

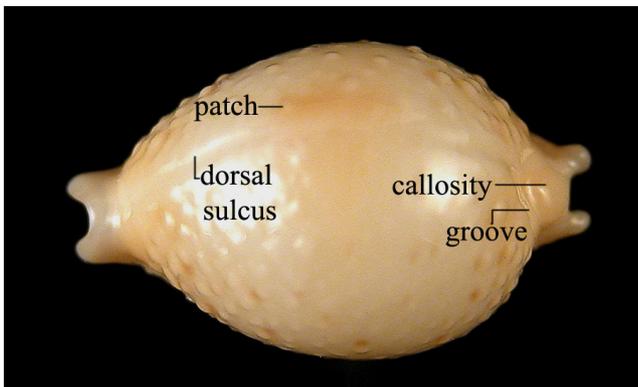
***PUSTULARIA CHIAPPONII* SEEMS TO BE A FORM OF *P. BISTRINOTATA***

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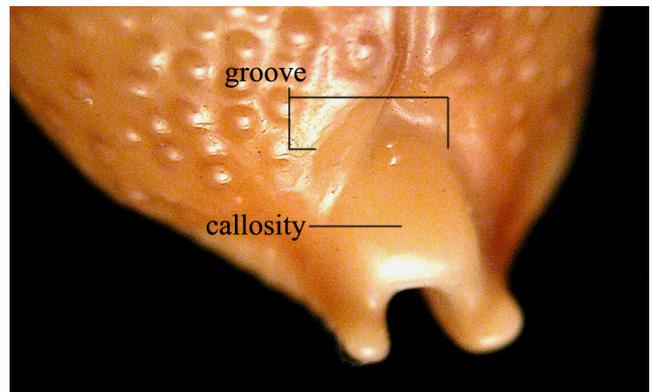
**Abstract:** A conchological study shows that *Pustularia chiapponii* is very close to *Pustularia bistrinotata* and these two taxa cannot be separated at a specific level because there is no conchological gap between them and their diagnostic characters belong to a category ‘more-less.’ All populations of the taxon described as *P. chiapponii* are not separated geographically from populations of *P. bistrinotata* hence *chiapponii* cannot be treated also as a subspecies of *bistrinotata*. This is apparently a pale form of *P. bistrinotata*.

**Key words:** Mollusca, Gastropoda, Cypraeidae, *Pustularia bistrinotata*, intraspecific variation.

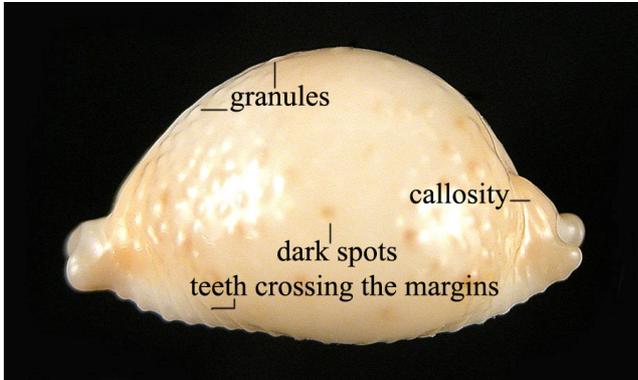
*Pustularia chiapponii* (Lorenz, 1999) is described as a species from Borongan, Samar, and other areas of the Philippines. Recently I had a chance to examine several batches of shells, which seems to be very close to the description of *chiapponii*, and to compare them with other species of the genus *Pustularia*.



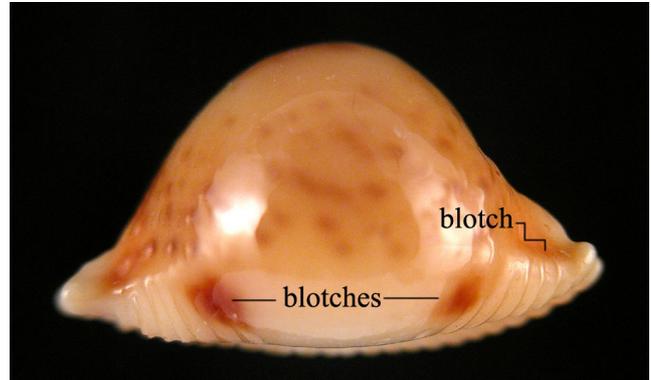
1. Pale form of *P. bistrinotata*, the Philippines



2. *P. bistrinotata*, the Philippines



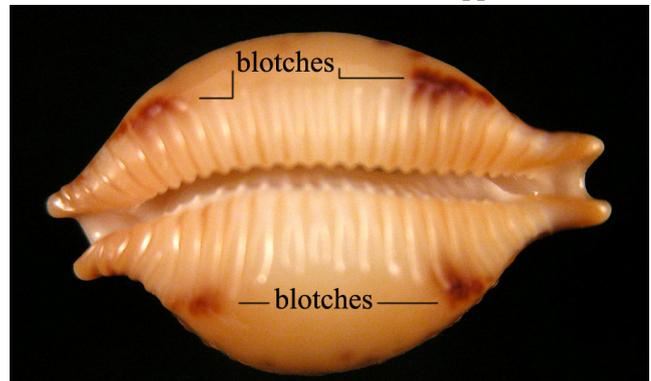
3. Pale form of *P. bistrinotata*, New Caledonia



4. 2. *P. bistrinotata*, the Philippines



5. Pale form of *P. bistrinotata*, New Caledonia



6. 2. *P. bistrinotata*, the Philippines

The diagnostic shell characters of *P. chiapponii* given in its original description are summarized in Table 1 and marked by the sign\*; the diagnostic characters of this taxon mentioned in a section 'Discussion' of the description are marked by the sign\*\*.

Table 1  
Shell characters of *Pustularia chiapponii*, *P. bistrinotata*, and *P. cicercula*

shell characters		<i>chiapponii</i>	<i>bistrinotata</i>	<i>cicercula</i>
number of studied shells N and localities→see notes		Note 3	Note 4	Note 5
shell profile		globular*	globular	globular to humped
extremities		rostrated*	rostrated	rostrated
a degree of rostration of the extremities		medium	moderate to medium	high
shell color (paler towards the aperture in <i>chiapponii</i> )		pale yellow*	light/dark ochraceous or yellow	whitish or grey or beige
base	spots or blotches absent	V*	sometimes	V
	up to four blotches mostly present	absent	V <sup>1</sup>	absent
spire	with a blotch	absent**	absent	mostly present
	covered by callus, not visible	yes*	yes	yes
	Y-shaped groove near the spire	visible*	present	present
wart-like callosity near the spire		medium*	medium	hardly visible, practically absent
dorsum	occasional blotches near extremities	absent	mostly present; may be absent	absent
	two/three pair of brown blotches	absent	mostly present; may be absent	absent
	three darker colored dorsal patches	hardly visible*	large blotches <sup>2</sup>	absent
	is not spotted	V*	sometimes	V
	(mostly) granulose	yes*	yes	yes
	with longitudinal sulcus	present*	present	present
aperture is narrow and curved to the left posteriorly		often*	sometimes	may be curved
columellar teeth	shorter or short in the middle	not	may be short	may be
	long, never short in the middle	V**	may be	mostly
	anterior attain the lateral part of the dorsum and cross the lateral carina	present	present	present
teeth	there is no staining	V*	sometimes	may be stained
	may be colored	no	often	may be
	cross posterior labral margin	V*	present	
	meet the dorsal granules at the margins near the extremities	V*	V	V

#### Notes

1. Very rarely the blotches may be absent.
2. Sometimes the dorsal blotches are hardly visible or look like dorsal patches.
3. N=37 from New Caledonia; Vanuatu; Borongal, E. Samar (Philippines).
4. N=155 from Phuket, Thailand; Guam; Kwajalein; Marshall Islands; Okinawa; Philippines (Samar I.); Solomon Is.; New Caledonia; French Polynesia.
5. N=56 from East Sinai; Zanzibar; Thailand; Philippines; Vanuatu; New Caledonia.
6. The shell characters marked by the sign \* are given in the original description.

*P. cicercula* differs from *bistrinotata* and *chiapponii* by the absence of:  
-the wart-like callosity near the spire in completely grown-up specimens,  
-three darker colored dorsal patches and/or blotches, and by the presence of the spire blotch and the higher degree of rostration at the extremities. Besides, it can be more easily separated from *bistrinotata* by the lighter shell color. *P. chiapponii*, which superficially resembles *cicercula*, can be easily confused with it.

The difference between *bistrinotata* and *chiapponii* belongs to a category 'more-less': shells of *bistrinotata* are usually more dark colored, the basal blotches are more often present, blotches near the extremities often present although they seem to be absent in *chiapponii*, the three darker colored dorsal patches in shells of the latter often resemble the dorsal blotches of *bistrinotata*: a groove near the spire in *chiapponii* is less visible, the dorsal blotches are less visible in *chiapponii* although the color patches resemble the blotches closely; the dorsum is less distinctly punctuate in *chiapponii* than in *bistrinotata* but these small blotches still can be found.

There seems to be no diagnostic shell character of a specific rank separating between these taxa.

To be recognized as a subspecies, *chiapponii* should be geographically separated from *bistrinotata* but this seems to be not the case.

It is mentioned in the original description of *P. chiapponii* that it is known from the Philippines only but shells very closely resembling *chiapponii* are known also from New Caledonia and Vanuatu and these shells can be easily identified as *P. chiapponii*.

My impression is that *chiapponii* is a form of *P. bistrinotata* for the following reasons:

A) There seems to be no diagnostic characters of a specific level separating between *chiapponii* and *bistrinotata*.

B) There is no population of *chiapponii* known, which is geographically separated from populations of *P. bistrinotata*.

C) Shell characters of *chiapponii* are very close to these of *bistrinotata*.

According to long standing conchological practices, shells of any cowry subspecies should differ from shells of other subspecies of the same species by at least one substantial diagnostic characteristic. It is the responsibility of the author of a new subspecies to prove the existence of a separate population, to choose the appropriate diagnostic characters, and to prove the subspecific level of the population under study. It certainly should not be left for consequent authors to prove the opposite. The scientific evidence confirming a specific level of *chiapponii* is not provided hence I treat it as a pale (beige) and unspotted form of *P. bistrinotata*.

#### Literature

Lorenz 1999. Revision of the living *Pustularia* (Mollusca:Gastropoda:Cypraeidae) with the description of *P. chiapponii* n. sp. LC 31(292):11-28.

Schilder F.A. & Schilder, M. 1938. Prodrôme of a monograph on living Cypraeidae. Proc. of Malacological Society of London 23:119-231.

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