

## THREE SPECIES OF *PARTHENINA* (CHRYSALLIDINAE, PYRAMIDELLIDOIDEA) NEW TO WEST AFRICA

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*Abstract* Three species of pyramidellid gastropods, *Parthenina suturalis* (Philippi 1844), *Parthenina flexuosa* (Monterosato 1874) and *Parthenina feldi* (Aartsen et al. 2000), are reported from off West Africa for the first time. This represents a considerable increase in distribution range for all species, and indicates that the pyramidellid fauna of West Africa is still incompletely known in spite of several studies published in recent years. The shell morphology of the three species are described.

*Key words* *Chrysallida*, *Heterostropha*, *distribution*, *Pyramidellidae*, *Pyramidellidomorpha*, *West Africa*

### INTRODUCTION

The Pyramidellidae are a speciose group of parasitic gastropods, comprising more than 6000 species divided into more than 350 genera (Schander *et al.*, 1999). In recent years the pyramidellid fauna of Europe and West Africa has been intensively studied (e.g. Schander, 1994; Peñas & Rolan, 1997, 1998; Aartsen *et al.*, 1998, 2000). Numerous new species have been described from the area, but still a large number remains to be described. New studies also indicate that present knowledge about distribution range is incomplete. The present paper describes three species previously only recorded from the Mediterranean Sea or from the islands off the west African coast.

The Gulf of Guinea, with its humid tropical climate (Vallée & Margat, 2003) and complex hydrographic dynamics (McGlade *et al.*, 2002; Verstraete, 1992) is dominated by seasonal upwelling, warm and low saline surface water and surface and subsurface zonal currents (Hardman-Mountford & McGlade, 2003). The eastward flowing Guinea Current is a dominant feature, transporting low-salinity warm water (Binet & Marchal, 1993) and favouring upwelling during its summer intensification (Philander, 1979). The major upwelling season extends from July to September along northern coast (the Ivory Coast, Ghana, Togo

and Benin) and June to September on the east coast (off southern Gabon to Angola). A minor upwelling season occurs in December-January (Longhurst, 1962; Philander, 1979).

### MATERIALS AND METHODS

Material was collected in Nigeria, Gabon and the Republic of Congo during a cruise with R/V Fridtjof Nansen in July 2005. Thirty-five stations were sampled using a 0.1 m<sup>2</sup> van Veen grab between 20 and 217 meters depth. The localities here referred to are listed in Table 1. Four replicates were taken at each station. Samples were screened through sieves of mesh size 0.5 or 1 mm. Samples were fixed in 96% alcohol or in 10% borax buffered formaldehyde. Samples were subsequently sorted under a stereo microscope at the Natural History Museum, University of Bergen.

For Scanning Electron Microscopy (SEM) images, the shells were cleaned and dried and mounted on to aluminum stubs with conductive carbon cement, and subsequently sputtered with gold-palladium alloy using a Bio-Rad SEM Coating System. Images were obtained using a Zeiss Supra VP55 microscope and edited in Adobe Photoshop CS4 Extended.

All specimens are deposited at the Natural History Collections, Bergen Museum, University of Bergen.

**Table 1** Sampling stations for material here reported. Geographical position given in decimal degrees.

Station number	Country	Date	Longitude	Latitude	Depth (m)
5N13	Nigeria	14 June 2005	6.9698N	4.0141E	66
5N15	Nigeria	20 June 2005	7.9578N	4.0178E	63
5G16	Gabon	11 July 2005	10.6133N	3.8108W	69
5CR2	Republic of Congo	13 July 2005	10.9287N	4.4843W	165

## RESULTS

Family Odostomiidae Pelsener 1928  
 Subfamily Chrysallidinae Saurin 1958  
 Genus *Parthenina* Bucquoy, Dautzenberg &  
 Dollfus 1883

*Parthenina suturalis* (Philippi 1844) comb. nov.  
 (Figs 1C, D, E, F)

*Rissoa suturalis* Philippi 1844 (nom. nov. pro  
*Rissoa striata* Philippi 1836 non Andrzejowsky  
 1833) *Enumeratio Molluscorum Siciliae* 2: 129.  
*Rissoa suturalis* Philippi 1844  
*Chrysallida suturalis* auct.

*Type locality* Magnisi, Italy.

*Material examined* 5 shells, station 5N15 (Nigeria,  
 63 m).

*Previous recorded distribution* Mediterranean  
 Sea (e.g. Linden & Eikenboom, 1992). There are  
 also previous records from the Atlantic coast of  
 Europe north to the British Isles. We agree with  
 Linden & Eikenboom (1992) that these records  
 need confirmation since the species often seems  
 to be confused with the variable *Parthenina*  
*interstincta* (= *P. obtusa*) (see below).

*Description* Shell small, slender, subcylindri-  
 cal or cylindrical, off-white with blunt apex.  
 Protoconch of type B (see Linden & Eikenboom,  
 1992). Whorls straight but suddenly bent  
 inwards toward abapical suture. Suture distinct,  
 deep, noticeably oblique. Axial ribs not very  
 elevated, more or less sinuous and orthocline  
 or slightly prosocline. The axial ribs turn to the  
 right down into suture after crossing the spiral  
 ridge. Axial ribs are equally broad or broader  
 than interspaces and continuing to the base or,  
 disappearing at the periphery of the ultimate  
 whorl. Spiral sculpture consists of one thin ridge  
 placed abapically. A second ridge is sometimes

present within the suture. Two ridges on the  
 ultimate whorl, the lowermost at the periphery  
 of the base. Aperture oval, apically narrowed.  
 A small columellar tooth is visible when the  
 shell is turned left. Umbilicus deep, narrow or  
 moderately broad.

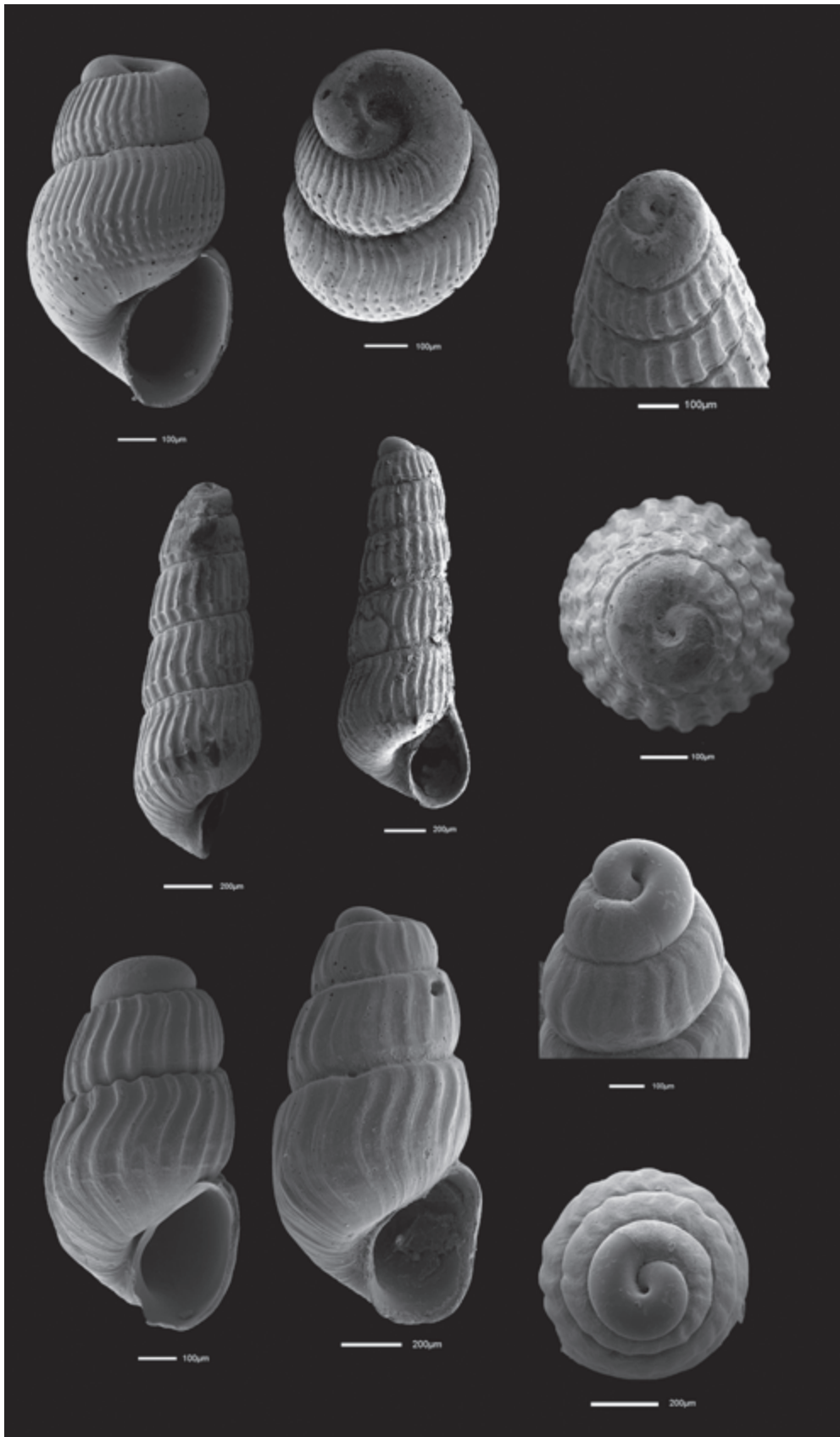
*Remarks* There are two forms in the specimens  
 identified in this study. One form has broader  
 interspaces than what is typically recorded for  
 this species, and the spiral ridge is stronger  
 and it bends more towards the suture (as fig-  
 ured in Peñas *et al.*, 1996, figs 34–35). Linden &  
 Eikenboom (1992) state that this species occa-  
 sionally can have fewer axial ribs with wider  
 interspaces. With the exception of the very vari-  
 able *P. interstincta*, no other species recorded from  
 the East Atlantic shows the same spiral sculpture  
 (two ridges, one in the suture), and we consider  
 both forms to belong to the same species. Linden  
 & Eikenboom (1992) reports micro-sculpture in  
 the form of spiral striae. This was not observed  
 on our specimens, but is most likely due to  
 the fact that all of our specimens were slightly  
 worn. *P. suturalis* resembles the slender form of  
*Parthenina interstincta* (J. Adams 1797) but is more  
 cylindrical, the axial ribs are more tightly spaced  
 and numerous, and the suture is narrower and  
 not as distinct. Furthermore, the spiral ridges  
 are finer and thinner and there is sometimes a  
 second ridge visible in the suture.

*Parthenina feldi* (Aartsen, Gittenberger & Goud  
 2000) comb. nov. (Figs 1A, B)

*Chrysallida (Parthenina) feldi* Aartsen, Gittenberger  
 & Gould 2000 *Zoologische Mededelingen Leiden* 74:  
 35–37, fig. 44.

*Type locality* Ponta Inglez/Ponta Preta, SW of  
 Maio, Cape Verde Islands, 76 m.

*Material examined* 1 shell, station 5CR2 (Republic  
 of Congo 165 m).



**Figure 1** A Protoconch of *Parthenina feldi*. B *P. feldi* protoconch. C *P. suturalis* teleoconch D *P. suturalis* teleoconch. E *P. suturalis* protoconch. F *P. suturalis* protoconch. G *P. flexuosa* teleoconch. H *P. flexuosa* teleoconch. I *P. flexuosa* protoconch. J *P. flexuosa* protoconch. Scale Bars: A, B, E, F, G, I 100µm; C, D, H, J 200 µm.

*Previous recorded distribution* Only recorded from the Cap Verde Archipelago (Aartsen *et al.*, 2000).

*Description* Shell very small, broad, delicate, subcylindrical, white and shiny with blunt apex. Protoconch of type B tending to C (see Linden & Eikenboom, 1992). Whorls convex. Suture distinct, moderately deep. Axial ribs not very elevated, sinuous and orthocone. Ribs numerous and tightly spaced, about twice as broad as interspaces. Disappearing at the periphery of the ultimate whorl. Very fine striations can be seen as a continuation of ribs on the base. Spiral sculpture consisting of fine, thin ridges in lower half of whorls. Three spiral ridges are present on the initial whorl and four on the ultimate. Aperture oval. No columellar tooth present. Small umbilical fissure present.

*Remarks* *Parthenina feldi* is similar to *P. juliae*, but more cylindrical and the axial ribs are more sinuous and numerous. We agree with Aartsen *et al.* (2000) who assume that the specimen figured as *P. juliae* in Peñas & Rolán (1998) is in fact *P. feldi*.

*Parthenina flexuosa* (Monterosato 1874) comb. nov. (Figs 1G, H, I, J)

*Odostomia flexuosa* Monterosato 1874 *Journal de Conchyliologie* 22: 267

*Chrysallida flexuosa* auct.

*Chrysallida interspatiosa* Linden & Eikenboom 1992 *Basteria* 36: 21–23, figs 10, 25, 26. [Type locality São Miguel, Azores, 480 m].

*Type locality* Palermo, Italy.

*Material examined* Five shells, station 5N13 (Nigeria, 66 m); 4 shells, station 5N15 (Nigeria, 63 m); 35 shells, station 5CR2 (Republic of Congo, 165 m); 2 shells. Station 5G16 (Gabon, 69 m).

*Previous recorded distribution* The Mediterranean Sea, Azores archipelago and the adjacent banks (Peñas & Rolán, 1999). The Canary Islands and Cape Verde archipelago (Aartsen *et al.*, 2000).

*Description* Shell small, solid but delicate, subcylindrical, white or cream-coloured with blunt

apex. Protoconch type C tending to B (see Linden & Eikenboom, 1992). Whorls slightly convex. Suture distinct, moderately deep. Axial ribs not very elevated, flexuous and orthocone or slightly ophistocone. The axial ribs are about as broad as interspaces, disappearing at the periphery of the ultimate whorl or continuing on the base as diffuse lines. Spiral sculpture consisting of a thin ridge abapically, two in ultimate whorl. The spiral ridge is sometimes weak and difficult to observe. When axial ribs end at the periphery the lowermost ridge of the ultimate whorl is more like a border at the base. Aperture oval, apically narrowed. A small tooth can be seen if the shell is turned left. The umbilical fissure is narrow.

*Remarks* The combination of shape and sculpture in *P. flexuosa* is very characteristic and should make it rather easy to separate this species from other pyramidellids in the area.

## DISCUSSION

The results show that our knowledge of the pyramidellid fauna of West Africa is still incomplete. Not only is our knowledge of the species composition and the distribution of the species incomplete, but even more acute is our lack of knowledge of the biology of the species present (Schander *et al.*, 1999). Our preliminary results shows that there are still a great number of undescribed species of pyramidellids in the area, and six new species have recently been described by us (Lygre & Schander, 2010), with several more in the process of being described.

The nomenclature of the pyramidelloidea is still confused. Pimenta & Absalão (2004) and Pimenta *et al.*, (2009) point out that most of the over 300 supraspecific taxa of the Pyramidelloidea (Schander *et al.*, 1999; Schander *et al.*, 2003) are poorly defined, and that an absence of general consensus about the definitions and boundaries of the genera and subgenera contributes to a much confused taxonomy. A great number of authors shoe-horn species into the "supertaxa" *Odostomia*, *Chrysallida*, and *Turbonilla* without any consideration of phylogenetic context. The above reported species are often placed in the genus *Chrysallida*, but it is doubtful

if any true members of *Chrysallida* sensu stricto are present at all in the eastern Atlantic. The species dealt with here are markedly different from the illustration of the type species of *Chrysallida*, *Chemntizia communis* C. B Adams 1852 as illustrated in Palmer (1958), and we prefer therefore not to place these species in this genus as it is clearly erroneous.

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