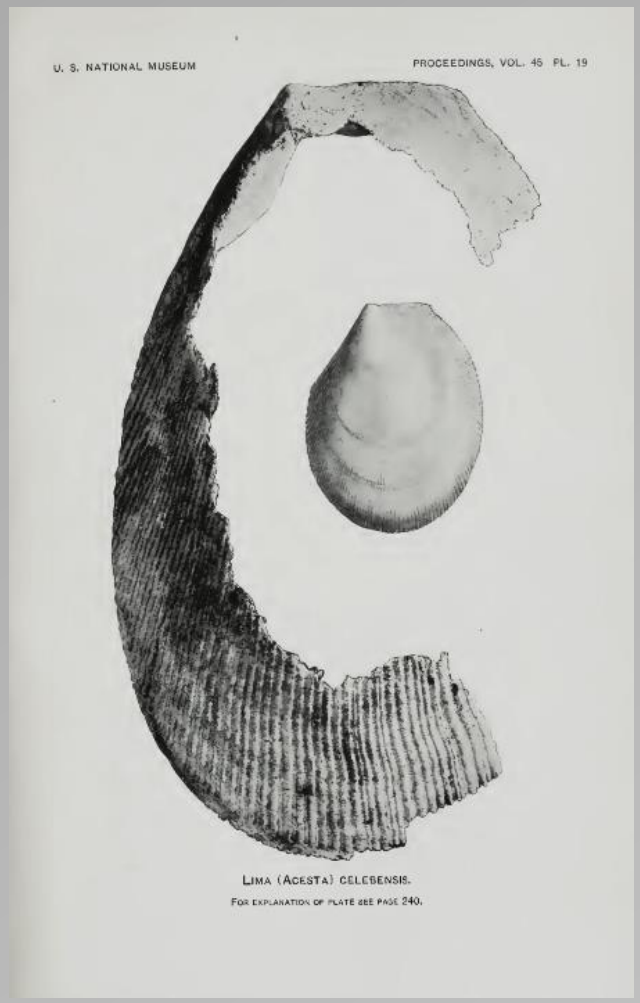
Acesta gabrieli Nolf, 2022 versus *Acesta celebensis* (Bartsch, 1913)

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)

Bartsch (1913) described ***Acesta celebensis***, based upon two damaged left valves and a lot of fragments from south of North Island, Buton Strait, Indonesia (05°34’00” S/ 122°18’15” E) in 519 fathoms, in green mud bottom).

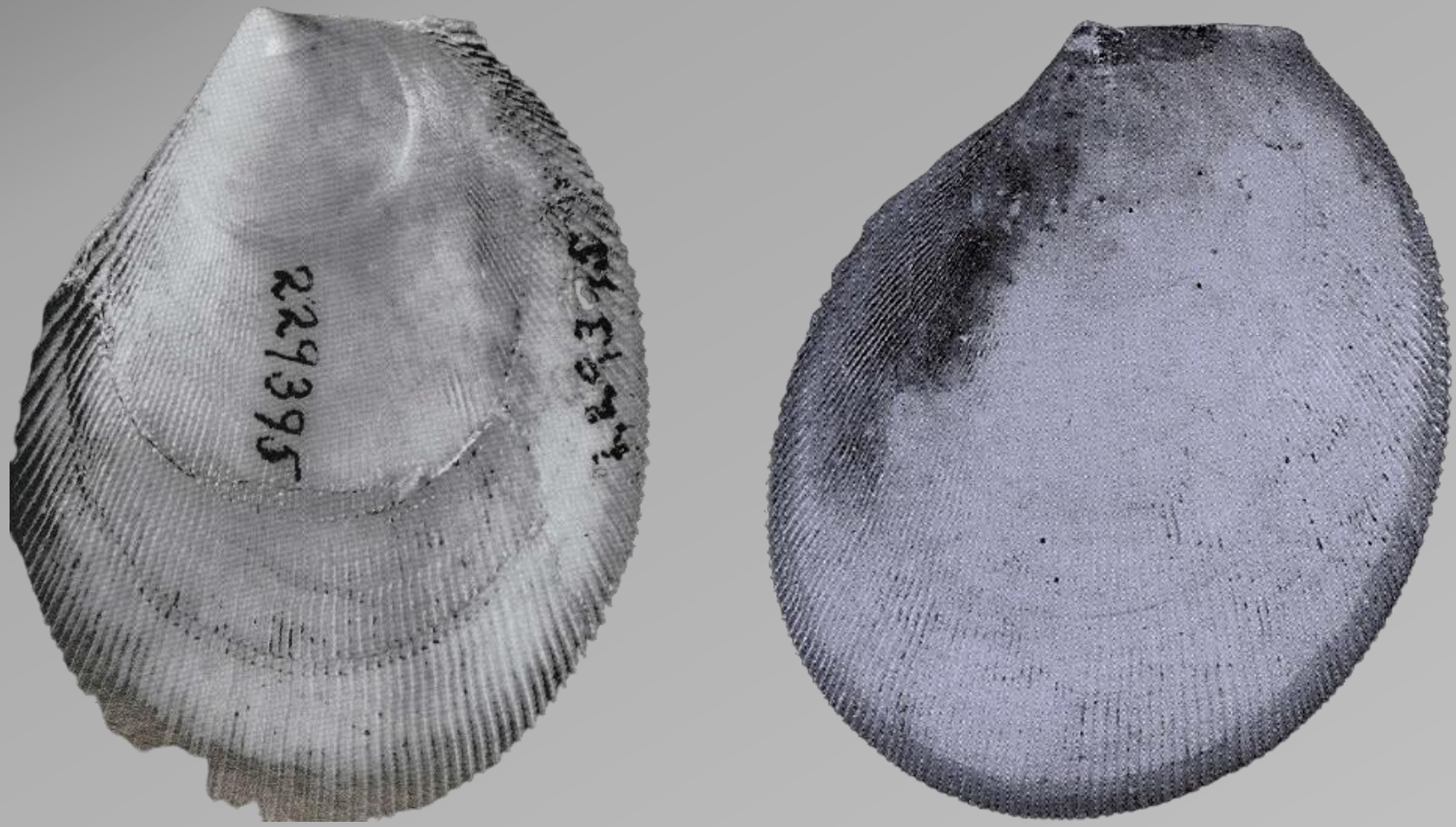
A well-preserved **juvenile specimen** from unknown exact locality, collected by the same Philippine Expedition of the U.S. National Museum, was also figured and was considered conspecific by Bartsch.



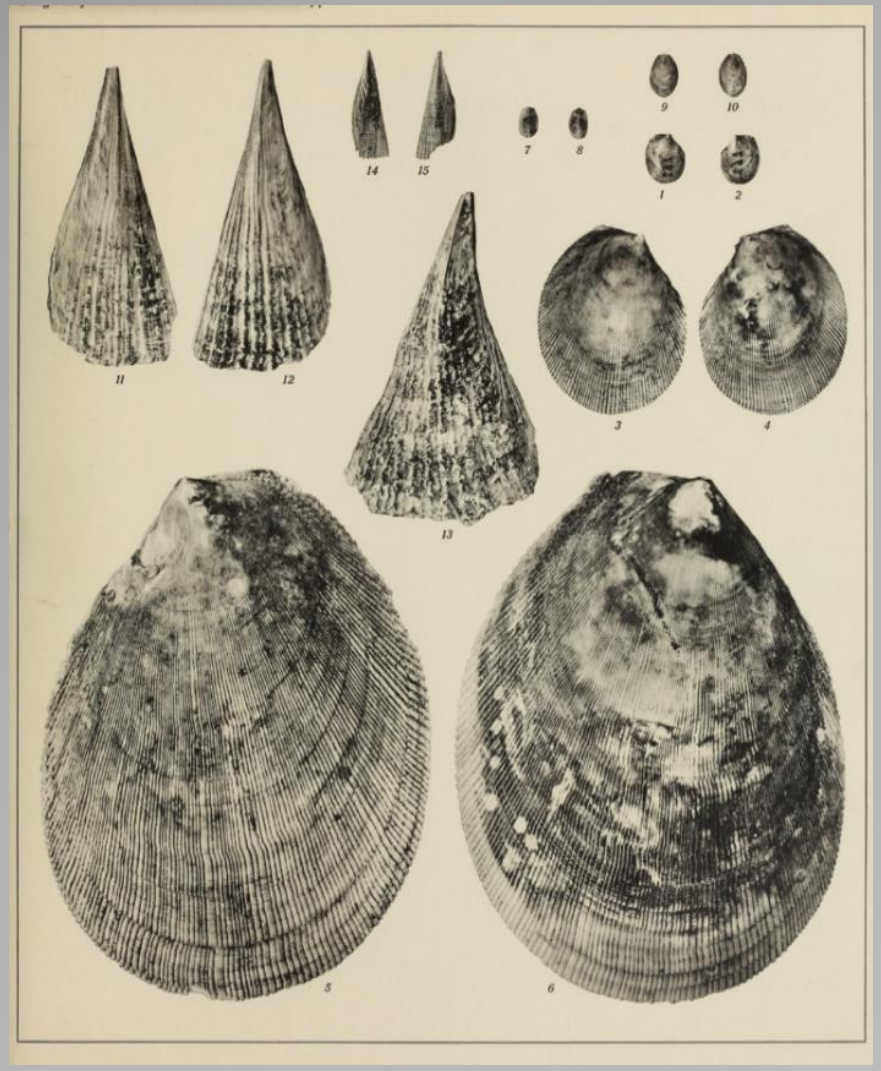
***Lima* (*Acesta*) *celebensis* Bartsch, 1913**

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).

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.



Left: ***Acesta celebensis* (Bartsch, 1913).** Originally figured juvenile specimen, USNM 229395. Buton Strait, Indonesia. 950 m (from Marshall, 2001).
Right: juvenile specimen of ***Acesta gabrieli* nov. sp.** figured as *Acesta* sp. aff. *celebensis* by Marshall (2001). Sulu Sea, Indonesia, 794 m, ZMA, 55.5 x 45.0 mm.



“*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, Monographe 53c. 353 pp.

Family LIMIDAE Rafinesque, 1815

Genus ***Acesta*** H. Adams & A . Adams, 1858

Typetaxon: *Ostrea excavata* Fabricius 1779

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 Nolf, 2022
(= *Acesta* sp. 1 fide Huber)

Holotype: E Kotakot, off Stephan Strait, Papua New Guinea. 04°29’ S/ 145°35’ E. Papua Niugini Expedition - CP4038. 800-840 m.
In mud. 17 December 2012.
H. 159.1 mm L. 120.3 mm D. 50.3 mm.

Paratypes 1-8: also from type locality.

Most important characteristics:

- 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.
- 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.
- Lunule very narrow with five strong parallel ribs downwards from the umbones.

- **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.

Discussion

- 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**.

***Acesta gabrieli* Nolf, 2022**

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.

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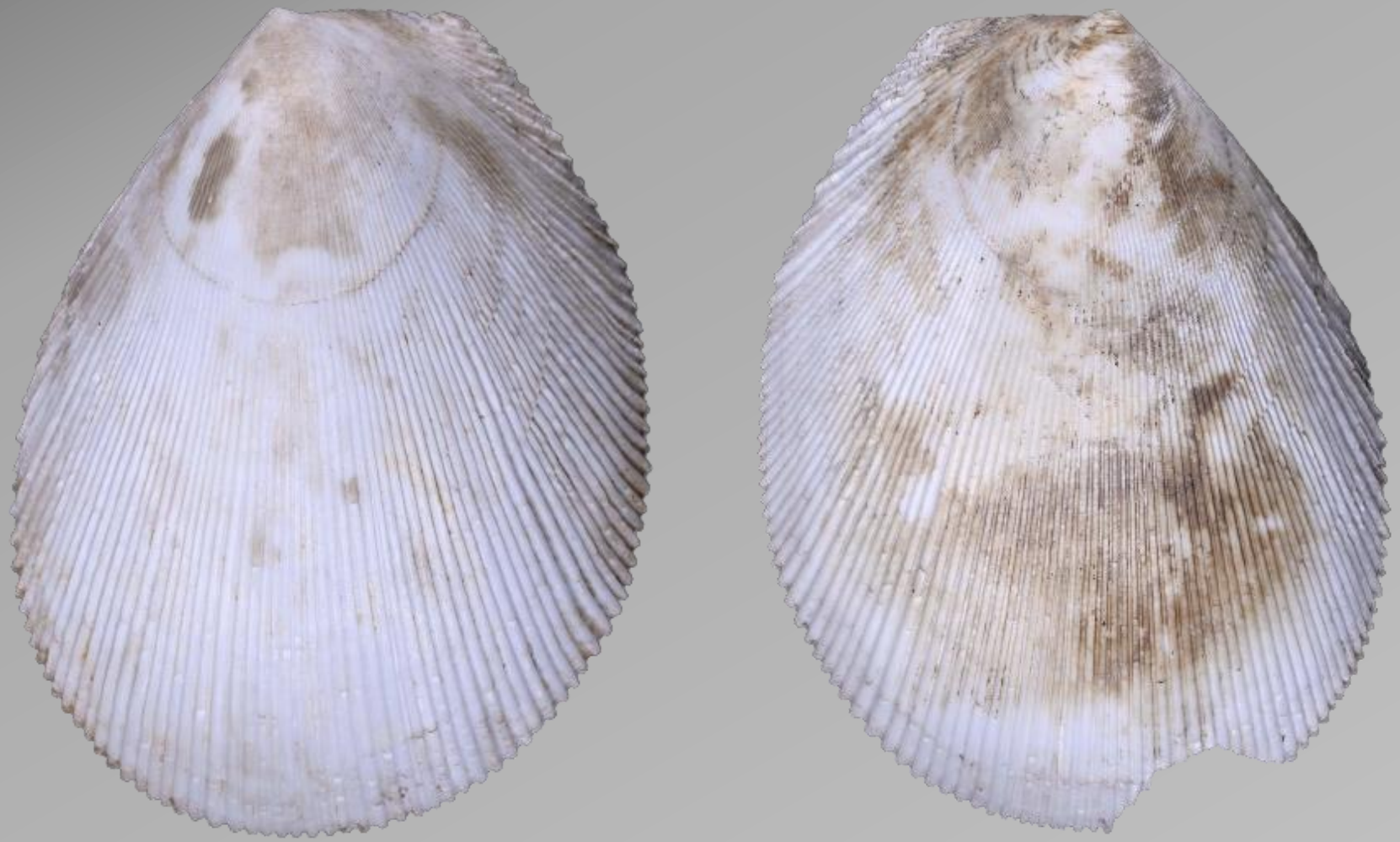


***Acesta gabrieli* Nolf, 2022**

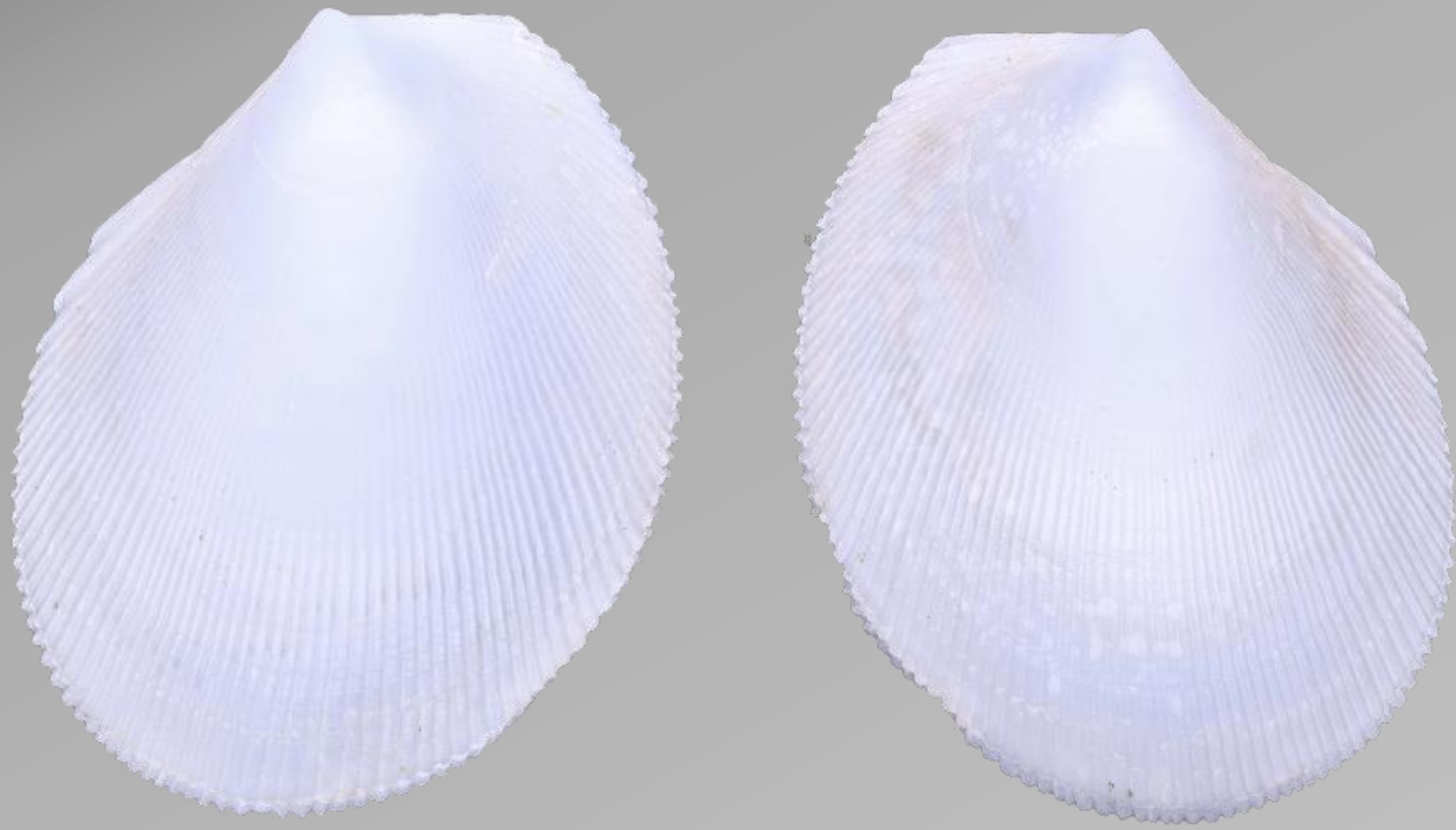
E Kotakot, off Stephan Strait, Papua New Guinea. 04°29’ S/ 145°35’ E. Papua Niugini Expedition. CP4038. 800-840 m. 17 December 2012. Paratype 1 MNHN.

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

***Acesta gabrieli* Nolf, 2022**

E Kotakot, off Stephan Strait, Papua New Guinea. 04°29’ S/ 145°35’ E. Papua Niugini Expedition. CP4038. 800-840 m. 17 December 2012. Paratype 1 MNHN.

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



***Acesta gabrieli* Nolf, 2022**

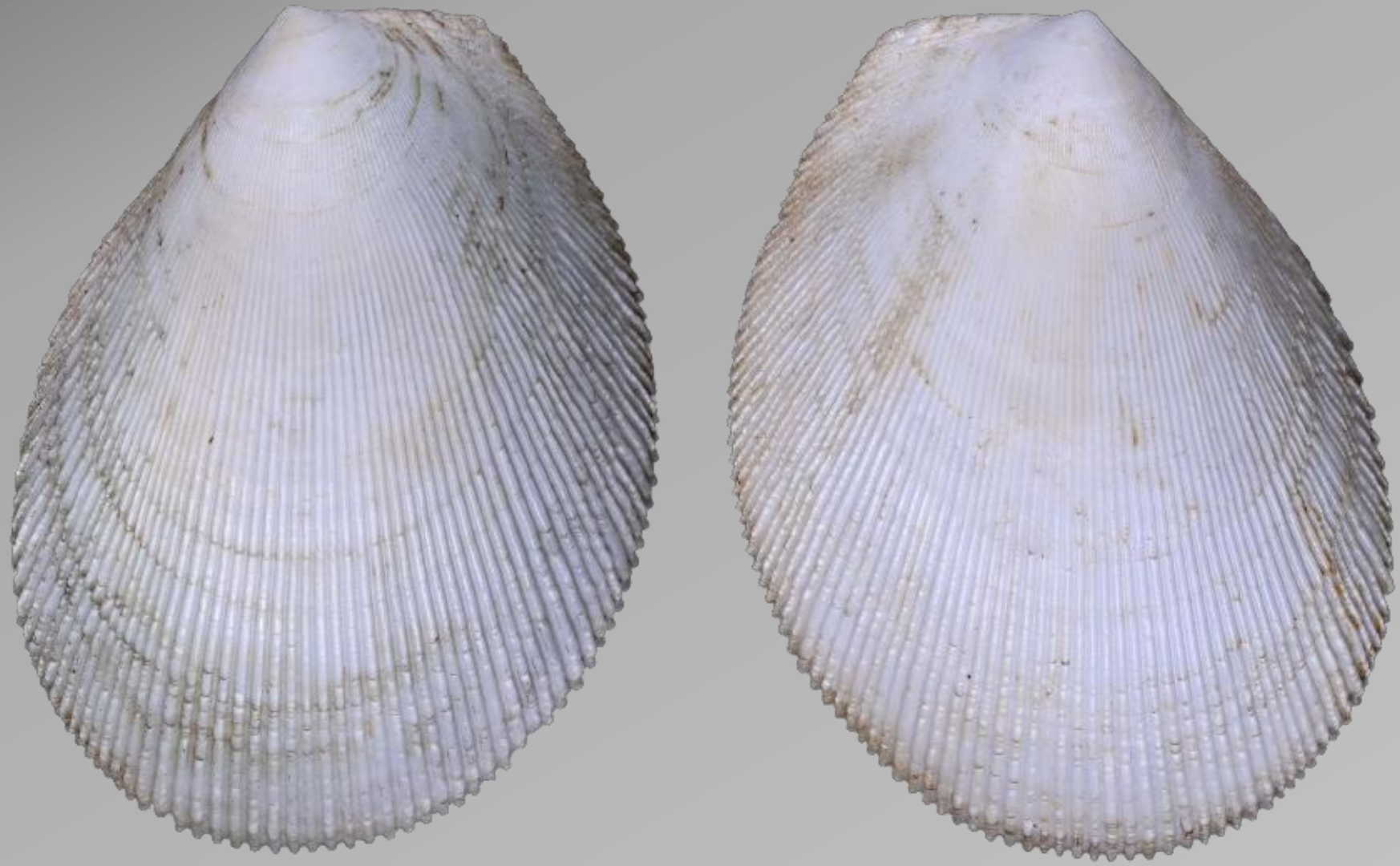
E Kotakot, off Stephan Strait, Papua New Guinea. 04°27’ S/ 145°34’ E. Papua Niugini Expedition. CP4038. 820 m. 17 December 2012. Paratype 4 MNHN.

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

***Acesta gabrieli* Nolf, 2022**

E Kotakot, off Stephan Strait, Papua New Guinea. 04°27’ S/ 145°34’ E. Papua Niugini Expedition. CP4038. 820 m. 17 December 2012. Paratype 5 MNHN.

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



***Acesta gabrieli* Nolf, 2022**

Tanimbar, Indonesia. 08°44’ S/ 134°05’ E. CFN.

H. 151.8 mm L. 114.1 mm D. 61.3 mm

***Acesta gabrieli* Nolf, 2022**

Tanimbar, Indonesia. 08°44’ S/ 134°05’ E. CFN.

H. 151.8 mm L. 114.1 mm D. 61.3 mm

***Acesta gabrieli* Nolf, 2022**

E Kotakot, off Stefan Strait, Papua New Guinea.

04°27’ S/ 145°34’ E.

H. 151.9 mm L. 113.9 mm D. 55.1 mm

***Acesta gabrieli* Nolf, 2022**

E Kotakot, off Stefan Strait, Papua New Guinea.

04°27’ S/ 145°34’ E.

H. 151.9 mm L. 113.9 mm D. 55.1 mm

***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.

Comparison with *Acesta celebensis* (Bartsch, 1913)

- **More elongated** oval form.
- Very narrow and shallow **interstices** between the radial ribs.
- Both *A. gabrieli* and *A. celebensis* show very fine commarginal threads between the ribs.
- **Most important characteristic:** the **angle** between the hinge plate and the anterior margin with an average value of 126° in *A. celebensis* compared to *A. gabrieli* which has an average angle of 151°.

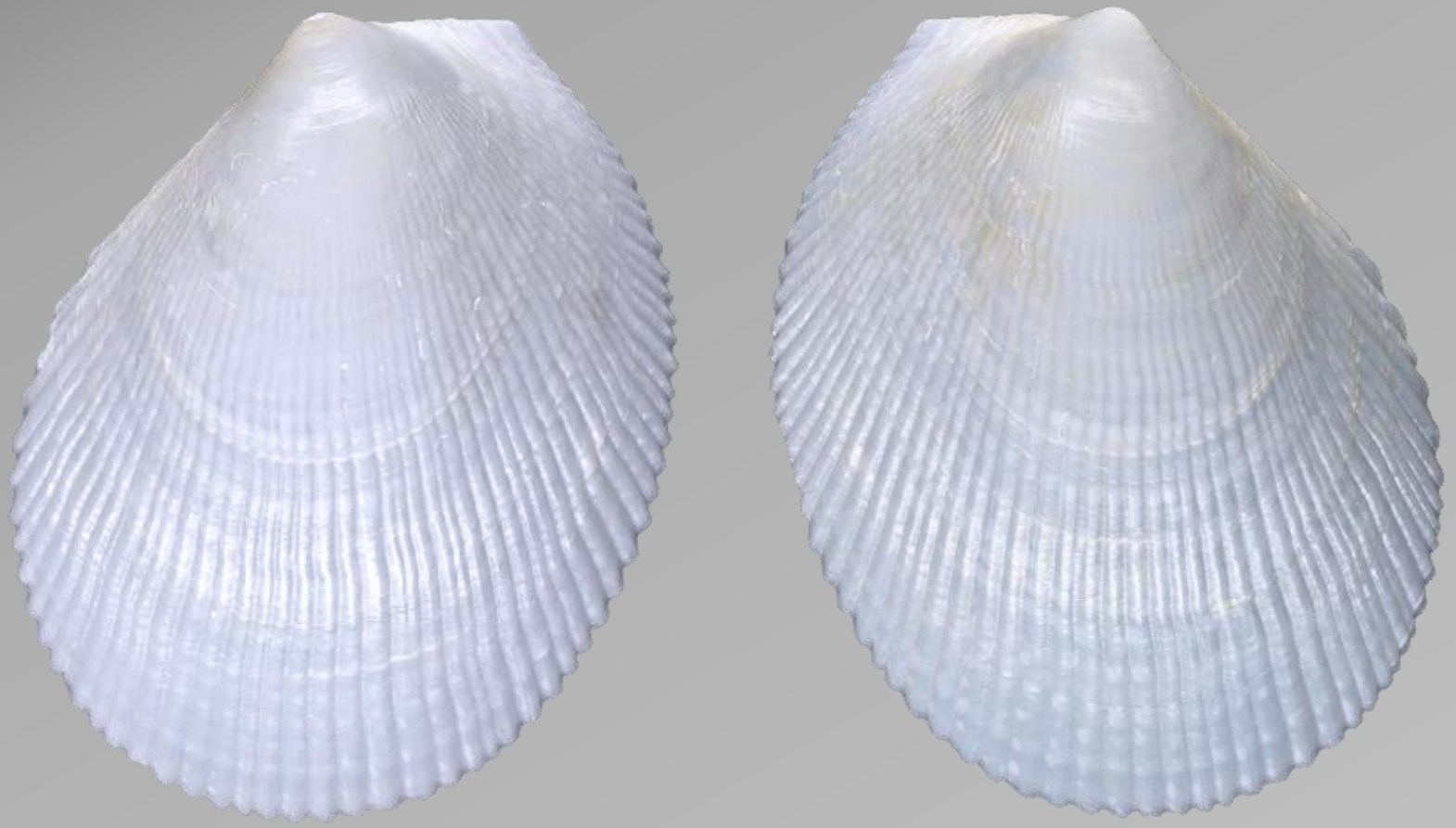
***Acesta celebensis* (Bartsch, 1913)**

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.

***Acesta celebensis* (Bartsch, 1913)**
Naturalis Biodiversity Center, ZMA, Leiden.

Comparison with *Acesta sphoni* (Hertlein, 1963)

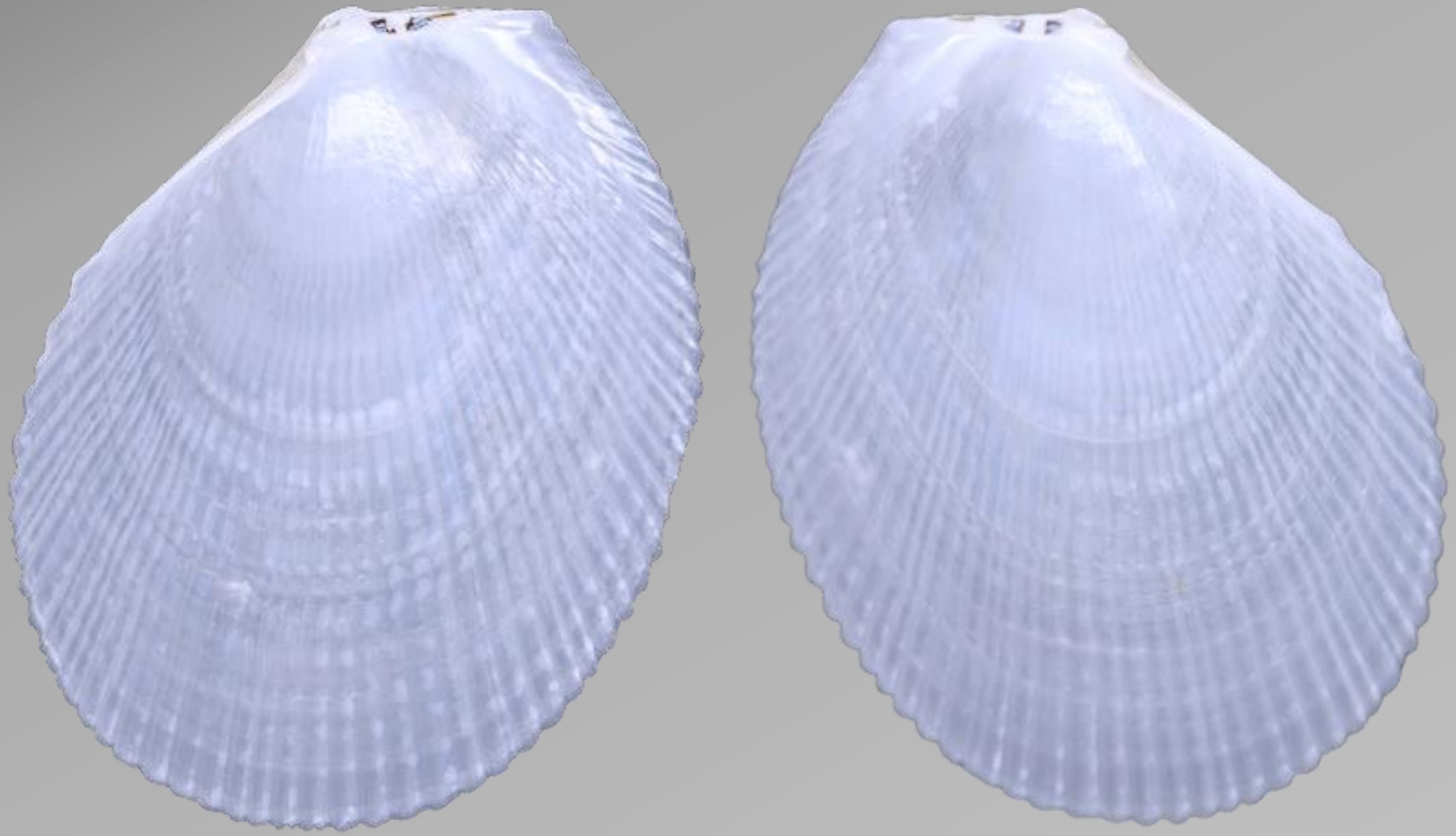
- Very similar but smaller.
- Only about 55 broad radiating ribs, instead of more than 100 ribs in *A. gabrieli.*
- Anterior margin below the anterior auricle is longer.
- *A. sphoni* is confined to Californian waters.



***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

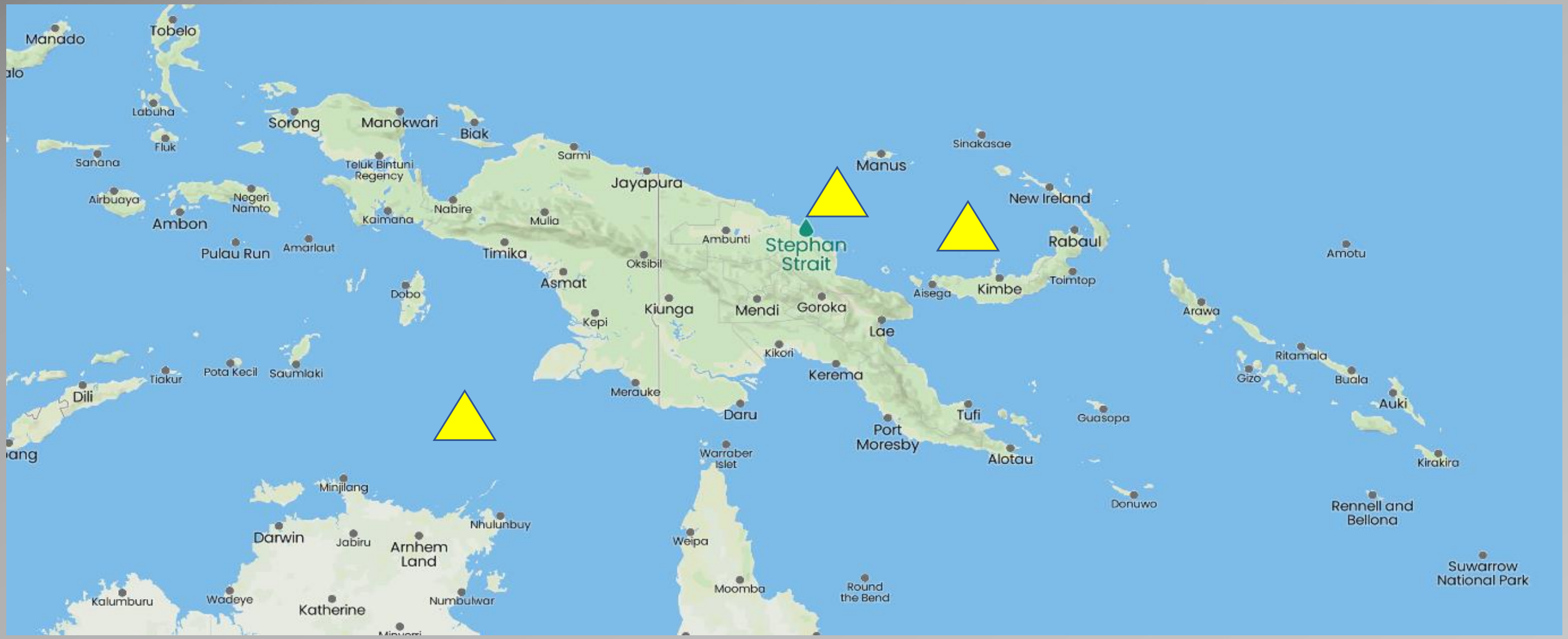


***Acesta* (*Plicacesta*) *sphoni* (Hertlein, 1963)**

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

Papua New Guinea



Geographic distribution of *Acesta gabrieli* Nolf, 2022

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.