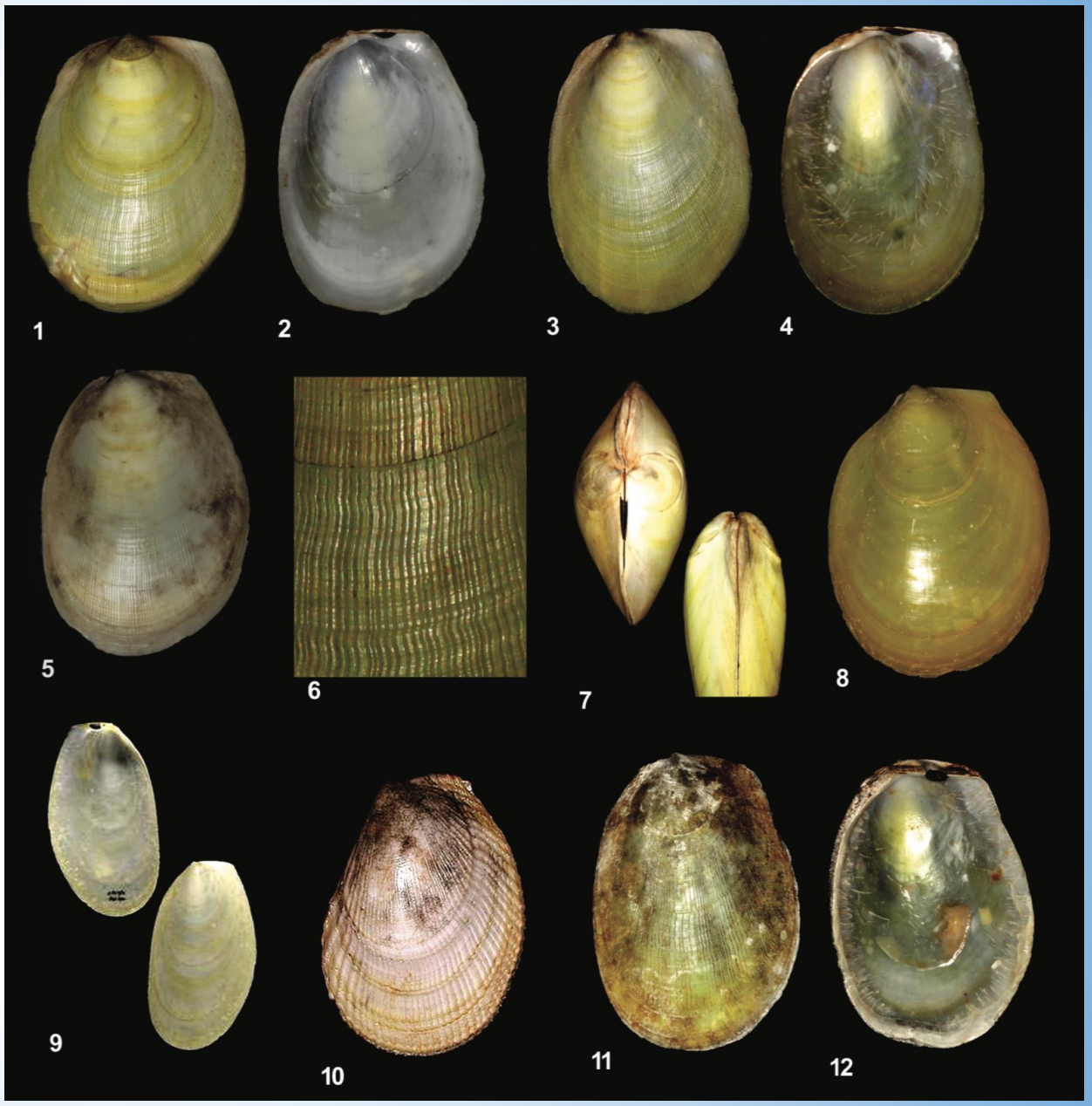
Acesta marissinica Yamashita & Habe, 1969 versus *Acesta kronenbergi* Thach, 2015

the issue of a contested synonym
and its final resolution
by speakers Steve Hubrecht and Frank Nolf

Figs 1-12: *Acesta* species from Thach in *Basteria*, **78**(4-6) – A new *Acesta* species (Bivalvia: Limidae) from Vietnam.
1-7: *Acesta kronenbergi* spec. nov., offshore Southeast Nha Trang City, Khánh Hòa, Vietnam.
1-2: holotype;
3-4: paratype 1;
5: paratype 2;
6: detail of the surface sculpture;
7: dorsal view with ligament (left, holotype) and byssal gape (right, holotype);
8: *A. rathbuni*: Vietnam;
9: *A. philippinensis:* holotype*;*
10: *A. smithi*;
11-12: *A. marissinica*: Vietnam.



In a paper titled “A critical assessment of the genus *Acesta* (Mollusca: Bivalvia: Limidae) in the Indian Ocean, the West and South Pacific” published in *Neptunea*, **16**(2) (May 2022) F. Nolf & S. Hubrecht argue that ***Acesta kronenbergi* Thach, 2015** and ***A. marissinica* Yamashita & Habe, 1969** are **synonymous**.

However, in his publication “Five New Species of Marine Shells (Mollusca: Bivalvia: Lucinidae, Spondylidae, Mactridae, Veneridae) from Vietnam and Remark on *Acesta kronenbergi* Thach, 2015” published in Malacologia, n°124 (2024) **disputes** the **synonymisation** of *A. kronenbergi* with *A. marissinica.*

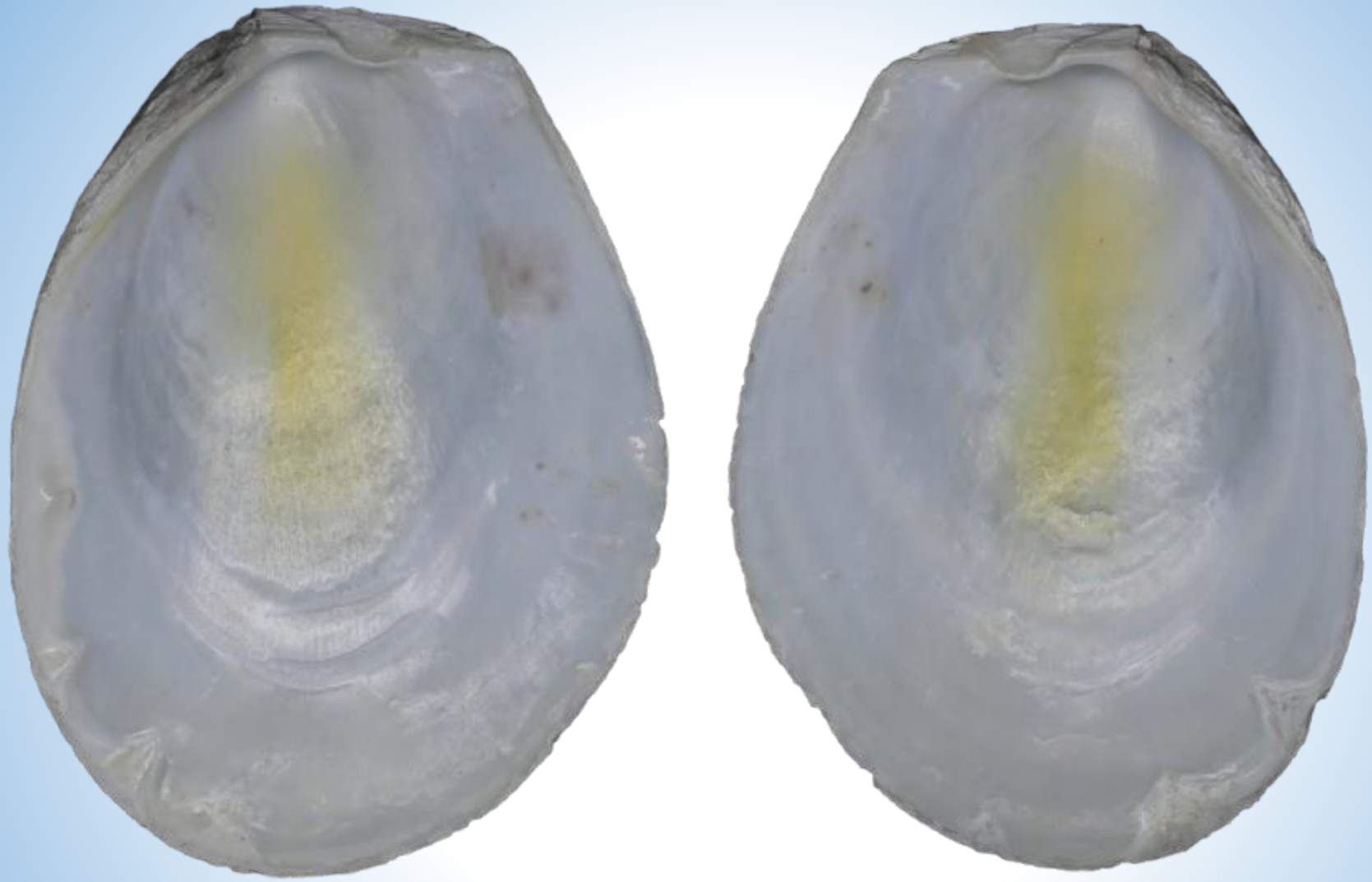
We studied several dozens of specimens within the subgenus *Callolima* collected at different localities (Japan, East and South China Seas, the Indonesian Islands, North West Australia, Papua New Guinea and the Solomon Islands).

We observed that it is often challenging to attribute certain shells to specific described species.

However, after extensive and thorough research, we maintain that *A. kronenbergi* and *A. marissinica* occur in the same waters of the West Pacific and cannot be distinguished from each other. Both exhibit identical characteristics, such as the thick shell edges, the byssal gape, the quadrate-ovate outline and the nearly straight anterior margin. These features differentiate them from the rather similar *Acesta rathbuni* (Bartsch, 1913).

To further substantiate our conclusions, we will analyse the points raised by Dr Thach. Our study includes 12 specimens of *A. marissinica*, one of which originates from Vietnam and was originally attributed to *A. kronenbergi*. This particular specimen was indirectly acquired from Dr Thach's shell business. These specimens form part of the collections held by both authors and the Muséum national d'Histoire naturelle in Paris. For detailed locality data, we refer to the "Material" section of this study and our earlier publication (Nolf & Hubrecht, 2022).

Off Hagi, Yamaguchi Prefecture, Japan – trawled at a depth of 500-520 m in the Japan Sea – February 2011 – 187.5 mm – Coll. SH LIM0012/1



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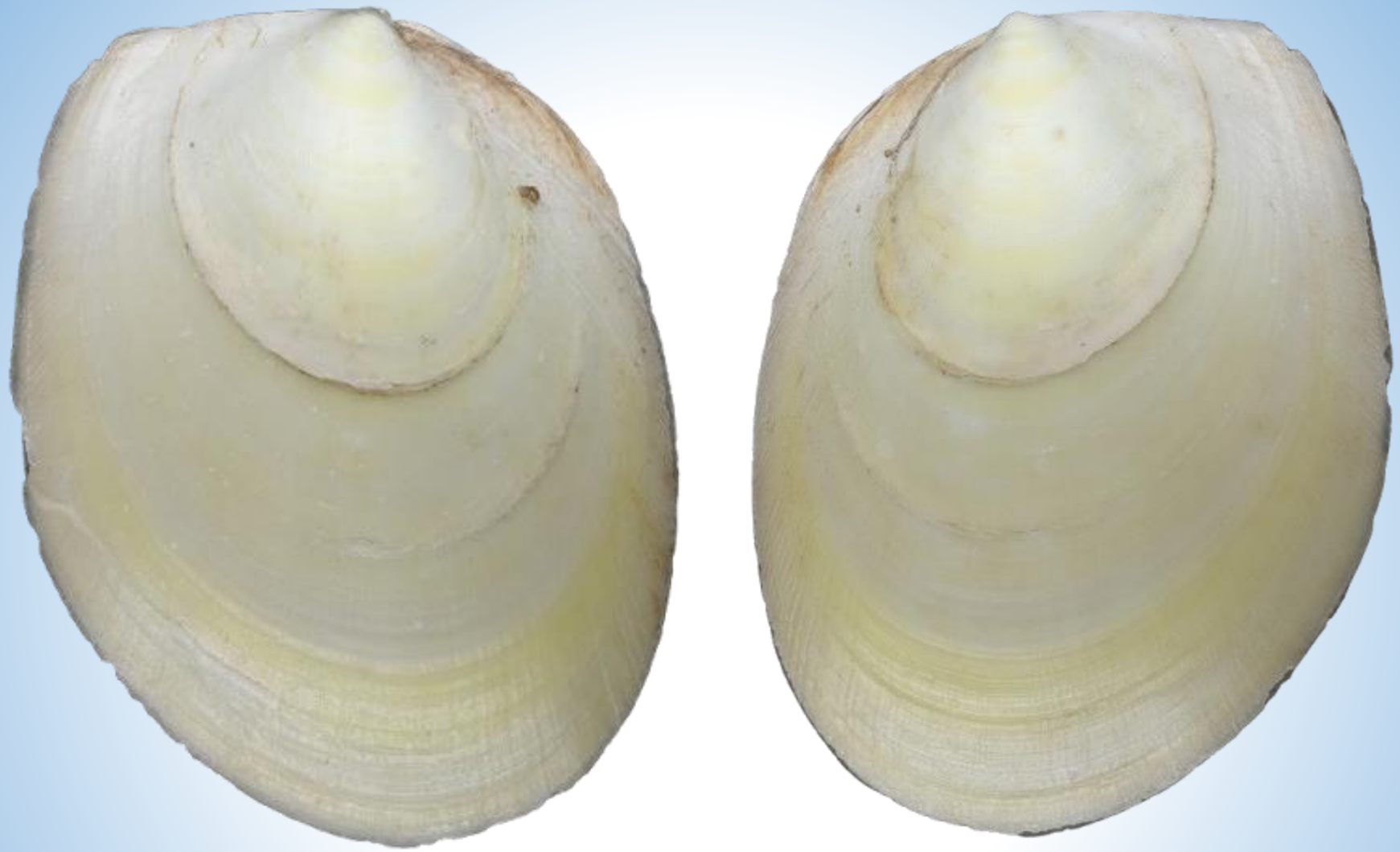

Off NE coast, Taiwan – taken in deep water – May 2015
109.6 mm – Coll. SH LIM0012/2

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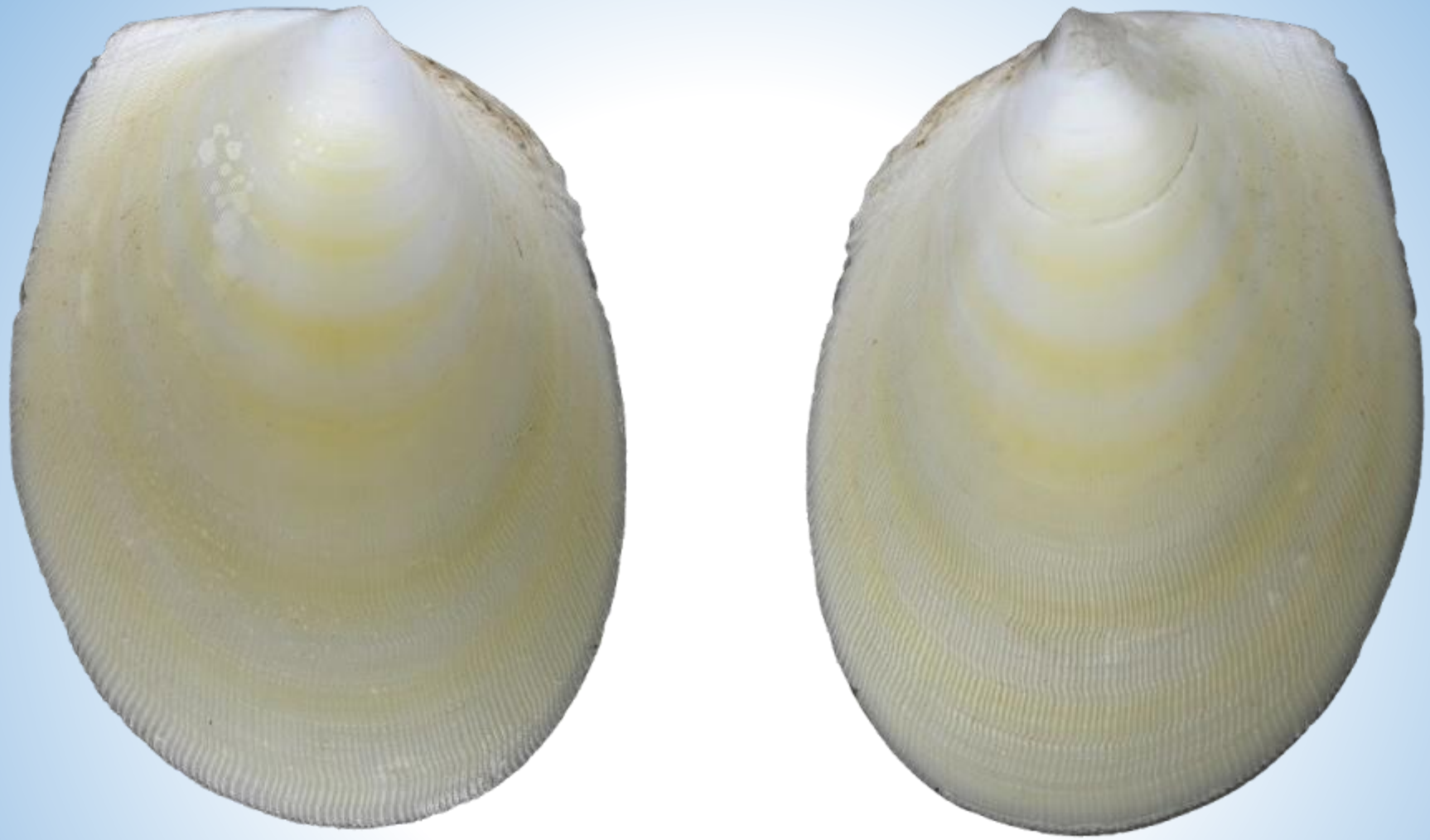


Off Hainan, China, South China Sea – 20°02’ N/ 115°01’ E - dredged at a depth of 653-700 m – January 2014 – 79.7 mm – Coll. FN

Offshore Beihai, Guangxi Province, China, South China Sea – trawled by fishermen - 164.6 mm – Coll. FN12957

Offshore Beihai, Guangxi Province, China, South China Sea – trawled by fishermen - 164.6 mm – Coll. FN12957

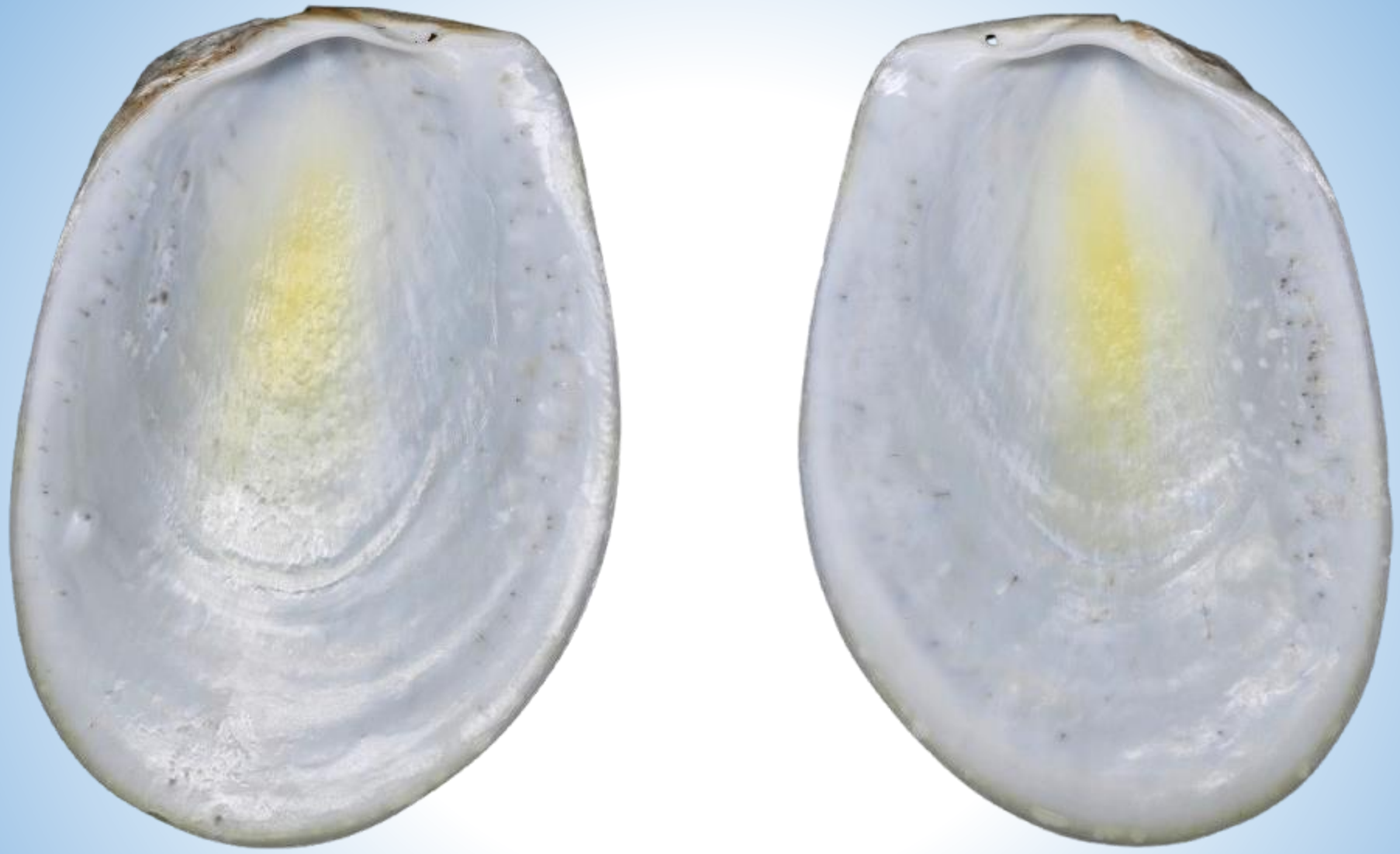
Offshore Beihai, Guangxi Province, China, South China Sea – trawled by fishermen - 214.6 mm – Coll. FN12957

Offshore Beihai, Guangxi Province, China, South China Sea – trawled by fishermen - 214.6 mm – Coll. FN12957

Off Beihai, Guangxi Province, China, South China Sea – trawled by fishermen - 216.8 mm – Coll. SH0012/3

Off Tun Sa Island, China, South China Sea – trawled by fishermen - 186 mm – Coll. SH0012/4

Off Nha Trang, Vietnam – taken by local fishermen in nets at a depth of 300 m
ca. 2000 - 195 mm – Coll. SH0012/5



Off Nha Trang, Vietnam – taken by local fishermen in nets at a depth of 300 m
ca. 2000 - 195 mm – Coll. SH0012/5

Off Broome, NW Australia – trawled by prawn fishermen at a depth of 500 m
195.1 mm – Coll. SH0012/6

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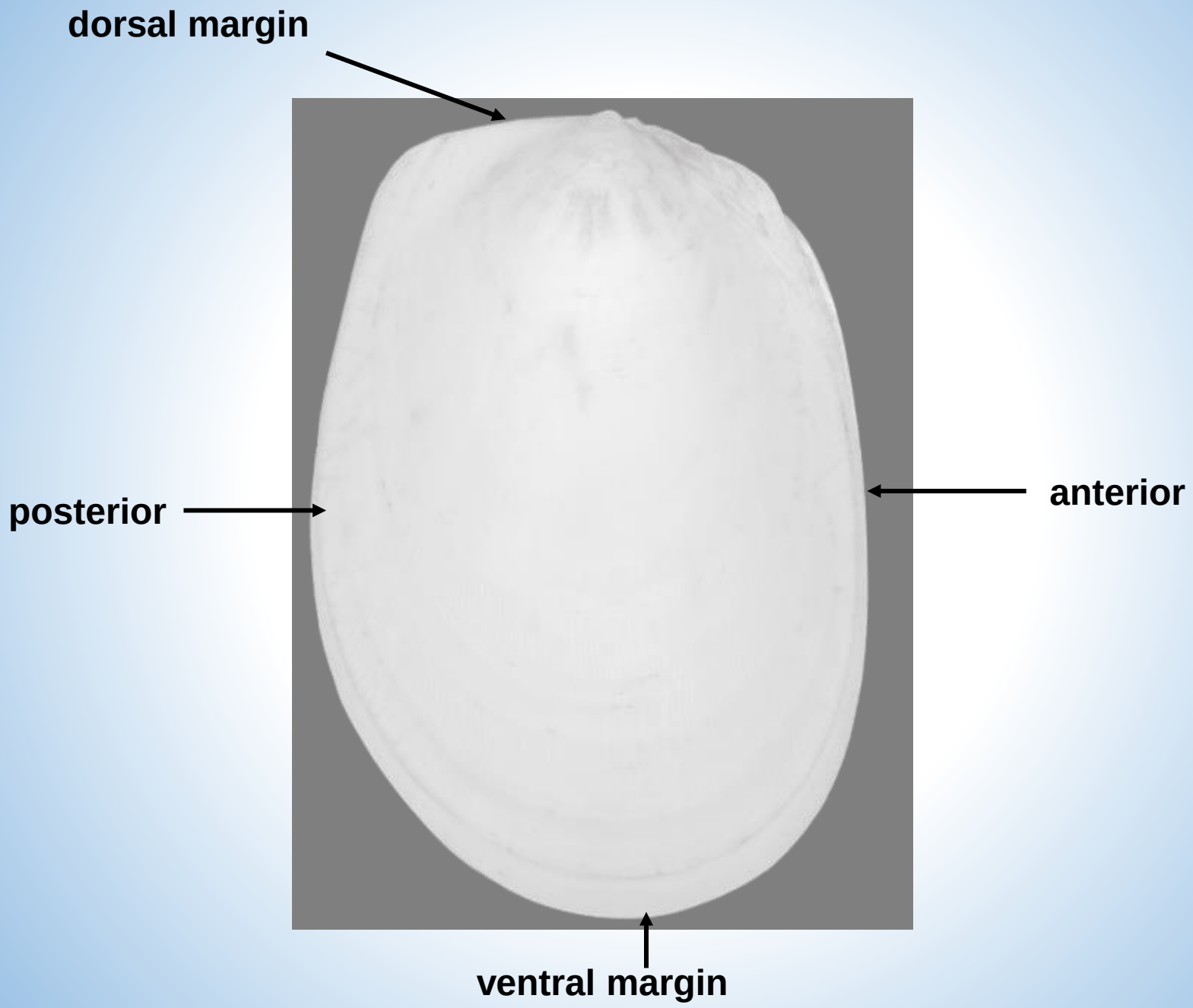
195.1 mm – Coll. SH0012/6

Table with a comparison between the characteristics of both species based upon data from Dr Thach

	A. kronenbergi	*A. marissinica*
size	medium adult size	larger adult size
shape	quadrate-ovate	elongate, laterally widened
convexity	weakly inflated	inflated
dorsal margin	long	moderately long
anterior auricle	long	shorter
byssal gape	with very thick edges	with moderately thick edges
anterior margin	strongly sloping near dorsal margin	slightly sloping near dorsal margin
umbones	broad and high	short
radial ribs	narrow, well visible	flat
shell thickness	thick	moderately thick

Table with a comparison between the characteristics of both species based upon data from Hubrecht & Nolf

	A. kronenbergi: specimen from Nha Trang (Thach)	*A. marissinica*
height	195 mm (type material: 145-166 mm)	110-217 mm
width	137 mm (70% of shell length)	86-156 mm (66-78% of length)
depth	60.5 mm (44% of width) – strongly inflated (Thach: 31.6%)	34.9-69 mm (32-44% of width) - strongly inflated
shell shape	elongate, laterally widened	elongate, laterally widened
shell colour	yellow	yellow
periostracum	absent	absent
shell thickness	thick shell: 93g/100 mm	thick shell: 106-124 g/100 mm shell length
shell sculpture	flat radial ribs	flat radial ribs
dorsal margin	long	slightly shorter
byssal notch	very thick edges	thick to very thick edges


dorsal margin
posterior
anterior
ventral margin

General comment: Dr Thach compares his specimens of *A. kronenbergi* from Vietnam with an image of *A. marissinica* taken from the original publication by Yamashita & Habe (1969). However, he does not appear to have studied actual specimens of *A. marissinica*, apart from the single specimen depicted (figs 11-12) in his original publication, which lacks detailed locality information.

This approach is inconsistent with the statement in his original description of *A. kronenbergi*, where he asserts under “Range and habitat” that “The specimens occur sympatrically with *Acesta rathbuni* and *A. marissinica* on sandy mud at 200-350 m.”

Detailed points raised by Dr Thach:

1. "*The shape of* A. kronenbergi *is* ***more obese*** *and the* ***shell is thinner***": We have meticulously examined the 12 specimens within our collections and find no distinguishable difference in shape or thickness beyond the natural variability of the species. Using the ratio of weight to shell length as an objective measure of shell thickness - while excluding juvenile and immature specimens -the material from Vietnam falls at the lower end of the observed spectrum.

Dr Thach has stated that *A. kronenbergi* possesses a moderately thick shell (2015) and, more recently, a thinner shell (2024) than *A. marissinica*. However, his observations appear to be based on a limited number of specimens that were not fully mature. In our measurements, *A. kronenbergi* shells weighed between 106 and 124 grams per 100 mm of shell length, compared to 93 grams per 100 mm for *A. marissinica*

It is important to note that shell thickness is highly variable within species of LIMIDAE (as well as other molluscan families) and is influenced by factors such as specimen age, depth, and environmental conditions. **Consequently, we do not accept shell thickness or shape as valid criteria for distinguishing *A. kronenbergi* as a separate species.**

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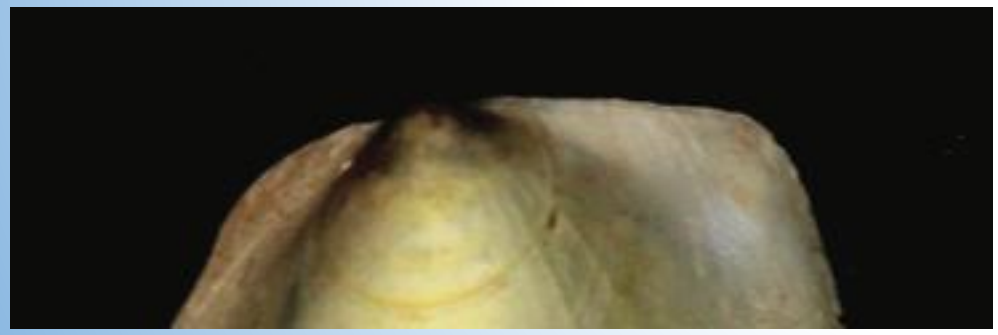
Consequently, we do not accept shell thickness or shape as valid criteria for distinguishing *A. kronenbergi* as a separate species.

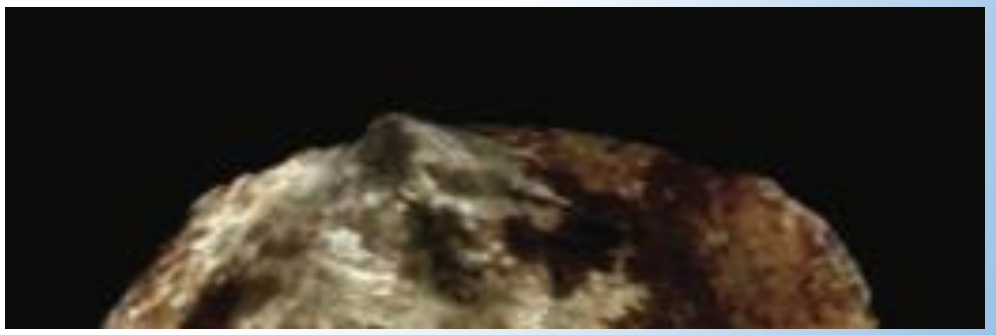
2."*The umbones of* A. kronenbergi *are much broader and not situated at the anterior end of the dorsal margin*":

This argument was not included in the original description of *A. kronenbergi*. Dr Thach's statement appears to be based solely on photographic evidence, rather than a study of physical specimens. Upon examining the 12 specimens available to us, we were unable to identify any discernible difference in the umbones' morphology or positioning that would substantiate this claim.

Thus, this characteristic does not provide a valid basis for species differentiation.



dorsal margin of
'A. kronenbergi'



dorsal margin of
A. marissinica

3. **“*The sculpture of* A. marissinica *and* A. kronenbergi *is not similar*”:**

Dr Thach misrepresents the sculpture of *A. marissinica* by relying on poor-quality photographs derived from a photocopy of the Original publication (image 24). This process introduced a grid-like artefact, leading to the incorrect conclusion that the surface of *A. marissinica* exhibits crossed lines. Such a feature has never been observed in any species of *Acesta*.

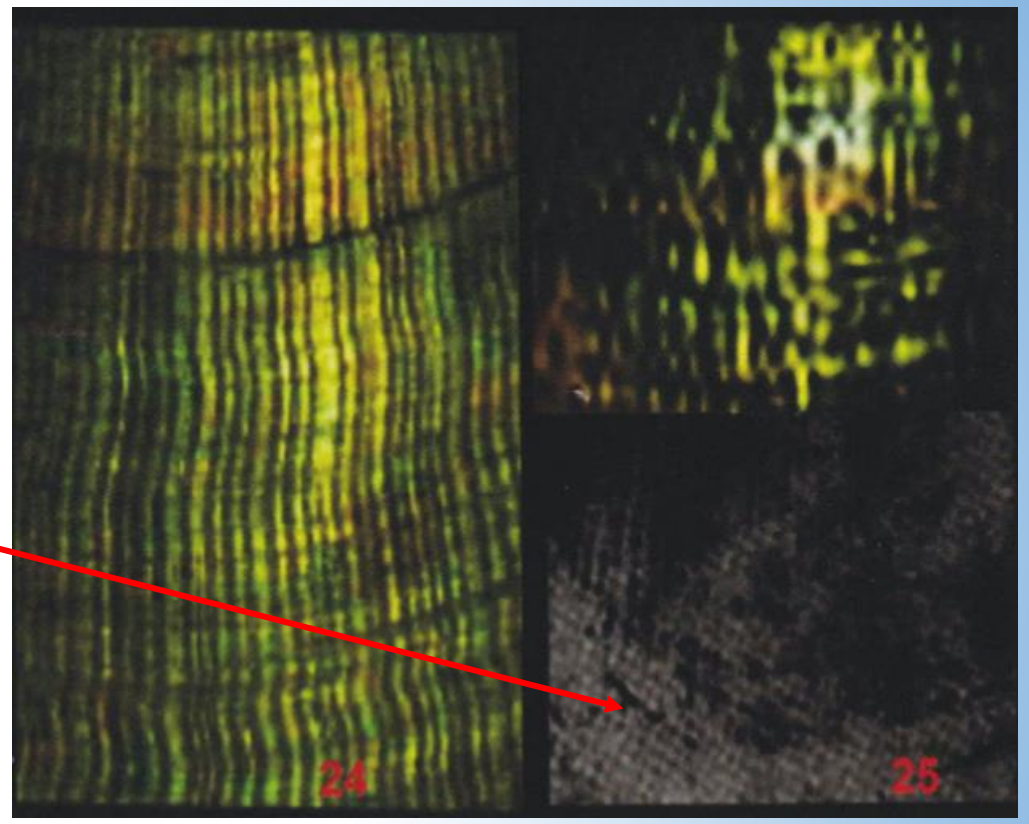


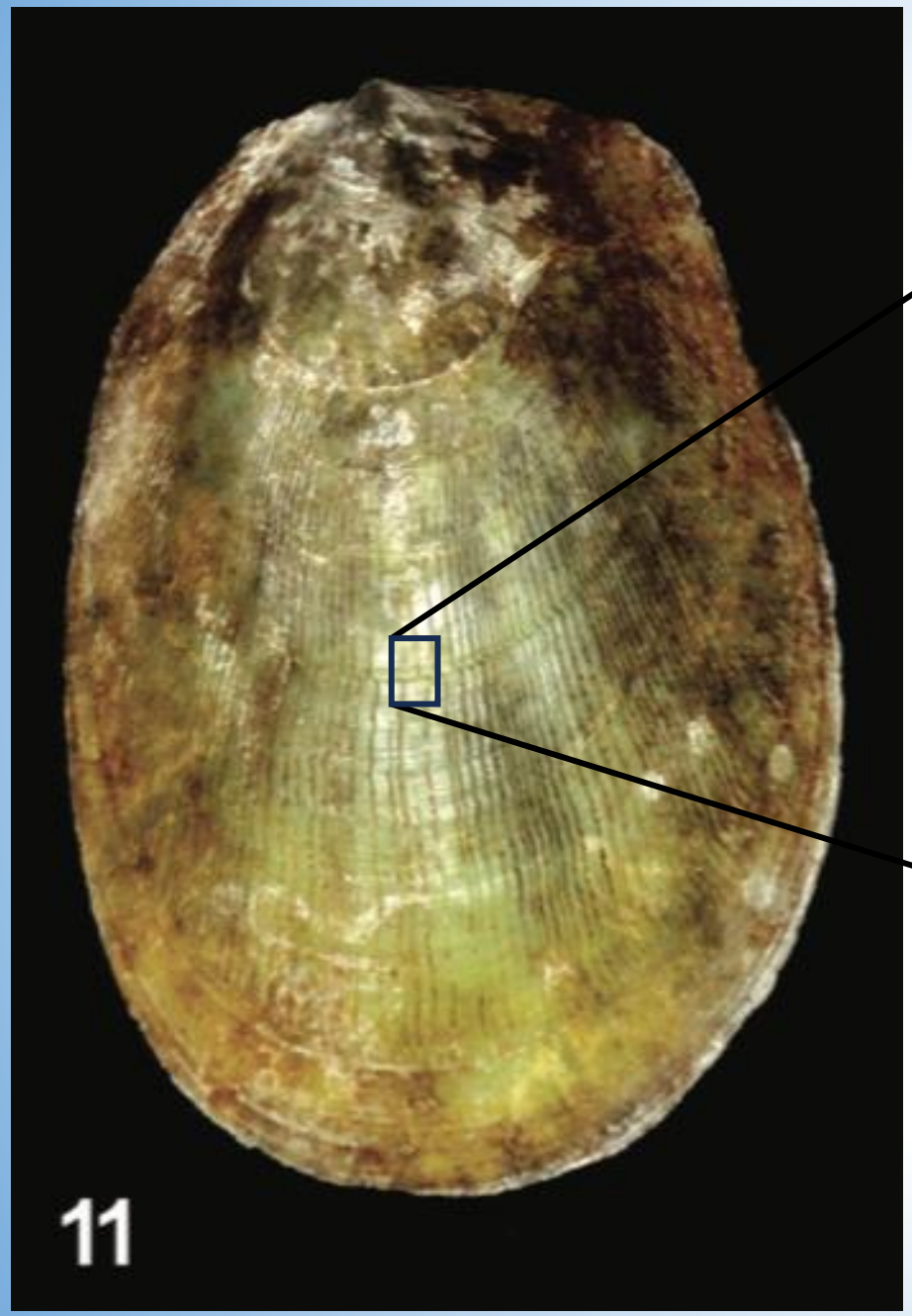
Fig.24 & top of fig.25: ***A. kronenbergi***

Bottom of fig.25: ***A. marissinica***

This misleading procedure must be unequivocally rejected.

***A. marissinica* Yamashita & Habe, 1969: original picture of the holotype (190 x 150 x 73 mm)**

notice the grid-like artefact, caused by making a poor-quality photocopy as used by Dr Thach in his remark in *Malacologia*, n°124



a series of waving parallel threads, no grid pattern

a more realistic view of the microsculpture in *Acesta marissinica*

In our analysis, we found no differences in the parallel, wavy ribs extending from the umbones to the ventral margin of the shells. These ribs are consistent in both number and distinctness of the threads in all specimens examined.

Consequently, we do not consider this argument a valid basis for distinguishing *A. kronenbergi* as a separate species.

4. **“*The dorsal margin of* A. kronenbergi *is longer and more convex*”:**

It is true that juvenile and subadult specimens may exhibit a slightly longer posterior margin. However, this characteristic holds limited taxonomic value due to the considerable variability observed among the specimens studied. Furthermore, we were unable to identify any consistent difference in the degree of convexity of the dorsal margin between the two purported species.

As such, these arguments do not provide a reliable basis for distinguishing *A. kronenbergi* as a separate species.

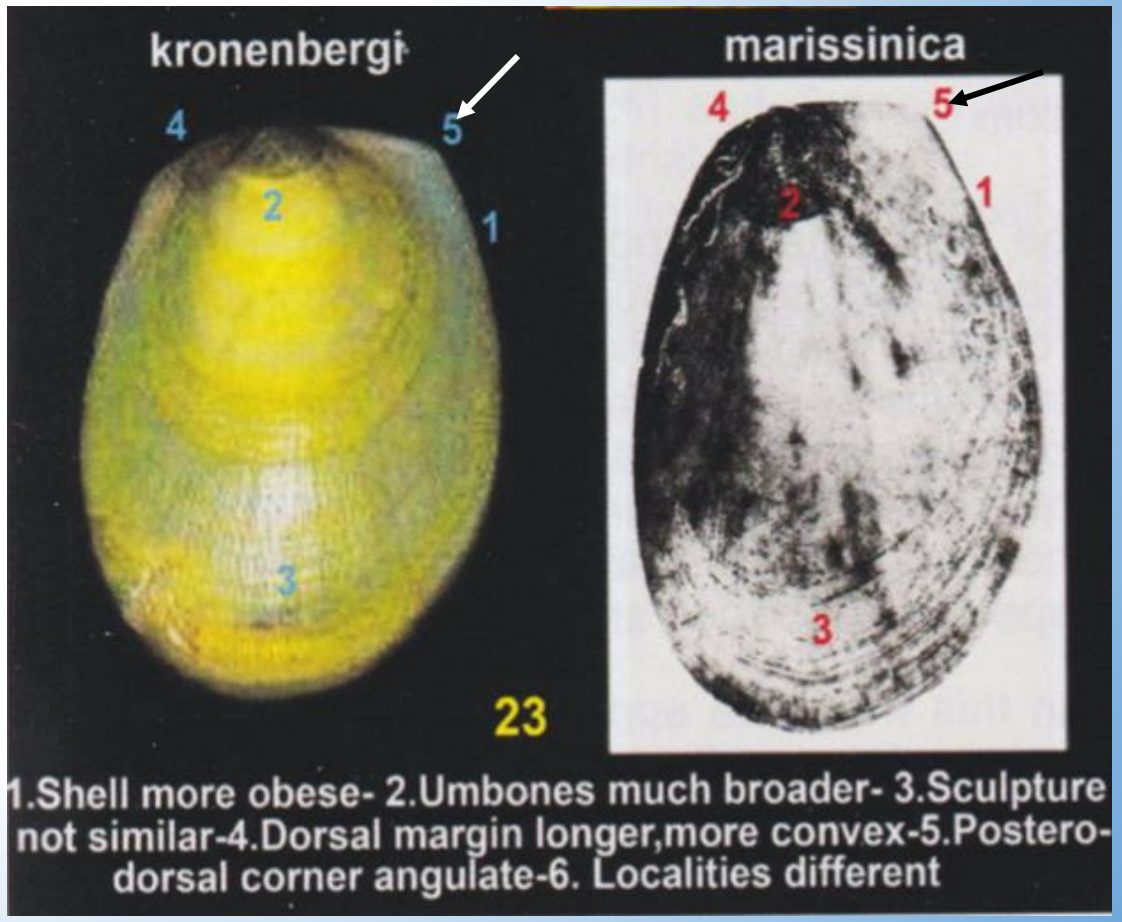
***A. marissinica* Yamashita & Habe, 1969: original picture of paratype 1 (186 x 131 x 57 mm)**

remark the aberrant form of the posterior side!

5. **“*The posterior dorsal corner is more angulate*”:**

Dr Thach’s claim contradicts his own illustrated figures. For example, Figure 23 demonstrates that the holotype of *A. marissinica* actually has a more pronounced hooked angle compared to the holotype of *A. kronenbergi*.

Upon careful examination of all specimens in our collection, we found no consistent differences in the posterior dorsal corner beyond the normal variability of the species.



Juvenile and subadult specimens do exhibit a sharper angle, but this is a developmental feature rather than a species-specific trait.

Therefore, this argument does not support the differentiation of *A. kronenbergi* as a distinct species.

6. **“*The localities are different*”:**

Dr Thach restricts the range of *A. kronenbergi* to a narrow zone near Nha Trang (Vietnam) in the South China Sea (SE Nha Trang City, Khánh Hòa, Vietnam - 12°15’ N, 190°11’ E) and suggests that the range of *A. marissinica* is limited to an area approximately 380 km north of Nha Trang at 15°40’ N. However, this claim is **inconsistent** with his earlier statement in the original description of *A. kronenbergi*, where he specifies under "Range and habitat" that “The specimens occur sympatrically with *Acesta rathbuni* and *A. marissinica* on sandy mud at 200-350 m.”

Furthermore, both localities fall within the confines of the South China Sea, which is geographically bounded to the south by Borneo and Eastern Sumatra. Our research expands this distribution significantly, as we possess a specimen of *A. marissinica* trawled by scampi trawlers off Broome (NW Australia) at a depth of 450-500 m, demonstrating a substantially wider geographical range.

We therefore find that geographical considerations, as presented by Dr Thach, cannot be regarded as a decisive factor for species differentiation.

Conclusion

Dr Thach's conclusions are based on an insufficient sample size compared to our detailed study of twelve specimens from diverse sources. His arguments fail to account for the normal variability of a species that occupies a sessile lifestyle across variable depths and environmental conditions, spanning a wide geographical range from Japan to NW Australia.

Consequently, we reaffirm our conclusion that *Acesta kronenbergi* Thach, 2015, is a junior synonym of *Acesta marissinica* Yamashita & Habe, 1969.

Geographic distribution of
***Acesta marissinica* Yamashita & Habe, 1969 (▲)**