Results of the Rumphius Biohistorical Expedition to Ambon (1990)

Part 6. Mollusca, Bivalvia, Pectinidae

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Key words: Rumphius Biohistorical Expedition; Indonesia; Ambon; Mollusca; Bivalvia; Pectinidae.
During the Rumphius Biohistorical Expedition (1990) to Ambon 17 Pectinidae species were collected, nine of which were described by Rumphius (1705) and five illustrated by Rumphius. One species, viz. *Decatopecten plica* (Linnaeus, 1758), illustrated in Rumphius (1705: pl. 44, fig. O), has not been refound. No decisive evidence is found of Rumphius' pectinids kept in either the Gualtieri collection at Calci, or in the Naturhistorisches Museum at Vienna.

Introduction

During the Rumphius Biohistorical Expedition (4 November 1990 - 14 December 1990) to Ambon (Moluccas, Indonesia) 68 samples of Pectinidae including 17 species were collected from 18 stations in the shallow coastal waters around the island (see table 2). All pectinids mentioned by Rumphius (1705, 1741, 1766), excepting *D. plica* (Linnaeus, 1758) (fig. 59), were rediscovered by the present expedition.

Rumphius (1705) described nine species from the same region. Altogether c. 62 (sub)species of Pectinidae are known from the Indonesian Archipelago (see table 2) from littoral to bathyal depths. Most likely additional pectinid species could be found around Ambon by dredging or trawling in deeper waters.

In 1682 Rumphius sold many molluscs to Cosimo III de Medici, grand duke of Toscane, together with other "naturalia" (Targioni Tozzetti, 1903). Gualtieri, court-physician of Cosimo III de Medici, got duplicate specimens for his collection (Argenville, 1780), many of which are figured in his "Index Testarum Conchyliorum" (1742). In November 1990, during a visit to the Museo di Storia Naturale e del Territorio of the University of Pisa, at Certosa di Calci, near Pisa, I traced several pectinids of Gualtieri's

collection. Though no labels or other information were found with this material, it is likely that some of these originate from the Moluccas, viz. *A. obliteratum*, *A. pleuronectes*, *D. radula*, *G. pallium* and *M. lentiginosa*, and might stem from Rumphius.

Rumphius also donated molluscan shells to some members of the Academia Naturae Curiosorum at Vienna; in 1681 he was admitted to this Academia and got the name "Plinius Indicus". During a visit to the Naturhistorisches Museum at Vienna I examined several pectinids from the Moluccas, however, without discovering any trace of Rumphius' donated material.

Material and methods

The material collected during the Rumphius Biohistorical Expedition has been deposited in the Nationaal Natuurhistorisch Museum at Leiden.

Each species is treated systematically, and literature references, synonyms, geographic distribution, bathymetric ranges, and ecology are mentioned together with remarks on Rumphius' described and illustrated pectinids.

For a general introduction on the Rumphius Biohistorical Expedition and additional information about the localities, see Strack (1993).

Pectinid material of Rumphius was not found with certainty in the Museo di Storia Naturale e del Territorio at Calci, or in the Naturhistorisches Museum at Vienna.

Abbreviations:

AMS = The Australian Museum, Sydney, Australia
BMNH = The Natural History Museum, London, U.K.
LSL = The Linnean Society of London, Burlington House, London, U.K.
MLU = Museum Ludovicae Ulricae (material now in UUZM)
MNHN = Muséum National d'Histoire Naturelle, Paris, France
USNM = National Museum of Natural History, Smithsonian Institution, Washington D.C., U.S.A.
UUZM = Uppsala University Zoological Museum, Uppsala, Sweden
ZMA = Zoölogisch Museum, University of Amsterdam, The Netherlands
ICZN = International Code of Zoological Nomenclature
(R) = station mentioned by Rumphius (1705)

The Pectinidae of Rumphius' Amboinsche Rariteitkamer

Rumphius (1705: 141-144) divided the pectinids into two groups: Pectines ("platte St Jacobs Schulpen" [= flat St James' Scallops]) and Pectunculi ("bultige St Jacobs Schulpen" [= Humpback St James' Scallops]), which are figured on his plate 44. *Amusium* ("Kompas-Schulp" [Moon Scallop]) closely allied to Pectines ("...uit den maagschap van de Pectines..." [= ... from the family of St James' Scallops...]) is extensively described on pages 144-145 and figured on plate 45. He treated five alleged pectinid species from the Moluccas, which, in fact represent nine currently recognized species (see table 1). His other Pectines and Pectunculi belong to the Limidae (1 species), Cardiidae (5 species), Arcidae (4 species) and Veneridae (1 species)(Martens, 1902: 126-127).

The pectinid added by Schynvoet (pl. 48 figs 7-8), is *Nodipecten nodosus* (Linnaeus, 1758)(Martens, 1902: 129), a species from the western Atlantic, and will not be discussed in this paper.

Notes on the species listed by Rumphius are given below:

Amusium (Dentamussium) obliteratum (Linnaeus, 1758)

Sipman in Rumphius, 1705: 188 [not illustrated].

Rumphius (1705) recorded this species from Ceram, and Sipman added in the same publication (p. 188) a new variety from Ambon: "op Ambon vind men een slach daar van, ..."[= In Ambon is found a variety of it,...]. It is possible that VOC-traders [VOC = Vereenigde Oostindische Compagnie = Dutch East-India Company] already in the 17th century brought material of this species to the Netherlands. However, most material on hand dates from the 18th century and is kept in several European museum collections, labelled "Moluccas", "Amboina" or "Ambon".

This species still occurs in the Moluccas. During the Rumphius Biohistorical Expedition a simple specimen was collected alive at Hitu on Ambon, a locality also mentioned by Rumphius (1705).

Amusium (Amusium) pleuronectes (Linnaeus, 1758)

Rumphius, 1705: 144-145, pl. 45, figs A, B.
Sipman in Rumphius, 1705: 188.

Rumphius (1705: 144) mentioned two ancient Dutch names for *A. pleuronectes*, viz. "Maandoublette" or "Kompas-Schulpen", "...naar de strepen, dewelke men op de vlakke schaalen ziet, ...en daar van mag het zyn, dat men ze in 't Latyn *Amusium* noemt." (based on the stripes observed on the flat valves, and therefore it may be that they are termed in Latin *Amusium*)(from *amussis* = ruler). Rumphius (1705: 144) described *A. pleuronectes* in detail and recorded localities from "...den Noord-Westen hoek van Xula mangoli, en de stranden van Waro tot Hote toe, op Kerams Noordkust." [= Northwest end of Xula mangoli, and the beaches of Waro to Hote, on Seram's north coast]. On page 145 he added the following localities: Batavia [= Jakarta] in 1696, collected by local fishermen from nearby islets, Bima (on Sumbawa Island) and from Sapi [= Selat Sape between Sumbawa and Komodo] in 1697 "zynde aldaar mede in de treknetten gevonden" [= collected at that place also in the dragnets].

Specimens have yellowish soft parts ("...week geelachtig vleesch...") and are "cleaving through the water like an arrow" ("...doorsnydende het water als een pyl..."). He mentioned that specimens could be collected only during the wet season ("...in den Oosten of Zuid-Oosten Mousson"), washing up alive on the beaches of northern Seram. In 1666 the first specimens came from Hote (Seram) and were transported to Amboina (= Ambon) ("De eerste wierden in 't jaar 1666 in *Amboina* gebragt van Hote")(Rumphius, 1705: 144).

Laevichlamys squamosa (Gmelin, 1791)

Rumphius, 1705: 141-142, no III, pl. 44, fig. C (pro parte).
Sipman in Rumphius, 1705: 188, no. 3 (pro parte).

Rumphius (1705: 141-2) mentioned four "species" of "*Pecten tenuis*":

– "D'eerste is kastanjebruin, met korte en ydele schubbetjes op de plooijen" [= The first is auburn, with short and fine scales on the ribs]. This species is depicted in Rumphius' pl. 44, fig. C as suggested by Martens (1902: 126). Sipman's description (in Rumphius, 1705: 188) is somewhat different: "De 1ste is kastanjebruin, met korte en ydele schubbekens en met swarte plekjes, gemeen aan de voorste randen van steenige stranden op de plooijen" [= The first is auburn, with short and fine scales and with black specks, common on the foremost edges of stony beaches on the folds].

– "De tweede blyft klein, grauw, ruig van schubbetjes, en met zwarte plekjes, gemeen aan de voorste randen op steenige stranden" [= The second remains small, grey, rough with small scales, and with black specks, common on the foremost edges of stony beaches]. According to Martens (1902: 126) the second "species" could be *P. punctatus* Gmel.(Gualtieri, 1742: pl. 74, fig. G = *lentiginosus* Reeve), which he collected on Ambon and Flores; this species was also represented in Dunker's collection from Java. In his description of *O. punctata* Gmelin (1791: 3320, no 29) only referred to Gualtieri (1742: pl. 74 fig. G). When examining Gualtieri's collection, I traced one right valve (H 49 mm, L 42.9 mm), with an ink-number 74.G. on the inner side, whereas, the illustrated left valve was not found. This right valve is morphologically similar to *Mimachlamys lentiginosa* (Reeve, 1853). Therefore *Ostrea punctata* Gmelin turns out to be a senior synonym of *M. lentiginosa* (Reeve, 1853), as already suggested by Martens (1902).

– "De derde is gansch wit, ook met ydele schubben" [= The third is completely white, also with fine scales], which is a colour variation of *L. squamosa*, mentioned by Martens (1902: 126).

– "De vierde is koraal en minie-rood; zommige ook citroengeel, dieper geplooit, en ruig gekartelt op de plooijen" [= The fourth is coral red and minium red; some also citrine, more deeply folded, and roughly crenated on the ribs]. Martens (1902: 126) attributed this form to *P. porphyreus* Chemnitz (*senatorius* auct., non Chemnitz), observed from Java. Rumphius' description of the fourth "species" most probably refers to *Mimachlamys senatoria* (Gmelin, 1791).

Summarizing I conclude that according to Rumphius' description and his ecological data, these pectinids are most probably the following species:

- *Mimachlamys lentiginosa* (Reeve, 1853) (typical)
- *Mimachlamys albolineata* (G.B. Sowerby II, 1842) (typical)
- *Laevichlamys squamosa* (Gmelin, 1791) (white colour form)
- *Mimachlamys senatoria* (Gmelin, 1791) (red and yellow colour form)

Gloripallium pallium (Linnaeus, 1758)

Rumphius, 1705: 141, pl. 44, fig. B.
Sipman in Rumphius, 1705: 188.

Rumphius (1705: 141) described this species rather in detail: "*Pecten secundus*", is

kleiner en bultiger dan de voorgaande, ook met twee doch ongelyke ooren, en op de voorens ruig, aan 't breedste deel grauw, naar achteren witachtig, met veele zwarte plekjes en stipjes, waar door men ze mede Bontemantels noemt; binnen zyn ze wit, en omtrent de kanten purperverwig" [= *"Pecten secundus"* is smaller and more convex than the former (*Decatopecten radula*, det. Dijkstra), also with two unequal auricles, and on the costae rough, the widest part (near the ventral margin) grey, to the back side whitish, with many black specks and fine dots, so that these are called scallops; inner side white, and near the margins purplish]. In fact, Rumphius observed a purple colour form of *G. pallium*. One specimen could be traced in the Gualtieri collection, with the ink number 74.F. on the inside of both valves. On an accompanying label is written "Indie". Possibly this specimen was sent by Rumphius to Cosimo III de Medici.

Rumphius (1705: 141) mentioned this species from Ambon, from stony beaches. Martens (1902: 126) recorded it from Batjan and Adenare, and also from Dunker's collection from Java.

Decatopecten radula (Linnaeus, 1758)

Rumphius, 1705: 141, pl. 44, fig. A.
Sipman in Rumphius, 1705: 188.

Rumphius (1705: 141) clearly described this species as follows: "Pecten primus sive vulgaris", gemeene St. Jacobs Schulpen, Neerduitsch, Bontemantel, is plat, 3 en 4 vingers breed, achter by den wervel met twee ooren, waar van t'eene altyd grooter is, waar door ze een uitgebreide mantel gelyken: Zy heeft veele plooijen, met diepe voorens onderscheiden gelyk een kam, waar van ze in 't Latyn den naam heeft; de plooijen zyn overdwars gekartelt en ruig, vuilwit of vaal met weinige zwarte plekken. De Maleijers noemen ze Bia Siffir, dat is, Kamschulpen, ook Bia Terbang, dat is, Vliegende Schulp, om dat men ze zomtyds uit het water een sprong ziet doen als of ze vlogen, doch niet ver" [= Pecten primus sive vulgaris, three or four finger's broad, with two auricles, of which one is always larger, so that they resemble a wide coat: she has many costae, with deep grooves like a comb, from which the Latin name is derived; the ribs are crenated and rough crosswise, dirty white or greyish with few black stains. The Malayan people call them Bia Siffir, that is "Comb Scallops", also Bia Terbang, that is "Flying Scallops", because they sometimes jump out of the water as if they are flying, though not far].

Pectinidae collected by the Rumphius Biohistorical Expedition (1990)

Family **Pectinidae** Wilkens, 1810 [emend. Waller, 1978]
Genus *Amusium* Röding, 1798

Type species: *Ostrea pleuronectes* Linnaeus, 1758

Subgenus *Dentamussium* Dijkstra, 1990

Type species: *Ostrea obliterata* Linnaeus, 1758

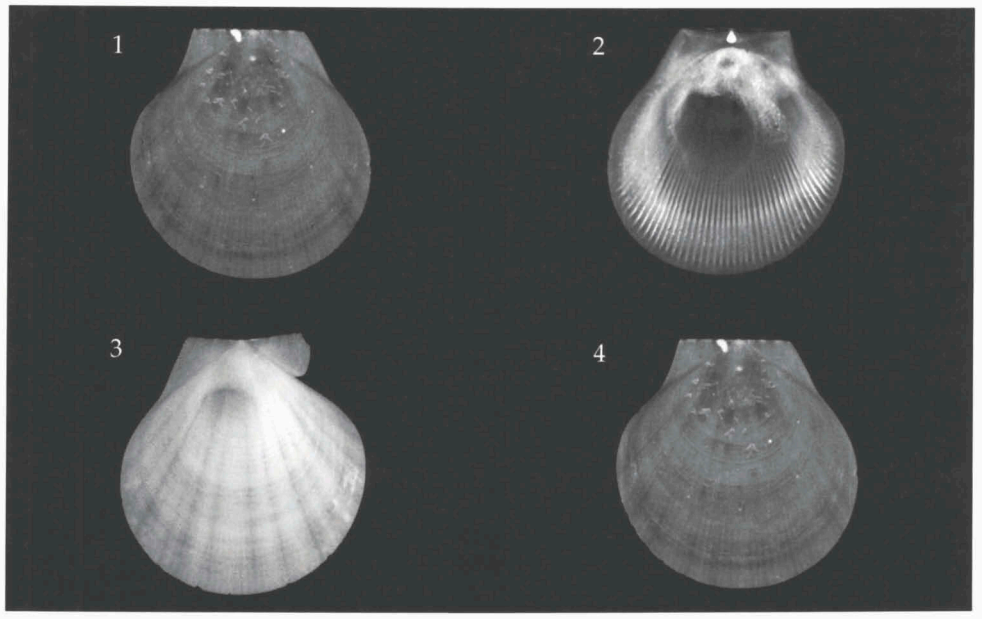
Amusium (Dentamussium) obliteratum (Linnaeus, 1758) (figs 1-4)

Sipman in Rumphius, 1705: 188, no 4.
Gualtieri, 1742: pl. 73, fig. C.
Knorr, 1757: pl. 21, fig. 6.
Regenfuss, 1758: vol. 2, pl. 2, fig. 12. [Pre-Linnaean publications].
Ostrea obliterata Linnaeus, 1758: 697, no 160; 1764: 525, no 104; 1766: 1146, no 197; Gmelin, 1791: 3323, no 46; Dillwyn, 1817: 258; Wood, 1825: 49, no 25; Hanley, 1855: 108; Dodge, 1952: 175.
Pecten obliteratus; Meuschen, 1778: 416 [Invalid publication]; Lamarck, 1819: 165, no 8; Bosc, 1824: 263-264; Defrance, 1825: 240; Sowerby I, 1825: 25, no 574; Deshayes in Lamarck, 1836: 133, no 8; Sowerby II, 1842: 55, no 29, pl. 16, fig. 126; Chenu, 1843: 4, pl. 12, figs 2, 2a-c; Catlow & Reeve, 1845: 82, no 61; Jay, 1850: 85, no 2385; Reeve, 1853: sp. 70, pl. 19, fig. 70; 1860: 57, no 99; Küster & Kobelt, 1888: 85-86, no 50, pl. 22, figs 1-3.
Amussium obliteratum; Dunker, 1882: 243; Paetel, 1890: 236; Lamy, 1935: 319.
Pecten (Amussium) obliteratus; Gregorio, 1898: 10-11, 42, pl. 2, figs 1-5, pl. 4, figs 7-8.
Amusium obliteratum; Kuroda, 1931: 76; Kuroda & Habe, 1952: 13; Abbott & Dance, 1982: 304, fig.; Dijkstra, 1983: 5, figs; Rombouts, 1991: 4, pl. 2, fig. 3; Matsukuma, Okutani & Habe, 1991: pl. 133, fig. 6.
Amusium (Dentamussium) obliteratum; Dijkstra, 1990b: 50-56, figs.
Pecten glaberrimus Chemnitz, 1784: 324-325, pl. 66, figs 622-624 [Invalid publication].
Ostrea tenuis Schröter, 1786: 311, 338, pl. 21, fig. 6.

Material.— sta. 20 (R): Hitu, Hitulama, 20.xi.1990, 1 living specimen.

Distribution and ecology.— See Dijkstra (1990b: 55).

Remarks.— Linnaeus (1758: 697) only referred to Gualtieri [1742: pl. 73, fig. G (sic;



Figs 1-4, *Amusium (Dentamussium) obliteratum* (Linnaeus), H 32.9 mm, W 32.1 mm; sta. 20. 1, left valve, exterior; 2, left valve, interior; 3, right valve, exterior; 4, right valve, interior.

should read C), and (1764: 525 fig. C; providing a more comprehensive description].

During my visit to the Museo di Storia Naturale e del Territorio, Universita di Pisa, Gualtieri's collection was studied. The figured left valve was found, together with a handwritten label: "*Pecten obliteratus* Lk. [= Lamarck, 1819] Gualt. 73.C". The handwriting dates from after 1819 and is not that of Gualtieri. On the inside of the left valve is written in ink "73.C". It is possible that Rumphius had sent this specimen to Cosimo III de Medici, but this can not be proved (Tomasi, 1988).

No specimen of *A. obliteratum* is preserved in the Linnaean collection (LSL). According to Holm (1957), no specimens are in the UUZM collection, but during a visit in May 1990 I found two specimens in the collection of the Museum Ludovicae Ulricae (MLU), kept at the UUZM (see also Wallin, 1993: 87). This material will be discussed elsewhere.

For comparison with *A. pleuronectes* and further details see Dijkstra (1990b).

Subgenus *Amusium* sensu stricto

Amusium (Amusium) pleuronectes (Linnaeus, 1758)

Buonanni, 1684: fig. 354; 1709: 35, 38, pl. 15, no 106.
Rumphius, 1705: 144-145, pl. 45. figs A, B.
Sipman in Rumphius, 1705: 188.
Argenville, 1742: pl. 27, fig. G.
Gualtieri, 1742: pl. 73, fig. B.
Klein, 1753: pl. 9, fig. 30.
Knorr, 1757: pl. 20, figs 3,4. [Pre-Linnaean publications].
Ostrea pleuronectes Linnaeus, 1758: 696-697, no 159; 1764: 524, no 103; 1766: 1144-1145, no 189; Born, 1778: 82-83, no 4; 1780: 99-100; Chemnitz, 1784: 284-288, pl. 61, fig. 595 [Invalid publication]; Gmelin, 1791: 3317, no 6; Bruguière, 1797: pl. 208, fig. 3; Cuvier, 1798: 420, no 3; Dillwyn, 1817: 250, no 6.
Pecten pleuronectes; Bosc, 1802: 260; 1824: 255; Lamarck, 1819: 164, no 7; Defrance, 1825: 239-240; Deshayes, 1832: 717, no 6; Deshayes in Lamarck, 1836: 132-133, no 7; Sowerby II, 1842: 55, no 30, pl. 16, figs 127, 128, 135, 136; Chenu, 1843: 4, pl. 11, figs 1-3; Reeve, 1853: sp. 48, pl. 13, fig. 48; Küster & Kobelt, 1888: 49, no 15, pl. 13, fig. 4.
Amusium pleuronectes; Röding, 1798: 165, no 124; Oyama, 1951: 84, text-fig. 4; Kira, 1962: 138, pl. 49, fig. 16; Morton, 1980: 375-404; Abbott & Dance, 1982: 303, fig.; Grecchi, 1983: 7-9, figs; Rombouts, 1991: 4-5, pl. 3, fig. 3; Dharma, 1992: 84-85, pl. 20, fig. 1; Bernard, Cai & Morton, 1993: 52.
Pectinium pleuronectes; Link, 1807: 156.
Amussium pleuronectes; E.A. Smith, 1884: 116, no 75; 1885: 308; Lynge, 1909: 158.
Amusium pleuronectes pleuronectes; Habe, 1964a: 2, pl. 1, figs 3-4; Matsukuma, Okutani & Habe, 1991: pl. 133, fig. 11.
Amusium (Amusium) pleuronectes; Dijkstra, 1990b: 52, 53, figs.
Pleuronectia laevigata Swainson, 1840: 388.

Material.— sta. 01: Hitu, west side of Hunut (= 2 km north of Poka), 4.xi-13.xii.1990, 1 right valve.

Distribution and ecology.— *Amusium pleuronectes* is known from the western and southwestern Pacific, from southern Japan, China, the Philippines and Indonesia, to Australia and the Solomon Islands, as well as from the northeastern Indian Ocean. So far the species has not been recorded from the western Indian Ocean and the central Pacific.

Morton (1980) observed that specimens of *A. pleuronectes* may move with an average speed of 37 to 45 cm/second. The "swimming" is not a response to predation, but apparently related to a seasonal migration, possibly linked to reproduction. Del Norte (1988) reported that the major spawning season for the Lingayen Gulf (northern Philippines) is in February and the minor one from July to September.

Specimens are living on a sandy or muddy sand bottom in shallow water.

Remarks.— Klein (1753: 134) and Röding (1798: 165) followed Rumphius in using the spelling *Amusium*, although correct Latin spelling should be *Amussium*, as used by Herrmannsen (1846: 19) and E.A. Smith (1884, 1885). However, according to the ICZN (1985, art. 33(b)(i)) this orthographic change is incorrect.

Amusium pleuronectes is rather variable in colour, from bright reddish-brown, brownish, greyish-brown to dark brown; sometimes the blue radial streaks are dark brown, and prominent (umbonal area) to absent (ventral marginal area) in mature specimens. The internal ribs are also variable in number (20 to 26).

Genus *Laevichlamys* Waller, 1993

Type species: *Pecten multisquamatus* Dunker, 1864

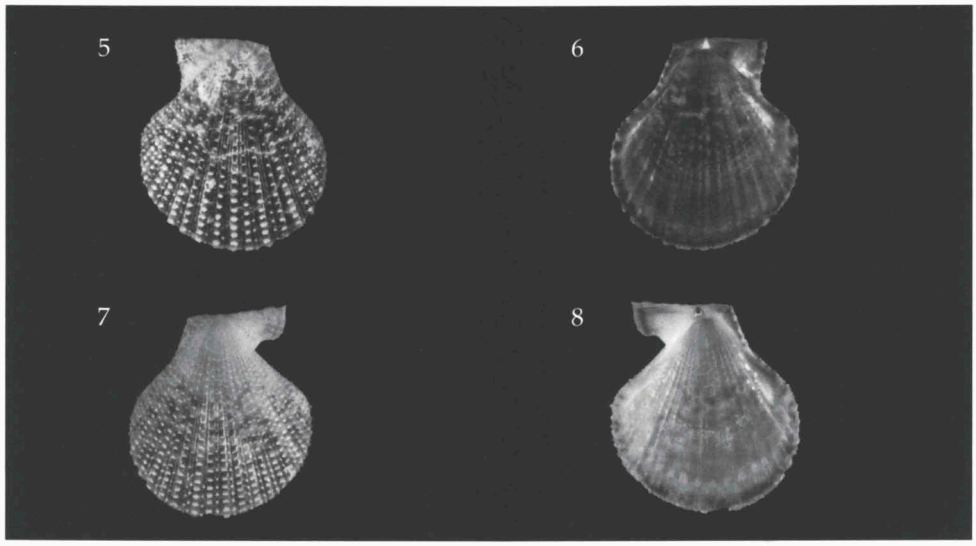
Laevichlamys irregularis (G.B. Sowerby II, 1842) (figs 5-8)

Pecten irregularis Sowerby II, 1842: 69-70, pl. 13, figs 51-52; Reeve, 1852: spec. 19, pl. 4, figs 19a-b.
Pecten (Chlamys) irregularis; Dautzenberg & Bavay, 1912: 13; Adam & Leloup, 1939: 57.
Chlamys irregularis; Kira, 1962: 139, pl. 50, fig. 3; Masuda, 1962: 171, pl. 24, figs 2-3; Kay, 1979: 525, figs 168B-C; Wagner, 1982: 86; Dharma, 1992: 84-85, pl. 20, figs 5, 5a; Bernard, Cai & Morton, 1993: 48; Dijkstra, 1993: 8-9.
Chlamys spec. cf. *irregularis*; Waller, 1972: 238, 239, pl. 2, figs 34-35, fig. 3.
Chlamys (Scaeochlamys) irregularis; Rombouts, 1991: 33, pl. 12, fig. 8.
Chlamys (Coralichlamys) irregularis; Wang, 1983: 48, 54, pl. 1, fig. 2.
Laevichlamys irregularis; Waller, 1993: 202, 204.
Pecten cuneatus Reeve, 1853: spec. 94, pl. 24, figs 94a, 95.
Chlamys cookei Dall, Bartsch & Rehder, 1938: 90-92, pl. 24, figs 1-4.
Chlamys midwayensis Habe & Okutani, 1968: 50-51, pl. 3, figs 2-3.

Material.— sta. 05 (R): Leitimur, Tg. Benteng (= "Galghoek"), 7-8.xi.1990, 1 left valve; sta. 11 (R): Leitimur, Cape Nusaniwe, 12.xi.1990, 2 left valves; sta. 21 (R): Hitu, Mamala, 21.xi.1990, 1 living specimen + 1 left valve; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 1 living specimen + 2 left valves + 1 right valve, ; sta. 27 (R): Leitimur, Hutumuri, 26-27.xi.1990, 1 right valve; sta. 30 (R): Hitu, Suli, 29.xi.1990, 1 left valve + 1 right valve; sta. 37: Hitu, west-side Laha, 6.xii.1990, 1 right valve; sta. 39 (R): Hitu, south-side Larike up to and including Batu Suangi, 8-9.xii.1990, 1 living specimen.

Distribution and ecology.— Throughout the western, southwestern and central Pacific, also known from the northeastern Indian Ocean. The animals live byssally attached to corals on sandy bottoms in shallow water.

Remarks.— Rumphius (1705) did not record this species, which is very variable in colour and sculpture. The close-set radial riblets vary in number and prominence, and are provided with fine lamellae.



Figs 5-8, *Laevichlamys irregularis* (Sowerby), H 28.4 mm, W 25.6 mm; sta. 39. 5, left valve, exterior; 6, left valve, interior; 7, right valve, exterior; 8, right valve, interior.

Wang (1983) placed the present species in *Coralichlamys* Iredale, 1939, which he considered a subgenus of *Chlamys*. Rombouts (1991) classified it in *Scaeochlamys* Iredale, 1939, also as a subgenus of *Chlamys*. Recently this species was placed by Waller (1993) in a new genus: *Laevichlamys*.

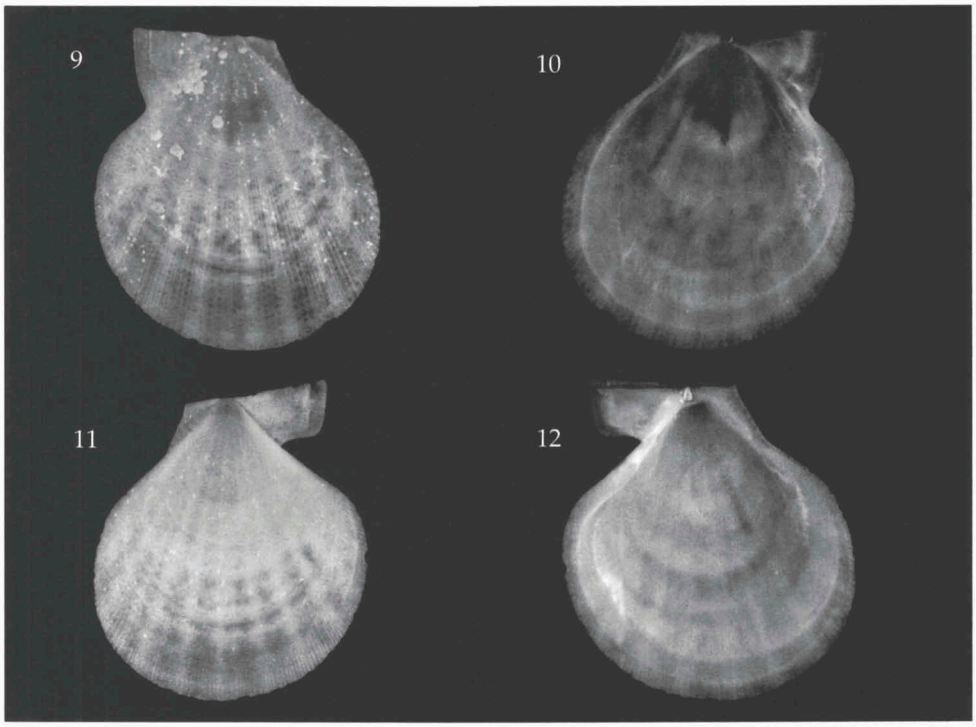
Laevichlamys mollita (Reeve, 1853)
(figs 9-12)

Pecten mollitus Reeve, 1853: spec. 100, pl. 25, fig. 100; Küster & Kobelt, 1888: 202-203, pl. 54, figs 3-6.
Chlamys mollita; Masuda, 1962: 179, pl. 21 fig. 7, pl. 23, figs 6-8; Dijkstra, 1983: 5, figs; Matsukuma, Okutani & Habe, 1991: 137, pl. 135, fig. 5.
Chlamys (Chlamys) mollita; Rombouts, 1991: 16, pl. 6, fig. 8; Lamprell & Whitehead, 1992: [20], no 40, pl. 8, fig. 40.

Material.— sta. 20 (R): Hitu, Hitulama, 20.xi.1990, 1 living specimen.

Distribution and ecology.— This species is known from the western to the southwestern Pacific and from southern Japanese waters to the Solomon Islands and northeastern Australia. The animals live in shallow water on sandy bottoms between coral rubble or under coral boulders.

Remarks.— Rumphius (1705) did not record this species. Reeve (1853) described *L. mollita* from Japan. However, the type lot (BMNH, 3 syntypes) has three labels, on two of which is written "Celebes" [= Sulawesi]. Küster & Kobelt (1888) first recorded it from the Moluccas. Recently this species was placed by Waller (1993: 204) in *Laevichlamys*.



Figs 9-12, *Laevichlamys mollita* (Reeve), H 43.0 mm, W 39.2 mm; sta. 20. 9, left valve, exterior; 10, left valve, interior; 11, right valve, exterior; 12, right valve, interior.

Laevichlamys squamosa (Gmelin, 1791) (figs 13-17)

Lister, 1687: pl. 184, specimen 21.

Rumphius, 1705: 141-142, no III, pl. 44, fig. C (pro parte). Sipman in Rumphius, 1705: 188, no 3 (pro parte). [Pre-Linnaean publications].

Ostrea squamosa Gmelin, 1791: 3319, no 17.

Pecten squamosus; Bosc, 1802: 263; G.B. Sowerby II, 1842: 69, no 73, pl. 13, figs 48-50, pl. 14 figs 88, 92-93; Reeve, 1853: spec. 65, pl. 18, figs 65a-b.

Pecten (Chlamys) squamosa; Dautzenberg & Bavay, 1912: 14; Adam & Leloup, 1939: 58; Wilkins, 1953: 14-15, pl. 5, figs 16-18.

Chlamys squamosa; Waller, 1972: 237-239, fig. 3, pl. 3, figs 38-41; Abbott & Dance, 1982: 312, fig.; Dijkstra, 1984: 16-17, figs; Dijkstra et al, 1989: 24; 1990: 4, 5, figs; Dharma, 1992: 84, no 4, pl. 20, figs 4, 4a; Bernard, Cai & Morton, 1993: 49.

Chlamys (Mimachlamys) squamosa; Rombouts, 1991: 30-31, pl. 12, fig. 2.

Chlamys (Chlamys) squamosa; Lamprell & Whitehead, 1992: [18], no 39, pl. 7, fig. 39.

Laevichlamys squamosa; Waller, 1993: 203, 204.

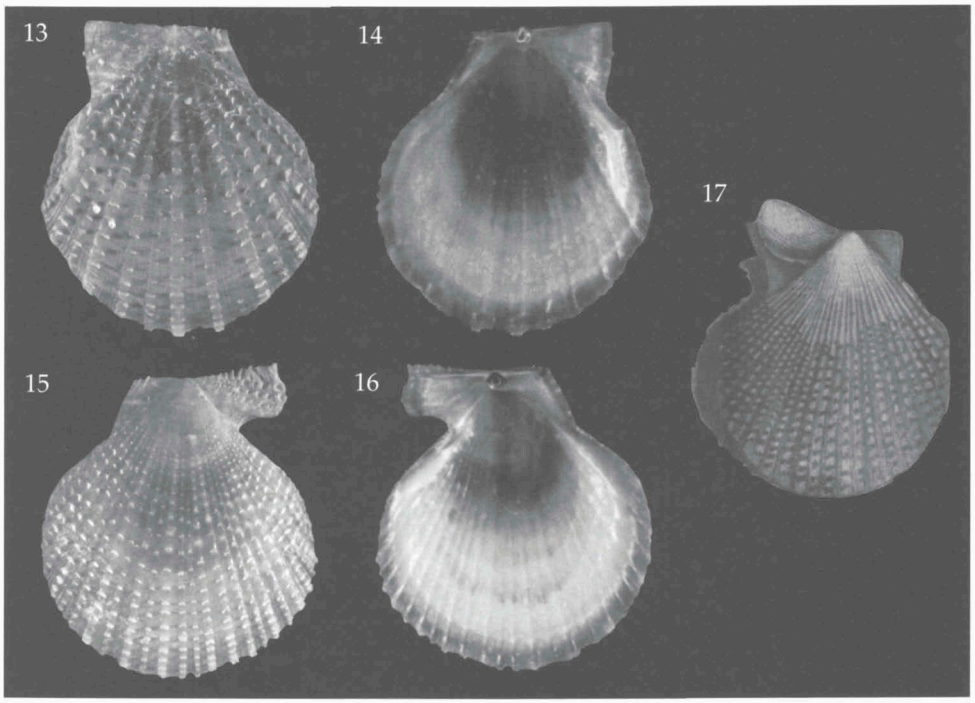
Ostrea anonyma Gmelin, 1791: 3329, no 73.

Pecten hybridus Lamarck (non Gmelin), 1819: 177-178, no 56.

Pecten serratus G.B. Sowerby II (non Nilsson); Reeve, 1852: spec. 46, pl. 12, figs 46a-b.

Pecten dissimilis Fischer (non Fleming), 1858: 341 (pro parte).

Mimachlamys grossiana Iredale, 1939: 352-353, pl. 5, figs 23-23a.



Figs 13-16, *Laevichlamys squamosa* (Gmelin), H 42.1 mm, W 38.8 mm; sta. 18. 13, left valve, exterior; 14, left valve, interior; 15, right valve, exterior; 16, right valve, interior; Fig. 17, Rumphius, 1705: pl. 44, fig. C (H 34 mm, W 30 mm).

Material.— sta. 16 (R): west-side of Pombo Islet, 15-17.xi.1990, 1 living specimen; sta. 17 (R): south-east-side of Pombo Islet, 15-17.xi.1990, 1 left valve; sta. 18: Hitu, east-side Laha up to and including Tawiri, 24.xi.1990, 1 living specimen + 1 right valve; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 2 living specimens.

Distribution and ecology.— Throughout the western, southwestern and southern central Pacific, from southern Japanese waters, China, the Philippines, Indonesia, and Australia to New Caledonia, and eastwards to French Polynesia. Also known from the northeastern Indian Ocean. On sandy or muddy bottoms in shallow water, byssally attached to rocks, coral or sediments.

Remarks.— For taxonomic and nomenclatural notes, see Dijkstra (1991: 32).

Laevichlamys wilhelminae (Bavay, 1904)

Chlamys wilhelminae Bavay, 1904: 200-201, pl. 6, figs 13-14.
Chlamys wilhelminae var. *maculata* Bavay, 1904: 201, pl. 6, figs 3-4.
Pecten (Chlamys) wilhelminae; Dautzenberg & Bavay, 1912: 17.
Chlamys wilhelminae; Dautzenberg & Bouge, 1933: 428; Dijkstra, 1987: 3, figs; 1989: 14, 18, figs.
Chlamys (Chlamys) wilhelminae; Dijkstra et al., 1989: 24; 1990: 6, 7, figs; Dijkstra, 1990: 9; Rombouts, 1991: 21, pl. 24, fig. 9.
Laevichlamys wilhelminae; Waller, 1993: 204.

Material.— sta. 11 (R): Leitimur, Cape Nusaniwe, 12.xi.1990, 1 left valve; sta. 30 (R): Hitu, Suli, 29.xi.1990, 1 right valve.

Distribution and ecology.— Known from the western, southwestern and southern central Pacific, from the Philippines, Indonesia and Australia, to the Society Islands. The animals live byssally attached to corals or between coral rubble on sandy bottoms in shallow water to c. 50 m.

Bavay (1904) described the holotype of *C. wilhelminae* from the Moluccas (ZMA).

Remarks.— Rumphius (1705) did not record this species. Bavay's description of *C. wilhelminae* var. *maculata* corcerns a colour variant.

Genus *Mimachlamys* Iredale, 1929

Type species: *Pecten asperrimus* Lamarck, 1819

Mimachlamys albolineata (G.B. Sowerby II, 1842)

Ostrea pusio Linnaeus, 1758: 698, no 169 (pro parte).
Pecten albolineatus Sowerby II, 1842: 73, pl. 14, figs 69-70; Reeve, 1853: spec. 95, pl. 24, fig. 94b; Küster & Kobelt, 1888: 75-76, pl. 19, fig. 3.
Pecten (Chlamys) albolineatus; Dautzenberg & Bavay, 1912: 10.
Chlamys albolineata; Abbott & Dance, 1982: 314, fig.; Dharma, 1992: 84, pl. 20, figs 6, 6a; Bernard, Cai & Morton, 1993: 48.
Chlamys (Mimachlamys) albolineata; Wang, 1983: 51, pl. 1, fig. 4.
Chlamys (Chlamys) albolineata; Dijkstra, 1990a: 9; Rombouts, 1991: 9, pl. 6, fig. 4.
Mimachlamys albolineata; Dijkstra, 1991: 33.

Material.— sta. 03 (R): Leitimur, Batumerah (near Ambon town), 7-9.xi.1990, 1 specimen; sta. 04 (R): Leitimur, Wainitu (near Ambon town), 7-8.xi.1990, 1 living specimen; sta. 18: Hitu, east-side Laha up to and including Tawiri, 24.xi.1990, 24 living specimens; sta. 20 (R): Hitu, Hitulama, 20.xi.1990, 10 living specimens + 1 left valve + 1 right valve; sta. 21 (R): Hitu, Mamala, 21.xi.1990, 2 living specimens; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 4 living specimens + 1 left valve, ; sta. 26: Hitu, 4 km west of Kaitetu, 23.xi.1990, 1 living specimen; sta. 35 (R): Hitu, Tg. Martafons, 4.xii.1990, 1 living specimen; sta. 37: Hitu, west-side Laha, 6.xii.1990, 4 living specimens; sta. 39 (R): Hitu, south-side Larike up to and including Batu Suangi, 8-9.xii.1990, 1 living specimen.

Distribution and ecology.— Throughout the western and southwestern Pacific, from southern Japanese waters to Indonesia, Papua New Guinea, and the Solomon Islands. Also known from the northwestern Indian Ocean. The animals live byssally attached to rocks and coral boulders on sandy bottoms in shallow water.

Rumphius (1705) recorded this species intertidally on stony beaches of Ambon.

Mimachlamys lentiginosa (Reeve, 1853)
(figs 18-21)

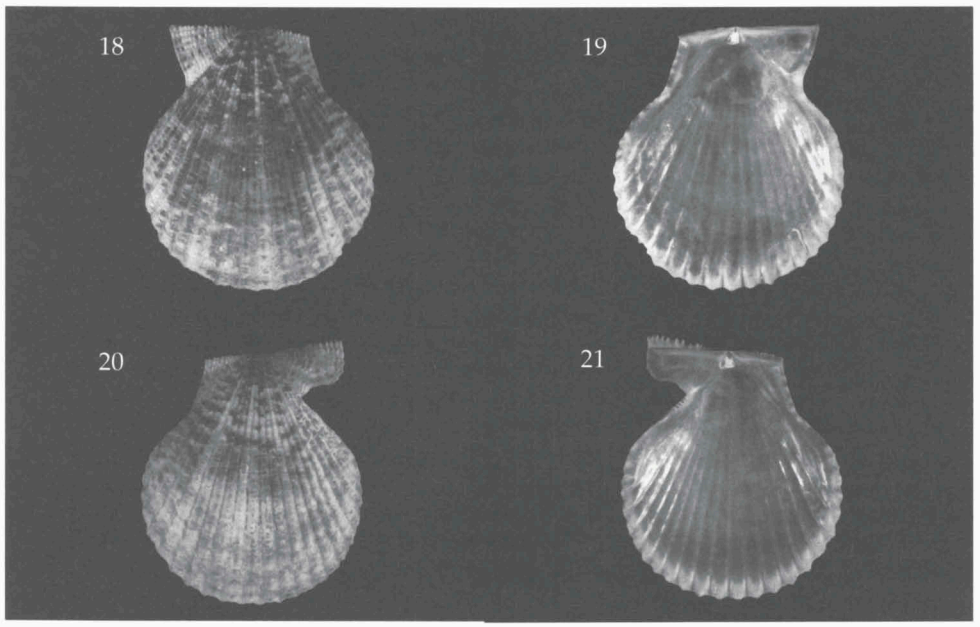
Rumphius, 1705: 141 (pro parte).
Gualtieri, 1742: pl. 74, fig. G. [Pre-Linnaean publications].
Ostrea punctata Gmelin, 1791: 3320, no 29.
Pecten punctatus Bosc, 1802: 265; 1824: 260; Defrance, 1825: 248.

Pecten lentiginosus Reeve, 1853: spec. 76, pl. 20, fig. 76.
Pecten (Chlamys) cruentatus var. *lentiginosa* (sic); Dautzenberg & Bavay, 1912: 9-10.
Chlamys (Mimachlamys) lentiginosa; Habe, 1964b: 174, pl. 53, fig. 13; Rombouts, 1991: 29, pl. 11, figs 1, 1a.
Chlamys lentiginosa; Abbott & Dance, 1982: 314, fig.
Chlamys (Chlamys) lentiginosa; Dijkstra, 1990a: 9, 11.
Mimachlamys lentiginosa; Lamprell & Whitehead, 1992: [24], no 58, pl. 10, fig. 58.
Pecten sanguinolentus Reeve (non Gmelin), 1853: spec. 159, pl. 34, fig. 159 [= *Pecten saniosus* Reeve, misidentification].
Mimachlamys gavena Iredale, 1939: 351-352, pl. 5, fig. 28.

Material.— sta. 04 (R): Leitimur, Wainitu (near Ambon town), 7-8.xi.1990, 1 right valve; sta. 05 (R): Leitimur, Tg. Benteng (= "Galghoek"), 8-9.xi.1990, 1 right valve; sta. 16 (R): west-side of Pombo Islet, 15-17.xi.1990, 6 living specimens; sta. 20 (R): Hitu, Hitulama, 20.xi.1990, 3 specimens; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 1 living specimen + 1 left valve + 3 right valves; sta. 30 (R): Hitu, Suli, 29.xi.1990, 1 left valve; sta. 35 (R): Hitu, Tg. Martafons, 4.xii.1990, 3 living specimens; Rumahtiga, x.1989, 1 specimen, leg. H. Strack.

Distribution and ecology.— Throughout the western and southwestern Pacific, from southern Japanese waters to Australia, Papua New Guinea and the Solomon Islands. The animals live byssally attached to rocks, stones, coral, etc. on muddy sand or sandy bottoms, from intertidal to c. 50 m.

Remarks.— Some authors treated *M. lentiginosa* as a synonym or a variety of *P. cruentatus* Reeve, 1853. However, in the former species there are 22 radial costae and the colour is brownish or blackish freckled with white, whereas the latter is scarlet-red with 26 radial costae. Iredale (1939: 351) described *M. gavena* from Queensland



Figs 18-21, *Mimachlamys lentiginosa* (Reeve), H 35.6 mm, W 31.4 mm; sta. 35. 18, left valve, exterior; 19, left valve, interior; 20, right valve, exterior; 21, right valve, interior.

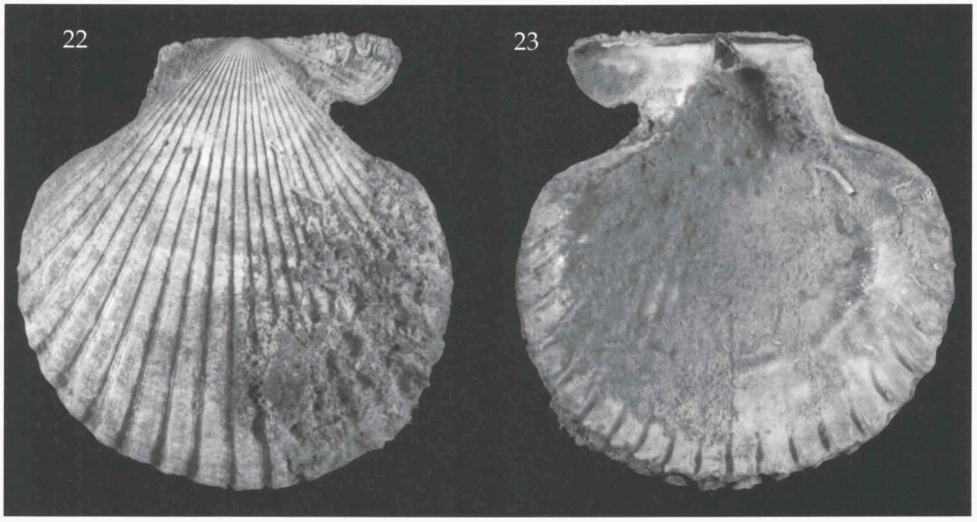
(AMS C.89666, holotype); this species agrees fully with *M. lentiginosa*. A closely allied species from northwestern Australia is *Mimachlamys funebris* (Reeve, 1853).

Mimachlamys senatoria (Gmelin, 1791)
(figs 22-23)

Pallium senatoris Chemnitz, 1784: 320, pl. 65, fig. 617 [Invalid publication].
Ostrea senatoria Gmelin, 1791: 3327.
Pecten senatoris; Lynge, 1909: 153-154.
Pecten (Chlamys) senatorius; Dautzenberg & Bavay, 1912: 4-8 (pro parte).
Chlamys senatoria; Barnard, 1964: 430; Abbott & Dance, 1982: 309, fig.; Oliver, 1992: 74, pl. 13, figs 1a-b; Dharma, 1993: 84, no 3, pl. 20, figs 3, 3a.
Chlamys (Chlamys) senatoria; Dijkstra, 1990a: 9, 11.
Chlamys (Mimachlamys) senatoria; Rombouts, 1991: 30, pl. 11, figs 6, 6a.
Mimachlamys senatoria; Dijkstra et al., 1989: 24; 1990: 6, 7, fig.; Dijkstra, 1991: 34-35; 1993: 12-13, figs 1-5; Lamprell & Whitehead, 1992: [24], no 56, pl. 10, fig. 56.
Pallium porphyreum Chemnitz, 1784: 330, pl. 66, fig. 632 [Invalid publication].
Ostrea porphyrea Gmelin, 1791: 3328.
Pecten aurantius Lamarck, 1819: 175.
Pecten florens Lamarck, 1819: 175.
Pecten pseudolima Sowerby II, 1842: 78, no 101, pl. 20, fig. 235.
Pecten layardi Reeve, 1853: spec. 80, pl. 21, figs 80a-b.
Pecten fricatus Reeve, 1853: spec. 161, pl. 34, fig. 161.
Pecten blandus Reeve, 1853: spec. 162, pl. 34, figs 162a-b.
Pecten raffrayi Jousseaume, 1886: 221-222, fig.

Material.— sta. 04 (R): Leitimur, Wainitu (near Ambon town), 7-8.xi.1990, 1 right valve; sta. 35 (R): Hitu, Tg. Martafons, 4.xii.1990, 1 right valve.

Distribution and ecology.— This species is distributed throughout the tropical



Figs 22-23, *Mimachlamys senatoria* (Gmelin), H 81.9 mm, W 78.2 mm; sta. 04. 22, right valve, exterior; 23, right valve, interior.

Indo-Pacific, from the Philippines to Australia, Papua New Guinea and the Solomon Islands to New Caledonia; it is also known from the northern and western Indian Ocean, including the Red Sea. The animals are free living or byssally attached under rocks, coral boulders, or between sediments on sandy bottoms in shallow water. They are often covered with sponges.

Rumphius (1705: 142) recorded it from Ambon as a rarity.

Remarks.— *Mimachlamys senatoria* is very variable in shape, sculpture and colour. The confusion concerning the taxonomic status of this species in the literature will be treated elsewhere.

Genus *Excellichlamys* Iredale, 1939

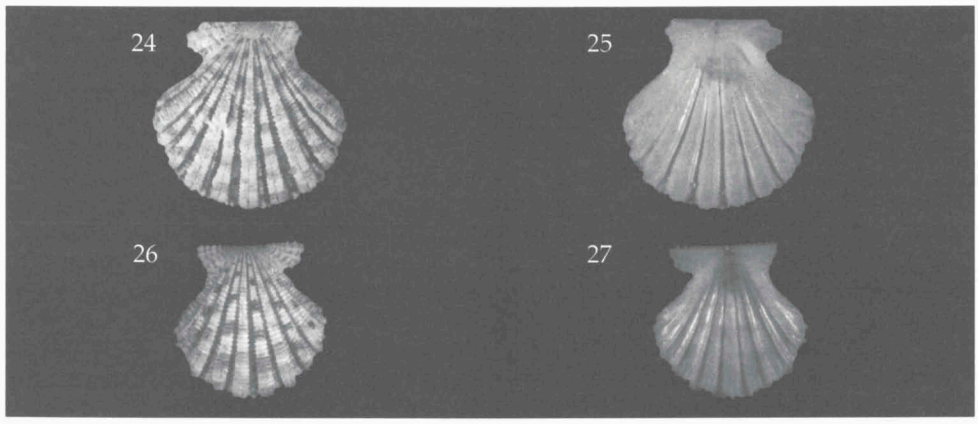
Type species: *Pecten spectabilis* Reeve, 1853

Excellichlamys spectabilis (Reeve, 1853) (figs 24-27)

Pecten histrionicus var.; Petit de la Saussaye, 1853: 150-152, pl. 5, fig. 2.
Pecten spectabilis Reeve, 1853: spec. 128, pl. 29, fig. 128.
Pecten (Aequipecten) histrionicus var. *spectabilis*; Dautzenberg & Bavay, 1912: 22-23.
Chlamys (histrionica var.?) *spectabilis*; Kuroda, 1932: 95-96.
Aequipecten histrionicus var. *spectabilis*; Lamy, 1935: 314-315.
Excellichlamys spectabilis; Iredale, 1939: 366; Kuroda, Habe & Oyama, 1971: 366-367, pl. 79, figs 12-13; Abbott & Dance, 1972: 308, fig.; Waller, 1972: 224, 225F, 227, 246-250, 247F, 248T, 258, 259, pl. 5, figs 87-92, pl. 6, figs 93-102; Dijkstra, 1987: 9-10, figs; Dijkstra et al., 1989: 24; 1990: 7, 8, fig.; Rombouts, 1991: 40, pl. 14, fig. 7; Dharma, 1992: 84, no 8, pl. 20, fig. 8; Lamprell & Whitehead, 1992: [30], pl. 13, figs 76-77.

Material.— sta. 05 (R): Leitimur, Tg. Benteng (= "Galghoek"), 8-9.xi.1990, 1 left valve + 1 right valve; sta. 27 (R): Leitimur, Hutumuri, 26-27.xi.1990, 1 left valve + 1 right valve.

Distribution and ecology.— This species is distributed throughout the Indo-Pacif-



Figs 24-27, *Excellichlamys spectabilis* (Reeve), H 25.5 mm, W 26.2 mm (lv), H 21.3 mm, W 21.4 mm (rv); sta. 27. 24, left valve, exterior, 25, left valve, interior; 26, right valve, exterior; 27, right valve, interior.

ic, from southern Japanese waters, the Philippines, Indonesia and Australia, to the southern central Pacific (Tuamotu Archipelago); it is also known from the western Indian Ocean. Live specimens are found byssally attached under coral branches and between coral rubble on sandy bottoms in shallow water to c. 100 m.

Remarks.— Rumphius (1705) did not record this species.

Some authors treated *E. spectabilis* as a subspecies of *E. histrionica* (Gmelin, 1791)(neotype designated by Waller, 1972: 249), whereas, Waller (1972: 248) treated it as a species.

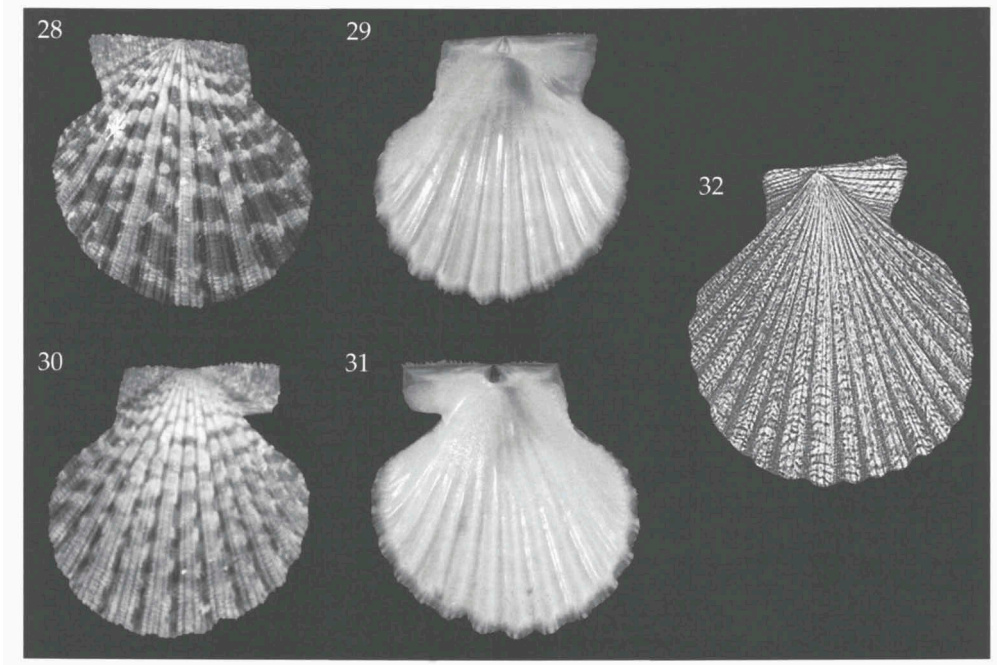
Genus *Gloripallium* Iredale, 1939

Type species: *Ostrea pallium* Linnaeus, 1758

Gloripallium pallium (Linnaeus, 1758) (figs 28-32)

Rumphius, 1705: 141, pl. 44, fig. B.
Sipman in Rumphius, 1705: 188.
Gualtieri, 1742: pl. 74, fig. F. [Pre-Linnaean publications].
Ostrea pallium Linnaeus, 1758: 697, no 163; 1764: 526, no 107; 1766: 1145, no 193; Born, 1778: 84-85; 1780: 101-102; Gmelin, 1791: 3322, no 40; Dillwyn, 1817: 253.
Pecten pallium Meuschen, 1778: 420 [Invalid publication]; Bruguière, 1797: pl. 210, figs 1a-b; Bosc, 1824: 262; Defrance, 1825: 242; Deshayes, 1832: 721-722, no 18; Sowerby II, 1842: 73-74, pl. 17, figs 148-150; Chenu, 1843: 7, pl. 26, figs 1, 1a-c, 3, 3a-b, 4, 4a-c, 5, 5a-c; Reeve, 1853: spec. 63, pl. 17, figs 63a-c; Küster & Kobelt, 1888: 39-40, 103, pl. 11, figs 1, 5, pl. 28, figs 7-8, pl. 29, fig. 1.
Chlamys pallium; Röding, 1798: 163, no 102; Dautzenberg & Bouge, 1933: 427.
Pectinium pallium; Link, 1807: 156.
Pecten (Aequipecten) pallium; Dautzenberg & Bavay, 1912: 19-20; Oostingh, 1925: 254-256; Adam & Leloup, 1939: 59.
Gloripallium pallium; Iredale, 1939: 257; Kira, 1962: 140, pl. 50, fig. 10; Waller, 1972: 224, 225F, 226, 228F, 239-243, 240T, 248, 249, pl. 3, figs 45-47, figs 4, 9, table 6; Dijkstra, 1984: 17-18, figs; 1989: 14, 18, figs; Dijkstra et al., 1989: 24, 1990: 3; Rombouts, 1991: 42-43, pl. 15, figs 4, 4a; Dharma, 1992: 84, pl. 20, fig. 18; Lamprell & Whitehead, 1992: [26], pl. 11, fig. 67.
Chlamys (Cryptopecten) pallium; Hertlein, 1969: N357, fig. C79: 1c; Dijkstra, 1990a: 9, 12.
Cryptopecten pallium; Abbott & Dance, 1972: 309, fig.
Gloripallium pallium pallium; Dijkstra, 1991: 46-47.
Pallium ducale Chemnitz, 1784: 302-305, pl. 64, fig. 607 [Invalid publication].
Pecten novaeguinae Tenison-Woods, 1878: 267.

Material.— sta. 01: Hitu, west-side of Hunut (= 2 km north of Poka), in front of base camp, 4.xi-13.xii.1990, 3 left valve + 1 right valve; sta. 03 (R): Leitimur, Batumerah (near Ambon town), 7-9.xi.1990, 1 specimen; sta. 04 (R): Leitimur, Wainitu (near Ambon town), 7-8.xi.1990, 1 left valve + 1 right valve; sta. 05 (R): Leitimur, Tg. Benteng (= "Galghoek"), 8-9.xi.1990, 1 specimen + 1 left valve; sta. 06: Hitu, Poka (in front of PSL building), 8.xi.1990, 1 right valve; sta. 11 (R): Leitimur, Cape Nusaniwe, 12.xi.1990, 1 left valve + 1 right valve; sta. 16 (R): west-side of Pombo Islet, 15-17.xi.1990, 3 living specimens; sta. 17 (R): south-east-side of Pombo Islet, 15-17.xi.1990, 2 specimens; sta. 18: Hitu, east-side Laha up to and including Tawiri, 24.xi.1990, 4 living specimens + 1 left valve; sta. 20 (R): Hitu, Hitulama, 20.xi.1990, 5 living specimens + 1 left valve; sta. 21 (R): Hitu, Mamala, 21.xi.1990, 1 living specimen; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 1 specimen + 1 left valve; sta. 30 (R): Hitu, Suli, 29.xi.1990, 1 left valve + 3 right valves; sta. 37: Hitu, west-side Laha, 6.xii.1990, 1 specimen;



Figs 28-31, *Gloripallium pallium* (Linnaeus), H 57.9 mm, W 57.0 mm; sta. 05. 28, left valve, exterior; 29, left valve, interior; 30, right valve, exterior; 31, right valve, interior; Fig. 32, Rumphius, 1705: pl. 44, fig. B (H 53 mm, W 48 mm).

sta. 39 (R): Hitu, south-side Larike up to and including Batu Suangi, 8-9,xii.1990, 1 right valve; Hitulama, 20.x.1989, 1 left valve, leg. H. Strack.

Distribution and ecology.— This species is distributed throughout the tropical Indo-Pacific. For recorded localities, see Oostingh (1925: 255-256) and Waller (1972: 241-243). The animals live byssally attached to rocks, stones and corals on sandy bottoms in shallow water.

Remarks.— For more references, see Oostingh (1925: 254).

Genus *Decatopecten* (Rüppel in) G.B. Sowerby II, 1839

Type species: *Ostrea plica* Linnaeus, 1758

Decatopecten radula (Linnaeus, 1758) (figs 33-35)

Rumphius, 1705: 141, pl. 44, fig. A.

Gualtieri, 1742: pl. 74, fig. L. [Pre-Linnaean publications].

Ostrea radula Linnaeus, 1758: 697, no 161; 1764: 525, no 105; 1766: 1145, no 191; Born, 1778: 83; 1780: 100; Chemnitz, 1784: 295-298, pl. 63, figs 599-600 [Invalid publication]; Gmelin, 1791: 3318, no 11; Dillwyn, 1817: 251, no 10.

Pecten radula; Meuschen, 1778: 416 [Invalid publication]; Bruguière, 1797: pl. 208 fig. 2; Lamarck, 1819: 166, no 13; Bosc, 1824: 256, pl. 2 fig. 3; Defrance, 1825: 240; Deshayes, 1832: 719, no 12; Deshayes in

Lamarck, 1836: 134-135, no 13; Sowerby II, 1842: 63, no 54, pl. 17, figs 154-155; Chenu, 1843: 4, pl. 15, figs 8-10; Reeve, 1853: spec. 83, pl. 21, fig. 83; Fischer, 1858: 341; Küster & Kobelt, 1888: 54-55, no 20, pl. 15, figs 1-2; Martens, 1902: 126.

Chlamys radula; Röding, 1798: 162.

Pecten (Pallium) radula; Dautzenberg & Bavay, 1912: 24-26; Oostingh, 1925: 256-259; Adam & Leloup, 1939: 59.

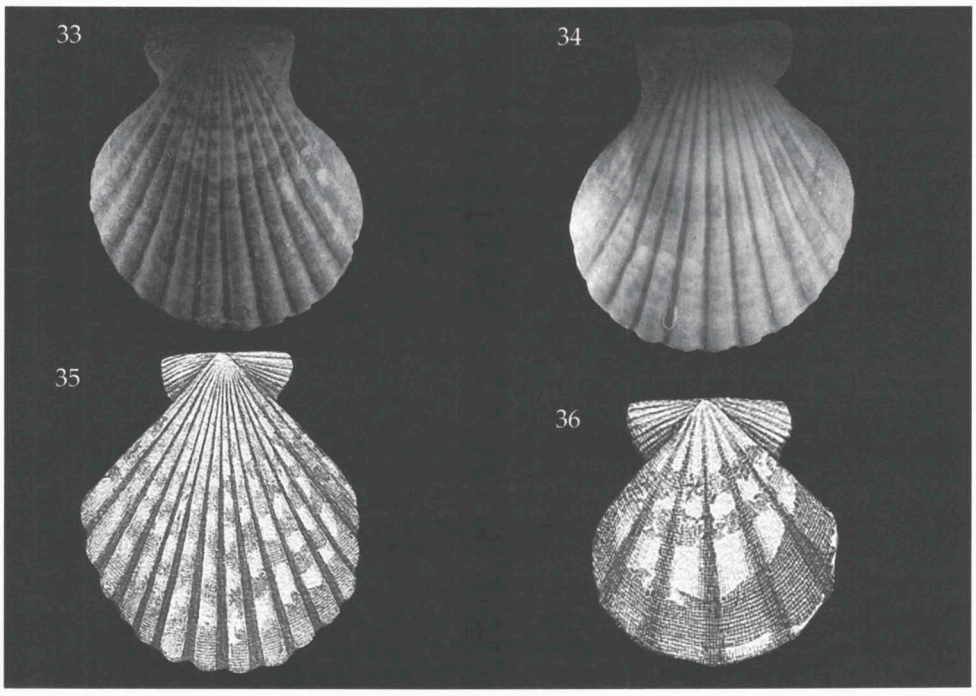
Comptopallium radula; Kira, 1962: 141, pl. 50, fig. 15; Waller, 1972: 245, 245T, pl. 5, figs 84-85; Abbott & Dance, 1982: 307, fig.; Dijkstra, 1984: 11-12, figs; 1991: 43-44; Dijkstra et al., 1989: 24; 1990: 7, 8, fig.; Rombouts, 1991: 35, pl. 13, fig. 4; Dharma, 1992: 84, pl. 20, fig. 12; Lamprell & Whitehead, 1992: [28], no 74, pl. 12, fig. 74; Bernard, Cai & Morton, 1993: 50.

Semipallium (Semipallium) radula; Dijkstra, 1990a: 9, 12.

Comptopallium pauciplicatum Iredale, 1939: 359-360.

Material.— sta. 01: Hitu, west-side of Hunut (= 2 km north of Poka), in front of base camp, 4.xi-13.xii.1990, 2 living specimens; sta. 04 (R): Leitimur, Wainitu (near Ambon town), 7-8.xi.1990, 1 right valve; sta. 16 (R): west-side of Pombo Islet, 15-17.xi.1990, 1 living specimen; sta. 35 (R): Hitu, Tg. Martafons, 4.xii.1990, 2 specimens; Poka, in front of PSL building, 16.x.1989, 3 specimens, leg. H. Strack.

Distribution and ecology.— Throughout the western and southwestern Pacific, from southern Japanese waters, China, the Philippines, Indonesia, Papua New Guinea and the Solomon Islands to northeastern Australia, New Caledonia and the Fiji Islands. The animals live on muddy sand or sandy bottoms among masses of seaweed, under stones and between dead corals in shallow water.



Figs 33-34, *Decatopecten radula* (Linnaeus), H 90.1 mm, W 80.9 mm; sta. 35. 33, left valve, exterior; 34, right valve, exterior; Fig. 35, Rumphius, 1705: pl. 44, fig. A (H 59 mm, W 51 mm); Fig. 36, *Decatopecten plica* (Linnaeus), Rumphius, 1705: pl. 44, fig. O (H 34 mm, W 31 mm).

Remarks.— Some authors synonymised *Pecten argenteus* Reeve, 1853, with *D. radula*, but the former species is more similar to *Bractechlamys vexillum* (Reeve, 1853). *Decatopecten radula griggi* (Webb, 1957) is known from northwestern Australia. For more information, references and distributional data, see Oostingh (1925: 258-259).

Genus *Haumea* Dall, Bartsch & Rehder, 1938

Type species: *Haumea juddi* Dall, Bartsch & Rehder, 1938 (= *Pecten loxoides* G.B. Sowerby III, 1882)

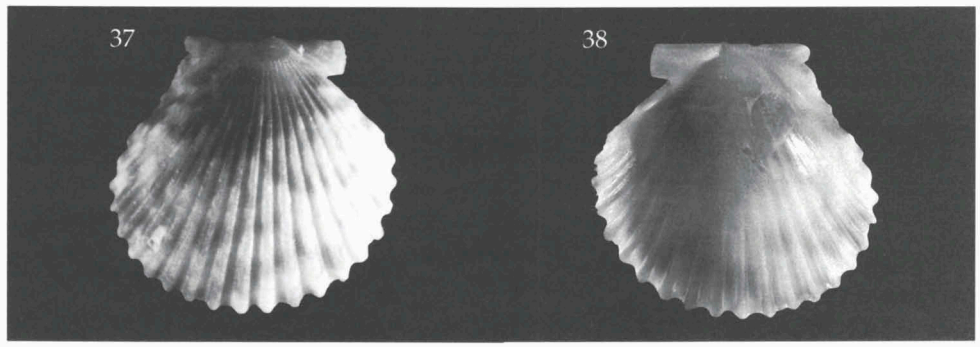
Haumea inaequivalvis (G.B. Sowerby II, 1842) (figs 37-38)

Pecten inaequivalvis Sowerby II, 1842: 50-51, no .15, pl. 19, figs 193-195; Reeve, 1852: spec. 1, pl. 1, figs 1, 6.
Pecten (Vola) inaequivalvis; Küster & Kobelt, 1888: 236-237, pl. 62, figs 5-8.
Pecten (?Aequipecten) inaequivalvis; Dautzenberg & Bavay, 1912: 24, no 29.
Chlamys (Aequipecten) inaequivalvis; Dautzenberg & Bouge, 1933: 426.
Chlamys inaequivalvis; Kira, 1962: 137-138, no 13, pl. 49, fig. 13.
Argopecten inaequivalvis; Abbott & Dance, 1982: 310, fig.
Haumea inaequivalvis; Dijkstra, 1984: 28-29, figs; 1989: 15, 17, 18, figs; Rombouts, 1991: 43-44, pl. 25, fig. 1; Dijkstra & Kastoro, 1997: 275, fig. 150.
Chlamys (Argopecten) inaequivalvis; Dijkstra, 1990a: 9.
Cryptopecten inaequivalvis; Bernard, Cai & Morton, 1993: 50.

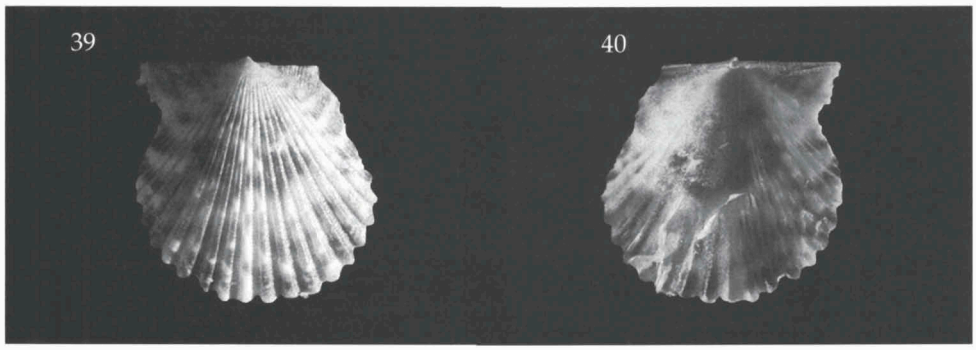
Material.— sta. 16 (R): west-side of Pombo Islet, 15-17.xi.1990, 1 living specimen; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 1 left valve + 1 right valve.

Distribution and ecology.— Throughout the western, southwestern and southern central Pacific, from southern Japanese waters, China, the Philippines, Indonesia, and Papua New Guinea to French Polynesia; also known from the northern and western Indian Ocean (Andaman Islands, Mauritius, Reunion, and Malagasy). The animals are free living on muddy or muddy sand bottoms in shallow water.

Remarks.— Rumphius (1705) did not record this species from Ambon.



Figs 37-38, *Haumea inaequivalvis* (Sowerby), H 7.8 mm, W 8.1 mm; sta. 23. 37, right valve, exterior; 38, right valve, interior.



Figs 39-40, *Haumea rehderi* (Grau), H 5.1 mm, W 5.1 mm; sta. 23. 39, left valve, exterior; 40, left valve, interior.

Haumea rehderi (Grau, 1960)
(figs 39-40)

Pecten (Aequipecten) aequisulcatus (non Carpenter, 1864); Dautzenberg & Bavay, 1912: 19, no 23.
Chlamys (Argopecten) rehderi Grau, 1960: 15-18, pl. 2, figs 1-3; Dijkstra, 1990a: 11, pl. 2, figs 16-17.
Argopecten rehderi; Dijkstra, 1988: 3-4, figs; 1989: 12, 18, figs; Dijkstra et al., 1989: 24; 1990: 9, 10, figs; Rombouts, 1991: 8.

Material.— sta. 16 (R): west-side of Pombo Islet, 15-17.xi.1990, 1 living specimen; sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 2 left valves.

Distribution and ecology.— So far this species was only recorded from the Indonesian Archipelago, New Caledonia and the Society Islands. Specimens live among coral rubble on sandy bottoms in shallow water.

Remarks.— Rumphius (1705) did not record this pretty, small species. Dautzenberg & Bavay (1912: 19) erroneously identified it as "*P. (Aequipecten) aequisulcatus* Carpenter", a species occurring in the Lower Californian region. Grau (1960) placed this species in *Argopecten*, a subgenus of *Chlamys*. Subsequently, Dijkstra (1988, 1989) and Rombouts (1991) treated it as a species of *Argopecten*. Recent morphological and phylogenetic studies (Waller in Shumway, 1991; Dijkstra, unpubl.) indicate that the present species belongs in *Haumea* rather than *Argopecten*.

No species of *Argopecten* are known from the Indo-Pacific region.

Genus *Pedum* Lamarck, 1799

Type species: *Ostrea spondyloidea* Gmelin, 1791

Pedum spondyloideum (Gmelin, 1791)
(fig. 41)

Ostrea spondyloidea Gmelin, 1791: 3335, no 109; Dillwyn, 1817: 280, no 75.
Pedum spondyloidea (sic); Lamarck, 1799: 88.
Pedum spondyloides (sic); Lamarck, 1801: 136; Bosc, 1802: 250; 1824: 245, pl. 10, figs 3-4; Defrance, 1825: 248.

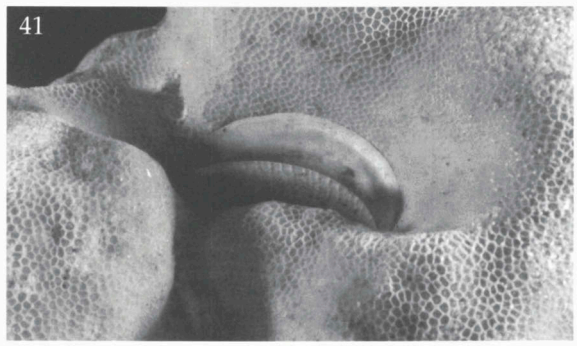


Fig. 41, *Pedum spondyloideum* (Gmelin); sta. 23, in situ in *Porites*.

Pedum spondyloideum; Lamarck, 1819: 154-155; Chenu, 1843: 1, pl. 1, figs 1-4; Sowerby II, 1847: 438, pl. 91, figs 1-4; Reeve, 1841: 154-155, pl. 111, figs 1-5; Habe, 1964b: 174, pl. 53, fig. 15; Yonge, 1967: 311-323, figs 1-8; Hertlein, 1969: N364, figs C86, 1a-b; Waller, 1972: 254-258, pl. 8, figs 136-143; Abbott & Dance, 1982: 315, fig.; Dijkstra, 1987: 9-10, figs; Dijkstra et al., 1989: 24; 1990: 4; Lamprell & Whitehead, 1992: [34], pl. 15, fig. 86; Bernard, Cai & Morton, 1993: 53.
Pedum spondiloîdeum (sic); Quoy & Gaimard, 1834: 447-449, pl. 76, figs 15-21.
Pedum spondyloîdeum (sic) var.; Fischer, 1858: 340.
Pedum ---------- Bruguière, 1791: pl. 178, figs 1-4 [no species name].
Ostrea pedum Röding, 1798: 170.
Pedum pedum intensum Iredale, 1939: 341.

Material.— sta. 23 (R): Hitu, Kaitetu (near Hila), 22-23.xi.1990, 1 living specimen in situ in *Porites*.

Distribution and ecology.— Throughout the tropical Indo-Pacific region. Specimens live in shallow water, embedded in cavities of brain corals of the genera *Porites* and *Favia*.

Remarks.— Rumphius (1705) did not mention this species.

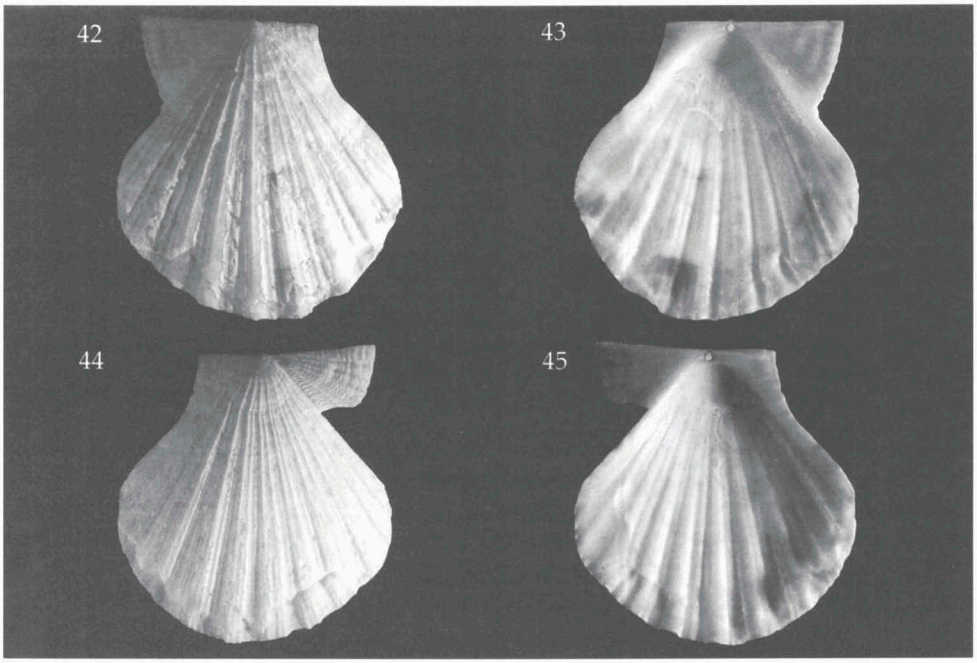
For further information on its morphology, ecology and distribution, see Yonge (1967: 311-323), and Waller (1972: 254-258).

Genus *Semipallium* (Jousseaume in) Lamy, 1928

Type species: *Pecten tigris* Lamarck, 1819

Semipallium fulvicostatum (A. Adams & Reeve, 1850) (figs 42-45)

Pecten fulvicostatus Adams & Reeve, 1850: 74, pl. 21, fig. 11; Reeve, 1853: spec. 123, pl. 28, fig. 123; Küster & Kobelt, 1888: 226-227, pl. 60, fig. 6; Lynge, 1909: 156-157 (pro parte); Wagner, 1989: 112, fig. 1.
Pecten (Chlamys) fulvicostatus; Dautzenberg & Bavay, 1912: 16-17 (pro parte).
Complicachlamys fulvicostata; Iredale, 1939: 363.
Semipallium fulvicostatum; Dijkstra, 1989: 16, 17, 18, figs; 1991: 38-39; Rombouts, 1991: 59, pl. 20, fig. 13; Bernard, Cai & Morton, 1993: 49 (pro parte).
Pecten luculenta (sic) Reeve, 1853: spec. 59, pl. 16, fig. 59; Küster & Kobelt, 1888: 170, pl. 47, fig. 8.



Figs 42-45, *Semipallium fulvicostatum* (Adams & Reeve), H 11.2 mm, W 10.8 mm; sta. 17. 42, left valve, exterior; 43, left valve, interior; 44, right valve, exterior; 45, right valve, interior.

Complicachlamys luculenta; Iredale, 1939: 363.
Chlamys dringi (non Reeve); Dautzenberg & Bouge, 1933: 426.

Material.— sta. 17 (R): south-east side of Pombo Islet, 15-17.xi.1990, 1 living specimen.

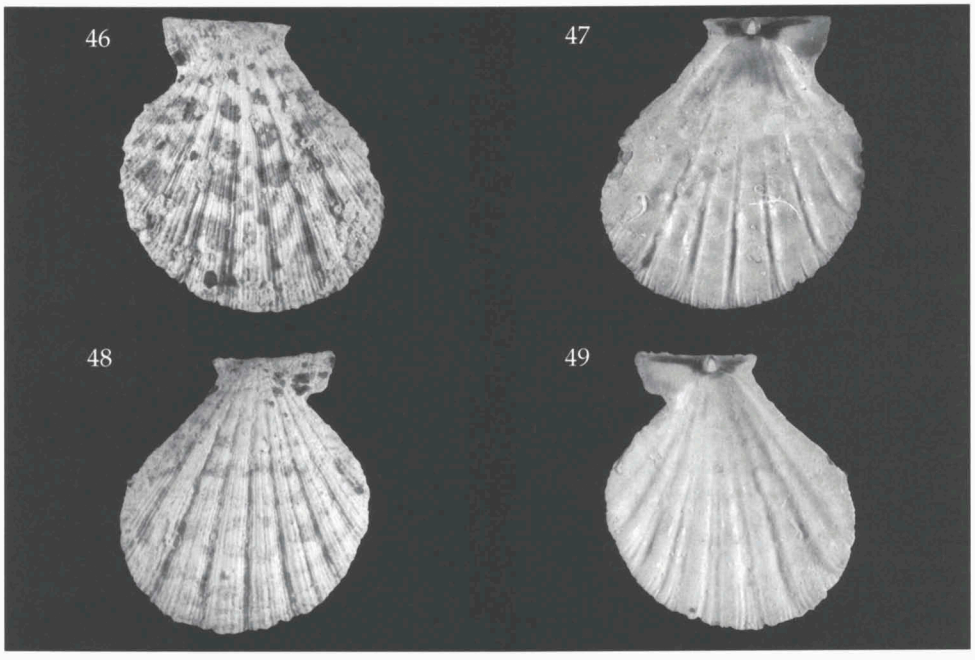
Distribution and ecology.— Throughout the western, southwestern and southern central Pacific, from southern Japanese waters, through China, the Philippines, Indonesia, Papua New Guinea and the Solomon Islands, to French Polynesia. Specimens live among coral rubble on sandy bottoms in shallow water.

Remarks.— Rumphius (1705) did not record this species.

In the literature, *S. fulvicostatum* is sometimes confused with *Semipallium tigris* (Lamarck, 1819), *Semipallium dringi* (Reeve, 1853) or *Complicachlamys wardiana* Iredale, 1939. *S. tigris* is larger and more solid and has a different colour pattern (white with black spots). *S. dringi* is more orbicular, and *C. wardiana* lacks reticulate microsculpture.

Semipallium tigris (Lamarck, 1819)
(figs 46-49)

Pecten tigris Lamarck, 1819: 171; Defrance, 1825: 243; Sowerby II, 1842: 68, pl. 14, figs 95-96; Philippi, 1845: 101, pl. 1, figs 6a-c; Reeve, 1853: spec. 77, pl. 20, fig. 77; Küster & Kobelt, 1888: 129-130, pl. 35, fig. 10.
Pecten (Pallium) tigris; Adam & Leloup, 1939: 60.



Figs 46-49, *Semipallium tigris* (Lamarck), H 53.1 mm, W 47.8 mm; sta. 17. 46, left valve, exterior; 47, left valve, interior; 48, right valve, exterior; 49, right valve, interior.

Complicachlamys tigris; Habe, 1964b: 174, pl. 53, fig. 14.
Semipallium (Semipallium) tigris; Hertlein, 1969: N365-N366, figs C87: 3a-b; Wang, 1985: 502, fig. 1.
Semipallium tigris; Abbott & Dance, 1982: 308, fig.; Dijkstra, 1991: 40; Rombouts, 1991: 59, pl. 22, figs 1, 1a; Dharma, 1992: 84, pl. 20, figs 13, 13a; Lamprell & Whitehead, 1992: [28], no 69, pl. 12, fig. 69; Bernard, Cai & Morton, 1993: 49.

Material.— sta. 17 (R): south-east side of Pombo Islet, 15-17.xi.1990, 1 living specimen; sta. 27 (R): Leitimur, Hutumuri, 26-27.xi.1990, 1 left valve.

Distribution and ecology.— Throughout the western and southwestern Pacific, from the southern Japanese islands, the Philippines, China, Indonesia and northeastern Australia, to the Samoa Islands; also known from the northeastern and western regions of the Indian Ocean (Andaman Sea, Mauritius, Reunion). The animals live byssally attached under coral boulders or among coral rubble on sandy bottoms in shallow water.

Remarks.— Rumphius (1705) did not record this species. In the literature it is sometimes confused with *S. fulvicostatum*. *S. tigris* is identifiable by its characteristic yellow colour, the red spots on the anterior auricles and, sometimes, the brown or black dots on the auricles near the hinge line on the inner side of the shell; these dots are absent in *S. fulvicostatum*.

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Table 1.

			Rumphius (1705)	Martens (1902)	Current name
pag.	pl.	fig.	name		
141	44	A	*Pecten primus*	*Pecten radula* L.	*Decatopecten radula* (L.)
141	44	B	*Pecten secundus*	*Pecten pallium* L.	*Gloripallium pallium* (L.)
141	44	C	*Pecten tenuis*	*Pecten squamosus* Gm.	*Laevichlamys squamosa* (Gm.) *Mimachlamys albolineata* (Sow.) *Mimachlamys lentiginosa* (Rve.) *Mimachlamys senatoria* (Gm.)
143	44	O	*Bia Sabandar*	*Pecten velutinus* Sow.	*Decatopecten plica* (L.)
144	45	A,B	*Amusium*	*Pecten pleuronectes* L.	*Amusium pleuronectes* (L.) *Amusium obliteratum* (L.)

Table 2. Records of Pectinidae from Ambon collected during the Rumphius Biohistorical Expedition, 1990; + = live; – = dead

Species:	Sta.: 01	03	04	05	06	11	16	17	18	20	21	23	26	27	30	35	37	39
1. *Amusium obliteratum*										+								
2. *Amusium pleuronectes*	–																	
3. *Decatopecten radula*	+		–				+									–		
4. *Excellichlamys spectabilis*				–										–				
5. *Gloripallium pallium*	–	–	–	–	–	–	+	–	+	+	+	–			–		–	–
6. *Haumea inaequivalvis*							+					–						
7. *Haumea rehderi*							+					–						
8. *Laevichlamys irregularis*				–		–					+	+		–	–		–	+
9. *Laevichlamys mollita*										+								
10. *Laevichlamys squamosa*							+	–	+			+						
11. *Laevichlamys wilhelminae*						–									–			
12. *Mimachlamys albolineata*		–	+						+	+	+	+	+			+	+	+
13. *Mimachlamys lentiginosa*			–	–			+			–		+			–	+		
14. *Mimachlamys senatoria*			–													–		
15. *Pedum spondyloideum*												+						
16. *Semipallium fulvicostatum*								+										
17. *Semipallium tigris*								+						–				
Total species (+)	01	00	01	00	00	00	06	02	03	04	03	05	01	00	00	02	01	02
Total species (–)	02	02	04	04	01	03	00	02	00	01	00	03	00	03	04	02	02	01
Total species (+/–)	03	02	05	04	01	03	06	04	03	05	03	08	01	03	04	04	03	03

Table 3. Pectinidae recorded from Indonesia; RU = Rumphius (1705); SI = Siboga Expedition (1899-1900) (Dautzenberg & Bavay, 1912); LE = Leopold Expedition (1928-1929) (Adam & Leloup, 1939); SN = Snellius-II Expedition (1984-1985) (Dijkstra, 1991); DA = Dharma (1992); RB = Rumphius Biohistorical Expedition (1990); KA = Karubar Expedition (1991) (Dijkstra & Kastoro, 1997); + = present; – = absent.

Species	RU	SI	LE	SN	DA	RB	KA
1. *Amusium balloti*	–	–	+	+	–	–	–
2. *Amusium obliteratum*	+	–	–	–	–	+	–
3. *Amusium pleuronectes*	+	+	–	–	+	+	–
4. *Anguipecten picturatus*	–	–	–	+	–	–	+
5. *Annachlamys flabellata*	–	–	–	+	+	–	–
6. *Annachlamys macassarensis*	–	+	–	+	+	–	–
7. *Annachlamys reevei*	–	+	–	+	–	–	–
8. *Bractechlamys oweni*	–	+	–	–	–	–	–
9. *Bractechlamys vexillum*	–	+	–	–	–	–	–
10. *Complicachlamys wardiana*	–	+	–	+	–	–	–
11. *Coralichlamys madreporarum*	–	–	+	+	–	–	–
12. *Cryptopecten bullatus*	–	+	–	+	–	–	+
13. *Cryptopecten nux*	–	+	–	+	–	–	+
14. *Decatopecten plica*	+	–	–	+	+	–	–

15. *Decatopecten radula*	+	+	+	+	+	+	−
16. *Delectopecten alcocki*	−	−	−	+	−	−	+
17. *Delectopecten fluctuatus*	−	−	−	−	−	−	+
18. *Delectopecten musorstomi*	−	+	−	+	−	−	−
19. *Excellichlamys histrionica*	−	+	−	−	+	−	−
20. *Excellichlamys spectabilis*	−	+	−	+	+	+	−
21. *Glorichlamys elegantissima*	−	−	−	+	−	−	−
22. *Glorichlamys quadrilirata*	−	+	−	−	−	−	−
23. *Gloripallium pallium pallium*	+	+	+	+	+	+	−
24. *Gloripallium pallium speciosum*	−	−	−	+	−	−	−
25. *Haumea inaequivalvis*	−	+	−	−	−	+	+
26. *Haumea rehderi*	−	+	−	−	−	+	−
27. *Hemipecten forbesianus*	−	+	−	−	−	−	−
28. *Hyalopecten tydemani*	−	+	−	+	−	−	−
29. *Juxtamusium coudeini*	−	+	−	−	−	−	−
30. *Juxtamusium maldivense*	−	−	−	+	−	−	−
31. *Laevichlamys aliae*	−	+	−	−	−	−	+
32. *Laevichlamys allorenti*	−	−	−	+	−	−	−
33. *Laevichlamys andamanica*	−	−	−	+	−	−	−
34. *Laevichlamys deliciosa*	−	+	−	+	−	−	+
35. *Laevichlamys gladysiae*	−	+	−	+	−	−	−
36. *Laevichlamys irregularis*	−	+	+	+	+	+	−
37. *Laevichlamys limatula*	−	+	−	−	−	−	−
38. *Laevichlamys mollita*	−	−	−	−	−	+	−
39. *Laevichlamys squamosa*	+	+	+	+	+	+	−
40. *Laevichlamys wilhelminae*	−	+	+	−	−	+	−
41. *Mimachlamys albolineata*	+	+	−	+	+	+	−
42. *Mimachlamys cloacata*	−	+	−	+	−	−	−
43. *Mimachlamys gloriosa*	−	−	−	−	+	−	−
44. *Mimachlamys lentiginosa*	+	+	−	+	−	+	−
45. *Mimachlamys senatoria*	+	+	+	+	+	+	−
46. *Minnivola pyxidata*	−	+	−	−	+	−	−
47. *Mirapecten mirificus*	−	−	−	+	−	−	−
48. *Mirapecten moluccensis*	−	−	+	−	−	−	−
49. *Mirapecten rastellum*	−	−	−	+	−	−	−
50. *Pecten excavatus*	−	−	−	+	−	−	−
51. *Pedum spondyloideum*	−	−	−	+	−	+	−
52. *Pseudohinnites levii*	−	+	−	−	−	−	−
53. *Scaeochlamys lemniscata*	−	+	−	−	−	−	−
54. *Scaeochlamys livida*	−	−	−	+	−	−	−
55. *Semipallium dianae*	−	−	−	+	−	−	+
56. *Semipallium dringi*	−	−	−	+	−	−	−
57. *Semipallium fulvicostatum*	−	+	−	+	−	+	−
58. *Semipallium tigris*	−	−	+	+	+	+	−
59. *Serratovola gardineri*	−	+	−	+	−	−	−
60. *Veprichlamys jousseaumei*	−	+	−	−	−	−	−
61. *Veprichlamys versipellis*	−	−	−	−	−	−	+
62. *Volachlamys singaporina*	−	+	−	−	+	−	+