama asperella-complex

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4. *Chama asperella* Lamarck, 1819

Synonyms:

Chama muricata Röding, 1798
Chama spinosa Broderip, 1835
Chama jukesi Reeve, 1847
Chama pellisphocae Reeve, 1847

Lamarck, 1819. Hist. nat. Anim. s. vert., VI (1): 96.

Original description: “9. Came aspérelle. *Chama asperella*. *Ch. testa imbricata, albida, squamulis fornicatis sursum elevatis echinata; margine crenulato*. [b] Var. ? *testa squamulis brevioribus, subdecumbentibus*. Habite.....les mers australes ? La variété [b] vient de la baie des Chiens-Marins.”

[translated: *Chama* with the shell imbricated, white, spiny by vaulted up lifted small scales; with crenulated margin. [b] Var. ? shell with the small scales shorter, nearly reclining down]

A type specimen was not figured, neither by Delessert (1841), nor by Chenu (1846). Lamy (1921: 240; 1927: 359) described 3 specimens in MNHN reported by Lamarck for his *Ch. asperella*. Delsaerd (1986: 77, pl. I, fig. 1) designated and figured the lectotype. The old label mentioned “individu nommé par Lamarck”. It was the first of the 3 specimens described by Lamy. The lectotype measures 15 mm and is completely white. Paralectotype 1 measures 20 mm and has the inner margins purplish; it was labelled by Lamarck [fide Lamy] as “*Chama asperella*, autre variété”. Paralectotype 2, ovate and completely white, reaches 35 mm and was labelled “*Chama asperella* var. b”. It was collected by Péron et Lesueur in 1803 in the “Baie des Chiens-Marins (Australie)”.

Ch. asperella has an Indo-Pacific distribution.



Lectotype in MNHN (photo: author, 1986)

Chama muricata Röding, 1798

Röding, 1798. Museum Boltenianum: 195, sp. 453.

“*C. Muricata* Die stackliche *Chama*. Gmel. *Chama bicornis* sp. 13 Chem., t. 52 f 518”.

Röding redacted a catalogue of the collection of Joannes Fried Bolten with references for each species. The Museum Boltenianum housed seven species of *Chama*. *Ch. muricata* was present with only one specimen. Röding referred to *Ch. bicornis* in Gmelin (1791: sp. 13) and to Chemnitz (1784. Band 7: pl. 52, fig. 518). The latter figured a specimen which can be identified as the species later described by Lamarck as *Chama asperella*: a white, spiny shell with a pink-coloured umbo.

The pink-coloured umbo is a handy distinguishing feature to separate *Ch. asperella* from resembling species at first sight. *Ch. muricata* is an older name than *Ch. asperella*, but *Chama muricata* Röding, 1798 is a homonym of *Chama muricata* Poli, 1795; consequently *asperella* becomes the first valid specific name. The name *bicornis* is a form which can be found in several species.

Chama spinosa Broderip, 1835

Broderip, 1835a. Proc. Zool. Soc. London: 150.

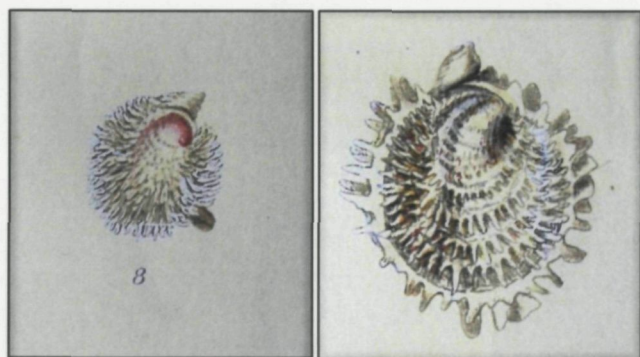
Broderip, 1835b. Trans. Zool. Soc. London: 306, pl. 28, fig. 8-9.

“*Chama testa alba interdum roseo vel purpureo umbo-nem versus valvae superioris picta, spinis fornicatis creberrimis horrida; intus alba, limbo integra.* Hab. in Oceano Pacifico (Lord Hood’s Island)”

[translated: *Chama* with a white shell, the umbo sometimes tinged with rose or purple contrasting with the upper valve, rough through very dense, vaulted spines; inside white, the margin smooth]

Lord Hood’s Island is the atoll Marutea South in Polynesia.

Broderip added: “The younger specimens are tinged towards the umbo of the upper valve with a delicate rose-colour.”



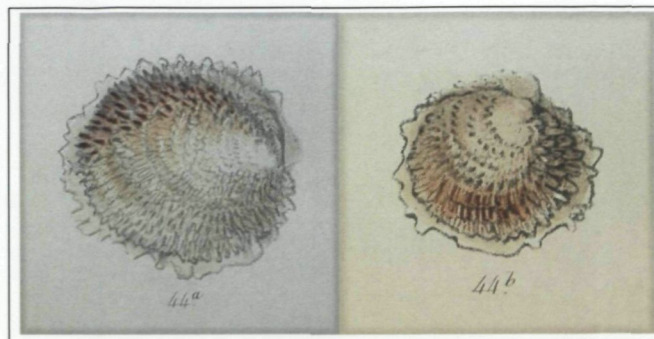
Broderip, 1835b: pl. 28, figs. 8-9

Reeve, 1847b. Conch. Icon. Vol. IV. *Chama*, sp. 44. *Chama spinosa*. Pl. VIII, fig. 44a and pl. IX, fig. 44b. His English description:

“The spinous *Chama*. Shell orbicular, rather flat, upper valve profusely and very minutely scaled, scales laminiferous towards the umbone, tubulous and spinous towards the margin, lower valve rudely squamate, scales imbricated and irregularly fimbriated, margins of the valves scarcely crenulated; whitish, posterior spines mostly stained with rust-brown.”

The inner margins were described as “scarcely crenulated” by Reeve and “limbo integra” [= smooth] by Broderip. The inner margins of *Ch. asperella* are minutely crenulated.

Two syntypes are kept in NHMUK: 38.9 x 35.1 mm and 21.7 x 23.3 mm. The syntypes are quite well recognisable in Reeve’s figures.



Reeve, 1847: figs. 44a and 44b



The 2 syntypes in NHMUK

Tryon (1872: 120) considered *Ch. spinosa* a valid species and *Ch. fragum* Reeve, *Ch. jukesii* Reeve and *Ch. pellisphocae* Reeve as synonyms. Lamy (1917: 265) synonymised *Ch. spinosa* and *Ch. pellisphocae* with *Ch. asperella*, which has the umbo tinged with pink, the spines on the posterior part of the upper valve tinged with brown and the innerside of the valves tinged with purple. Lamy considered *Ch. jukesii* the entirely white colour form of *Ch. asperella*. This opinion was repeated by Lamy (1921: 240; 1928: 361).

Chama jukesii Reeve, 1847

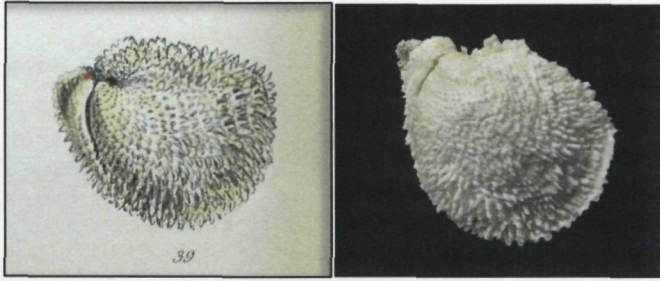
Reeve, 1847a. Proc. Zool. Soc. London, part XIV: 120. Reeve, 1847b. Conch. Icon. Vol. IV. *Chama*, sp. 39. *Chama jukesii*. Pl. VII, fig. 39.

His English description: “CHAMA JUKESII. JUKES’ CHAMA. Shell ovate, both valves profusely and very closely short-spined, spines of the lower valve somewhat squamate; snowy white within and without, umbones pale purple at the apex. Hab. Cape Upstart, North Australia (on coral reefs at low water); Jukes.” [=type locality].

Reeve dedicated his species to “Mr. Jukes, the zealous naturalist of H.M.S. ‘The Fly’, to whom this monograph is indebted through Mr. Cuming for several interesting species”.

3 syntypes are kept in NHMUK. They measure 39.2 x 29.5 mm, 34.0 x 31.8 mm and 31.4 x 23.6 mm. The largest syntype is probably the one figured in the original description. The inner margins are crenulated. Lamy was

right to consider *Ch. jukesi* just a colour form and thus synonym of *Ch. asperella*.



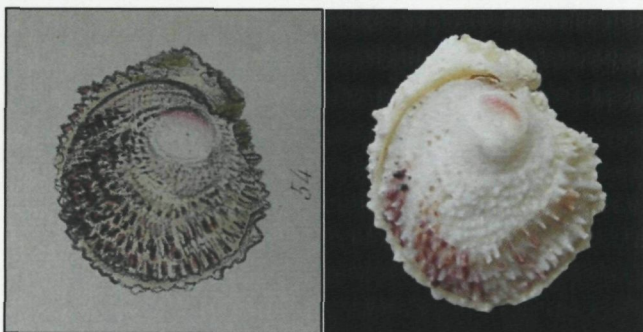
The figured type in Reeve, 1847b and one of the syntypes

Chama pellisphocae Reeve, 1847

Reeve, 1847a. Proc. Zool. Soc. London, part XIV: 118.
Reeve, 1847b. Conch. Icon. IV. *Chama*, sp. 54. *Chama pellis-phocae*. Pl. IX, fig. 54.

His English description: "CHAMA PELLIS-PHOCAE. THE SEAL-SKIN CHAMA. Shell scarcely orbicular, upper valve very minutely scaled throughout, scales very short and blunt near the umbone, longer and somewhat spinous towards the margin, lower valve roughly lamellated, margins of the valves smooth; white, scales towards the margin reddish brown, umbone pink. Hab. Island of Ticao, Philippines (attached to stones); Cuming." [=type locality].

3 syntypes are kept in NHMUK. They measure 28.3 mm, 27.4 mm and 28.0 x 24.8 mm, the latter is very recognisable in Reeve's figure 54. Although the inner margins were described as smooth, they are in fact minutely crenulated. Reeve remarked that "the pink stain upon the umbone is probably a character which may help to distinguish this species". However, it is also a characteristic of *Ch. asperella*. Delsaerd (1986: 77) and Huber (2010: 674) added *Ch. pellisphocae* to the synonyms of *Ch. asperella*, which remains a correct decision.



Reeve's figure and the probably figured syntype

5. *Chama aspersa* Reeve, 1846

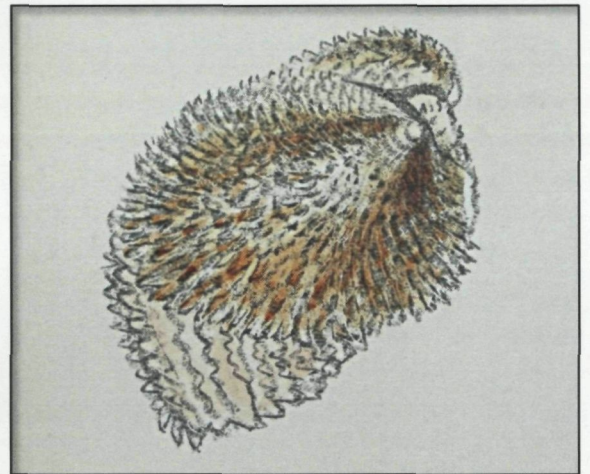
Synonyms: *Chama planata* Reeve, 1846
Chama fibula Reeve, 1846

Reeve, 1846b. Conch. Icon. IV. *Chama*, sp. 23. Pl. V, fig. 23.

His English description:

"CHAMA ASPERSA. THE SPRINKLED CHAMA. Shell ovate, upper valve flattish, ornamented with profuse concentric rows of small vaulted spines, rather long and erect towards the margin, lower valve rather deeply convex, with very close-set lamellated scales, spine-shaped at the margin, margins of the valves smooth; white, rayed or sprinkled with rust-red. Hab. Tacloban, Isle of Leyte, Philippines (attached to stones); Cuming." [= type locality]

Delsaerd (1986: 79) selected Reeve's figure as representing the lectotype. The type specimen had not been located at that time.



The figured lectotype, Reeve, 1846b

Later, two syntypes of *Chama aspersa* were found in the general collection of NHMUK and moved to the types: (1995175/1) labelled "lectotype", 35 x 24 mm and (1995175/2) "paralectotype", but this was not published.



Ch. aspersa in NHMUK (1995174/1)

Huber (2010: 675) stated that this was definitely not Reeve's species. As the figured type was missing and Reeve's figure was differently interpreted by various authors, Huber concluded *Ch. aspersa* was a nomen dubium.

Delsaerdt (1986) based his interpretation of *Ch. aspersa* on specimens from the Philippines and labelled "Sowerby & Fulton" in RMNH (18760-18761), on specimens in MNHN from Djibouti and identified by Lamy; on numerous specimens in RMNH from Gulf of Suez, in Coll. Beets. The left (lower) valve of (sub)adult specimens bears radiating, spaced, short spines, often rust-brown tinged. The right (upper) valve has a sculpture of dense spines, with rust-brown radiations from the umbo. These rust-brown radiations are often seen on the inner side of the right valve, too.

Ch. aspersa was recorded as a Lessepsian invader in the Mediterranean Sea by Mienis (2004), Ovalis (2007), Ovalis & Zeneton (2007), Mifsud & Ovalis (2007) and Delongueville & Scaillet (2010), based upon records from Israel, Greece, Turkey and Cyprus.

Ch. asperella has recently been recorded from the Mediterranean. A much better known Lessepsian invader is *Ch. pacifica* Broderip, 1835. Concerning the Mediterranean specimens examined: Huber (2010: 675) concluded that these belong to *Ch. asperella* because of the "finely crenulated margin instead of smooth [as noted by Reeve], a small size of approximately 20 mm and the typical whitish red brown outer colour".

Colour plates VII and VIII show the differences in colours and spines between *Ch. asperella* and *Ch. aspersa*.

Distribution: *Ch. aspersa* is a species with an Indo-Pacific distribution. In coll. author present from the Mediterranean Sea, the Great Bitter Lake, Gulf of Suez, Gulf of Aqaba, Thailand, Philippines and Australia.

Chama planata Reeve, 1846

Reeve, 1846. Conch. Icon. IV. *Chama*, sp. 25. *Ch. planata*. Pl. V, fig. 25.

His English description: "CHAMA PLANATA. THE FLATTENED CHAMA. Shell somewhat oblong-ovate, rather flattened, upper valve profusely scaled, scales short, minute, rather pressed forward, radiating in rows from the umbone, lower smooth, with large rude scales along the base, margins of the valves smooth; white, radiated from the umbones with rust-red. Hab. Island of Guimaras, Philippines (attached to stones); Cuming." [= type locality].

Reeve distinguished *Ch. planata* from *Ch. aspersa*: "in form it appears naturally flatter, in colour more distinctly rayed, and the sculpture of the valves is of a different system and more than usually dissimilar".



The figured syntypes in Reeve, 1846: fig. 25

Hidalgo (1903: 375) was convinced that *Ch. planata* was a synonym of *Ch. aspersa*. This opinion was followed by Lamy (1921: 307; 1928: 364-366), who mentioned numerous specimens from the Red Sea collected by Jousseume. He remarked that one of the figured syntypes bears very short spines, while the other syntype, although eroded, still shows two rust-coloured rays as seen in the Red Sea specimen from Suez, Massaouah, Djibouti, Aden. After examining a number of Red Sea specimens, Delsaerdt (1986: 79) shared Lamy's view. Huber (2010: 675) added *Ch. planata* to the synonyms of *Ch. asperella*. I hereby hesitate to accept Huber's opinion as the rust-rayed specimens seems to be locally common (many specimens were collected by Beets 1948-1950 in the Gulf of Suez and the Great Bitter Lake and were kept in RMNH, now Naturalis, Leiden) and therefore still consider *Ch. planata* a synonym of *Ch. aspersa*.

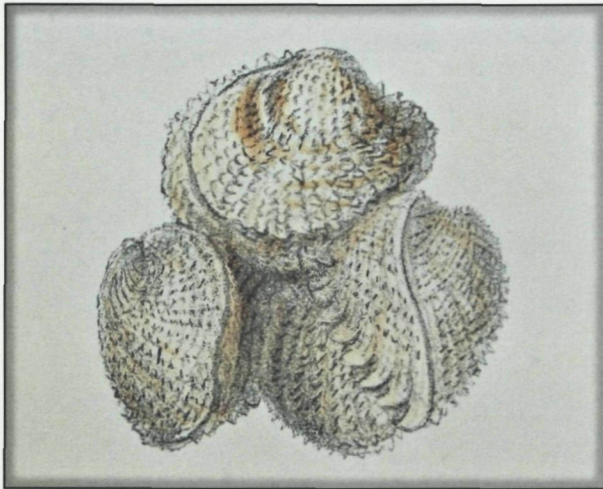
Chama fibula Reeve, 1846

Reeve, 1847b. Conch. Icon. IV. *Chama*. Sp. 27. *Ch. fibula*. Pl. V, fig. 27.

His English description: "CHAMA FIBULA. THE BUTTON CHAMA. Shell orbicular, upper valve very closely concentrically sculptured with short lamellated scales, lower valve with fewer scales elongated and flatly appressed, margins of the valves very minutely crenulated; snowy white, sometimes palely stained with rust-brown, umbones peculiarly tinged with violet; interior white, rayed with violet purple from the umbones.

Hab. Island of Luzon, Philippines (attached to coral); Cuming." [= type locality].

Reeve added: "A delicate rounded species, tinged with purple at the umbones both externally and internally".



The cluster of syntypes figured in Reeve, 1846b



The cluster of syntypes in NHMUK
(Photo: Kevin Webb © NHMUK)

The cluster of 4 syntypes is kept in NHMUK (1950.11.1 .47) and is very accurately figured in Reeve (1846b). Huber (2010: 675) erroneously stated that “the type lot could not be located in BMNH”.

Smith (1885: 172) synonymised *Ch. jukesi*, *Ch. pellisphocae* and *Ch. fibula*. As already mentioned under *Ch. spinosa*, Lamy (1917, 1921, 1928) accepted this view and also synonymised *Ch. pellisphocae* and *Ch. spinosa* with *Ch. asperella*.

Delsaerd (1986: 87) provisionally considered *Ch. fibula* a valid species distinguished from *Ch. aspersa* by the crenulated margins. By the lack of type material of *Ch. aspersa* at that time, this opinion was based on Reeve’s description which mentions “smooth margins” but study of the lectotype of *Ch. aspersa* revealed a partially crenulated margin.

Huber (2010: 674) correctly remarked that Reeve described *Ch. planata* with “margins of the valves smooth”, but that the depicted syntypes have finely

crenulated margins. Consequently, I hereby correct my earlier (provisional) opinion (“*Ch. fibula* valid species”).

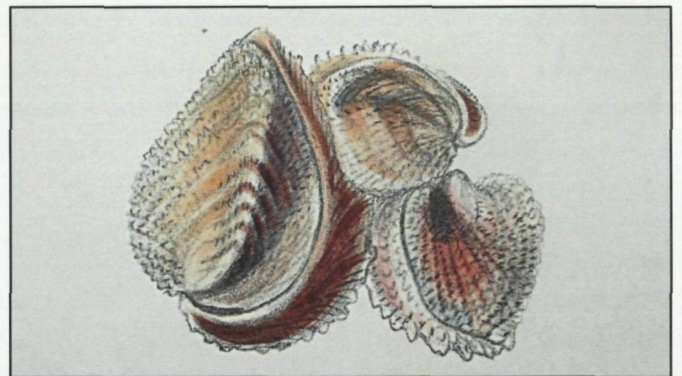
E.A. Kay (1979: 540) synonymised the Hawaiian *Ch. hendersoni* Dall, Bartsch & Rehder, 1938 with *Ch. fibula*.

6. *Chama obliquata* Reeve, 1846

Reeve, 1846b. Conch. Icon. IV. *Chama*, sp. 25. *Ch. obliquata*. Pl. V, fig. 28.

His English description:

“CHAMA OBLIQUATA. THE OBLIQUE CHAMA. Shell obliquely ovate, triangular, affixed by the side, upper valve profusely very minutely scaled, scales radiating obliquely from the umbone, spinous at the margin, lower comparatively smooth, rudely lamellated along the base, margins of the valves internally very minutely crenulated; white, almost entirely stained and rayed with rust and brown and purple; interior white. Hab. Catbalonga, Isle of Samar, Philippines (attached to stones); Cuming” [= type locality]



The figured syntypes in Reeve, 1847b



Syntypes of *Ch. obliquata* in NHMUK

The cluster of 3 syntypes is kept in NHMUK and can easily be recognised in Reeve’s figure. The largest syntype has a length of 37.7 mm. The inner margins are partially crenulated. Reeve added: “Distinguished by its oblique triangular growth, darkly rayed and stained with colour and extremely minutely scaled.”

Lamy did not mention *Ch. obliquata*. Lamy (1928: 340) only corrected a misidentification by Clessin and noted that Clessin's figure of *Ch. obliquata* was not the species figured by Reeve [as Hidalgo (1903: 379) had already remarked]. Huber (2010: 675) failed to differentiate *Ch. obliquata* from *Ch. asperella* and added *Ch. obliquata* to its synonyms.

In 1996, the late Manuel Montilla found 7 specimens collected on Balut Island (Philippines), which correspond very well with all characteristics of the description of *Ch. obliquata*. The largest specimen was compared with the cluster of the syntypes in NHMUK and there is no doubt that it belonged to *Ch. obliquata*. The specimen is here illustrated (Pl. VIII, Figs 14). Both valves of the species are heavier and thicker in comparison with those of *Ch. asperella* and *Ch. aspersa*.

? *Chama fragum* Reeve, 1847

Reeve, 1847a. Proc. Zool. Soc. London. Part XIV: 117.
Reeve, 1847b. Conch. Icon. IV. *Chama*. Sp. 48. *Ch. fragum*. Pl. IX, fig. 48.

His English description:

“CHAMA FRAGUM. THE STRAWBERRY CHAMA. Shell somewhat orbicular, upper valve concentrically very finely fimbriately laminated, laminae somewhat tubulous towards the margin, lower valve rudely tubulously squamate, margins of the valves minutely crenulated; white, dotted with red, interior whitish. Hab. Island of Mindanao, Philippines (attached to coral); Cuming” [= type locality].

Reeve added: “The sculpture of this species somewhat approaches that of *C. spinosa*...”. Indeed, the concentrically fimbriately laminated upper valve and the rudely tubulously squamate lower valve resemble those of *Ch. spinosa* = *Ch. asperella*. The type specimen of *Ch. fragum* could not be traced in NHMUK.

Around 1990, A. Matsukuma (Japan) studied the type collection in NHMUK: 7 valves labelled possible syntypes. A personal study of these 7 valves (locality unknown) proved they belonged to different species and it is not possible to match even one with Reeve's figure.

Coll. author houses a specimen that resembles Reeve's figure very well. It is a specimen ex coll. Eaton Shell Shop (London). It could be an excellent neotype, but there is no locality.



The figured type in Reeve, 1847, pl. IX, fig. 48 and the specimen in coll. author

Huber (2010: 675) also remarked that the valves present in NHMUK (1995182) under “*Ch. fragum*” are not conform to Reeve's species. As the species was differently interpreted by various authors, Huber formally declared “*Ch. fragum* Reeve” a nomen dubium.

Abbreviations:

MNHN: Muséum National d'Histoire Naturelle. Paris.
NHMUK: Natural History Museum, London.
RMNH: Rijksmuseum voor Natuurlijke Historie, Leiden. Now: Naturalis.

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PLATE VII

[figure = specimen x 2]

Chama asperella Lamarck, 1819

- | | | | |
|-----|------------------|--|----------|
| 1. | 14.4 mm, 11.1 mm | <i>Ch. Asperella</i> on old coral, Cureaghat, Andaman Islands. Leg. A. Delsaerdt (Sth. Andamans Exp. RBSC, 1982) | [0841] |
| 2. | 20.1 x 16.5 mm | right valve Jolly Boys Island, Andaman Islands. Leg. A. Delsaerdt (Sth. Andamans Exp. RBSC, 1982) | [0638] |
| 3. | 25.0 x 23.1 mm | left valve, inside Snake Island, Andaman Islands.. Leg. A. Delsaerdt (Sth. Andamans Exp. RBSC, 1982) | [0737] |
| 4. | 31.0 x 25.7 mm | Cureaghat, Andaman Islands. Leg. A. Delsaerdt (Sth. Andamans Exp. RBSC, 1982) | [0840] |
| 5. | 24.3 x 19.8 mm | Kos Island, Agios Stefanos, Greece Leg. Jean Wuyts, 8.1988 | [Ch.282] |
| 6. | 12 mm | on blue coral, Philippines (no exact locality; don. Ed. Wils, 1981) | [Ch.115] |
| 7. | 27.7 x 29.6 mm | North coast of Bohol Island, Philippines Leg. G. Poppe, 10.1998: 3-7m. | [Ch.329] |
| 8. | 23.1 x 23.5 mm | Balut Island, Philippines. Leg. M.O. Montilla. | [Ch.324] |
| 9. | 25.8 x 26.0 mm | Round Reef, Coloncester Island, near Bowen, Queensland, Australia. Leg. Thora Whitehead, 7. 1982. | [Ch.267] |
| 10. | 28.4 x 25.5 mm | Loc. idem as 8. Leg. Thora Whitehead, 7. 1982. | [Ch.267] |

Chama aspersa Reeve, 1846

- | | | | |
|-----|------------------|---|----------|
| 11. | 17.2 x 18.8 mm | Ras Matarma, NE Gulf of Suez, Egypt. Leg. Beets, 1948-49. Don. Gittenberger (RNH). | [Ch.227] |
| 12. | 11 mm | Great Bitter Lake, Egypt. Leg. Beets, 1950: sta. 15. Don. Gittenberger (RNH). | [Ch.223] |
| 13. | 23.0 x 14.5 mm | Saronic Gulf, Greece, Mediterranean Sea. Leg. P. Ovalis, 9.2016: dived -4m, taken alive. | [Ch.465] |
| 14. | 21.0 mm, 19.5 mm | Fethyie, Turkey. Mediterranean Sea Leg. P. Ovalis, 8.2017: dived -5 m, taken alive | [Ch.466] |

VII



PLATE VIII

Chama aspersa Reeve, 1846

- | | | | |
|-----|----------------------------------|--|----------|
| 1. | 35.1 x 29.4 mm | Locality unknown. Ex Coll. Eaton Shell Shop, London, 1980. b: left valve attached to right valve of another specimen of <i>Ch. aspersa</i> . | [Ch. 78] |
| 2. | 33.6 x 27.4 mm | Balut Island, Philippines. b: lateral view of the left valve. | [Ch.323] |
| 3. | 32.5 x 30.1 mm | Shelburne Bay, NE Queensland, Australia. Leg. Steve Cook, 14.1.1993: 11°48.7' S — 143°12.6' E, -31m. Don. K. Lamprell, 1.7.1999. | [Ch.331] |
| 4. | 29.2 x 29.5 mm | Data = 3. | [Ch.331] |
| 5. | 30.5 x 38.1 mm | Data = 3. | [Ch.331] |
| 6. | cluster of 3 specs. | H 16 mm, 18 mm, 15 mm Leg. G. Rigeaux, 2000: Pattaya area, G. Thailand. Phuket, Thailand. (no exact locality). specimen attached to <i>Pecten</i> sp. | [Ch.338] |
| 7. | 15.7 x 14.5 mm | Olango Island, Philippines. cluster, leg. team Poppe, 2000: 10-25m. | [Ch. 92] |
| 8. | 34.0 x 30.9 mm | Batangas Bay, Philippines. | [Ch.421] |
| 9. | 34.1 x 28.6 mm 30.5 x 27.9 mm | Attached to right valve of another specimen of <i>Ch. aspersa</i> , 29.1 x 28.7 mm.. | [Ch.361] |
| 10. | 33.0 x 36.5 mm | Batangas Bay, Philippines. Attached to <i>Pteria dendronephtya</i> . | [Ch.361] |
| 11. | 41.1 x 36.5 mm | Off Terengganu, NE Malaysia, Sth. China Sea. On rubble on wreck of Samui, -30-38m, 5° 18' N — 103° 18' E. Leg. Morisson. | [Ch.381] |

Chama fragum Reeve, 1847

- | | | | |
|-----|----------------|--|----------|
| 12. | 29.7 x 24.6 mm | Locality unknown. Ex Coll. Eaton Shell Shop, London, 1980. | [Ch. 79] |
| 13. | 24.5 x 22.5 mm | Western Australia. (no exact locality) Ex Coll. L. Willems, Veurne, 8.1985. Is it a rare gem <i>Ch. fragum</i> ? | [Ch.211] |

Chama obliquata Reeve, 1846

- | | | | |
|-----|----------------|--|----------|
| 14. | 37.8 x 29.1 mm | Balut Island, Philippines. Scuba diver for M.O. Montilla, 1996: -80 ft. a: lateral view on left and right valve b: view on the right valve. | [Ch.317] |
| 15. | 29.0 x 21.5 mm | Data = 14 | [Ch.317] |
| 16. | 24,0 x 13.7 mm | Data = 14 | [Ch.317] |

VIII



PLATE IX

- | | | | |
|------------------------------------|----------------------------------|---|-----------|
| 1. | 49.8 x 44.2 mm | <i>Chama asperella</i> Lamarck, 1819 Off Terengganu, NE Malaysia, Sth. China Sea. Leg. Morisson: 5° 18' N — 103° 18' E. | [Ch.381] |
| 2. | 52.1 mm | <i>Chama hendersoni</i> Dall, Bartsch & Rehder, 1938 Hawaii. In Coll. M. Coltro, Femorale. © Femorale. | |
| [following: figure = specimen x 2] | | | |
| 3. | 20 mm | <i>Chama fragum</i> Reeve, 1847 Majuro Atoll, Marschall Islands. In Coll. M. Coltro, Femorale. © Femorale. | |
| 4. | 17 mm | <i>Chama fibula</i> Reeve, 1846 Mindanao, Zamboanga, Philippines. 2012: 10-25m. 717258 © 2018 - Guido & Philippe Poppe | |
| 5. | 13 mm | Mindanao, Surigao, Basul IIs., Philippines. 2013: trawled 80-100m. 827923 © 2018 - Guido & Philippe Poppe | |
| 6. | 17.5 mm | Mindanao, Surigao, Mabua, Philippines. 2014: trawled 100-160m. 855372 © 2018 - Guido & Philippe Poppe | |
| 7. | 21.4 mm | Mindanao, Zamboanga Peninsula, Philippines. 2017: 10-25m. 1034297 © 2018 - Guido & Philippe Poppe | |
| 8. | 28.6 mm | Balut Isl., Philippines. 2017: -5m. 1040447 © 2018 - Guido & Philippe Poppe | |
| 9. | 18.7 x 17.8 mm 19.6 x 18.5 mm | right valve left valve Bohol, Philippines. Ex Coll. M.O. Montilla. | [Ch.370b] |
| 10. | 32.3 x 26.4 mm | Halls Bank, Fremantle, Western Australia. (compared with syntypes of <i>Ch. fibula</i>) | [Ch.162] |
| 11. | 18.9 x 17.3 mm 17.3 x 18.3 mm | right valve left valve Bohol, Philippines. Ex Coll. M.O. Montilla. | [Ch.370c] |
| 12. | 18.2 x 19.9 mm | right valve left valve Bohol, Philippines. Ex Coll. M.O. Montilla. | [Ch.370a] |

IX



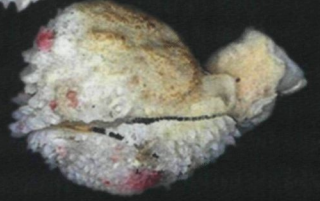
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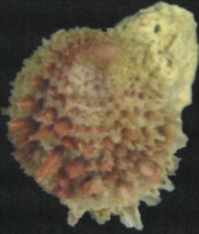
2



3



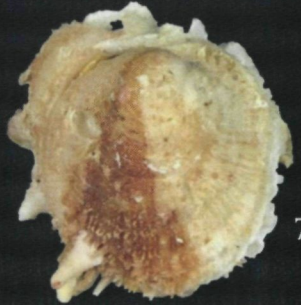
4



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8



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10



11



12



12

