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Content:

Acesta gabrieli sp. nov. versus *Acesta celebensis* (P. Bartsch, 1913) (Mollusca: Bivalvia: Limidae), by Frank Nolf 1-11
A critical assessment of the genus *Acesta* (Mollusca: Bivalvia: Limidae) in the Indo-West Pacific Ocean, with the description of *Acesta lemuriensis* sp. nov., by Frank Nolf and Steve Hubrecht 12-40

Covers:

- **Front cover:** at the left *Acesta gabrieli* sp. nov. and at the right *Acesta lemuriensis* sp. nov.
- **Back cover:** *Acesta* (*Callolima*) *rathbuni* (Bartsch, 1913). Off New Britain, Papua New Guinea. 06°07' S/ 149°10' E. 243.4 mm: largest size ever reported.

Layout: Frank Nolf

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***Acesta gabrieli* sp. nov. versus *Acesta celebensis* (P. Bartsch, 1913) (Mollusca: Bivalvia: Limidae)**

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Keywords: Mollusca, Bivalvia, LIMIDAE, *Acesta gabrieli*, *Acesta celebensis*, W Pacific.

Abstract: Pictures by Prashad (1932) of *Acesta celebensis* (P. Bartsch, 1913) have created a lot of confusion in the last century. A better photograph of the juvenile *A. celebensis* specimen from Bartsch was given by Marshall (2001), together with another enigmatic juvenile specimen from ZMA, labelled as *Acesta* sp. aff. *celebensis* and called *Acesta* sp.1 by Huber (2015). Similar juvenile shells and two adult specimens have been found at the MNHN. They are described as *A. gabrieli* sp. nov. in the present paper.

Abbreviations:

CFN: Private collection of Frank Nolf
(Oostende, Belgium)

CSH: Private collection Steve Hubrecht
(Koksijde, Belgium)

D.: Diameter

H.: Height

L.: Length

LV: left valve

MNHN: Museum national d'Histoire naturelle
(Paris)

RBINS: Royal Belgian Institute of Natural
Sciences (Brussels, Belgium)

RV: right valve

USNM: National Museum of Natural History,
Washington DC

ZMA: Zoological Museum Amsterdam (The
Netherlands)

Introduction: P. Bartsch (1913) described the new species *Lima (Acesta) celebensis* based upon two damaged left valves and a lot of fragments, probably belonging to these two valves, dredged at station 5647, south of North Island, Buton Strait, Indonesia (05°34'00" S/ 122°18'15" E) in 519 fathoms, in green mud bottom. One of these measured 159 mm (Pl. V, figs 17-18). A well-preserved juvenile specimen from unknown exact locality, collected by the same Philippine Expedition of the U.S. National Museum, was also figured (Pl. V, figs 17-19) and was considered conspecific by Bartsch. Although the smallest valve was the best preserved, it has no type status, since only the

larger valves formed the basis of the description. A better figure of that valve (USNM 229395) was given by Marshall (2001) and compared with *A. celebensis* from Sulu Sea, Indonesia (ZMA - 55.5 mm x 45.0) and labelled as *Acesta* sp. aff. *A. celebensis*. Marshall stated both are different from each other (Pl. V, figs 19 & 20).

Huber (2015) discussed the figures of Prashad and stated they should be compared with *A. indica* because of the numerous fine radial ribs. However, the posterior auricle of *A. indica* is rounded, and the '*A. celebensis*' from ZMA has a different outline, being anteriorly oblique.

A number of juvenile specimens in the MNHN material, lesser than 60 mm, completely match the ZMA specimen, but two large adult specimens of about 150 mm (cf. the large specimen of Prashad), were also obtained from the same location or found in the nearby waters.

Systematics:

Family LIMIDAE Rafinesque, 1815

Genus ***Acesta*** H. Adams & A. Adams, 1858
Typetaxon: *Ostrea excavata* Fabricius 1779
(by monotypy)

Large, thin shelled, ovate, equivalve and inequilateral, ventricose, with moderate byssal gape, anterior umbonal ridge ill-defined; anterior auricle reduced or absent; cardinal area mainly posterior to beak, ligament pit broad, curved (Marshall, 2001).

Subgenus: *Acesta*

Ornament of superficial radiating riblets, commonly strongest laterally and grading into fine striae on median portion of valves.

Chondrophore with the hinge more or less triangular, curved forward in contrast with the subgenus *Callolima*, wherein the ligament and the chondrophore are more or less oval, elongated in the direction of the hinge plate and with superficial radiating riblets, commonly strongest laterally and grading into fine striae on median portion of valves.

Anterior auricle present. Radial ribs of equal width not alternating with secondary finer riblets, in contrast with the subgenus *Plicacesta* wherein the ribs become stronger in the middle.

***Acesta gabrieli* nov.sp.**

(= *Acesta* sp. 1 fide Huber)

(Pl. I, figs 1-4; Pl. II, figs 5-8; Pl. III, figs 9-12;
Pl. V, fig. 20; Pl. VI, figs 21)

Type material:

Holotype: Pl. I, figs 1-4.

E Kotakot, off Stephan Strait, Papua New Guinea. 04°29' S/ 145°35' E. Papua Niugini Expedition - CP4038. 800-840 m. 17 December 2012.

MNHN-IM-2000-37932.

H. 159.1 mm L. 120.3 mm D. 50.3 mm.

Paratype 1: Pl. II, figs 5-8.

E Kotakot, off Stephan Strait, Papua New Guinea. 04°29' S/ 145°35' E. Papua Niugini Expedition - CP4038. Trawled by the N.O "Alis". 800-840 m. 17 December 2012. MNHN-IM-2000-37933.

H. 156.1 mm L. 121.2 mm D. 60.9 mm.

Paratypes 2-8:

E Kotakot, off Stephan Strait, Papua New Guinea. 04°27' S/ 145°34' E. Trawled by the N.O "Alis". Papua Niugini Expedition - CP4038. 800-840 m.

17 December 2012.

Paratype 2:

H. 45.43 mm L. 38.62 mm D. 17.30 mm.

MNHN-IM-2000-37934.

In alcohol with animal.

Paratype 3:

H. 55.79 mm L. 47.11 mm D. 18.84 mm.

MNHN-IM-2000-37935.

In alcohol with animal.

Paratype 4-8:

4: H. 59.80 mm L. 49.56 mm D. 21.40 mm.

MNHN-IM-2000-37936.

Pl. III, figs 9-10

5: H. 54.65 mm L. 42.77 mm D. 18.84 mm.

MNHN-IM-2000-37937.

Pl. III, figs 11-12

6: H. 22.91 mm L. 19.05 mm D. 8.23 mm.

MNHN-IM-2000-37938.

7: H. 26.50 mm L. 22.08 mm D. 10.00 mm.

MNHN-IM-2000-37939.

8: H. 27.30 mm L. 22.14 mm D. 9.22 mm.

MNHN-IM-2000-37940.

More material: 2 left valves from Tanimbar Islands, Indonesia – 08°44' S/131°05' E – KARUBAR Expedition – dredged by N.O. "Baruna Jaya 1" at a depth of 884-891 m. 5 November 1991. MNHN; 1 left valve from Tanimbar Islands, Indonesia – 08°21' S/ 131°43' E – dredged by N.O. "Baruna Jaya 1", Stn CP54 at a depth of 836-869 m. MNHN. 30 October 1991. H. 171.4 mm L. 127.8 mm.

Description: Shell up to 170 mm. Valves thin but solid, rather inflated, closed at the lunule, slightly anteroventrally oblique, glossy white.

Hinge straight and narrow. Ventral part protruding with the anteroventral margin rounded, but posterior margin more broadly rounded. Anterior auricle small, posterior auricle straightforward.

Lunule very narrow with five strong parallel ribs downwards from the umbones. Posterior auricle hooked, not rounded. Exterior surface of the valves sculptured with about 110 flattened radial ribs of equal strength, broader than the interstices and extending beyond the margins. These ribs are regularly spaced over the whole surface of the valves and become dominant towards the anterior and posterior parts of the shell. Rib interspaces becoming deeper towards the ventral margin, with very fine, crowded, nearly visible commarginal lirae between the radial ribs in the middle zone of the disk, fading out towards the anterior and posterior parts. Grooves between ribs are so deeply incised that they can be observed and felt from the inside of the valves.

Animal brownish red.

Type locality: Kotakot, off Stephan Strait, Papua New Guinea. 04°27' S/ 145°34'

Habitat: In mud, between 800 and 840 m.

Derivatio nominis: The name '*gabrieli*' is derived from my father's name Gabriel Nolf, who passed the exciting passion of collecting seashells on to me. I inherited his perseverance, needed to accomplish the revision of the genus *Acesta* in the SW Pacific.

Discussion: The present new species has always been a controversial item among authors treating *Acesta* species in the W Pacific Ocean. The problems were mainly caused by Bartsch (1913), who depicted a juvenile specimen of *A. celebensis* on the same plate with a fragment of an adult specimen for the only reason he did not possess an intact large specimen. Prashad (1932) made a connection to Bartsch by again depicting a large specimen of '*A. celebensis*' and two juvenile specimens, but this time they turned out to belong to a new undescribed species.

- Huber (2015) suggested the new species should be compared to *A. indica* (E.A. Smith, 1899) because of '*a translucent white border*' and the fact that Smith's species '*is opaque white with numerous fine radials as well*'. However, *A. gabrieli* is different from *A. indica* by the extremely narrow hinge plate, inducing beaks which are very close together. *A. gabrieli* possesses a more oblique outline, it has a

deeply incised shell surface, and the lunule cavity is not so prominent as in *A. indica*. It seems that the latter species is limited to the southern Indian Ocean, *A. gabrieli* lives in waters surrounding Papua New Guinea and the Indonesian islands.

- I agree with Huber (2015) that the new species is different from *A. borneensis* (Bartsch, 1913) and *A. butonensis* (Bartsch, 1913) in shape and colour:

* *A. borneensis* (Bartsch, 1913) is much more flattened, very elongated, except in the juvenile stage (type!) when it is almost circular in outline. The umbonal angle between the anterior dorsal and the dorsal margin of almost 140-142° is sufficient to distinguish it from all other described species. This angle is 126° in *A. gabrieli*.

* *Acesta butonensis* (Bartsch, 1913) is a questionable species. It was described from a small broken right valve, 26.8 mm high and 22 mm wide with a diameter of 5.5 mm. It clearly represents an immature individual and there is a most suggestive similarity between Bartsch's original figures and those given by Prashad (1932, pl. 4, figs 1,2) as immature specimens of *A. celebensis* (Bartsch, 1913). Bartsch's types of the two species originated from only a few miles apart in Buton Strait with less than 40 fathoms in difference. Maybe, *A. butonensis* represents an immature specimen of *A. verdensis*.

- *Acesta celebensis* (Bartsch, 1913) (Pl. V, figs 17-18; Pl. V, fig. 19; Pl. VI, figs 22-23; Pl. VII, figs 24-26) is different from *A. gabrieli* by the more elongated oval form, the very narrow and shallow interstices between the radial ribs. Both *A. gabrieli* and *A. celebensis* show very fine commarginal threads between the ribs.

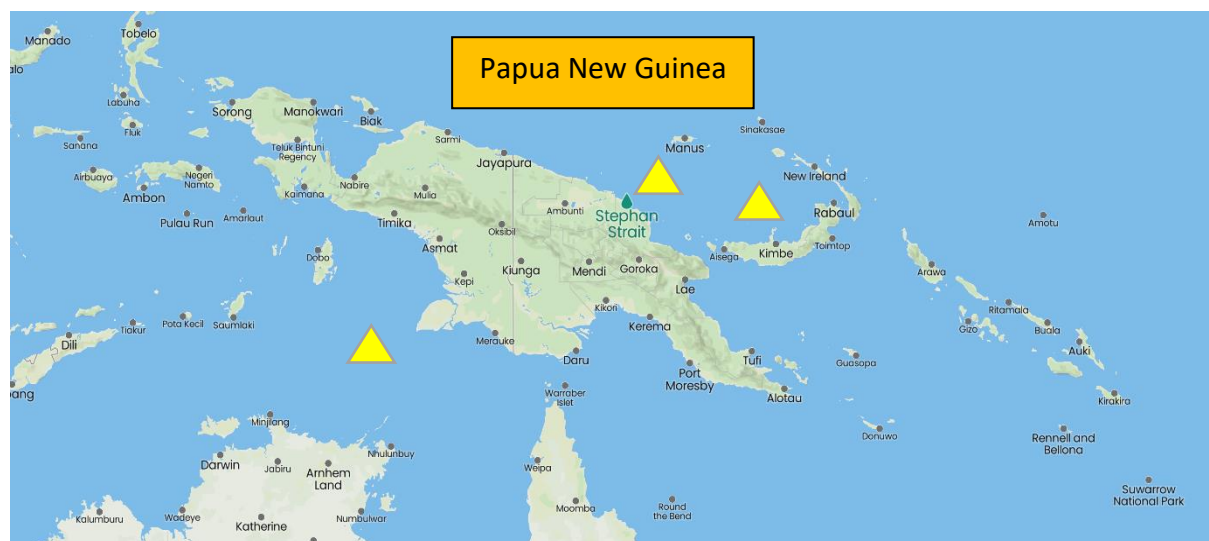
The most important characteristic is the angle between the hinge plate and the anterior margin with an average value of 126° (measured in 5 specimens: 124° - 126° - 129° - 123° - 130°) in *A. celebensis* compared to *A. gabrieli* which has an average angle of 151° (6 specimens: 155° - 158° - 145° - 155° - 150° - 150°).

- *Acesta verdensis* (Bartsch, 1913) is oval, nearly circular, with very fine numerous radiating riblets becoming obsolete in the central area of the disc, which is almost smooth and glossy. The lunule of the right valve often exhibits a typical notch inwards.

- *Acesta (Plicacesta) sphoni* (Hertlein, 1963) (Pl. IV, figs 13-16) is very similar but smaller and it has only about 55 broad radiating ribs, instead of more than 100 in *A. gabrieli*. The anterior margin below the anterior auricle is longer. *A. sphoni* is confined to Californian waters.

Conclusion: The description of *Acesta gabrieli* can be a definitive step in the elucidation of an annoying problem created by Bartsch (1913) and Prashad (1932) in the literature of a century ago. This new species has been confused in literature with *A. celebensis*, from which it is distinctly different by the deeply incised surface structure with very canaliculated radiating ribs, even visible from the interior, and the larger angle between hinge plate and anterior margin.

Acknowledgements: For the loan of material, I thank Philippe Bouchet and Virginie Heros (MNHN), Steve Hubrecht for critical remarks and the loan of additional material for photography. Johan Verstraeten and Jan Libbrecht made corrections to the manuscript.



Geographic distribution of *Acesta gabrieli* sp. nov. (▲)

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Plate I. Figs 1-4: *Acesta gabrieli* sp. nov. E Kotakot, off Stephan Strait, Papua New Guinea. 04°29' S/ 145°35' E. Papua Niugini Expedition. CP4038. 800-840 m. 17 December 2012. Holotype. MNHN. H. 159.1 mm L. 120.3 mm D. 50.3 mm; 1: LV; 2: RV; 3: interior of RV; 4: interior of LV.

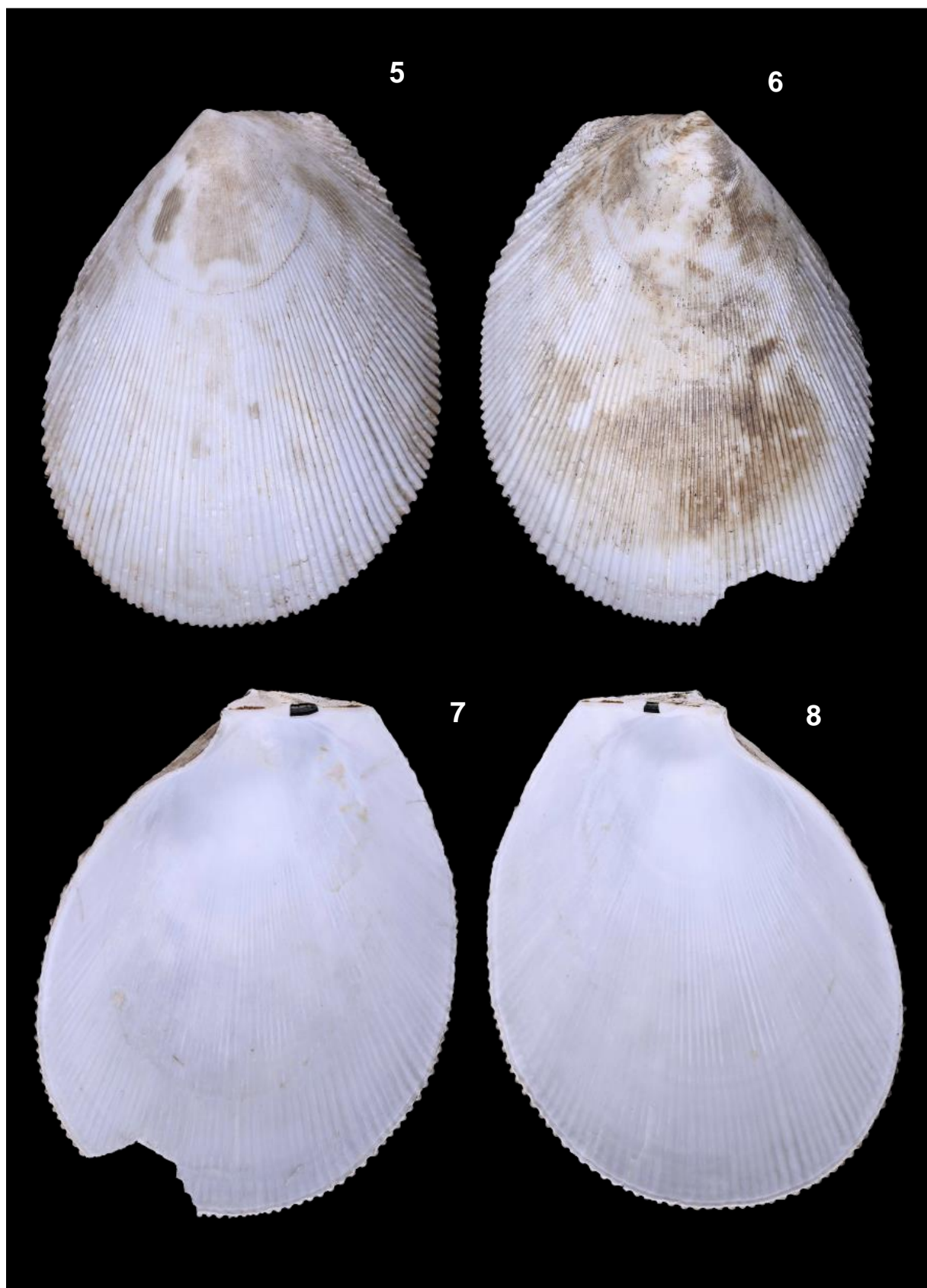


Plate II. Figs 5-8: *Acesta gabrieli* sp. nov. E Kotakot, off Stephan Strait, Papua New Guinea. 04°29' S/ 145°35' E. Papua Niugini Expedition - CP4038. Trawled by the N.O "Alis". 800-840 m. 17 December 2012. Paratype 1. MNHN. H. 156.1 mm L. 121.2 mm D. 60.9 mm; 5: LV; 6: RV; 7: interior of RV; 8: interior of LV.

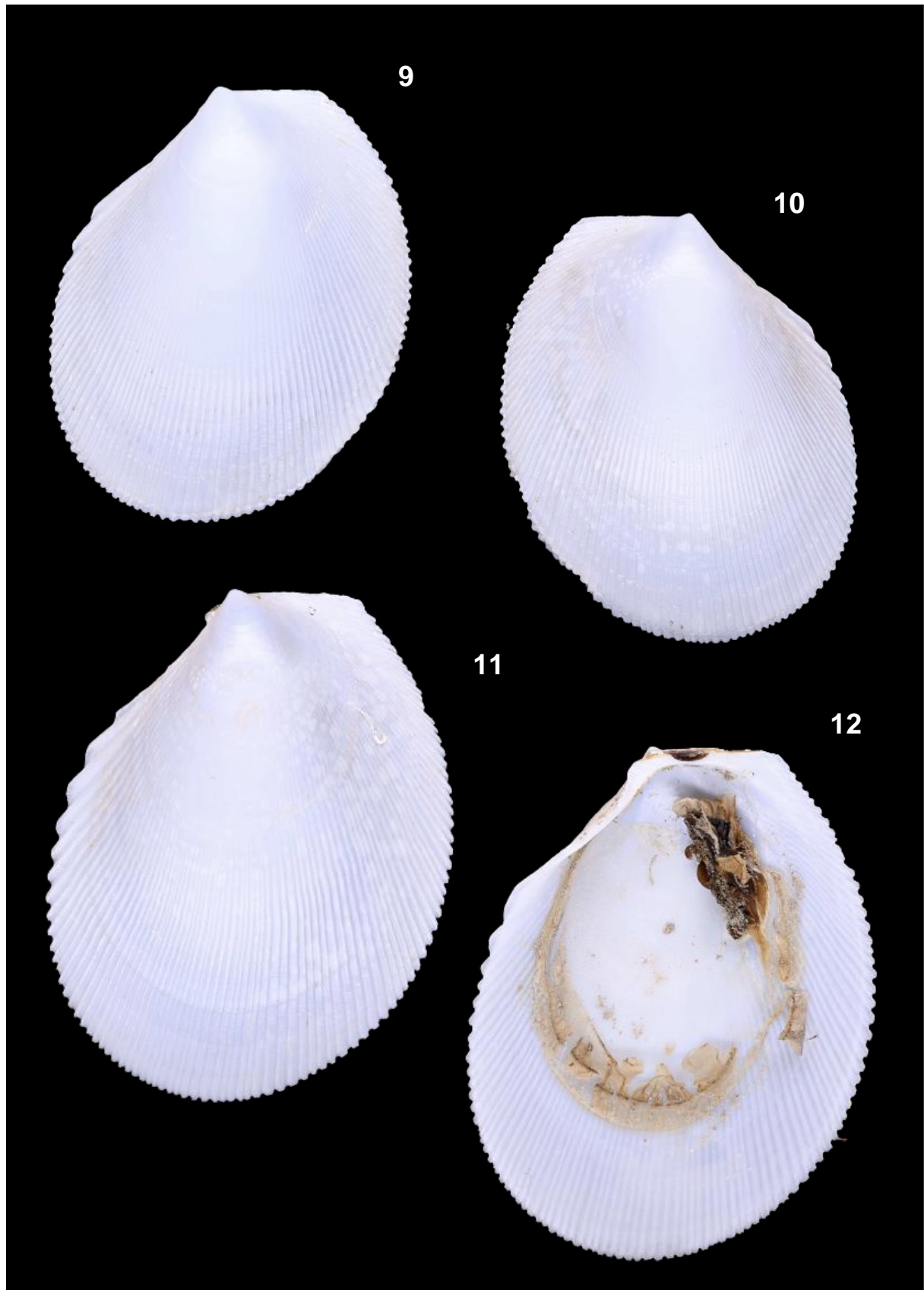


Plate III. Figs 9-12: *Acesta gabrieli* sp. nov. E Kotakot, Papua New Guinea. 04°27' S/ 145°34' E. Beam trawled by the N.O. "Alis" at a depth of 820 m. Papua Niugini Expedition. Stn CP4038. 17 December 2012; 9-10: paratype 4. MNHN. H. 59.80 mm L. 49.56 mm D. 21.40 mm; 13: LV; 14: RV; 11-12: paratype 5. MNHN. H. 54.65 mm L. 42.77 mm D. 18.84 mm; 15: LV; 16: interior of RV.

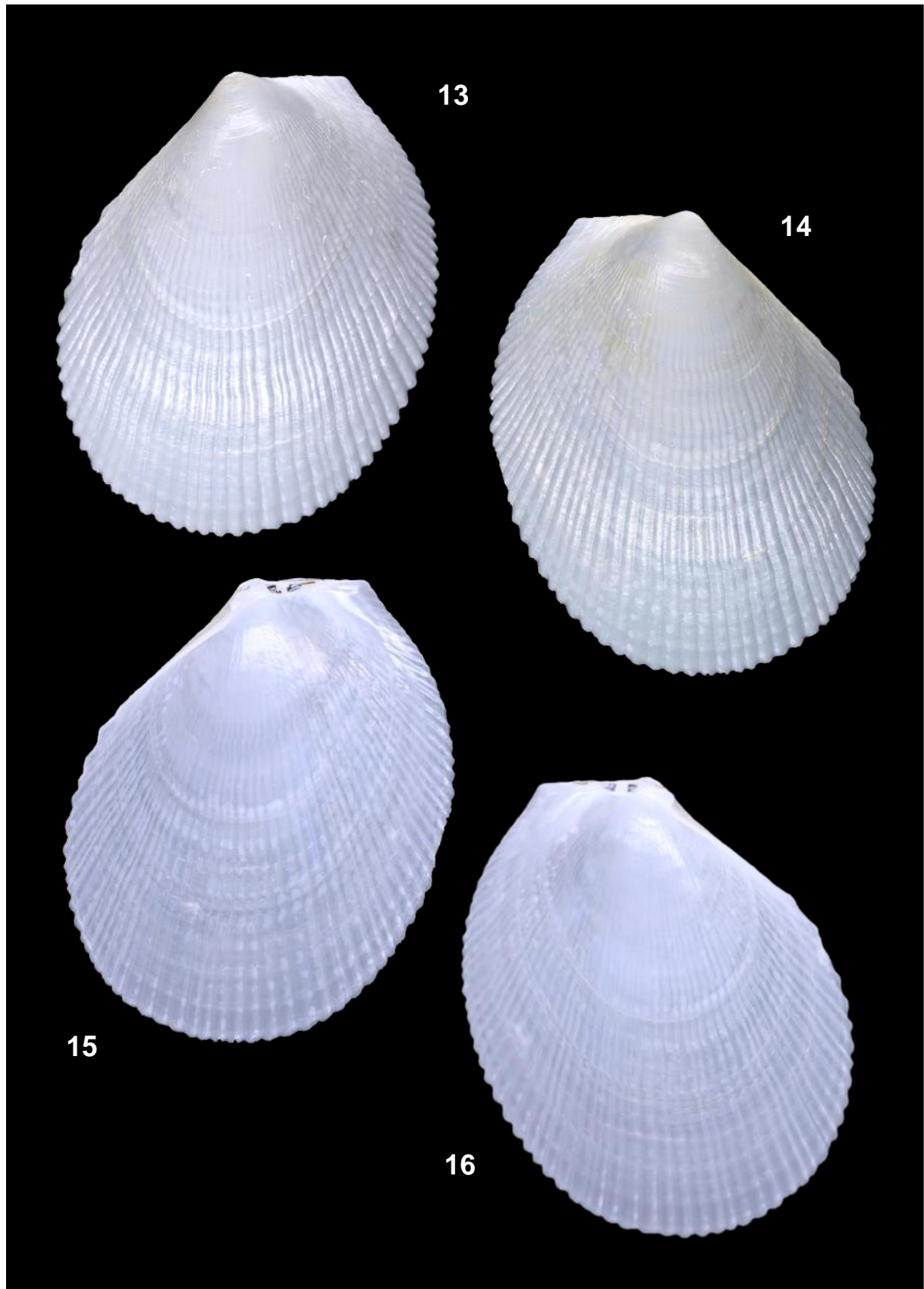
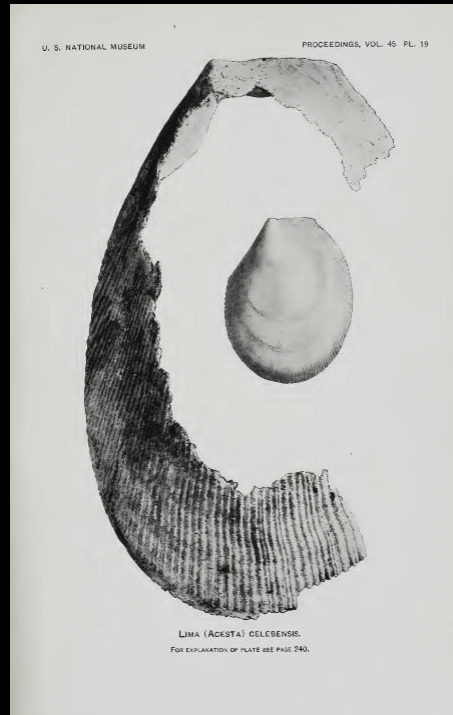


Plate IV. Figs 13-16: *Acesta (Plicacesta) sphoni* (Hertlein, 1963). Off Catalina Island, California, USA. Dredged at a depth of 600 m. 2006. H. 76.80 mm L. 60.19 mm D. 32.58 mm. CSH; 13: LV; 14: RV; 15: interior of the RV; 16: interior of the LV.

17



18



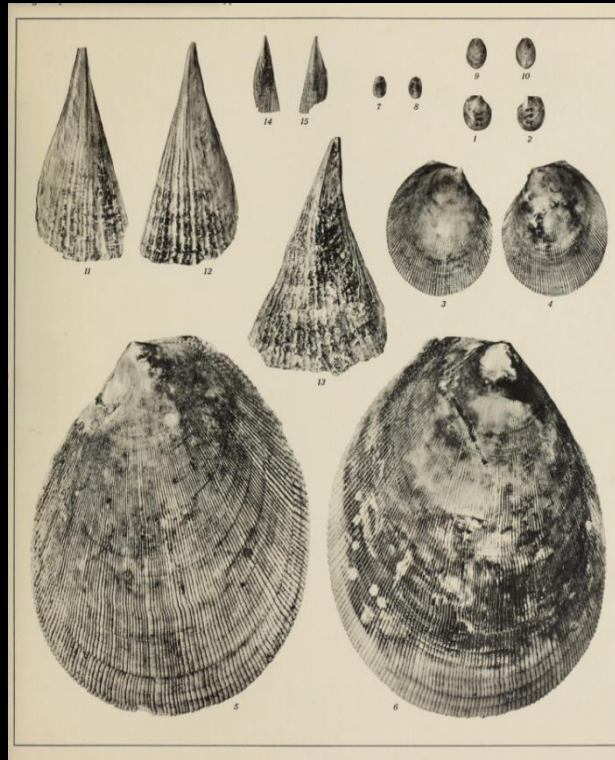
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20



Plate V. Figs 17-18: *Lima (Acesta) celebensis* Bartsch, 1913. Pls 18-19 from "The giant species of the molluscan genus *Lima* obtained in Philippine and adjacent waters". *United States National Museum, Proc.*, **45** (1978): 235-240 by Bartsch, P. (1913). Fig. 19: *Acesta celebensis* (Bartsch, 1913). Originally figured juvenile specimen, USNM 229395. Buton Strait, Indonesia. 950 m (from Marshall, 2001). Fig. 20: juvenile specimen of *Acesta gabrieli* sp. nov. figured as *Acesta* sp. aff. *celebensis* by Marshall (2001). Sulu Sea, Indonesia, 794 m, ZMA, 55.5 x 45.0 mm.



21

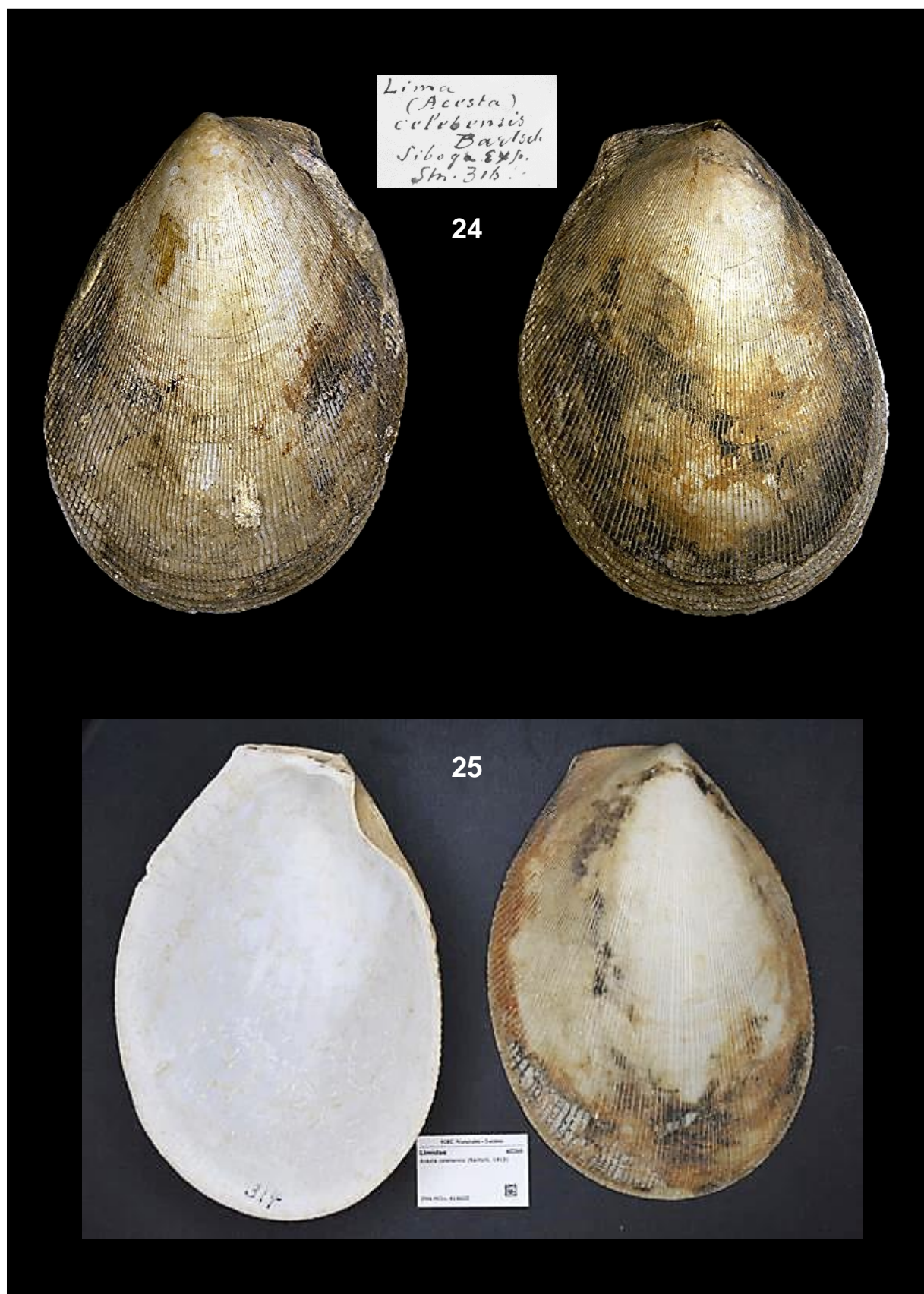


22



23

Plate VI. Fig. 21: "*Acesta celebensis* (Bartsch, 1913)" from "The Lamellibranchia of the *Siboga* Expedition. Systematic part. 2. Pelecypoda (exclusive of the Pectinidae)" by Prashad, B. (1932). Plate IV, figs 1-6. In: M. Weber, ed. *Siboga Expeditie 1899-1900*. E.J. Brill, Leiden, Monographie 53c. 353 pp.
Figs 22-23: *Acesta celebensis* (Bartsch, 1913). SE Point of Manus Island, Papua New Guinea. N.O. "Alis". BIOPAPUA Expedition. Stn CP3690. 02°14' S/ 147°16' E. 611-618 m. 29 September 2010. MNHN. H. 139.4 mm L. 101.9 mm. LV.



A critical assessment of the genus *Acesta* (Mollusca: Bivalvia: Limidae) in the Indo-West Pacific Ocean, with the description of *Acesta lemuriensis* sp. nov.

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Keywords: Mollusca, Bivalvia, LIMIDAE, *Acesta*,
W and S Pacific, Indian Ocean, new species.

Abstract: The genus *Acesta* (LIMIDAE) is still not very well understood. The present paper is an attempt to clarify the identity of some doubtful species of *Acesta* and to offer fine illustrative images and a key to make identification easier. Some names are degraded to the status of junior synonym (*Lima butonensis* Bartsch, 1913; *Acesta kronenbergi* Thach, 2015; *Lima bartschi* Thiele, 1918; *Lima smithi* Bartsch, 1913 non Sowerby III, 1888; *Lima hughi* Bartsch, 1923; *Lima crocea* Pelseneer, 1911; *Lima dalli* Bartsch). On the other hand, we describe a new species *Acesta* (*Plicacesta*) *lemuriensis* from the Seychelles area (Indian Ocean).

Abbreviations:

CFN: Private collection of Frank Nolf
(Oostende, Belgium)
CSH: Private collection Steve Hubrecht
(Koksijde, Belgium)
D.: Diameter
H.: Height
juv.: juvenile specimen(s)
L.: Length
LV: left valve
MNHN: Museum national d'Histoire naturelle
(Paris)
pv: pair of valves
RBINS: Royal Belgian Institute of Natural
Sciences (Brussels, Belgium)
RV: right valve
USNM: National Museum of Natural History,
Washington DC
v: valve(s)
ZMA: Zoological Museum Amsterdam (The
Netherlands)

Systematics:

Family LIMIDAE Rafinesque, 1815

Genus *Acesta* H. Adams & A. Adams, 1858
Typeaxon: *Ostrea excavata* Fabricius 1779
(by monotypy)

Large, thin shelled, ovate, equivalve and inequilateral, ventricose, with moderate byssal gape, anterior umbonal ridge ill-defined; anterior auricle reduced or absent; cardinal area mainly posterior to beak, ligament pit broad, curved (Marshall, 2001).

Ornament of superficial radiating riblets, commonly strongest laterally and grading into fine striae on median portion of valves.

Introduction: The different species of the genus *Acesta* live at great depths (300-1500 m) and are mostly only known from scientific expeditions, while the literature is mainly limited to the papers of Bartsch (1913), Lamy (1930), Thiele (1932), Vokes (1963a & 1963b) and the controversial PhD thesis of Stuardo (1968).

The genus *Acesta* contains worldwide about 30 different species, half of them in the W and S Pacific. A number of *Acesta* species is poorly known, sometimes only by fragments and their identity is often debated due to vague and sometimes cryptic descriptions or inaccurate drawings.

Material and methods: The study is based on the specimens from the MNHN, completed with samples from the private collections of Steve Hubrecht and Frank Nolf.

Discussion: The following is a list of species occurring in the waters of the Indian Ocean, the West and South Pacific, followed by comments and a critical analysis:

Subgenus *Acesta*

Shells relatively large but comparatively thin, ovate, inequilateral, ventricose, with moderately byssal gape. Anterior umbonal ridge ill-defined,

anterior auricle reduced. Cardinal area mainly posterior to beak. Chondrophore with the hinge more or less triangular, curved forward. Surface well provided with **radial ribs evenly spaced and equally strong**.

- ***Acesta arnaudi* F. Nolf, 2022** (Pl. I, figs 1-5) (= *Acesta* sp. 2 fide Huber, 2015)

Material: Crozet Islands, between Pig Island and Possession Island. 46°18'-16' S/ 51°14'-13' E. N.O. 'Marion Dufresne'. 1500 m. Expedition MD08 (BENTHOS). Stn 44 – CP199. 15 April 1976. 1 pv preserved in alcohol. MNHN; Shoals of Crozet Islands. N.O. 'Marion Dufresne'. 860 m. Expedition MD24 (BIOMASS). Stn DC48. 52°18' S/ 41°44' E. 1 September 1980. 1 pv. MNHN; Crozet Islands, between Pig Island and Possession Island. 46°18'-16' S/ 51°14'-13' E. N.O. 'Marion Dufresne'. 1500 m. Expedition MD08 (BENTHOS). Stn 44 – CP199. 15 April 1976. 4 pv with animal; Crozet Islands. N.O. 'Marion Dufresne'. 1500 m. 46°18'-16' S/ 51°14'-13' E. N.O. 'Marion Dufresne'. 1500 m. Expedition MD08 (BENTHOS). Stn 44 – CP199. 15 April 1976. 1 v. with animal + 1 v. with animal and hole; 1 v. from Marion Island. 47°01.78' S/ 37°57' E. South Africa Survey. MAD 57C. 680-715 m; 1 v. from Crozet Islands (Kara Dad shoals). 46°20' S/ 42°28' E. N.O. 'Marion Dufresne'. Expedition MD24 (BIOMASS). Stn DC71. 730 m; several fragments from Marion Island. 47°01.78' S/ 37°57' E. South African Survey. MAD 57C. 680-715 m; 1 fragment W of Marion Island. 46°51' S/ 37°34' E. N.O. 'Marion Dufresne'. Expedition MD24 (BIOMASS). Stn DC64. 990-1025 m; several fragments from Amsterdam Island. 37°55' S/ 77°39' E. N.O. 'Marion Dufresne'. Expedition MD50 (JASUS). Stn DC64. 1000-1200 m. 15 July 1986; fragments and animals in alcohol. Crozet Islands Shoals Ob. 52°18' S/ 41°44' E. N.O. 'Marion Dufresne'. Expedition MD24 (BIOMASS). 860 m.

Holotype from the Crozet Islands, French Southern and Antarctic Territories. Paratypes and fragments also from Marion Island, St Paul and Amsterdam Islands.

Shell up to about 100 mm, thin, fragile, rather glossy. Oval in outline, slightly oblique and rather swollen. Chondrophore triangular and strongly curved. Anterior auricle extremely reduced, posterior auricle larger and rounded. Lunule well marked. Valves white with a shiny appearance, periostracum very thin and yellowish grey. Fine growth lines in the juvenile growth stage, but very distinct in the older stages of larger specimens. Costulation attenuated from the right and left margins towards the centre of the valves, where fine

striae are present. Outer margins of the valves not or only faintly crenulated. Interior of the valves white, glossy and not influenced by the external costulation.

- ***Acesta borneensis* (P. Bartsch, 1913)**

(Pl. II, figs 6-11)

Material: Makassar, Indonesia. N/O "Coriolis". CORINDON 2 Expedition. Stn CH214. 00°31' N/ 117°50' E. 595 m. 1 November 1980. 2 v. MNHN; Tanimbar Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn DW60. 08°21' S/ 132°14' E. 387-389 m. 31 October 1991. 1 v. MNHN.

Holotype is a young specimen from off Silungan Islet, Borneo (04°12'44" N/ 118°26'44" E).

Acesta borneensis was considered by Bartsch (1913) to be different from any known species and as such described as a new species. Basically, his description of the juvenile shell reveals some important characteristics of that species, but is insufficient to obtain a complete picture of it. The following is a revised version, based on an adult specimen depicted in this paper on Pl. II, figs 7-11 from Makassar, Indonesia. Depth: 530m. H. 131.1 mm L. 95.0 mm D. 33.9 mm. Two other left valves are present in the MNHN from Makassar, Indonesia. 00°31' N/ 117°50' E. Dredged at a depth of 595 m. November 1980 (122.3 mm and 159.2 mm).

Shell suboval in outline, up to 130 mm. Valves very thick and solid, closed at the lunule. Hinge straight, slanting slightly upward and narrow. Inequilateral with very flattened valves nearly closed at the byssus gape. Very narrow, elongate hinge and resilifer wedge-shaped. Beaks anteriorly converging with the extreme end of the auricle. Anterior auricle very reduced and nearly absent, posterior auricle straight on ending in a hooked dorsal margin. Umbonal angle between the anterior dorsal and the dorsal margin measures 140-142°. Angle between the dorsal margin - which is long and straight - and the posterior dorsal is about 125°. Area occupied by the lunule concavely excavated and very narrow. Outer surface marked by about 80 sharp radial ribs which run from the umbones to the margins and are crossed by very fine parallel threads. These ribs are slightly waving at the top of the disc, later on becoming straight forward, very regular but more prominent in the middle of the disc and are extending beyond the margins, giving them a very sharp aspect. Interstices broad, becoming wider towards the middle of the shell surface. In addition to these ribs, the surface is marked by

concentric growth lines with stronger ridges at intervals, indicating resting stages. Interior yellowish white, edged with a yellowish band in juvenile specimens, becoming darker in the adult stage. Colour: lemon yellow.

- *Acesta butonensis* (P. Bartsch, 1913)

(Pl. X, fig.55)

Holotype is a small damaged right valve from the south of North Island, Buton Strait, E Sulawesi.

This is a very controversial species, of which the description is nearly the same - word by word – of *Acesta verdensis* (Bartsch, 1913). No differences can be observed between the holotypes, the figures and the descriptions of both species, except that Bartsch (1913) remarked that the young holotype of *A. butonensis* has a bluish white interior, edged with a yellowish border. We observed a greyish border in adult specimens of *A. verdensis*. More material is needed to decide if *A. butonensis* (described on p.240) is a junior synonym of *A. verdensis* (p.239). Vokes (1963a) also had many doubts about the real identity of *A. butonensis* and made a comparison with the very juvenile specimen of Prashad's *A. celebensis*, which turned out to be *A. gabrieli* sp. nov. Vokes (1963a) believed that *A. butonensis* represents an immature specimen of *A. celebensis*. We believe that none of these suppositions are conclusive as it concerns here a specimen with a remarkably large angle between the anterior dorsal and dorsal margin of 150°, a value only observed in *A. verdensis*.

Conclusion: until further notice we regard *A. butonensis* as a synonym of *A. verdensis*.

- *Acesta celebensis* (P. Bartsch, 1913)

(Pl. III, figs 12-15)

Material: Anchorage East of Snilus Besar, Paternoster Islands, Indonesia. 07°19.4' S/ 116°49.5'. Siboga Expedition. Stn 316. Trawled at a depth of 538 m in fine, dark-brown sandy mud. 19 February 1900. 1 pv. Coll. Dautzenberg. RBINS; 1 pv. Naturalis Biodiversity Center, ZMA, Leiden; SE Point of Manus Island, Papua New Guinea. N/O "Alis". BIOPAPUA Expedition. Stn CP3690. 02°14' S/ 147°16' E. 611-618 m. 29 September 2010. 1 pv. MNHN.

Holotype: Two left valves and a lot of fragments dredged at Stn 5647, south of North Island, Buton Strait, SE of Sulawesi, on the north side of the Flores Sea, Indonesia. 05°34'00"S/ 122°18'15" E. Depth: 519 fathoms, on greenish mud bottom. Largest size: 159 mm. A juvenile specimen from the Philippines was also figured.

Shell large, oval, with the hinge slightly curved. Outer surface marked by many coarse radiating ribs which are strongest on the lateral border, particularly on the very strongly excavated lunule. Finer threads are present in the depressed grooves between these ribs. Hinge broad. Resilium deeply impressed, wedge-shaped.

Prashad (1932) made a connection to Bartsch's figures and description by again depicting a large specimen of '*A. celebensis*' and two juvenile specimens, which all turned out to belong to a new undescribed species.

A better figure of that juvenile specimen (USNM 229395) was given by Marshall (2001) and compared with *A. celebensis* from the Sulu Sea, Indonesia (ZMA - 55.5 mm x 45.0) and labelled as *Acesta* sp. aff. *A. celebensis*. Marshall (2001) stated that both are different from each other.

Huber (2015) discussed the figures of Prashad and stated that they should be compared with *A. indica* because of the numerous fine radial ribs. However, the posterior auricle of *A. indica* is rounded, and the '*A. celebensis*' from ZMA has a different outline, being anteriorly oblique.

A number of specimens in the MNHN material completely match the ZMA specimen, but all of them are less than 60 mm and are therefore juvenile stages of a much larger adult shell of about 150 mm (cf. the large specimen of Prashad), obtained from the same location or found in the nearby waters. They all belong to the new species *Acesta gabrieli* sp. nov.

The latter is more bulbous and has many stronger radiating ribs, spaced from each other by deeply incised grooves. The ribs can be observed through the interior side of the thick valves in contrast with *A. celebensis*.

- *Acesta citrina* Masahito & Habe, 1976

(Pl. IV, figs 16-22)

Material: Katsuyama, Chiba Prefecture, Japan. Trawled with gill nets from 250-330 m. 3 December 2006. 1 pv. CSH; Shizuoka, off Sagami Bay, Japan. Trawled at a depth of 500-600 m. March 2007. 1 pv. CSH.

Holotype from off Esuzaki, Wakayama Prefecture, Honshu, Japan Sagami Bay.

Shell rather small for the genus, sized from 45 mm to 65 mm in length, thin, elongated ovate in shape, slightly inflated. Anterior dorsal margin short and oblique downwards, posterior dorsal margin short, straight posteriorly, forming a small triangular wing. Anterior margin long and weakly concave, slightly gaping. Posterior margin gently curved, ventral margin well rounded. Lunule long and concave. Surface shiny, yellow, paler at the umbo and deeper to

the margins with distantly placed darker yellowish concentric zones. Shell surface with many wrinkled minute radial striae. Ligamental area between the umbo and the short straight hinge line flat and broad triangular in shape. Interior smooth and polished, yellow at the margins, which are minutely crenulated corresponding to the ends of the radial striae on the shell surface.

Acesta smithi (G.B. Sowerby III, 1888) is the nearest ally in Japanese waters to this species, but this larger shell is sculptured with distinctly placed ribs and deep canaliculated interstices. *Acesta goliath* (G.B. Sowerby III, 1883) has a large white ovate shell and a smooth glossy surface.

- ***Acesta gabrieli* Nolf, 2022** (= *Acesta* sp. 1 fide Huber, 2015) (Pl. V, figs. 23-27)

Material: Tanimbar Islands, Indonesia. N/O "Baruna Jaya 1". Stn CP54. 08°21' S/ 131°43' E. 836-869 m. 31 October 1991. 1 v. MNHN; Tanimbar Islands, Indonesia. N/O "Baruna Jaya 1". Stn CP91. 08°44' S/ 131°05' E. 884-891 m. 5 November 1991. 2 juv. v. MNHN; E Kotakot, off Stephan Strait, Papua New Guinea. 04°29' S/ 145°35' E. Papua Niugini Expedition - CP4038. 800-840 m. 17 December 2012. 2 pv. + 7 juv. pv. (some with animal).

Holotype and **paratypes** from E Kotakot, Papua New Guinea.

Shell up to 150 mm. Valves thin but solid, rather inflated, closed at the lunule, slightly anteroventrally oblique, glossy white.

Hinge straight and narrow. Ventral part protruding with the anteroventral margin rounded, but posterior margin more broadly rounded. Anterior auricle small, posterior auricle straight.

Lunule very narrow with five strong parallel ribs downwards from the umbones. Posterior auricle hooked, not rounded. Exterior surface of the valves sculptured with about 110 flattened radial ribs of equal strength, broader than the interstices and extending beyond the margins. This new species has often been confused with *A. celebensis* in literature, but is different by its impressive ribs, with very deep interstices, visible from the interior side. Angle between hinge plate and anterior margin about 25° larger than within *A. celebensis* (Bartsch, 1913).

- ***Acesta goliath* (G.B. Sowerby III, 1883)**
(Pl. VI, figs 28-30)

Material: Miyako Island, Ryukyus, Japan. Trawled at a depth of 80-100 m. 12 December 2000. 1 pv. CSH; Aomori, Okuki, Japan. Trawled in very deep water. 2009. 1 pv. CSH; Tokyo Bay, Japan. Trawled at a depth of 200 m.

1 pv. CSH; off Iwate-Takada, Japan. Trawled at a depth of 200-250 m. 1984. 1 pv. CSH.
Type locality: Japan.

Shell rather obliquely ovate, semitransparent, striated at the sides and on the auricles, otherwise smooth. Anterior side with a depressed lunule, making a straight outline extending from the umbones about half the length of the shell. Cardinal area deeply excavated. Anterior auricles small and very sloping, posterior auricles large. Valves nearly closed, slightly gaping at the anterior side. Colour: white. Size: from 100 mm to a maximum of 176 mm.

Easily separated from *Acesta smithi* (Sowerby III, 1888) by its glossy appearance, the small hinge plate and the absence of strong ribs over the most part of the disk. In several popular shell books and magazines, white coloured specimens of *A. rathbuni* are often misidentified as *A. goliath*.

- ***Acesta indica* (E.A. Smith, 1899)**
(Pl. VI, fig. 31)

Type material: 2 specimens (51 mm and 75 mm) from off Travancore coast, India.

"*Testa L. excavatae peraffinis, sed minus elongata, striis radiantibus tenuioribus et magis numerosis insculpta*". Except the comparison with *Acesta excavata* (Fabricius, 1799) the original description in Latin reveals no relevant information about the structure of this species. Shell moderately large, with the anterior margin convex in its upper part, with about 40 distinct radiating ribs over the whole surface of the shell with marked growth stages.

Barnard (1963) described a valve from dredging operations by the research vessel *Africana II* south of South Africa, Stn A1254, app. 33°01' S/ 34°49' E at a depth of 1300m. As it was impossible to get a photograph of this specimen - it has never been depicted - or to examine it in actual condition, we were obliged to use the figures by Alcock (1907) and Thiele (1918-20) of *A. indica* and the comments by Barnard (1932), who was himself not totally convinced of his identification.

Conclusion: *Acesta indica* remains a rather mysterious species, only known from a few specimens in a not-well defined geographic distribution area.

- ***Acesta maui* B.A. Marshall, 2001**
(Pl. VII, figs 32-38)

Material: SE of Campbell Island, southern New Zealand. N/O "Chiyo Maru". 53°14.3' S/ 170°12.3' E. 480-487 m. 31 August 1987. Paratype MNHN; Chatham Rise, New Zealand.

Dredged at a depth of 450-500 m. December 2002. 2pv. CSH; off Beachport, South Australia. Dredged at a depth of 120 m, on sand. 1 pv. CSH.

Type material: North Island, Cook Strait and South Island, SE Campbell Island, southern New Zealand, Chatham Rise, Bounty Platform and Campbell Platform.

Shell up to 185 mm high, elongate, thin, glossy, translucent, white, moderately inflated, strongly inequilateral, very anteroventrally oblique.

Periostracum thin, brown, covered with minute spines that rise from stellate bases, most of which are grouped in roughly commarginal lines. Prodissoconch wide, globular and smooth. Prodissoconch II sharply defined, only slightly larger than prodissoconch I. Hinge straight, smooth, ligament pit central, oblique, narrow angulate, shallow concave. Dorsal margin weakly convex behind small umbones, set off from posterior margin by distinct angulation. Anterodorsal margin retracted below hinge (byssal notch), straight or slightly convex. Posterodorsal margin straight or slightly concave, anterior and posterior margins broadly rounded, ventral margin more tightly rounded. Exterior sculptured with numerous low, rounded radial riblets that become stronger towards the margins, covering the whole disc, but becoming entirely absent from median area. Interspaces beside anterior margin about as wide as each riblet, sculptured with much finer, closer, commarginal riblets.

A typical characteristic in live taken specimens of *A. maui* is the presence of a brown periostracum provided with a kind of short bristles like in *A. angolensis* (Adam & Knudsen, 1955) and *A. patagonica* (Dall, 1902).

A. maui is comparable with *A. patagonica* (Dall, 1902), to which it is most similar in hinge height relative to shell height, and shell thickness, shape and proportions. *A. maui* differs in having weaker, more closely spaced radial ribs on the anterior and posterior thirds. These ribs are practically absent in the mid part of the disk creating a shinier appearance of the shell surface. Animals of both species are externally very similar (Marshall, 2001).

- *Acesta saginata* B.A. Marshall, 2001
(Pl. IX, figs 47-53)

Material: Chatham Rise, New Zealand. Trawled at a depth of 1000 m. 1 pv. CSH.

Holotype: Curtis Island, NE New Zealand. Also from Tasmania.

Shell up to 116 mm high, rather thin, inflated, inequilateral, distinctly anteroventrally oblique, glossy white. Hinge straight, smooth, ligament

pit central, strongly oblique. Dorsal margin straight behind small umbones, set off from posterior margin by distinct angulation. Posterior margin more broadly rounded than the anteroventral margin. Exterior sculptured with about 100 ribs, stronger and most widely spaced on anterior and posterior sides. Interspaces on central third of disc narrower than each rib. Rib interspaces with fine, crowded, commarginal threads.

Angle between hinge plate and anterior margin is about 10° less than in *A. gabrieli* Nolf, 2022, a more anteroventrally oblique shell, with a very narrow hinge plate.

Important remark: The paratypes from New Caledonia, identified by Marshall as *Acesta saginata* (MNHN), are definitely not that species. One of them was depicted as fig.12 (Pl. IX, figs 51-53). In contrast with the New Zealand specimens, shells from New Caledonia possess only obsolete radiating threads instead of distinct ribs and the hinge plate is also different. We suppose that the New Caledonian specimens belong to another undescribed species. As only single valves and fragments in bad condition were present, a description has not been pursued.

- *Acesta verdensis* (P. Bartsch, 1913)

(Pl. X, figs 54-59) (= ?*Lima butonensis* Bartsch, 1913)

Material: Solomon Islands. N/O "Alis". Salomon 1 Expedition. Stn DW1827. 09°59.1' S/ 161°05.8' E. 804-936 m. 4 October 2001. 6 fragments. MNHN; SE Santa Isabel Island, Solomon Islands. N/O "Alis". SALOMON 2 Expedition. Stn CP2186. 08°17.0' S/ 160°00.0' E. 487-541 m. 23 October 2004. 1 v. MNHN; Kolombangara Island, Vella Gulf, Solomon Islands. N/O "Alis". Salomon 2 Expedition. Stn DW2266. 07°51.3' S/ 156°52.6' E. 560 m. 4 November 2004. 1 juv. pv + 7 v. MNHN; south Gatukai, Solomon Islands. N/O "Alis". SALOMON 2 Expedition. Stn DW2302. 09°06.8' S/ 158°22.0' E. 254-341 m. 8 November 2004. 1 broken v. MNHN.

Holotype from the Philippines. Most of the valves in the MNHN material came from the Solomon Islands.

Shell moderately large, from 50 to 120 mm, irregularly outline from oval to nearly circular, slightly gaping at the lunule. Outer surface marked by numerous, quite regular and regularly spaced radiating riblets, which are stronger near the lunule than on the rest of the shell. Central part of the disk is almost smooth. In addition to the radial sculpture, the surface is marked with numerous growth lines, some of which mark resting stages and are much

stronger than the remainder. Hinge slightly curved, extending very slightly anterior to the beaks. Resilifer deeply impressed, wedge-shaped. Lunule strongly developed and deeply impressed, often showing an indentation in the right valve. Angle between the dorsal and anterior dorsal margin measures about 145-150°, larger than in any other *Acesta* species living in the same waters. Outer surface cream coloured, interior creamy white.

Subgenus *Callolima*

Ligament and the chondrophore more or less oval, elongated in the direction of the hinge plate and with **superficial radiating riblets, commonly strongest laterally and grading into fine striae on median portion of valves, sometimes nearly completely absent in the middle of the disc. Radial ribs of equal width not alternating with secondary finer riblets.** Anterior auricle present, but sometimes very reduced.

- *Acesta marissinica* Yamashita & Habe, 1969 (Pl. XIII, figs 77-83)

Material: Off Nha Trang, Vietnam, South China Sea. Trawled at a depth of 300 m. 1 pv. 2000. CSH; off Hainan, China, South China Sea. 20°02' N/ 115°01' E. Trawled between 653-700 m. 12-01-2014. 1 juv. pv. MNHN; Beihai, Guangxi, South China Sea, China. 3 pv. CSH; South China Sea, China. Trawled at a depth of 800-1000 m. 2 pv. CSH; Tun Sa Island, South China Sea, China. Trawled at a depth of 200 m. 1 pv. CSH; off Hagi, Yamaguchi Pref., Japan Sea, Japan. Trawled between 500-520 m. February 2011. 1 pv. CSH; Taiwan. Trawled in deep water. May 2015. 1 pv. CSH; off Broome, NW Australia. Trawled at a depth of 450-500 m on mud and sand. 1 pv. CSH.

Holotype: East China Sea, off Amami Oshima, south of Kyushu, Japan. According to the authors also known from the South Chinese Sea.

Shell very large, attaining about 210 mm in size. Thick, moderately inflated, triangularly ovate and even quadrate ovate, equivalve but inequilateral, slightly gaping at the posterior margin. Byssal gape with thickened edges and a straight anterior margin. Umbo situated at the anterior end of dorsal margin and slightly beyond it. Lunule small but distinctly marked with lamellated growth lines and coarse incised radial grooves. Anterior margin is slightly curved and the posterior gently to roundly arcuate. Ventral margin rounded and dorsal margin straight, forming an angular corner with the posterior margin at the distal end and providing

the posterior wing area. Ligamental area between the dorsal margins deeply slanted, narrow and long. Resilifer groove grows from the anterior umbo to the middle part of the ligamental line. Hinge plate narrow. Excavation between the lunule also deeply slanted, but not sinuated on the anterior margin. Surface with many radial, weakly waved ribs, lunule with very strong cords. Colour from deep yellow to ashy yellow. Interior shiny, glossy white, but slightly yellow at the umbonal area, diffusing to the ventral margin.

Discussion: Thach (2015) states that the narrow, radial ribbing in *A. kronenbergi* is more distinct than in *A. marissinica* and *A. rathbuni*. In fact, *A. rathbuni* possesses only obsolete threads (limited to the anterior and posterior parts of the disc), and the sculpture of both *A. marissinica* and *A. kronenbergi* is identical. They both have a quadrate-ovate shape and a byssal gape with very thick edges, whereby they differ from all other similar *Callolima* species like *A. rathbuni* and *A. niasensis*, and certainly *A. philippinensis* and its synonym *A. bartschi*. Thach made no comparison with *A. niasensis*, a species closely related to *A. marissinica* and therefore also to *A. kronenbergi*.

Conclusion: From the study of dozens of species in the subgenus *Callolima*, collected at different localities (South China Sea, the Indonesian Islands, Papua New Guinea and the Solomon Islands), we learned that it is sometimes very difficult to attribute certain shells to one of the described species.

We state that *A. kronenbergi* and *A. marissinica* occur in the same waters of the West Pacific and cannot be differentiated from each other because they possess the same characteristics, such as the thick edges of the byssal gape, the quadrate-ovate outline and the nearly straight anterior margin whereby they differ from *A. rathbuni* (more ovate, no thickened edges at the lunule, more globose, only obsolete threads and lateral sides, more glossy), *A. niasensis* (radial ribs wavy and more impressed at irregular distances) and finally *A. philippinensis* with its very oblique outline and fragile light-weighted shell.

***Acesta kronenbergi* Thach, 2015 has to be regarded as a junior synonym of *A. marissinica*.**

This species is closely allied to *Acesta philippinensis* (Bartsch, 1913), but differs in having the distinctly marked lunule swelling and coarser radial ribs on the shell surface. *A. philippinensis* is a fragile shell, very obliquely

elongated and truncated at the lower posterior portion of the shell. *A. niasensis* (Thiele, 1918) has a deeply excavated and sinuated lunule and has not the thickened edges of the lunule.

- *Acesta niasensis* (Thiele, 1918)

(Pl. XIV, figs 84-88)

Material: Kai Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn CC10. 05°21' S/ 132°30' E. 329-389 m. 23 October 1991. 1 pv. MNHN; Kai Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn DW13. 05°26' S/ 132°38' E. 329-389 m. 24 October 1991. 2 v + 3 fragments. MNHN; Tanimbar Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn CP69. 08°42' S/ 131°53' E. 356-368 m. 2 November 1991. 5 pv + 2 v + 2 fragments. MNHN; SE Point of Manus Island, PAPUA New Guinea. N/O "Alis". BIOPAPUA Expedition. Stn CP3690. 02°14' S/ 147°16' E. 611-618 m. 29 September 2010. 3 pv with animal. MNHN.

Holotype: Nias Strait, off SE Sumatra.

Shell moderately thick, slightly sloping, flat arched. From the rather long edge of the ligament zone, the dorsal margin drops obliquely, in the beginning almost in a straight line and then merges into the broadly lower edge. Margins broadly rounded below. Resilium very elongate and narrow, wedged towards the anterior. Beaks coincide with the anterior auricles. Anterior auricles very reduced. Entire surface covered with numerous rather flat and close-fitting wavy radial ribs, which are more or less kinked at some growth marks and are broader than the interstices. Colour lemon-yellow. Interior white to pale yellow.

This species is poorly known and practically absent in the literature of the last century. In fact, it is only figured by Thiele (1932) and Stuardo (1968), who depicted again the type. Only one specimen was known until today.

Acesta niasensis is different from *A. rathbuni* by the thickness of the valves and its outline, being broader in the middle part of the disk and rounder below, in contrast with *A. rathbuni* which is slightly oblique at the posterior third of the ventral margin. The most important characteristic is the presence of the flat wavy radiating ribs with very narrow interstices between them. *A. rathbuni* has no or few threads, coming close together towards the lateral margins. The middle of the disk has a glossier appearance because it lacks most radiating threads.

- *Acesta philippinensis* (P. Bartsch, 1913)

(Pl. XV, figs 89-93)

(syn. *Lima* (A.) *bartschi* Thiele, 1918; *L. (Callolima) smithi* Bartsch, 1913 non G.B. Sowerby III, 1888; *L. hughi* Bartsch, 1923 nom. nov. *L. smithi* Bartsch, 1913 non G.B. Sowerby III, 1888).

Material: Bohol Sea, Philippines. M/V "DA-BFAR". Panglao 2005 Expedition. Stn CP2352. 923-1260 m. 09°27' N/ 124°03' E. 24 May 2005. 2 lv (CSH+CFN) + 1 v. MNHN; Philippines. N/O "Coriolis". MUSORSTOM 3 Expedition. Stn CP122. 12°20' N/ 121°42' E. 673-675 m. 4 June 1985. 2 lv+2 v. MNHN; Philippines. N/O "Coriolis". MUSORSTOM 3 Expedition. Stn CP128. 11°50' N/ 121°41' E. 815-821 m. 5 June 1985. 4 pv (CSH+CFN) + 3 v. MNHN; Bohol Sea, Philippines. N/O "DA-BFAR". PANGLAO 2005 Expedition. Stn CP2388. 09°27' N/ 123°34' E. 762-786 m. 30 May 2005. 5 pv. MNHN; E Guadalcanal, Solomon Islands. N/O "Alis". SALOMONBOA 3 Expedition. Stn CP2848. 09°35' S/ 160°47' E. 414-456 m. 24 September 2007. 1 pv + 6 v. MNHN.

Type from the outer Tayabas Light, Philippines.

Shell very large, reaching about 200 mm with a maximum size of 260 mm, spatulate outline, slender, elongate and very obliquely shaped, truncated posteriorly from the middle to the ventral margin. Shell thin and very fragile, slightly gaping at the lunule and narrowly so for the entire length of the posterior lateral margin. Hinge very narrow and slightly curved, bending slightly upward posteriorly. Outer surface marked with well-incised, fine, quite regularly spaced wavy radiating riblets. The incised lines are somewhat stronger at the lunule than elsewhere. Yellowish with concentric bands of darker lemon yellow, probably marking growth stages. Interior pale yellow with a deeper yellow coloured blotch in the middle of the valves.

Bartsch (1913) also described *Lima (Acesta) smithi*, but this name was already preoccupied by G.B. Sowerby III in 1888 (see further on in this paper). Later on, Thiele (1918) renamed this shell as *Lima (Acesta) bartschi* and Bartsch renamed it as *L. hughi*. However, none of these forms can be accepted as separate species because they only refer to broader, less elongate forms of *Acesta philippinensis*. We follow here the opinion of Huber (2010). The divided muscle scar in the type of *A. bartschi* remarked by Huber (2010) looks very dubious and it should never be a feature to make a distinction with related species, which have similar scars. An intensive examination of dozens of species in the *Callolima* group has not allowed us to make a distinction and the shape or the position of scars should not be an identification tool.

- *Acesta rathbuni* (P. Bartsch, 1913)

(Pl. XVI, figs 94-98 & Pl. XVII, figs 99-104)
(syn. '*Lima crocea* Pelseneer, 1911'; '*Lima dalli*'
Bartsch fide Huber, 2015)

Remarks:

° *Lima dalli* apparently was not described by Bartsch as stated by several authors including Huber (2015) and taken over by WoRMS, but was only figured by Platt (1949) in National Geographic Magazine, n°96, p.71, fig.11 as *Lima dalli* and said to come from the Philippines, hence not described.

° Pelseneer (1911) doesn't provide a description of *Lima crocea*, only a number of generic anatomic elements of some Limidae species with including a reference to *Lima crocea* (pp.33-34).

Material: Philippines. MUSORSTOM 2 Expedition. Stn CP26. 13°49' N/ 120°50' E. 299-320 m. 1980. 12 pv with animal. MNHN; Philippines. N/O "Coriolis". MUSORSTOM 2 Expedition. Stn CP40. 13°08' N/ 122°39' E. 25 November 1980. 1 pv. MNHN; Kai Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn CP05. 05°49' S/ 132°18' E. 296-299 m. 22 October 1991. 2 pv. MNHN; Kai Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn CC10. 05°21' S/ 132°30' E. 23 October 1991. 1 pv. MNHN; Kai Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn DW13. 05°26' S/ 132°38' E. 417-425 m. 24 October 1991. 3 pv. + 2 juv. pv. MNHN; Tanimbar Islands, Indonesia. N/O "Baruna Jaya 1". KARUBAR Expedition. Stn CP69. 08°42' S/ 131°53' E. 356-368 m. 2 November 1991. 1 pv. MNHN; Solomon Islands. N/O "Alis". SALOMON 1 Expedition. Stn CP1786. 09°21' S/ 160°25' E. 387 m. 30 September 2001. 3 pv. MNHN; Solomon Islands. N/O "Alis". SALOMON 1 Expedition. Stn CP1794. 09°16' S/ 160°08' E. 494-504 m. 30 September 2001. 1 v. MNHN; Solomon Islands. N/O "Alis". SALOMON 1 Expedition. Stn CP1804. 09°32' S/ 160°37' E. 309-328 m. 2 October 2001. 1 pv. MNHN; Bohol Island, Maribohoc Bay, Philippines. PANGLAO 2004 Expedition. Stn P1. 09°36' N/ 123°45' E. 90-200 m. May-July 2004. 1 pv. MNHN; SW Choiseul Island, Solomon Islands. N/O "Alis". SALOMON 2 Expedition. Stn CP2212. 07°38' S/ 157°42' E. 400-475 m. 26 October 2004. 2 pv. MNHN; Balicasag Island, Philippines. PANGLAO 2004 Expedition. Stn P3. 09°31' N/ 123°41' E. 100 m. 3 November 2004 – 4 July 2004. 3 juv. v. MNHN; E Rendova Island, Solomon Islands. N/O "Alis". SALOMON 2 Expedition. Stn CP2288. 08°36' S/ 157°26' E. 509-520 m. 7 November 2004. 1 pv. MNHN; off Balicasag Island, Bohol Sea, Philippines. N/O "DA-BFAR". Panglao 2005 Expedition. Stn

CP2336. 09°32' N/ 123°39' E. 757-760 m. 22 May 2005. 1 pv with animal. MNHN; off Balicasag Island, Bohol Sea, Philippines. N/O "DA-BFAR". Panglao 2005 Expedition. Stn CP2340. 09°29' N/ 123°44' E. 271-318 m. 23 May 2005. 3 pv with animal + 3 v. MNHN; Bohol Sea, Philippines. N/O "DA-BFAR". Panglao 2005 Expedition. Stn CP2388. 09°27' N/ 123°34' E. 762-786 m. 30 May 2005. 11 juv. pv with animal + 4 v. MNHN; Guadalcanal, Solomon Islands. N/O "Alis". SALOMONBOA 3 Expedition. Stn CP2767. 09°19' S/ 160°06' E. 10 September 2007. 1 pv with animal. MNHN; E Guadalcanal, Solomon Islands. N/O "Alis". SALOMONBOA 3 Expedition. Stn CP2848-CP2849. 09°35' S/ 169°47' E. 414-456 m. 24 September 2007. 2 pv with animal. MNHN; South of Lae, Gulf of Huon, Papua New Guinea. N/O "Alis" BIOPAPUA Expedition. Stn CP3636. 07°27' S/ 147°31' E. 462-495 m. 23 August 2010. 1 pv with animal + 2 v; off Madang, Papua New Guinea. BIOPAPUA Expedition. CP3645. 06°46' S/ 147°51' E. 418 m. In sand. 24 August 2010. 1 pv with animal. MNHN; W of New Hanover, Papua New Guinea. N/O "Alis". BIOPAPUA Expedition. Stn CP3655. 02°15' S/ 150°16' E. 402-440 m. 28 August 2010. 1 v. MNHN; Open Bay, Papua New Guinea. N/O "Alis". BIOPAPUA Expedition. Stn CP3665. 04°50' S/ 151°38' E. 225-340 m. 23 September 2010. 1 pv. MNHN; SE Point Manus Island, Papua New Guinea, N/O "Alis". BIOPAPUA Expedition. Stn CP3691. 02°11' S/ 147°18' E. 499-517 m. 29 September 2010. 4 pv. With animal. MNHN; off Madang, Papua New Guinea. N/O "Alis". BIOPAPUA Expedition. Stn CP3708. 04°58' S/ 145°50' E. 502-529 m. 2 October 2010. 1 pv with animal + 1 v. MNHN; Papua New Guinea. MADEEP Expedition 2014. CP4259. 02°54' S/ 151°08' E. In mud. 370 m. 24 April 2014. 3 pv with animal + 1 juv. pv. MNHN; Papua New Guinea. MADEEP 2014 Expedition. CP4334. 06°08' S/ 149°10' E. 430-620 m. In mud. 6 May 2014. 4 pv. + 5 juv. pv. MNHN; off Tarawai Island, Papua New Guinea. Stn CP4069. 03°11' S/ 143°04' E. 510-610 m. In mud. 7 May 2014. 1 pv. MNHN; Ainto Bay, SE New Brittany, Solomon Sea. N/O "Alis". MADEEP Expedition. Stn CP4337. 06°07' S/ 149°17' E. 287-447 m. 7 May 2014. 1 v + 2 juv. pv. MNHN; Papua New Guinea. MADEEP 2014 Expedition. CP4338. 06°06' S/ 149°17' E. In mud. 410-614 m. 7 May 2014. 6 pv. MNHN; off Tarawai Island, Papua New Guinea. CP4069. 03°11' S/ 143°04' E. 510-610 m. In mud. 7 May 2014. 2 pv. MNHN; off Andaman Islands, Bay of Bengal. Trawled by Indian fishermen. January 2002. 1 pv. CFN; Siasi, Sulu Sea, Philippines. Trawled by fishermen. 1 pv. CFN; off New Britain, Papua

New Guinea. 06°07' S/ 149°10' E. Trawled. May 2014. 2 pv. CFN; off Vietnam, South China Sea. Dredged at a depth of 400 m. September 1984. 1 pv. CFN;

Visayan Sea, Philippines. Trawled at a depth of 90-120 m. July 1980. 1 pv. CSH; Balicasag Island, Philippines. Taken with tangle nets between 350-500 m. July 2004. 1 pv. CSH; Panglao, Bohol, Philippines. Trawled in deep, water. 5 pv. CSH; Panglao, Bohol, Philippines. Taken with tangle nets at 100-250 m. 2013. 3 pv. CSH; Nansha Island, South China Sea, China, China. Trawled at a depth of 400-600 m. 1 pv. CSH; Balicasag Island, Bohol, Philippines. Taken with tangle nets at 100-200 m. January 2017. 1 pv. CSH; off Broome, NW Australia. Trawled at a depth of 450-500 m on mud and sand. 1 pv. CSH; Rowley Shoals, NW Australia. Trawled by scampi boats at a depth of 400-500 m. 2 pv. CSH; Timor Sea, Northern Territory, Australia. 09°47' S/ 130°25' E. 1 pv. CSH.

Type: Dredged off the outer Tayabas Light, Philippines.

Shell large to very large, up to 243 mm. Slightly gaping for about a third of the anterior lateral margin and for about half of the posterior edges. Outline irregularly oval. Slightly notched at dorsal part of the posterior margin. Hinge slightly obliquely, downward slanting posteriorly. Lunule concavely, obliquely sloping. The remaining outline curving in a regular oval. Outer surface marked with irregularly fine radiating threads, faintly impressed, stronger on the lunule and practically absent in the middle zone of the disk, where the interstices become wider. Resilium almost straight dorsally, with a sigmoid curve ventrally. Colour light yellow, but white specimens are not rare. Interior greyish white with often a yellow patch in the middle.

A. rathbuni is the most widespread and most common *Acesta* species in the W Pacific. It differs from *Acesta niasensis* by its more fragile shell, except for old and large specimens (especially from NW Australia), and the slightly oblique outline in the lower half of the shell. Radiating ribs are straight and limited to fine threads in the lateral parts of the disc, creating a glossier appearance. Hinge very variable, from narrow and elongate to very broad.

A. niasensis possesses distinct wavy radiating ribs over the whole surface of the valves.

Subgenus *Plicacesta*

In the subgenus *Plicacesta*, species have a lunule which is very straight sloping towards the middle of the anterior margin and possess a large number of **evident ribs which become stronger from the lateral margins towards**

the middle of the disc. Margins are strongly crenulated.

Acesta (Plicacesta) lemuriensis sp. nov.

(Pl. XI, figs 60-65)

Holotype: From the Seychelles area, Indian Ocean. 10°57' S/ 60°16' E. SOMIRMAS Expedition. Stn DR50. Dredged at 286-500 m by the N.O. "Marion Dufresne". 1990. 1 v. H. 125.61 mm L. 95.63 mm. MNHN-IM-2000-37941.

Paratype 1: H. 92.05 mm L. 62.94 mm. 1 v. MNHN-IM-2000-37942.

Paratype 2: H. 94.87 mm L. 71.20 mm. 1 v. MNHN-IM-2000-37943.

More material: A dozen broken valves and fragments, all from the same location.

Description: Shell moderately large, obliquely ovate, inequilateral, opisthocline, slightly inflated, white. Dorsal margin short. About 70 rounded radiating ribs, moderately elevated, becoming stronger from the lateral margins to the middle of the disc and spaced by equally broad interstices. Ribs extending beyond the margins, creating sharp scales. Grooves between ribs are so deeply incised that they can be observed and felt from the inside of the valves. Growth stages clearly visible, creating a roof tile appearance. Hinge plate slightly inclining at the posterior side.

Anterior auricles extremely small, the posterior relatively larger, sloping slightly downwards and thickened. Ligament groove prosocline. Cardinal area excavated. Lunule with 3-4 ribs, rather narrow but very large, and sloping down in a straight line to about the middle of the anterior margin.

Type locality: Off the Seychelles, Indian Ocean. 10°57' S/ 60°16' E.

Etymology: The name '*lemuriensis*' refers to the origin of the population, the Lemurian shell province, off the Seychelles in the western Indian Ocean.

Discussion: The new *Acesta* species can only be compared with *Acesta smithi*, both being representatives of the subgenus *Plicacesta*. The Japanese species has a smaller and more sloping down posterior auricle and only two thirds of the total number of radiating ribs present in the Lemurian species. *Acesta indica* has a convex smaller lunule, a straight horizontal posterior auricle and a larger number of radiating ribs, present as fine threads instead of strong ribs with scaly margins as in *A. lemuriensis*.

- ***Acesta (Plicacesta) smithi* (G.B. Sowerby III, 1888)** (Pl. XII, figs 66-76)

Material: Off Katsuyama, Chiba Prefecture, Uraga Strait, Japan. Taken by nets at a depth of 250 m. November 2003. 1 pv. CSH; off Chikura, Chiba Prefecture, Japan. Trawled at a depth of 400-800 m. 3 pv. CSH; northern Sagami Bay, Japan. Trawled with gill nets at a depth of 300-350 m. 24 March 1996. 1 pv. CSH; off Tateyama City, Japan, Boso Peninsula, Japan. Trawled at a depth of 200-250 m, with sponges. 16 October 2000. 1 pv. CSH; off Kanaya, Chiba Prefecture, Uraga Strait, Japan. Trawled with gill nets at a depth of 250-300 m. In sand/gravel. February 1995. 1 pv. CSH.

Holotype from Japan (H. 63 mm L. 51 mm).

Shell obliquely ovate, opisthocline, slightly inflated and relatively thin, white. Dorsal margin short. Posterior auricle less sloping down compared to *A. lemuriensis*. About 40 rounded radiating ribs moderately elevated, slightly waved. Anterior auricles small, the posterior relatively large. Ligament groove prosocline. Cardinal area excavated. Colour yellowish white.

Sowerby (1888) made a comparison with *A. excavata* (Fabricius, 1779), which is not so decidedly ribbed and *A. goliath* (G.B. Sowerby III, 1883), which is smooth except at the sides, and not so inflated.

In fact, this species has no affinity with *A. excavata*, from which it is totally different by the very oblique and strongly inequilateral outline, the thickness of the valves, and especially the strong radial ribbing all over the surface of the shell.

Only as additional information:

- ***Acesta virgo* Habe & Okutani, 1968**

Only known from Midway Island, Hawaii.

Poppe (2010) figured a very similar specimen, identified as *Acesta* cf. *virgo* from Bodo, Siquijor, Philippines. Typical is the nearly circular outline, the very short hinge plate and the small posterior auricle compared to Philippine specimens of *Acesta rathbuni*.

- ***Acesta vitrina* Poppe, Tagaro & Stahlschmidt, 2015**

Central Point, Punta Engaño, Mactan Island, Philippines. Only known from the holotype and one paratype. Poppe et al. (2015) placed this species in the genus *Acesta* 'with reluctance', an opinion which we completely share. The thin, translucent shell in combination with the unusual very oblique outline is beyond any comparison with a typical *Acesta*. Moreover, this is most likely a juvenile stage of another species, belonging to another genus.



Conclusion: A revision of the genus *Acesta* is not so straightforward because specimens live in deeper water (300-1500 m) and are mostly only available from scientific expeditions. Fortunately, the material of the MNHN was often live collected, still containing the animals, but as could be suspected many specimens were broken or restricted to single valves only. Nevertheless, the specimens looked even in better condition than those used by previous authors to describe new species. Many authors in the past were limited in their availability of good quality material. Unfortunately, some authors described several species based on minor variations of available specimens (e.g., Bartsch, 1913) or misleading pictures, even on a fragment or a juvenile specimen (e.g., Bartsch, 1913), the use of few accurate drawings (Thiele, 1932), very short descriptions (several authors) or the creation of new names without description or adequate images (Stuardo, 1968). Otherwise, we appreciated the opinions of H.E. Vokes (1963a & b) and M. Huber (2015) when they evaluated the status of most *Acesta* species. We don't claim that our study is more scientific than others, but we have tried to create some order in the mapping of species in the genus *Acesta*. At the very beginning of our study, we thought that the condition of the hinge plate and the resilifer/resilium were of primordial importance. This was also the opinion of most other authors (Bartsch, Thiele, Stuardo). In reality, this is a very variable characteristic depending on heredity, habitat and certainly on the age of the specimens. Gerontic specimens have a very broad hinge and a deeply excavated resilifer. The hinge figures by Thiele (1932) are not useful as identification tool.

Our mapping is based on several parameters e.g., the outline, the hinge, the thickness of shells, and most of all the radial ribbing of the valves.

The most difficult 'group' contains the species which belong to the subgenus *Callolima*, namely *A. bartschi*, *A. kronenbergi*, *A. marissinica*, *A. niasensis*, *A. philippinensis* and *A. rathbuni*. Specimens which possess extremely distinctive characteristics can easily

be identified, but often many specimens are intermediate between extreme forms. Species names like *Lima bartschi* Thiele, 1918 and *A. kronenbergi* should be considered **junior synonyms** and after molecular analysis possibly more dubious species names should be degraded later on. *Acesta butonensis* is most probably a juvenile form of *A. verdensis*. Surprisingly, we discovered a box within the MNHN material with more than a dozen single valves and fragments of a **new species** from the Seychelles area.

They are described in this paper as *Acesta* (*Plicacesta*) *lemuriensis*, and they are

distinctly different from *Plicacesta smithi* (G.B. Sowerby, 1888) from Japan.

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Identification key to the Indian, South and West Pacific species of *Acesta*:

- 1 Shell surface with strong ribs, becoming stronger from the lateral margins towards middle of the disc **4**
- Shell surface with radial ribs, stronger lateral and becoming obsolete or completely absent in the middle of the disc **2**
- Shell surface with equally spaced radiating ribs **3**
- 2 Irregularly oval, slightly notched at dorsal part of posterior, fine radiating threads only at lateral margins, rather glossy in middle of disk *Acesta* (*Callolima*) *rathbuni* (Philippines, Indonesia, NW Australia, NE Solomon Islands)
- Shell thick, rather quadrangular in outline, but broader in the middle part of disk, with flat waving radiating ribs and very narrow interstices over the whole surface of the disk *Acesta* (*Callolima*) *niasensis* (SE Sumatra, Indonesia, Papua New Guinea)
- Triangularly and almost quadrangularly ovate in outline, byssal gape with thickened edges and a straight anterior margin *Acesta* (*Callolima*) *marissinica* (East China Sea, Vietnam)
- Slender and very obliquely shaped, truncated posteriorly from the middle to the ventral margin, very thin and fragile *Acesta* (*Callolima*) *philippinensis* (Philippines)
- 3 Shell oval, slightly oblique and rather swollen, anterior auricle extremely reduced, yellowish grey periostracum *Acesta* (*Acesta*) *arnaudi* (Crozet Islands, off Antarctica)
- Shell very solid, suboval in outline, flattened valves, posterior auricle straight on, ending in a hooked dorsal margin, sharp prominent ribs extending with broad interstices beyond the margins *Acesta* (*Acesta*) *borneensis* (Borneo, Sulawesi)
- Shell large, oval, hinge slightly curved, distinct radial ribs with narrow interstices *Acesta* (*Acesta*) *celebensis* (Buton, SE Sulawesi, Sulu Sea, Indonesia)
- Shell large, solid, inflated, slightly anteroventrally oblique, glossy white, impressive radiating ribs with deep interstices, visible from interior *Acesta* (*Acesta*) *gabrielii* (Stephan Strait, Papua New Guinea)
- Shell small, yellow, very glossy, elongated ovate with wrinkled minute radial striae *Acesta* (*Acesta*) *citrina* (Japan)
- Shell very large, obliquely ovate, smooth and glossy, only striated at the sides of the disk *Acesta* (*Acesta*) *goliath* (Japan)
- Shell moderately large, anterior margin convex in its upper part, about 40 distinct radiating ribs and marked growth stages *Acesta* (*Acesta*) *indica* (southern India)
- Large, elongate, thin, glossy, moderately inflated, very anteroventrally oblique, brown periostracum with minute spines *Acesta* (*Acesta*) *maui* (New Zealand, SE Australia)
- Shell moderately large, rather thin, inflated, anteroventrally oblique, with about 100 radiating riblets *Acesta* (*Acesta*) *saginata* (NE New Zealand, Tasmania)
- Shell moderately large, outline from oval to nearly circular, central part of the disk almost smooth, radial riblets mostly near margins, distinct growth stages, lunule often with indentation in the right valve *Acesta* (*Acesta*) *verdensis* (Philippines, Solomon Islands)
- 4 About 40 radiating ribs, a very short and less sloping down posterior auricle *Acesta* (*Plicacesta*) *smithi* (Japan)
- About 60 radiating ribs, a longer and more sloping down posterior auricle; narrower and more elongate *Acesta* (*Plicacesta*) *lemuriensis* (off Seychelles, Indian Ocean)

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Plate I. Figs 1-5: *Acesta (Acesta) arnaudi* Nolf, 2022; 1-3: Crozet Islands, between Pig Island and Possession Island. 46°18-16' S/51°14-13' E. Trawled by N.O. "Marion Dufresne" at 1500 m. 15 April 1976. H. 101.3mm L. 83.0 mm. Holotype. MNHN; 4-5: Crozet Islands. 52°18' S/ 41°44' E. Trawled by N.O. "Marion Dufresne" at 860 m. 1 September 1980. H. 90.1 mm L. 69.4 mm. Paratype 1. MNHN.

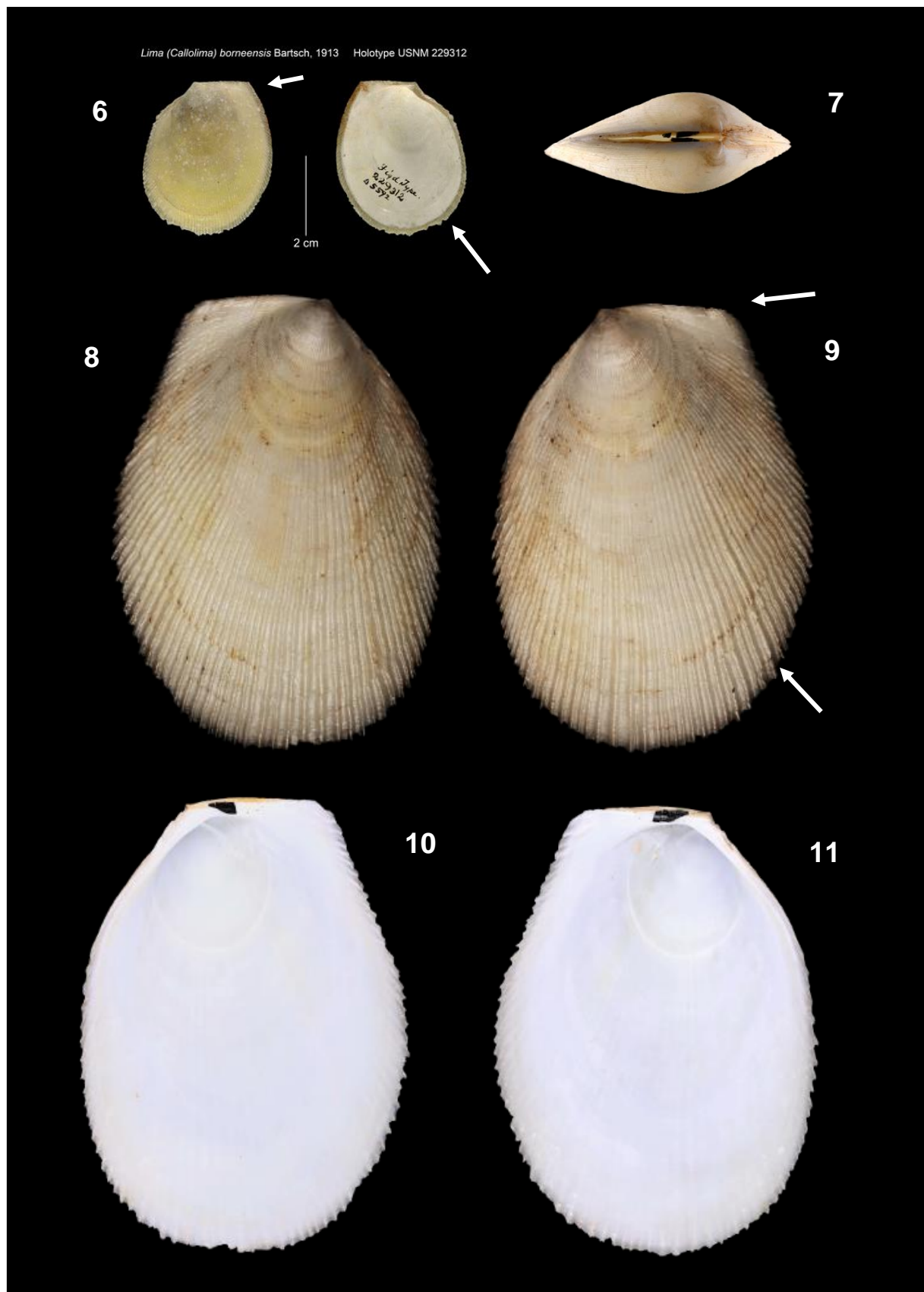


Plate II. Figs 6-11: *Acesta (Acesta) borneensis* (Bartsch, 1913); 6: Off Silungan Island, Borneo. 04°12'44" N/ 118°27'44" E. In 305 fms, on green bottom. H. 39.2 mm L. 33.0 mm. Holotype. USNM (juvenile specimen); 7-11: Makassar, Indonesia. 00°31' N/ 117°50' E. N.O. "Coriolis". CORINDON 2 Expedition. Stn. CH214. 595 m. 1 November 1980. H. 131.1 mm L. 95.0 mm.



Plate III. Figs 12-15: *Acesta (Acesta) celebensis* (Bartsch, 1913); 12-13: SE Point of Manus Island, Papua New Guinea. N.O. "Alis". BIOPAPUA Expedition. Stn CP3690. 02°14' S/ 147°16' E. 611-618 m. 29 September 2010. MNHN. H. 139.4 mm L. 101.9 mm. LV; 14-15: Anchorage East of Snilus Besar, Paternoster Islands, Indonesia. 07°19.4' S/ 116°49.5' E. Siboga Expedition. Stn 316. Trawled at a depth of 538 m in fine, dark-brown sandy mud. 19 February 1900. Coll. Dautzenberg. RBINS.

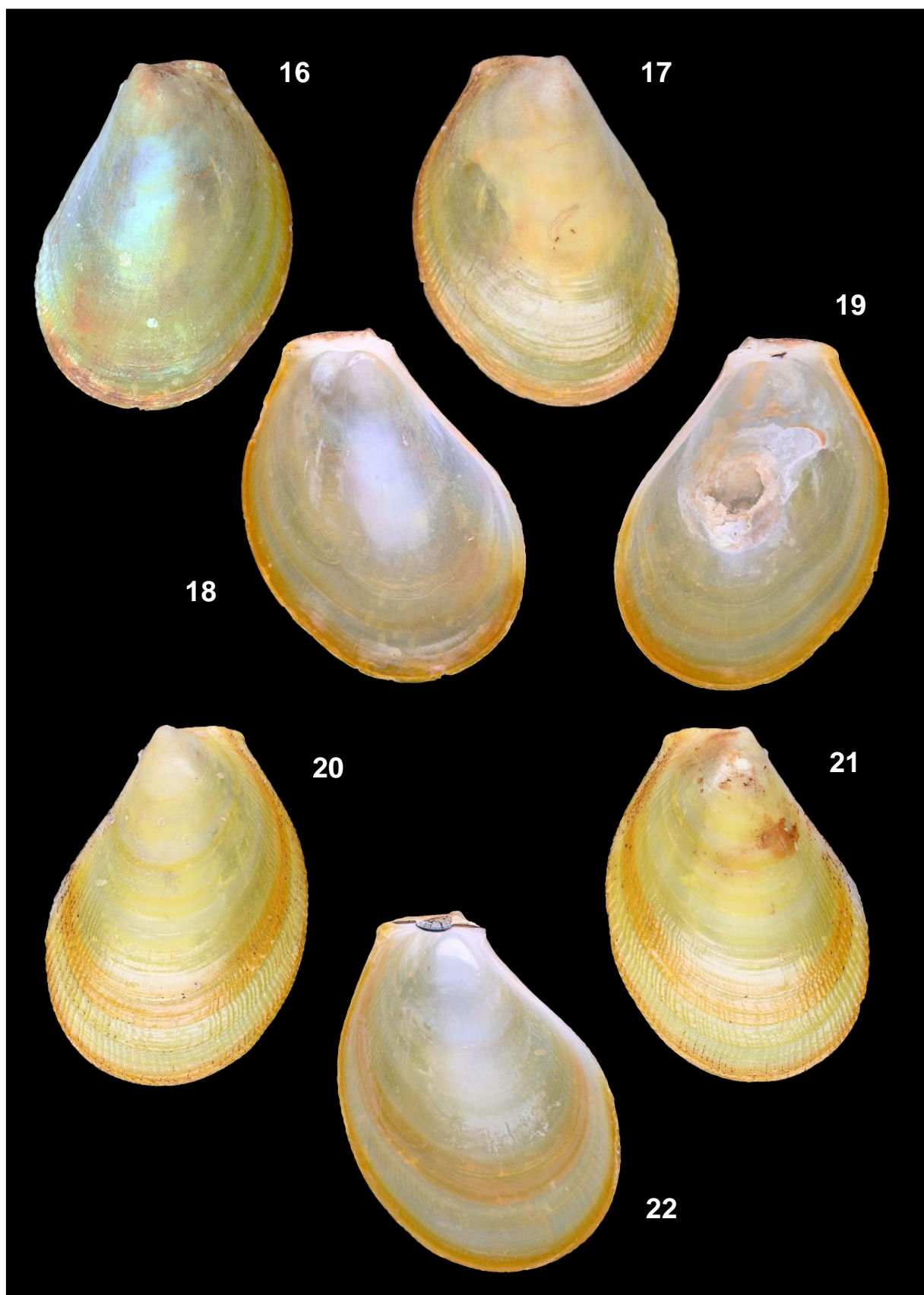


Plate IV. Figs 16-22: *Acesta (Acesta) citrina* Masahito & Habe, 1976. CSH; 16-19 Shizuoka, off Sagami Bay, Japan. Trawled at a depth of 500-600 m. March 2007. H. 51.2 mm L. 36.6 mm; 20-22: Katsuyama, Chiba Prefecture, Japan. Trawled with gill nets from 250-330 m. 3 December 2006. H. 52.5 mm L. 37.7 mm.

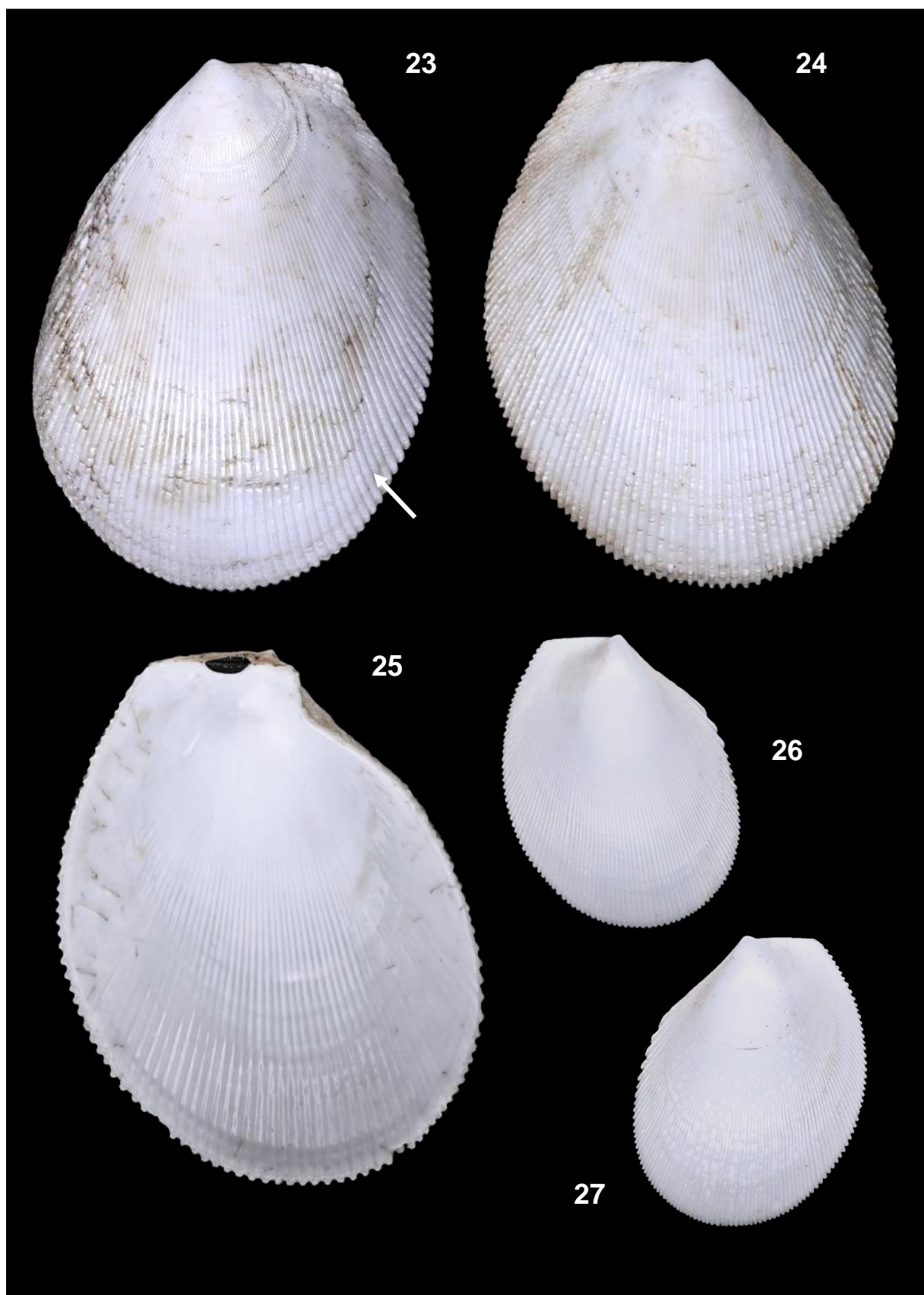


Plate V. Figs 23-27: *Acesta (Acesta) gabrieli* Nolf, 2022; 23-25: Tanimbar Islands, Indonesia. 08°44' S/ 134°05' E. H. 151.8 mm L. 114.1 mm. CFN; 26-27: E Kotakot, Papua New Guinea. 04°24' S/ 149°34' E. N.O. "Alis". PAPUA NIUGINI Expedition. Stn CP4038. 17 December 2012. Trawled at a depth of 800-840 m. H. 70.02 mm L. 54.41 mm. MNHN.

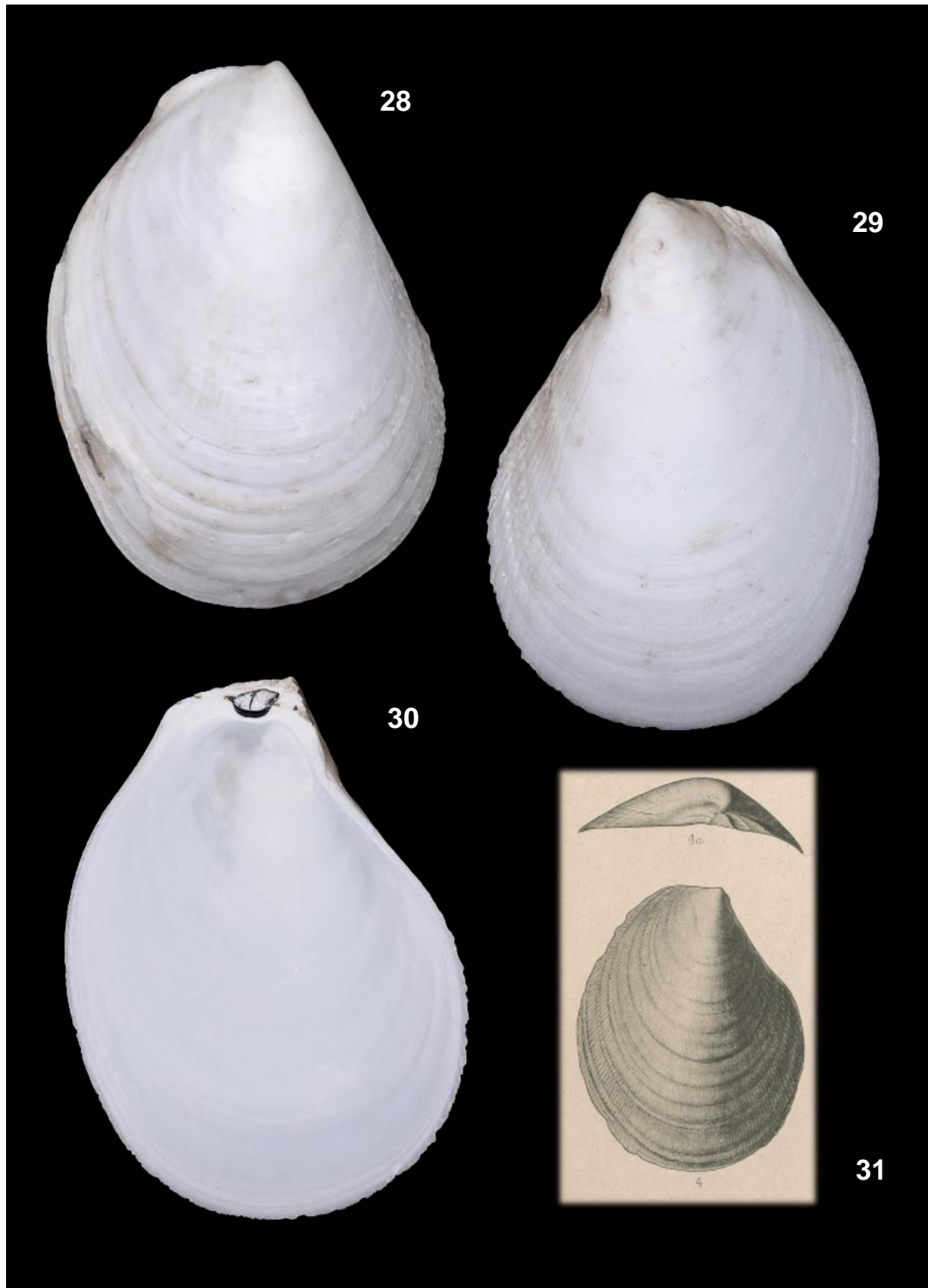


Plate VI. Figs 28-30: *Acesta* (*Acesta*) *goliath* (G.B. Sowerby III, 1883). Aomori, Okuki, Japan. Trawled in very deep water. 2009. H. 135.7 mm L. 101.2 mm. CSH.

Fig. 31: *Acesta* (*Acesta*) *indica* (E.A. Smith, 1899). *Illustrations of the Zoology of the Royal Indian Marine Survey Ship "Investigator" under the command of Commander W.G. Beauchamp, R.I.M. Mollusca*, Pt. VI, Pl. XIII, figs 4, 4a. Alcock, 1907.

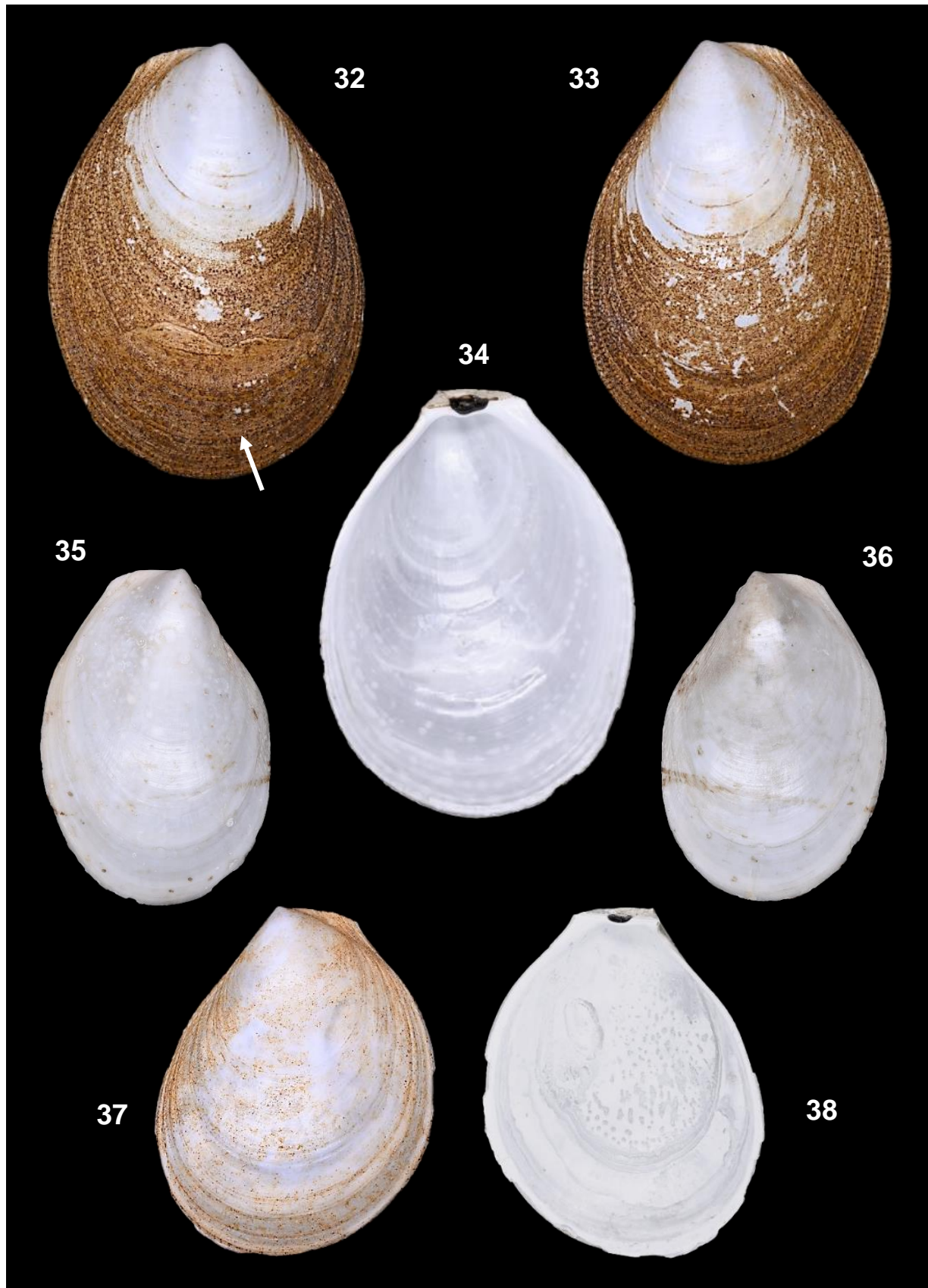


Plate VII. Figs 32-38: *Acesta (Acesta) maui* Marshall, 2001. CSH; 32-34: Chatham Rise, New Zealand. Trawled at a depth of 450 m. December 2002. H. 165.8 mm L. 119.1 mm; 35-36: Chatham Rise, New Zealand. Trawled at a depth of 500 m on the side of a canyon wall. H. 100.8 mm L. 69.6 mm; 37-38: Off Beachport, South Australia. Trawled at a depth of 120 m. On sandy bottom. 1990. H. 112.7 mm L. 86.7 mm.



Plate VIII. Figs 39-46: *Acesta (Acesta) patagonica* (W.H. Dall, 1902). CSH; 39-42: Off Quintero Island, Chile. Trawled at a depth of 350-400 m. August 1992. H. 90.5 mm L. 68.0 mm; 43-46: Bahia Parry, Seno Almirantazgo, Magellanes Strait, Chile. Taken in a crab trap at a depth of 80 m. January 2016. H. 83.7 mm L. 66.3 mm.

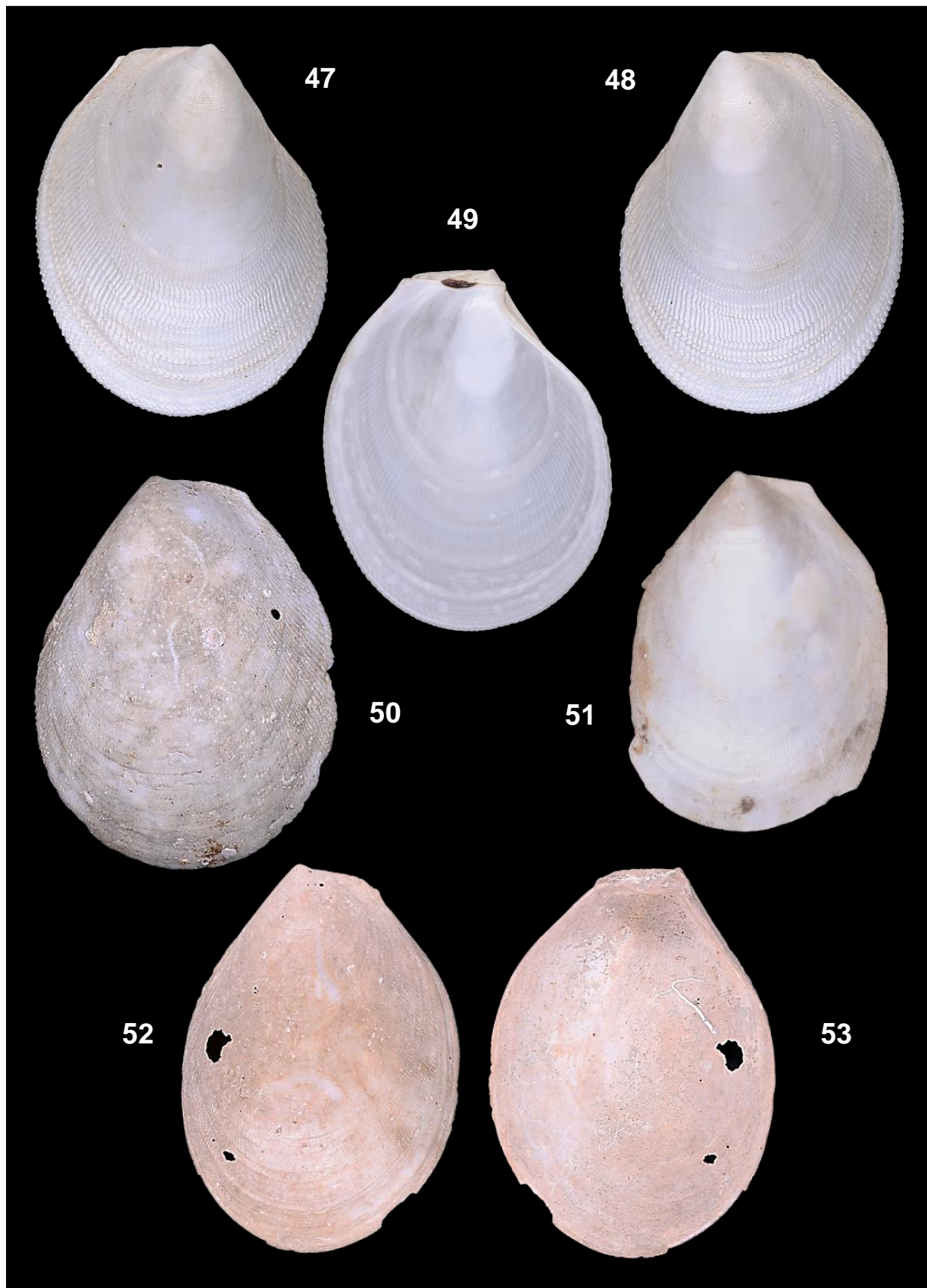


Plate IX. Figs 47-53: *Acesta* (*Acesta*) *saginata* Marshall, 2001; 47-49: Chatham Rise, New Zealand. Trawled at a depth of 1000 m. December 2000. H. 65.7 mm L. 50.8 mm. CSH; 50: *Acesta* cf. *saginata*. Off Crozet Islands. Kara Dad shoals. Dredged by N.O. 'Marion Dufresne'. 46°20' S/ 42°28' E. H. 83.73 mm L. 64.44 mm. MNHN; 51-53: *Acesta* cf. *saginata*. SW of Ile des Pins, New Caledonia. N.O. "Cyana". CALSUB Expedition. 22°53' S/ 167°23' E. MNHN; 51: Stn PL20. Trawled at -606 m. 13 March 1989; 52-53: Stn PL20. Trawled between 555-616 m. 10 March 1989.

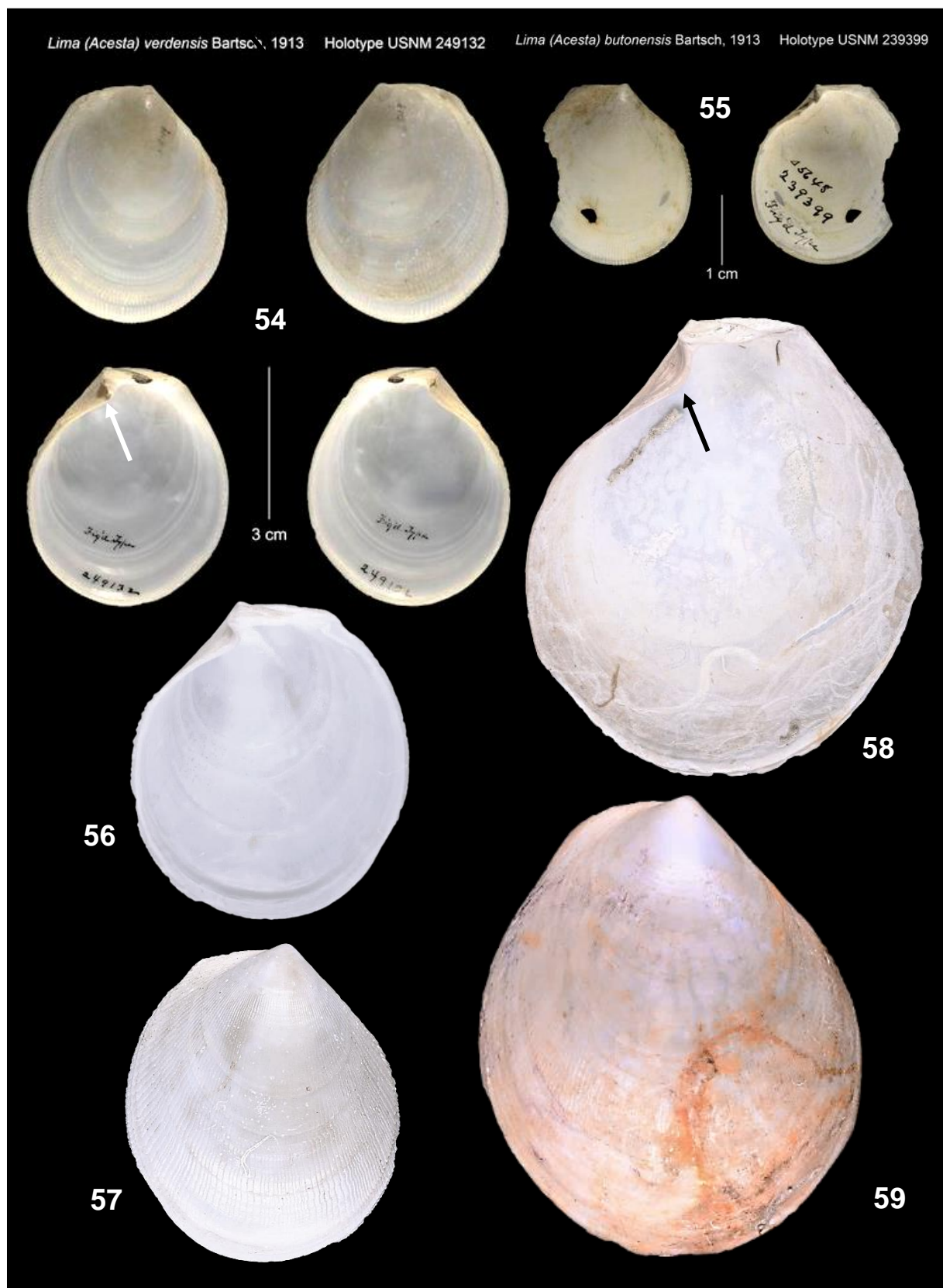


Plate X. Figs 54-59: *Acesta (Acesta) verdensis* (Bartsch, 1913); 54: Holotype USNM. Off Sombrero Island, Philippines. 13°45'05" N/ 120°30'30" E. H. 48 mm L. 40.4 mm; 55: *Acesta (Acesta) butonensis* (Bartsch, 1913). Holotype USNM. S of North Island, Buton Strait. 05°35'00" S/ 122°20'00" E. H. 26.8 mm L. 22.0 mm; 56-59: *Acesta (Acesta) verdensis* (Bartsch, 1913); 56-57: NW Santa Isabel Island, Solomon Islands. N.O. "Alis". SALOMON 2 Expedition. 07°43.9' S/ 158°27.7' E. H. 73.0 mm L. 63.36 mm. MNHN; 58-59: New Ireland, Papua New Guinea. N.O. "Alis". KAVIENG 2014 Expedition. 02°24' S/ 149°59' E. H. 114.8 mm L. 100.2 mm. MNHN.

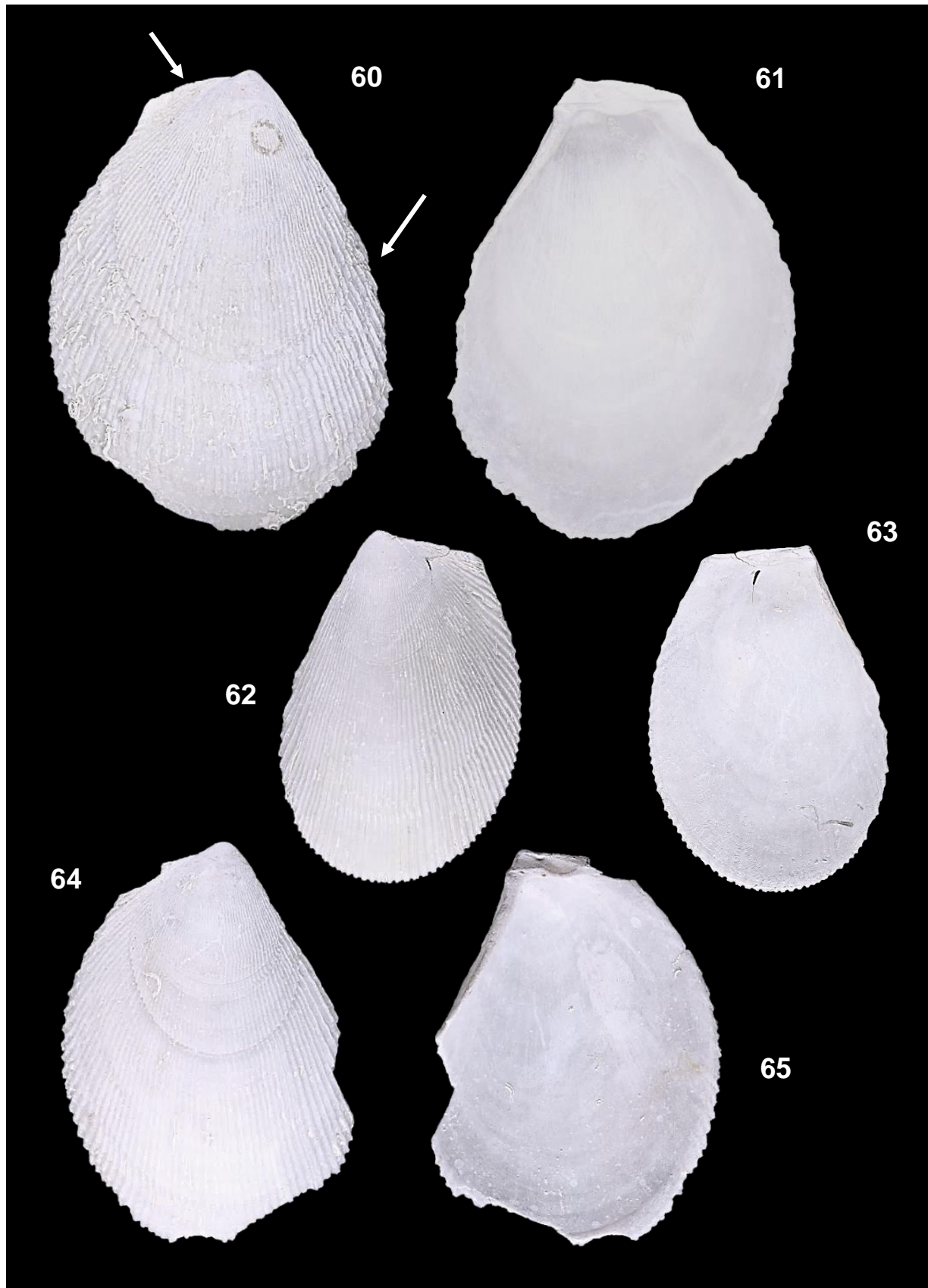


Plate XI. Figs 60-65: *Acesta (Plicacesta) lemuriensis* sp. nov.; 60-61: Off Seychelles, Indian Ocean. 10°57' S/ 60°16' E. N.O. "Marion Dufresne". SOMIRMAS Expedition. Stn DR50. Trawled between 286-500 m. 1990. H. 125.61 mm L. 95.63 mm. Holotype. MNHN; 62-63: H. 92.05 mm L. 62.94 mm. Paratype 1. MNHN; 64-65: H. 94.87 mm L. 71.20 mm. Paratype 2. MNHN.

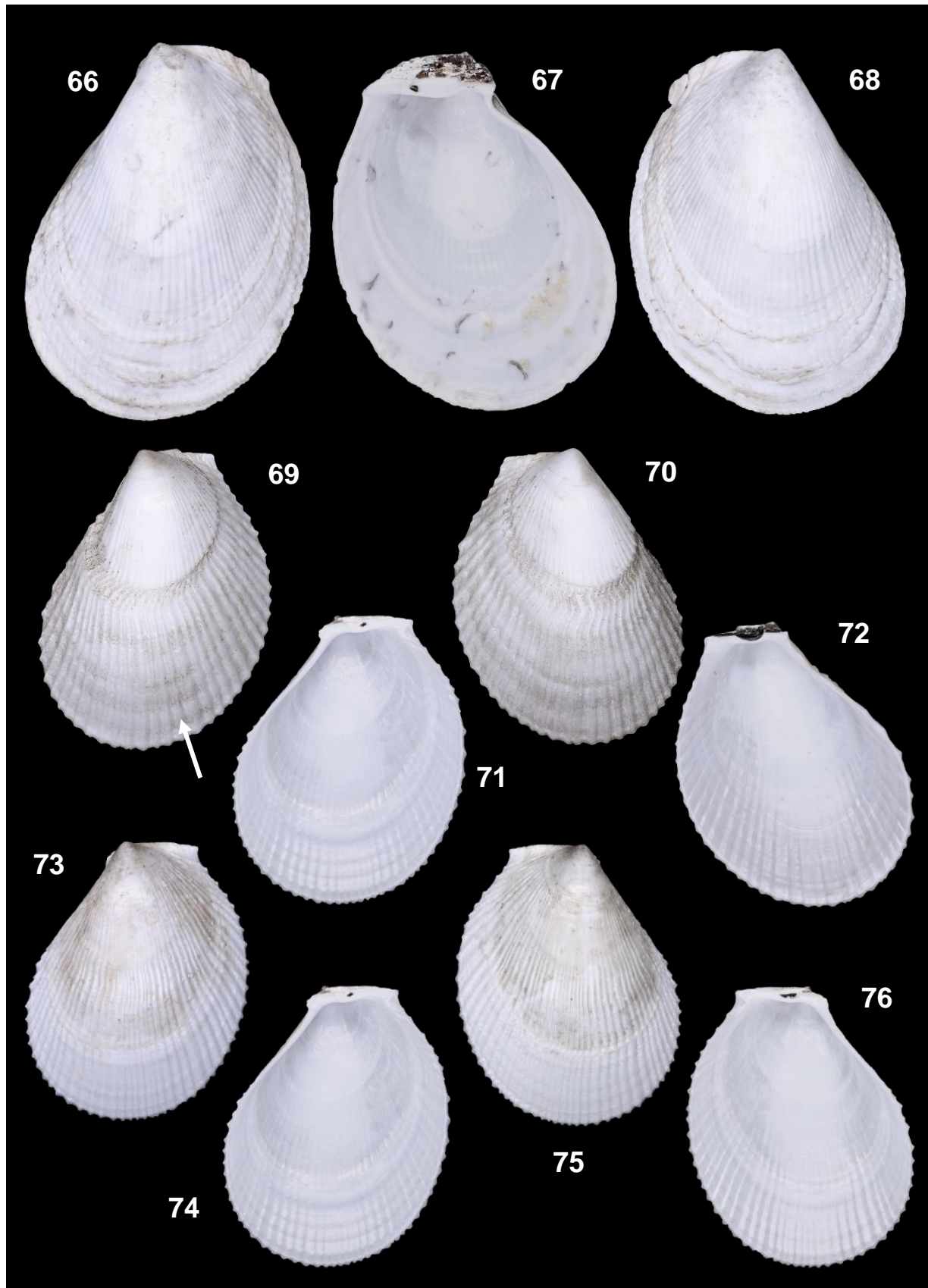


Plate XII. Figs 66-76: *Acesta (Plicacesta) smithi* (G.B. Sowerby III, 1883). CSH; 66-68: Off Katsuyama, Uraga Strait, Chiba Prefecture, Japan. Taken by nets at a depth of 250 m. November 2003. H. 96.1 mm L. 68.9 mm; 69-72: Off Chikura Strait Pacific Side, Chiba Pref., Japan. Trawled between 400-800 m. H. 78.6 mm L. 57.8 mm; 73-76: Northern Sagami Bay, Japan. Trawled by gill nets between 300-350 m. 24 March 1996. H. 79.5 mm L. 63.9 mm.

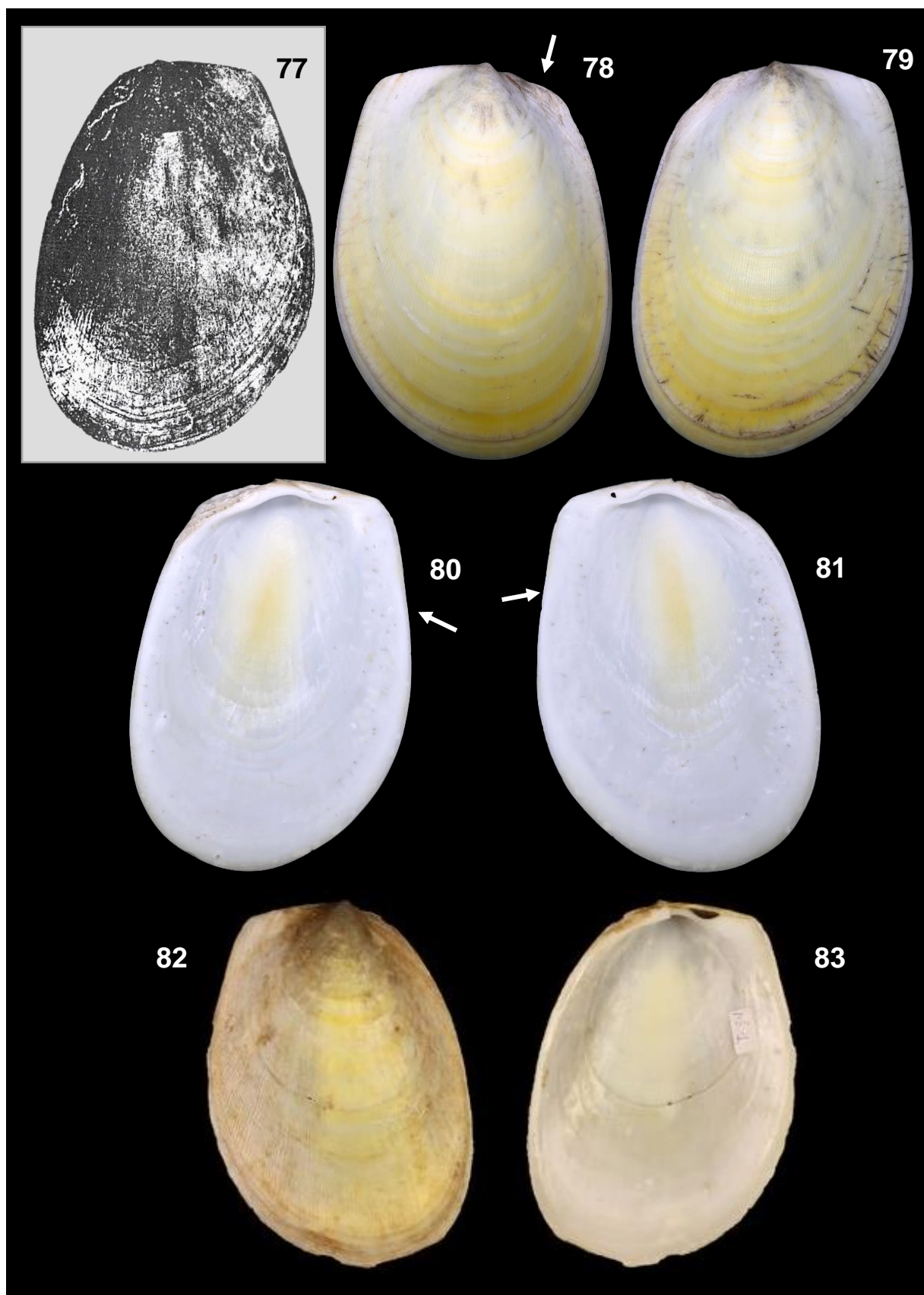


Plate XIII. Figs 77-83: *Acesta (Callolima) marissinica* Yamashita & Habe, 1969 (= *Acesta kronenbergi* Thach, 2015); 77: Holotype, from *Venus*, 27(4), fig. 2; 78-81: Off Nha Trang, Vietnam, South China Sea. Taken by nets at a depth of 300 m. 2000. H. 194.3 mm L. 135.6 mm. CSH; 82-83: *Acesta (Callolima) kronenbergi* Thach, 2015. Offshore, SE of Nha Trang City, Khánh Hòa Province, central Vietnam. Paratype. MNHN.

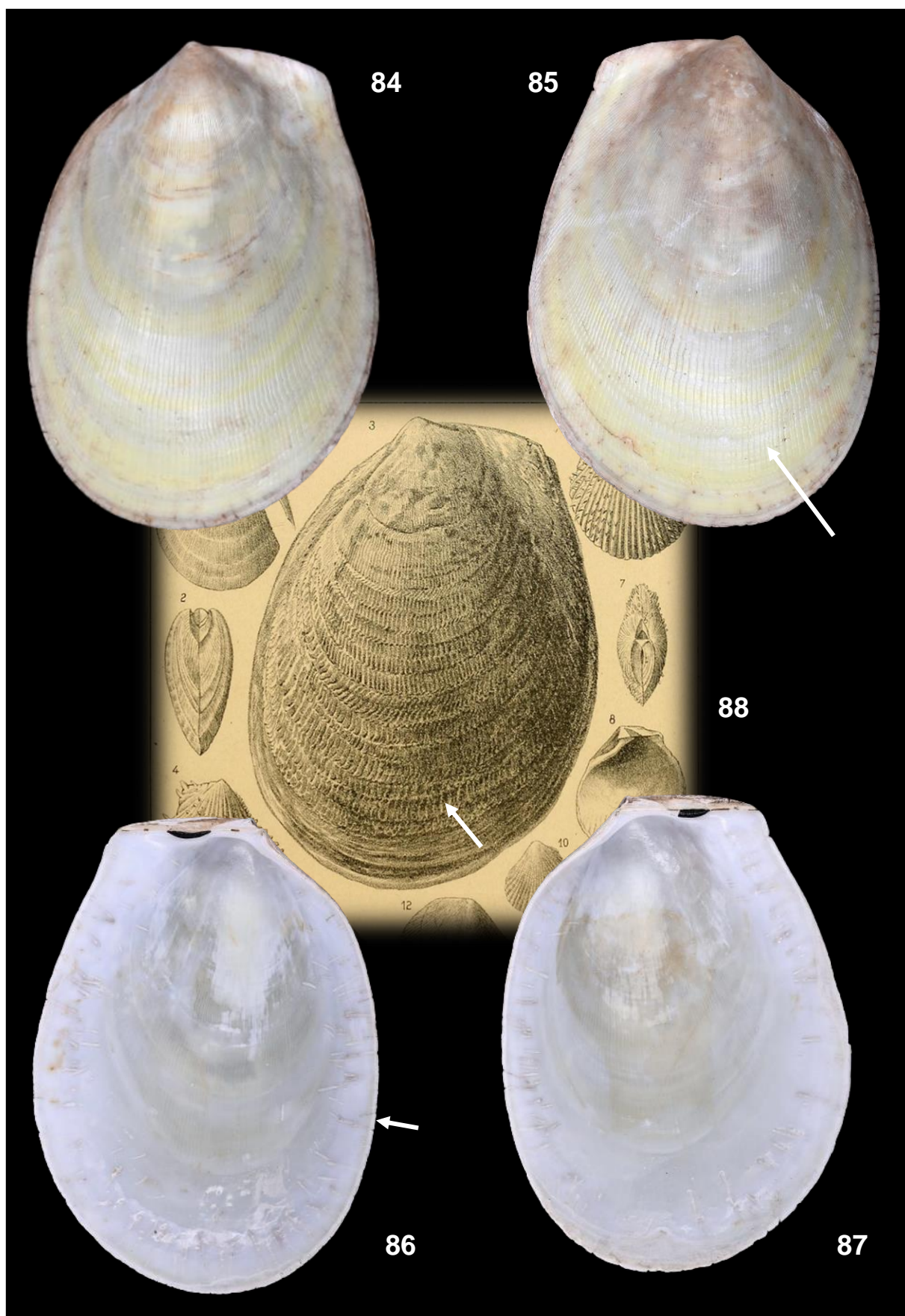


Plate XIV. Figs 84-88: *Acesta (Callolima) niasensis* (Thiele, 1918); 84-87: Kai Islands, Indonesia. 08°42' S/ 131°53' E. H. 146.9 mm L. 110.0 mm. CFN; 88: Pl. 3, fig.3 from Thiele, J., 1918-20. Familia Limidae. In: H.C. Küster, W. Kobelt and H.C. Weinkauff, eds. *Systematisches Conchylien-Cabinet von Martini und Chemnitz* 7(2a).

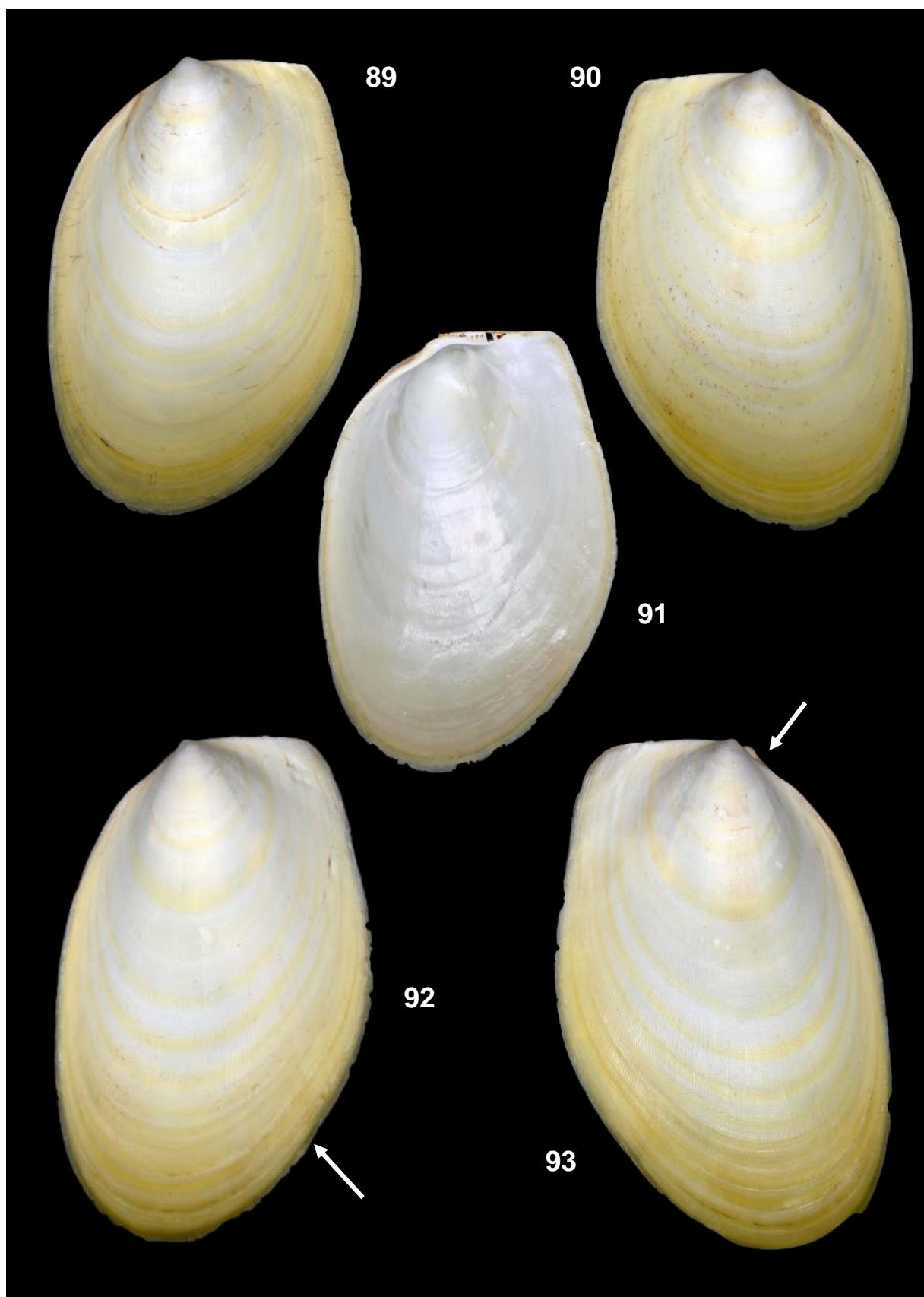


Plate XV. Figs 89-93: *Acesta (Callolima) philippinensis* (Bartsch, 1913). Philippines. 12°20' N/ 121°42' E. Trawled at a depth of 674 m. CFN; 89-91: H. 179.5 mm L. 124.1 mm; 92-93: H. 194.3 mm L. 120.5 mm.



Plate XVI. Figs 94-98: *Acesta (Callolima) rathbuni* (Bartsch, 1913); 94-95: Off South Vietnam. South China Sea. Dredged at a depth of 400 m. 26 September 1984. H. 188.5 mm L. 143.1 mm. CFN; 96-97: Siasi, Sulu Sea, Philippines. Trawled by fishermen. H. 151.2 mm L. 117.3 mm. CFN; 98: Papua New Guinea. 06°06' S/ 149°17' E. MADEEP 2014 Expedition. CP4338. Dredged at -510 m. In mud. H. 187.2 mm L. 138.2 mm. MNHN.

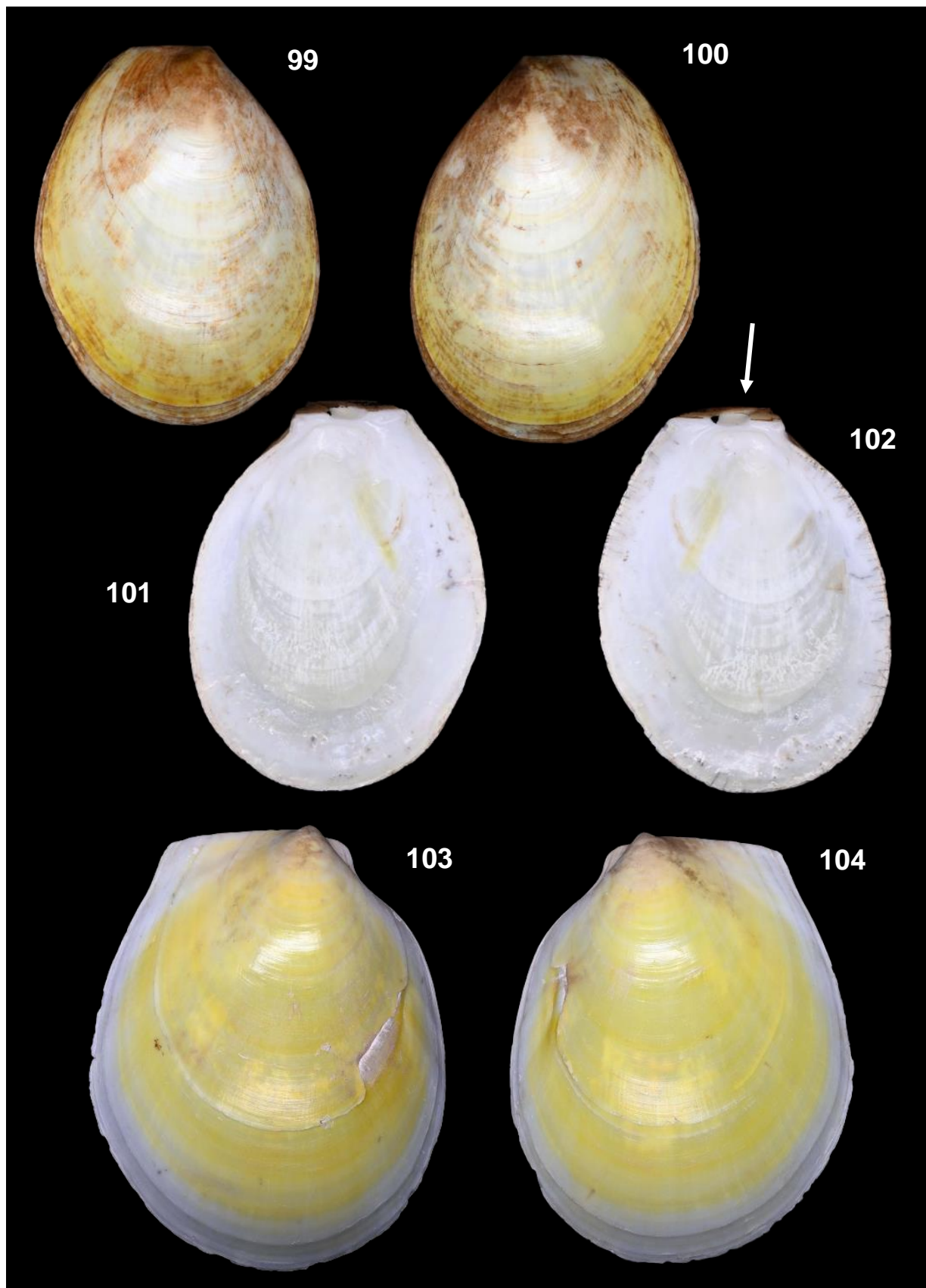


Plate XVII. Figs 99-104: *Acesta* (*Callolima*) *rathbuni* (Bartsch, 1913); 99-102: Off New Britain, Papua New Guinea. 06°07' S/ 149°10' E. MADEEP Expedition. CP4334. Trawled at -400 m. 6 May 2004. H. 243.4 mm L. 183.2 mm. MNHN; 103-104: Off Broome, Western Australia. Trawled on sand and mud at a depth of 450-500 m. H. 219.3 mm L. 177.6 mm. CSH.

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Aartsen, J.J. van, 2002. Indo-Pacific migrants into the Mediterranean. 1. *Gibborissoa virgata* (Philippi, 1849). *La Conchiglia*, **34**(303): 56-58.

Alf, A. & Kreipl, K., 2004. A new *Bolma* from Madagascar (Mollusca, Gastropoda, Turbinidae). *Spixiana*, **27**(2): 183-184.

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Dautzenberg, P. & Fischer, H., 1906. Mollusques provenant des dragages effectués à l'ouest de l'Afrique pendant les campagnes de S.A.S. le Prince de Monaco. In: Richard, M.J. (Ed.): *Résultats des Campagnes Scientifiques accomplies sur son yacht par Albert 1^{er} Prince Souverain de Monaco*. Imprimerie de Monaco, Monaco, **32**: 1-125, pls 1-5.

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