



Two new species of *Crassispira* (Gastropoda, Conoidea) from West Africa with a taxonomic note on *Crassispira tripter* von Maltzan, 1883

Dos nuevas especies de *Crassispira* (Gastropoda, Conoidea) de África occidental con una nota taxonómica sobre *Crassispira tripter* von Maltzan, 1883

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ABSTRACT

A previous suggestion that *Drillia tripter* von Maltzan, 1883 should be assigned to the genus *Crassispira* Swainson, 1840 is confirmed. Two new species of this genus are described and illustrated from West Africa and compared to other similar species from this area.

RESUMEN

Se confirma la asignación de *Drillia tripter* von Maltzan, 1883 al género *Crassispira* Swainson, 1840, que había sido previamente sugerida. Se describen e ilustran dos nuevas especies de este género de África occidental, haciendo comparación con otras congénicas.

INTRODUCTION

The genus *Crassispira* Swainson, 1840 from West Africa had been reviewed by FERNANDES, ROLÁN, AND OTERO-SCHMITT (1995), who identified ten species, describing five as new and mentioning yet another as undetermined. ROLÁN, RYALL AND HORRO (2007) increased this number with the description of a new species endemic of south Angola and commented that another known species would probably be better placed in this genus: *Drillia tripter* von Maltzan, 1883. Studies of this species have now confirmed that it is a *Crassispira*.

The authors have also recently been able to examine material collected from two different localities in West Africa that matches the characteristics of this genus as outlined by POWELL (1966). In both cases the material was obtained by scuba diving, a collecting method relatively new to the region. This technique has already led to other new species being newly discovered in West Africa. Specimen collection had previously been limited to intertidal searching, snorkel diving naturally limited to a maximum depth of 15 meters, dredging

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in sandy areas or as a by-product from fishermen's nets, trawls and traps. But with the introduction of scuba diving, some previously inaccessible areas can now be studied and these deeper rocky habitats are now revealing some species new to science.

The generic assignation of *Drillia tripter* von Maltzan, 1883 and the description of two new species of *Crassispira* are the subject of the present work.

MATERIAL

The material of the new species from Senegal has been collected by Alex Trencart and Jacques Pelorce by scuba diving at 30-37 meters off Dakar, Senegal. That from Sao Tomé Island has been collected by Sandro Gori at 43 meters on small rounded stones at Minerio Reef. It is to be noted that at such depths "down time" is severely limited to avoid decompression stops on the diver's ascent. We also studied the type material from the Berlin Museum of *Drillia tripter* von Maltzan, 1883 as well as numerous specimens from the collec-

tions of Jacques Pelorce, Frank Boyer, José María Hernández Otero and the three authors; all of this material is from the Dakar area of Senegal.

Abbreviations:

MHNS Museo de Historia Natural "Luis Iglesias" University of Santiago de Compostela.
MNCN Museo Nacional de Ciencias Naturales, Madrid.
MNHN Muséum national d'Histoire naturelle, Paris.
ZMB Zoologisches Museum, Berlin
CAT collection of Alex Trencart, Paris
CFB collection of Frank Boyer, Sevran
CHO collection of José María Hernández, Gran Canaria
CJH collection of Juan Horro, Vigo
CJP collection Jacques Pelorce, Paris
CPR collection of Peter Ryall, Maria Rain
CSG collection Sandro Gori, Livorno
sp specimen with soft parts
s empty shell
j juvenile
LC length of the shell
DR length of the radular tooth

SYSTEMATICS

Family TURRIDAE Swainson, 1840
Subfamily CRASSISPIRINAE Morrison, 1966
Genus *Crassispira* Swainson, 1840

Type species (s. d.): *Pleurotoma bottae* Kiener, 1840

Crassispira tripter (von Maltzan, 1883) (Figs. 1-10)

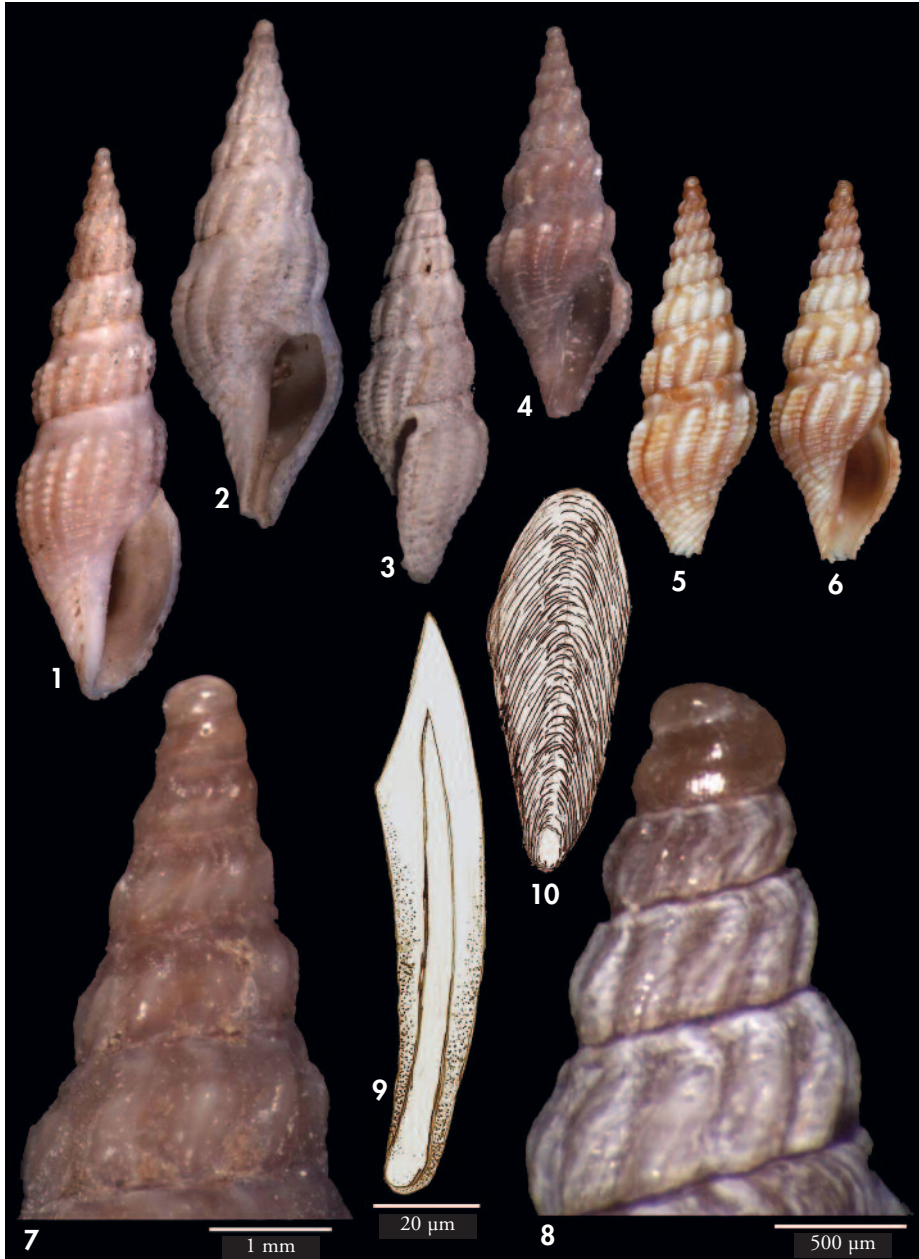
Type material: Two series of syntypes, references ZMB/Moll-37221, 4 dried shells (Figs. 1-3) and ZMB/Moll-112616, 2 dried shells (Fig. 4) this lot ex coll. Paetel (both leg. Von Maltzan).

Other material examined: 5 sp and 25 s, Cap Vert, Dakar (CJP); 5 sp from Dakar (MHNS); 3 sp, 5 s from Dakar (CHO); 19 s from Dakar (CFB).

Type locality: Gorée Island, Dakar, Senegal.

Description: NOLF (2008) has restated the main features of this species and we therefore refer readers to the original description as well as to this recent work for details of the shell. The shell is illustrated in the present work (Figs 1-6)

It is necessary to add a description of the protoconch (Figs. 7, 8) which is rounded, smooth, shiny, brown with a little more than one whorl, suture marked and there is a clear transition with the teleconch. As would be expected



Figures 1-10. *Crassispira tripter* (von Maltzan, 1883), Gorée, Senegal; 1-3: syntypes, 23.0, 20.5 and 15.6 mm, (ZMB/Moll-37221); 4: syntype, 14.3 mm (ZMB/Moll-112616, ex coll. Paetel); 5-6: shell, 14.2 mm(CHO); 7: protoconch of the syntype of fig. 4; 8: protoconch of a non-type shell (CFB). 9: marginal tooth of the radula; 10: operculum, 4 mm, from a specimen 17.1 mm.

Figuras 1-10. Crassispira tripter (von Maltzan, 1883), Gorée, Senegal; 1-3: sintipos, 23,0, 20,5 y 15,6 mm, (ZMB/Moll-37221); 4: sintipo, 14,3 mm (ZMB/Moll-112616, ex coll. Paetel); 5-6: concha, 14,2 mm(CHO); 7: protoconcha del sintipo fig. 4; 8: protoconcha de un ejemplar no tipo (CFB). 9: diente marginal de la rádula; 10: opérculo, 4 mm, de un ejemplar 17,1 mm.

ted with a species of direct development its size is a little variable ranging from 700 mm to 1 mm in diameter.

Dimensions: The largest syntype is 23 mm (Fig. 1); maximum size observed 24.56 mm (CFB), usually between 15-19 mm.

Animal: We studied an alcohol preserved specimen. The head is dark around the tentacles and in the base are the eyes. On the right dorsal part is a penis which is elongate and abruptly terminated by a flat small surface where a tiny appendix could be seen. The sole of the foot is cream.

Operculum: (Fig. 10) Elongated, almost straight, with a terminal nucleus.

Radula: (Fig. 9) Obtained from a specimen with shell of 17.1 mm. It is formed by two rows of marginal elongate teeth which total 50 in number. The tooth is sharp pointed with a small barb less than one third of the total length; an internal callous resembling a bone can be seen at the centre. The tooth is rather small (LC/DR= 142) and neither rachidian nor lateral teeth are present.

Distribution: Only known from the Dakar area of Senegal although NOLF (2008) mentions one specimen from Ivory Coast ex "Atlantidae" expedition.

Remarks: This is a well known west African species with many bibliographic references. VON MALTZAN (1883, 119, pl. 3, fig. 1) described it as *Drillia* and this generic placement was to be followed by all subsequent authors to date. They includes TRYON (1884: 208, pl. 30, fig. 80), POWELL (1966) and ARDOVINI AND COSSIGNANI (2004: 37, 220, 221).

KNUDSEN (1956) had some problems with the species placement confusing specimens from Gorée Bay with *Drillia ballista* von Maltzan, 1883. Recently NOLF (2008) has discussed this error and separated clearly *tripter* and *ballista* whilst again maintaining the generic assignment in *Drillia*.

POWELL (1966) noted some pertinent radula differences between the genera *Drillia* and *Crassispira* and we believe that he did not have the possibility to study the radula of *tripter* von Maltzan, 1883. He states that the genus *Drillia* bear a minute unicuspid central tooth with curved, comb-like lateral teeth behind the marginal ones whilst the genus *Crassispira* has only the marginal teeth. We must therefore conclude that the correct generic assignation for this species must be in *Crassispira* and not in *Drillia*.

Crassispira trencarti spec. nov. (Figs. 11-22)

Type material: Holotype (Figs. 11-13), sp in MNHN (ex CAT). Paratypes from Petit Thiouriba, 30 m, basaltic rocks, Dakar, Senegal, in the following collections: 1 sp (Figs. 14, 15) in MNCN (ex CJP); 2 s (Figs. 16, 17) in CJP. All from the type locality; other paratype (Figs. 18, 19), 1 j (Fig. 20) in MHNS from N'Gor, 14 m.

Type locality: Off N'Gor Island, Dakar, Senegal, 37 m.

Etymology: Named after Mr. Alex Trencart, Paris, who in recent years dived extensively in the type locality and found the holotype.

Description: Shell (Figs. 11-20) fusiform elongate and solid with a high spire. Protoconch (Fig. 21) of a little more than one smooth and shiny light brown whorl with a diameter of about 700 μ m. Teleoconch of the holotype with 6 ½ whorls, which exhibit prominent axial ribs that are a little opisthocline in shape, which begin (except on the first two whorls) below a subsutural depressed area, finishing on the lower suture; on the

last whorl the ribs fade below the periphery. Last whorl represents 40% of the total shell height, but in juvenile specimens the ratio can reach 50%; spiral sculpture of numerous small but prominent threads which continue up to the base. Aperture oval elongate, siphonal canal short and wide. Background colouration cream or light brown, with a narrow dark band on the suture; below this are irregularly spaced isolated oblique lines; on



Figures 11-21. *Crassispira trencarti* spec. nov. 11-13: holotype, 11.6 mm (MNHN); 14, 15: paratype, 7.8 mm (MNCN); 16, 17: paratype, 7.5 mm (CJP); 18, 19: paratype, 5.3 mm (MHNS); 20: paratype, 5.1 mm (MHNS); 21: protoconch of the holotype; 22: operculum.

Figuras 11-21. Crassispira trencarti spec. nov. 11-13: holotipo, 11,6 mm (MNHN); 14, 15: paratipo, 7,8 mm (MNCN); 16, 17: paratipo, 7,5 mm (CJP); 18, 19: paratipo, 5,3 mm (MHNS); 20: paratipo, 5,1 mm (MHNS); 21: protoconcha del holotipo; 22: opérculo.

the last whorl there is a cream band encompassing the widest part of the shell, bordered below by irregular but bold dark brown staining; the lower base is lighter and flecked with lighter and darker weak tubercles.

Dimensions: The holotype is 11.6 mm; the paratypes are smaller.

Animal: Not studied.

Operculum: (Fig. 22) Elongated with a terminal nucleus.

Distribution: Only known from the immediate area of Dakar, Senegal.

Remarks: *C. trencarti* spec. nov. was placed in the genus *Crassispira* because of the shell's general overall shape, the fact that the operculum has a terminal nucleus and it has close similarity to *Crassispira tripter* (von Maltzan, 1883).

Many of the other West African species are larger and wider and can easily be separated from the present species by the decollate spire. We comment on some similarly sized species from the area as follows:

Crassispira tripter (von Maltzan, 1883) is the closest species at first glance, however it is generally larger as already indicated, reaching more than 20 mm; it is also endemic to the area of Dakar and bears an elongate operculum with a terminal nucleus.

The protoconch of *C. tripter* is brown/mauve, depressed, bearing more numerous axial ribs on the teleconch and final whorls; the ribs are bold from the suture to the base and bend sharply to the left just above their midpoint; in the new species they only arise in a sub-sutural channel and drop perpendicular to the base. The general colour of the latter can be from light brown to orange to mauve/brown, often with some darker pattern on a lighter background

just below the suture and again as a narrow band at the top of the aperture, below the widest part of the final whorl.

Crassispira laevisculcata (von Maltzan, 1883) is longer and narrower and lacks spiral cords; colour is lighter.

Crassispira consociata (E.A. Smith, 1877) is generally larger and decollate, lacking any dark colouration, and juvenile specimens exhibit a multispiral protoconch.

Crassispira sacerdotalis Rolán and Fernandes, 1992 is narrower, of a uniform colour and with an angular protoconch (ROLÁN AND FERNANDES, 1992 fig. 4).

Crassispira pini Fernandes, Rolán and Otero-Schmitt, 1996 is also endemic to the Dakar area where it is found intertidally under rocks. It is smoother, uniform dark-brown in colour with weaker, more numerous tubercles. FERNANDES ET AL. (1995, fig. 28) illustrate a squat protoconch with strong radial lirations already in the third whorl which are quite different from our species.

Crassispira fuscobrevis Rolán, Ryall and Horro, 2007 can be of similar size with an intact protoconch but is endemic to south Angola, is stouter in shape and possesses a strong subsutural cord; the latter is generally uniform dark brown, or a little lighter in the sub-sutural area (i.e. the negative colour aspect of the species just described).

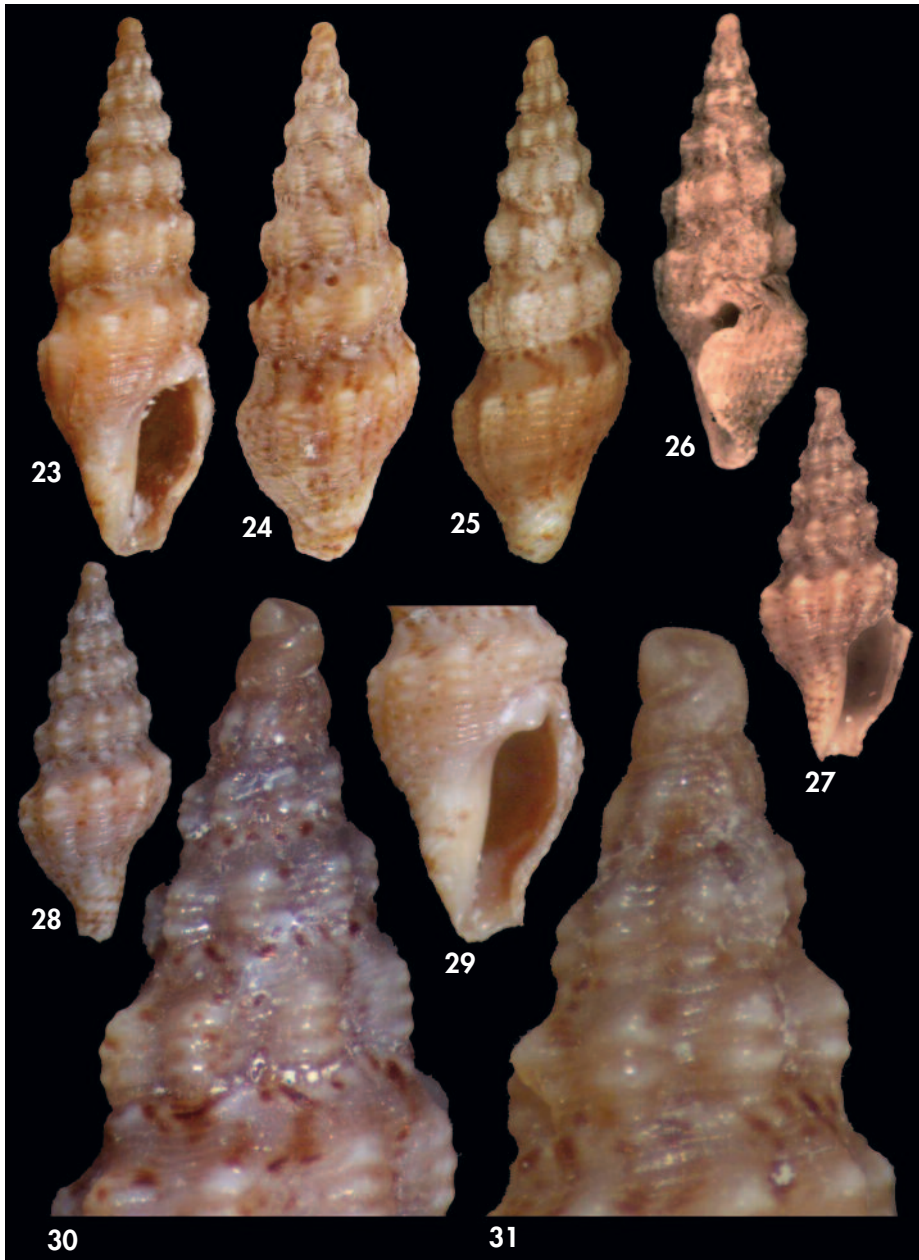
Addendum: After the submission of this paper, the authors obtained from Jacques Pelorce additional material of *Crassispira trencarti* spec. nov. and they were able to study its radula which confirms the generic attribution to *Crassispira* and the specific separation from *Crassispira tripter*. Both radular teeth are very similar, only different in the ratio, which in *Crassispira trencarti* has LC/DR = 133.

Crassispira sandrogorii spec. nov. (Figs. 23-31)

Type material: Holotype (Figs. 23, 24) in MNHN. Paratypes (all shells) in the following collections: MHNS (1, Figs. 27, 28); CPR (1, Fig. 14); CJH (1); and 4 more in CSG (Fig. 25, 26). All from the type locality.

Type locality: Minerio Reef, 00° 23' 01.6" N, 06° 46' 22.8" E, 43 m, on small rounded stones; São Tomé Island, Gulf of Guinea.

Etymology: Named after Mr. Sandro Gori, Italian malacologist, who in a recent collecting trip dived extensively in the type locality and collected all the material studied.



Figures 23-31. *Crassispira sandrogorii* spec. nov. 23, 24: holotype, 12,8 mm (MNHN); 25: paratype, 10,9 mm (CSG); 26: paratype, 10,5 mm (CPR); 27, 28 paratype, 8,2 mm (MHNS); 29: detalle de la abertura, paratipo (CSG); 30: detalle de la espira y protoconcha, paratipo (CSG); 31: protoconcha, mismo paratipo que la Figura 28.

Figures 23-31. Crassispira sandrogorii spec. nov. 23, 24: holotipo, 12,8 mm (MNHN); 25: paratipo, 10,9 mm (CSG); 26: paratipo, 10,5 mm (CPR); 27, 28 paratipo, 8,2 mm (MHNS); 29: detalle de la abertura, paratipo (CSG); 30: detalle de la espira y protoconcha, paratipo (CSG); 31: protoconcha, mismo paratipo que la Figura 28.

Dimensions: The holotype is 12.8 mm, the paratypes are smaller.

Description: Shell (Figs. 23-28) fusiform elongate, with a high spire, solid, the whorls stepped. Protoconch (Figs. 30, 31) of one and a half smooth whorls, having a depressed nucleus and a peripheral angulation; its diameter is about 700 μ m and the colour is light brown. Teleoconch of the holotype with 6-7 whorls, which exhibit prominent, wide and orthocline, or scarcely opisthocline, axial ribs, which (except on the first teleoconch whorls) begin below a subsutural depressed area, finishing on the lower suture; they are wider than their interspaces and on the last whorl fade below the periphery. The last whorl represents 40% of the total height, but in juveniles can reach 50% or more; spiral sculpture formed by numerous and well marked threads which continue up to the base. Aperture (Figs. 23, 29) oval elongate, with a prominent nodule on the upper part of the columella; siphonal canal short and wide, external lip fine with a deep sinus on the upper part, and strongly rounded anteriorly (Fig. 23). Background colouration yellowish-cream or light brown, with isolated dark narrow oblique axial lines irregularly scattered below the suture, and numerous dark spots appearing on the spiral thread on all the shell and down to the base.

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Animal and operculum: Both are unknown.

Distribution: Only known from the type locality and we believe it is probably endemic to São Tomé Island or the immediate island group.

Remarks: Although the specimens examined have been collected without animal we have placed it in the genus *Crassispira* as the shape agrees well with other species of this genus.

Crassispira sandrogorii spec. nov. can be differentiated from all other West African species by the very distinct angulate protoconch. Only *Crassispira sacerdotalis* Rolán and Fernandes, 1992, which is also endemic to this island, has a similar protoconch, but it is smaller, much shorter and mauve/black as against honey brown in our new species. The spire is shorter, the axial nodules are weaker, the shell is monochromatic dark brown and smaller in size (8 – 10 mm)), the spire is much shorter, the axial nodules are weaker, and the shell is monochromatic mauve or black against honey brown in our new species.

Our species has some resemblance to *C. trencarti* spec. nov. in respect of the randomly scattered dark pigmentations but as mentioned the protoconch is quite distinct, the shoulder is less evident, the colour darker with spiral bands, the spiral sculpture is finer and has more numerous threads.

conchologists and have allowed us to examine their material, and to Thomas Von Rintelen from Berlin Museum, who kindly sent us on loan the type material of *Crassispira tripter* (von Maltzan, 1883).

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