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Zonaria pyrum nigromarginata:
A new subspecies of *Zonaria pyrum* (Gastropoda: Cypraeidae)
from the Atlantic coast of the Iberian Peninsula

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Abstract: A new subspecies of *Zonaria pyrum* is described from the Atlantic Coast of the Iberian peninsula, especially based on the observations from a population in the Gulf of Cadiz (Spain) and specimens collected along the Portuguese coastline.

Introduction: *Zonaria pyrum* is a magnificent species of cowry living along the European and North African coasts. During the last couple of years a number of curious *Z. pyrum* were collected by divers in shallow waters in the Gulf of Cadiz, Spain. Additionally, similar specimens that share the characteristics were spotted in collections from Portugal. It seems these shells are consistently different from specimens coming from other areas and as a consequence they deserve a different name.

***Zonaria pyrum nigromarginata* n. ssp.**

Type material: 25 live and 3 dead collected shells of the new ssp. have been studied in comparison with about 60 other *Zonaria pyrum pyrum* from both Mediterranean and West-African origins. The holotype will be deposited in the collection of the Museum d'Histoire Naturelle de Paris (MNHN). All but one (paratype 17) of the 26 type-specimens come from an undisclosed area close to Cadiz, Spain.

Holotype: 29.6 x 17.6 x 14.2 mm (MNHN);

Paratype 1: 31.2 x 20.6 x 17.5 mm (coll. Jan Deprez); Paratype 2: 29.8 x 17.7 x 14.2 mm (JD); Paratype 3: 30.4 x 17.5 x 14.5 mm (JD); Paratype 4: 33.5 x 20.5 x 16.5 mm (JD); Paratype 5: 34.7 x 19.2 x 16.2 mm (JD); Paratype 6: 29.1 x 18.0 x 14.5 mm (JD); Paratype 7: 32.6 x 18.6 x 15.2 mm (JD); Paratype 8: 29.4 x 17.5 x 14.5 mm (JD); Paratype 9: 24.9 x 17.1 x 13.6 mm (JD); Paratype 10: 33.1 x 19.4 x 15.7 mm (coll. Frederick Govaert); Paratype 11: 34.2 x 21.0 x 16.9 mm (FG); Paratype 12: 38.1 x 23.2 x 18.1 mm (FG); Paratype 13: 35.5 x 21.1 x 17.0 mm (FG); Paratype 14: 35.5 x 21.4 x 17.6 mm (FG); Paratype 15: 33.8 x 19.5 x 15.6 mm (FG); Paratype 16: 28.5 x 17.2 x 19.3 mm (FG); Paratype 17 : Specimen from Portugal (JD).

Plus 8 additional paratypes in coll. of F. Govaert and Frank Swinnen.

Description: The holotype was found at about 6m deep in the vicinity of Cadiz. The shell is pyriform and callous with margins climbing up to the dorsum leaving a bright pale window. This window is crossed by two paler bands. The margins are of a dark reddish brown colour. Under the right light conditions some indistinct marginal spotting can be detected on both columellar and labral sides. The aperture is narrow and straight, the fossula are almost plain, only very slightly denticulated. Teeth pale and in contrast with the base, which is reddish brown.

Habitat, range and animal: According to information that was provided by the diver, this subspecies is found under rocks in shallow water in the area around Cadiz, SW Spain. The range of this subspecies is not yet fully known, but it seems it is restricted to the European area west of the Gibraltar Strait and it has been reported up to the central part of the Portuguese coast. Some specimens resembling the new subspecies have been found in Morocco, but more material and information is needed to confirm this.

The animal can be described as follows: the head is reddish orange, whereas the foot is of a pale pinkish colour. The mantle is rough and purplish brown. The papillae are quite numerous, paler than the mantle, simply structured but generally well produced.

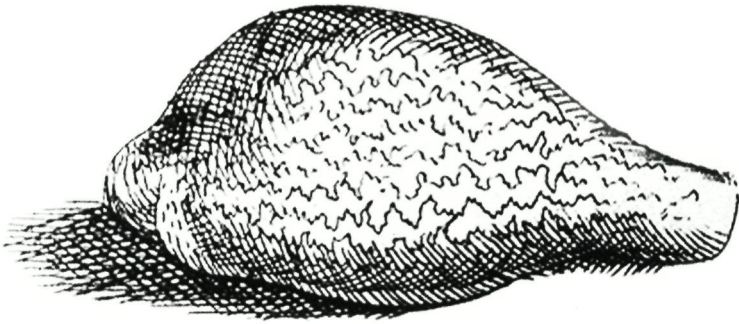
Etymology: The name refers to the dark coloured margins which are so obvious that they allow to immediately distinguish this subspecies from classic *Zonaria pyrum pyrum* (Gmelin, 1791). Some specimens of the type series are almost black.

Discussion: This new subspecies differs from classic *Z. pyrum pyrum* (Gmelin, 1791) by the colour of the base, which is reddish brown in the new subspecies instead of tan to brownish orange. The coloration of the margins is similar, but most often darker compared with the base and is occasionally going up far onto the dorsum. It

is interesting to note that all the specimens of the new subspecies studied showed (in) distinct marginal spotting which is a quite rare occurrence in classic *Z. pyrum pyrum*. In general, the aperture is also straighter and narrower than in *Z. pyrum pyrum*.

This subspecies was mentioned by Goutal (2009) in *Xenophora* as a curious population of *Zonaria pyrum*. During our study of the species complex, it became clear to us that this population belonged to a new subspecies of *pyrum*.

We have checked all the existing names and synonyms that have been used to describe this cowry or any other specific variant, form or population. The only synonym that posed confusion for our own description was *Cypraea maculosa* Gmelin, 1791. We have considered Gmelin's name as the possible name to describe this shell as the original description refers to some characteristics of our type series. However, the figure of *C. maculosa* does not show any of the original features of our new subspecies and the provenance of the shell is not described. Further study was impossible as the whereabouts of the type specimen of *C. maculosa* are unknown to us. These considerations in mind made us make the decision to propose our own name for the Atlantic Iberian *pyrum*.



Gmelin's figure of *Cypraea maculosa* in Buonanni - none of the characteristics of *Zonaria pyrum nigromarginata* can be recognised on this figure. Courtesy Cécile Hoskens and G.T. Poppe.

Additional note: Along the W African coast, the situation of the *Zonaria pyrum* complex becomes very confusing. *Zonaria pyrum 'senegalensis'* was described as a dwarf form from West-Africa, but normal-sized specimens are known to us. A few specimens of *Zonaria pyrum* coming from the Canary Islands were studied, but they seem to be extremely rare. The status of *Z. angelicae*, *Z. angolensis* and *Z. petitiana* is not yet clear to us because of insufficient material and especially lack of precise information, and we hope our article can inspire others to entangle the difficulties within this group of cowries.

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Plate 1:

- 1: *Zonaria pyrum nigromarginata* n. ssp., HOLOTYPE, Gulf of Cadiz, Spain, 6 m. Coll. MHNP.
- 2: *Zonaria pyrum nigromarginata* n. ssp., Paratype 1, Gulf of Cadiz, Spain, 6 m. Coll. Deprez.
- 3: *Zonaria pyrum nigromarginata* n. ssp., Paratype 5, Gulf of Cadiz, Spain, 6 m. Coll. Deprez.
- 4: *Zonaria pyrum nigromarginata* n. ssp., Paratype 10, Gulf of Cadiz, Spain, 6 m. Coll. Govaert.

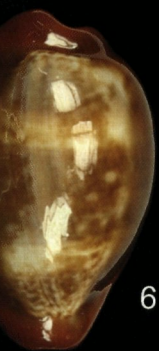
Plate 2:

- 5: *Zonaria pyrum nigromarginata* n. ssp., Paratype 11, Gulf of Cadiz, Spain, 6 m. Coll. Govaert.
- 6: *Zonaria pyrum nigromarginata* n. ssp., Paratype 13, Gulf of Cadiz, Spain, 6 m. Coll. Govaert.
- 7: *Zonaria pyrum nigromarginata* n. ssp., Paratype 17, Rio Formosa, Faro, South Portugal. Coll. Deprez.
- 8: *Zonaria pyrum nigromarginata* (?), Near Alhoceima, Morocco. Fished in deep water. Coll. Deprez.
- 9: *Zonaria pyrum pyrum*. Corfu, Greece. Coll. Deprez.
- 10: *Zonaria pyrum pyrum* (?), Lanzarote Isl., Canaries. Specimens from this area are extremely rare and very little known. Needs further study. Coll. Swinnen.
- 11: *Zonaria pyrum petitiana*. Casamana, Senegal. Coll. Deprez.
- 12: *Zonaria pyrum angolensis*. Angola. Exact locality unknown. We have studied specimens that were found inside empty *Pinna*-shells in depths of about 15-20 m.

Plate 3:**13-18:** *Zonaria pyrum nigromarginata* n. ssp.

- 13: living animal ex-situ, 4 different positions. Photos courtesy B. and J. Muñoz Sanchez.
- 14: living animal ex-situ. Photo courtesy B. and J. Muñoz Sanchez.
- 15: living animal in bulla stage, ex-situ. Photo courtesy B. and J. Muñoz Sanchez.
- 16: living animal, ex-situ. Photo courtesy B. and J. Muñoz Sanchez.
- 17: living animal, ex-situ. Photo courtesy B. and J. Muñoz Sanchez.
- 18: living animal, ex-situ. Photo courtesy B. and J. Muñoz Sanchez.





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