



Two new *Fusinus* (Gastropoda: Fasciolaridae) from the Canary Islands

Dos nuevos *Fusinus* (Gastropoda: Fasciolaridae) de las Islas Canarias

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ABSTRACT

Two new *Fusinus* Rafinesque, 1815, are described from the Canary Islands: the sinistral *F. saundersi* sp. nov. from Lanzarote, 3-15 m deep, is compared to *F. maroccensis* (Gmelin, 1791) and *F. elegans* (Reeve, 1848), both from the West African coast; the dextral *F. hernandezii* sp. nov. from northwest Gran Canaria, 150-200 m deep, is compared to *F. tenerifensis* Hadorn and Rolán, 1999 and *F. sectus* (Locard, 1897).

RESUMEN

Se describen dos nuevos *Fusinus* Rafinesque, 1815 de Canarias: el levógiro *F. saundersi* sp. nov. de Lanzarote se compara con *F. maroccensis* (Gmelin, 1791) y con *F. elegans* (Reeve, 1848), ambos de la costa oeste africana; el dextrógiro *F. hernandezii* sp. nov. del noroeste de Gran Canaria se compara con *F. tenerifensis* Hadorn y Rolán, 1999 y con *F. sectus* (Locard, 1897).

INTRODUCTION

The genus *Fusinus* is well represented in the Mediterranean fauna by a number of small to medium sized species. SABELLI, GIANNUZZI-SAVELLI and BEDULLI (1990) have mentioned 5 species (and some more synonyms) from the Mediterranean. Since that moment, new studies were realized on additional material and more species were described: BUZZURRO and RUSSO (2007) already mentioned 11 Mediterranean species and described 4 more. The presence of a paucispiral protoconch is evidence for a short dispersion range and a possible indication for endemism. This is the reason for which even after the work of BUZZURRO and RUSSO (2007), one more

species has been described (HADORN, AFONSO and ROLÁN, 2009). HADORN AND ROLÁN (1999) described *F. tenerifensis* from the Canary Islands and HADORN and RYALL (1999) described *F. bouchetti* from the Ibero-Moroccan Gulf and the Canary Islands from deep water.

Some species from the Canary Islands are usually recorded as being the same taxa as in the Mediterranean: *Fusinus pulchellus* (Philippi, 1844), *F. rostratus* (Olivi, 1792) and *F. syracusanus* (Linnaeus, 1758). *Fusinus bocagei* (P. Fischer, 1882) from deep water is the only species known to us that lives both in the Canary Islands and in Europe and West African coasts.

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The Canary Islands are an archipelago with a high number of endemics. In the last months, owing to the preparation of a book on Canary Islands molluscs, some of the populations collected from this archipelago and stored in the collections of José María Hernández, Francisco Déniz and the second author were studied. The present paper is the result of this study.

Abbreviations

MNCN: Museo Nacional de Ciencias Naturales de Madrid, Spain

MNHN: Muséum national d'Histoire naturelle, Paris, France

MHNS: Museo de Historia Natural, Santiago de Compostela, Spain (Coll. Emilio Rolán)

CFD: Collection of Francisco Déniz, Las Palmas, Gran Canaria, Canary Islands, Spain

CJH: Collection of José María Hernández, Gáldar, Gran Canaria, Canary Islands, Spain

CKF: Collection of Koen Fraussen, Aarschot, Belgium

CRH: Collection of Roland Hadorn, Röttenbach, Switzerland

dd: dead collected specimen

juv: juvenile specimen

lv: live collected specimen

SYSTEMATICS

Family FASCIOLARIIDAE Gray, 1853

Genus *Fusinus* Rafinesque, 1815

Fusinus Rafinesque, 1815: 145. Substitute name for '*Fusus* Lamarck 1799' [= *Fusus* Bruguière, 1789], non *Fusus* Helbling, 1779.

Type species: *Murex colus* Linnaeus, 1758, by typification of replaced name.

Sinistral species of *Fusinus* are usually placed in the genus *Sinistralia* H. and A. Adams, 1853 (type species by subsequent designation: *Murex maroccensis* Gmelin, 1791 [Recent, west Africa]). BOUCHET AND WARÉN (1985: 160) placed *Sinistralia* in synonymy with *Fusinus*. Records of *F. maroccensis* (Gmelin, 1791) and *F. elegans* (Reeve, 1848) from the Canary Islands are probably erroneously based on misidentification of the new species. Other known sinistral *Fusinus* are restricted to the Indian Ocean: *F. barclayi* (G.B. So-

werby, III, 1894) from Mauritius, *F. gallagheri* Smythe and Chatfield, 1981 from Oman and *F. somaliensis* Smythe and Chatfield, 1984 from Somalia. *F. depictus* (G.B. Sowerby, II, 1880) is a doubtful species which was described without locality. According to SMYTHE AND CHATFIELD, 1984 (p. 309) it is perhaps not a marine species. Anyway, *F. depictus* differs from *F. saundersi* sp. nov. by the obviously smooth surface with a distinct colouration, the conspicuously short spire and the ventricose body whorl.

Fusinus saundersi sp. nov. (Figs. 1-16)

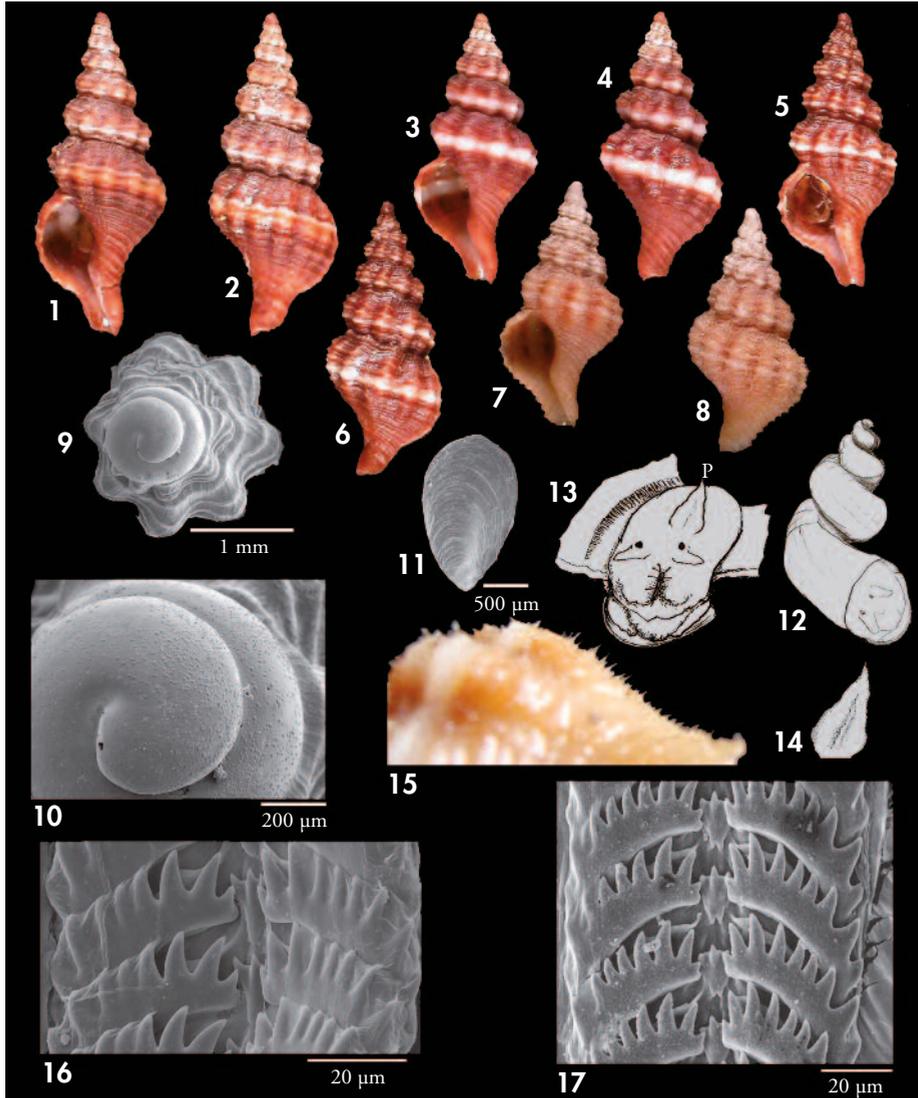
1978. Saunders, G.D.: 18-19 (as sinistral *Fusinus* from Lanzarote).

1982. Nordsieck, F.: 230, pl. 79, fig. 82.50 (as *Sinistralia maroccensis*).

1999. Hadorn, R. and E. Rolán, 1999: 44-45, fig. 21 (showing radula of *F. saundersi* as *F. (Sinistralia) maroccensis*).

2004. Ardovini, R. and T. Cossignani: 174 (as *Sinistralia maroccensis*).

Type material: Holotype (Figs. 1-2) (MNCN 15.05/51.016) (19.6 x 8.1 mm, lv). – Paratype 1 (Figs. 3-4) (MHNS) (16.7 x 7.8 mm, lv). – Paratype 2 (MHNS) (16.6 x 7.6, lv) – Paratype 3 (Figs. 5-6) CRH (17.0 x 7.4 mm, lv). – Paratype 4 CRH (14.7 x 6.2 mm, lv). – Paratype 5 CJH (14.8 x 6.3 mm, lv). – Paratype 6 CKF (19.0 x 8.1 mm, dd). Paratypes 1-5 from type locality, paratype 6 from the Canary Islands, northwest Gran Canaria, Sardina, 3 m deep.



Figures 1-13. *Fusinus saundersi* sp. nov. 1, 2: holotype (MNCN 15.05/51.016), Canary Islands, Lanzarote, Punta Quemada, 3-15 m deep, 19.6 mm; 3, 4: paratype 1 (MHNS), Canary Islands, Lanzarote, Punta Quemada, 3-15 m deep, 16.7 mm; 5, 6: paratype 3 (CRH), Canary Islands, Lanzarote, Punta Quemada, 3-15 m deep, 17.0 mm; 7, 8: shell (CRH), colour form, Canary Islands, northwest Gran Canaria, Sardinia, 15.3 mm; 9: protoconch; 10: microsculpture of the protoconch; 11: operculum, shell size 5.0 mm; 12: animal, drawing, shell size 13.5 mm; 13: detail of the soft parts (P= penis); 14: penis; 15: periostracum from a paratype; 16: radula, shell size 5.0 mm; 17: Radula, shell size 13.5 mm.

Figuras 1-13. *Fusinus saundersi* sp. nov. 1, 2: holotipo (MNCN, 15.05/51.016), Islas Canarias, Lanzarote, Punta Quemada, 3-15 m de profundidad 19,6 mm; 3, 4: paratipo 1 (MHNS), Islas Canarias, Lanzarote, Punta Quemada, 3-15 m de profundidad, 16,7 mm; 5, 6: paratipo 3 (CRH), Islas Canarias, Lanzarote, Punta Quemada, 3-15 m de profundidad, 17,0 mm; 7, 8: shell (CRH), forma de color, Islas Canarias, northwest Gran Canaria, Sardinia, 15,3 mm; 9: protoconcha; 10: microescultura de la protoconcha; 11: operculo, concha de 5,0 mm; 12: dibujo del animal, concha de 13,5 mm; 13: detalle de las partes blandas (P= pene); 14: pene; 15: periostraco de un paratipo; 16: rádula, concha de 5,0 mm; 17: rádula, concha de 13,5 mm.

Additional material: Canary Islands, Rolán Collection 15657 (MHNS), 2 lv, 1 dd juv. – Canary Islands, Gran Canaria, Las Palmas, Rolán Collection 16128 (MHNS), 1 dd. – Canary Islands, northwest Gran Canaria, Sardina, 15 m deep, CJH, 3 lv, 2 lv juv; CRH, 2 lv [in alcohol]. – Canary Islands, northwest Gran Canaria, Sardina, 15 m deep, CJH, 17 dd juv.

Type locality: Punta Quemada, Lanzarote, Canary Islands, 3-15 m deep.

Etymology: Named after G.D. Saunders, the first author who recorded shells of this species.

Description: Shell (Figs. 1-8) small (up to 25 mm), fusiform, sinistral, consisting of about 8 convex whorls (including protoconch) with a slight subsutural concavity. Light brown to dark brown, with a distinct white band at periphery. Usually lighter coloured on axial ribs, darker in the interspaces. A uniformly light brown colour form exists with darker brown interspaces between axial ribs. Spire angle broad (about 35-40°). Suture incised, wavy according to the axial ribs of preceding whorl.

Protoconch (Fig. 9) dark brown, glossy, consisting of 1 ½ to 1 ¾ whorls. Last part (¼ whorl) ornamented with 4-5 strong axial riblets, reaching from suture to suture, separated by broad, deep interspaces. Microsculpture (Fig. 10) of very small granules only in the non eroded material. Diameter 0.8-1.0 mm.

Axial sculpture consisting of broad, oblique axial ribs, traversing from below the subsutural concavity to the lower suture; most prominent at periphery, separated by narrow deep interspaces. 7 or 8 axial ribs on upper postnuclear whorls, 9 on antepenultimate, 10 or 11 on penultimate and 11-13 on body whorl. Fine axial growth lines are well visible.

Spiral sculpture consisting of broad, strong, rounded spiral cords, more prominent when crossing the axial ribs, weaker in the interspaces. Teleoconch beginning with 3 strong, light brown to white coloured primary spiral cords; the abapical cord strongest, the 2 abapical cords usually lighter coloured. From the second whorl onwards an additional fine spiral cord appears below the 3 central cords, soon becoming as strong as the subsutural cord. A fine secondary spiral cord intercalated between the primary cords on the penultimate and

body whorls. Some indistinct fine spiral cords of different strength visible in the subsutural area.

Aperture ovate, pinched at both ends, brown coloured, the white band well-visible inside the aperture. Outer lip thin, edge slightly crenulated, with numerous fine internal lirae. Parietal callus thin, almost obsolete, smooth. Columella smooth. Siphonal canal short, slightly curved to the right and slightly bending backwards, widely open. Aperture and siphonal canal together about $\frac{2}{5}$ of total shell length.

Periostracum (Fig. 15) fine, light brown, hairy.

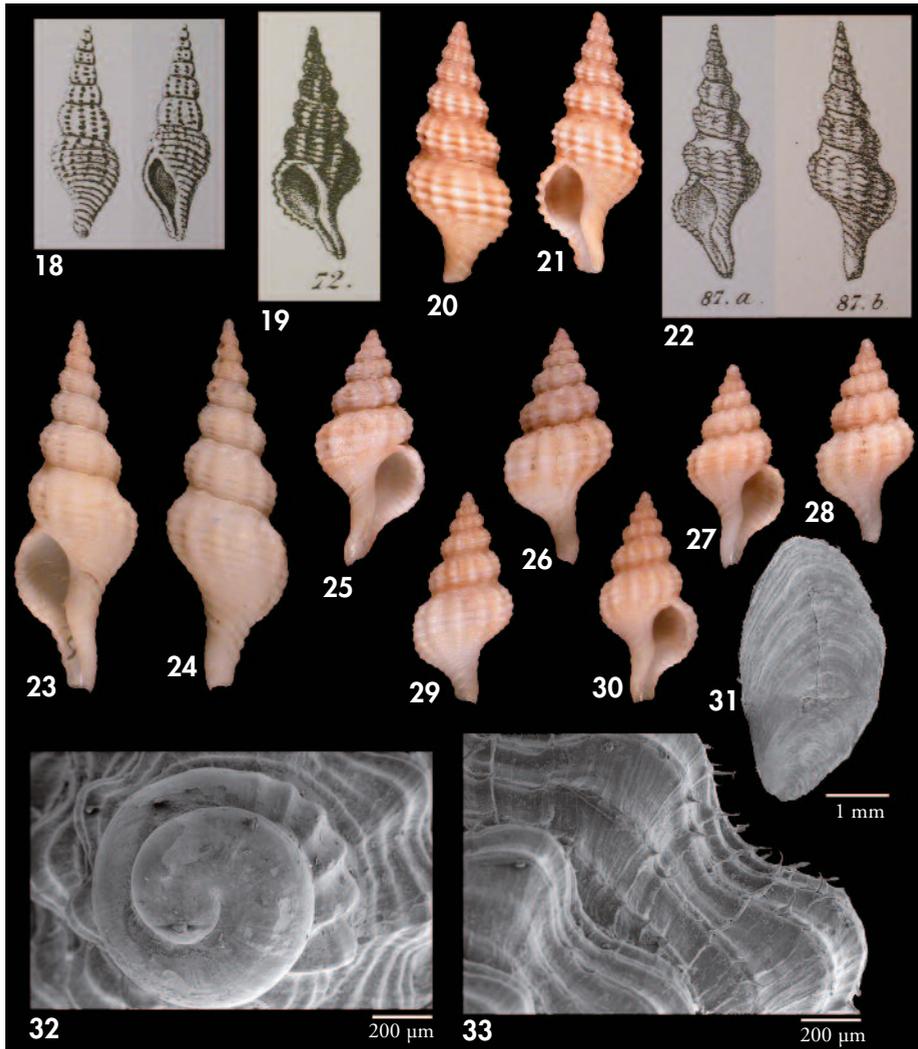
Operculum (Fig. 11) corneous, light brown, thin, ovate, filling aperture, adapically rounded, abapically with terminal nucleus, ornamented with fine concentric growth lines.

Radula (Figs. 16, 17) fasciolariid, typical for genus. Central tooth tricuspid, elongate, with broad convex base and narrow rounded tip. Lateral teeth strongly curved, broad, with 8-10 strong, broad, rather short cusps with incurved tips. At inner end with a small denticle.

Animal (Figs. 12, 13) red with small white spots, a large ctenidium with very numerous lamellae, placed at right side. The penis (Fig. 14) is placed behind the left eye and is lanceolate, leaf shaped, and relatively short.

Range and habitat: Canary Islands, reported from Gran Canaria, Tenerife and Lanzarote, live collected specimens 3-15 m deep.

Comparison: *F. elegans* (Reeve, 1848) was erroneously placed in synonymy with *Fusus maroccensis* (Gmelin, 1791) by TRYON, 1881 (p. 66). *F. elegans* (Figs. 22-24) differs from *F. maroccensis* (Figs. 18-21) by the white or cream coloured shell, the white protoconch, the weaker and less conspicuous but somewhat broader



Figures 18-21. *Fusinus maroccensis* (Gmelin, 1791). 18: original figures in CHEMNITZ, 1788, pl. 105, figs. 896; 19: original figure in REEVE, 1848, pl. 19, fig. 72; 20, 21: West Morocco, off Agadir, 17.9 mm (CRH). Figures 22-24. *Fusinus elegans* (Reeve, 1848). 22: original figures in REEVE, 1848, pl. 21, figs. 87a-b; 23, 24: Western Sahara, Cape Barba, 32 m deep, 26.9 mm (CJH). Figures 25-33. *Fusinus hernandezii* sp. nov., Canary Islands, northwest Gran Canaria, 28° 06' 46" N, 15° 48' 85" W, 150-200 m deep. 25, 26: holotype (MNCN 15.05/51.017), 16.4 mm; 27, 28: paratype 1 (MHNS), 14.0 mm; 29, 30: paratype 3 (CRH), 14.6 mm; 31: operculum; 32: protoconch; 33: detail of the periostracum.

Figuras 18-21. Fusinus maroccensis (Gmelin, 1791). 18: *figuras originales en CHEMNITZ, 1788, lám. 105, figs. 896*; 19: *figuras originales en REEVE, 1848, lám. 19, fig. 72*; 20, 21: *Marruecos oeste, frente a Agadir, 17,9 mm (CRH)*. *Figuras 22-24. Fusinus elegans* (Reeve, 1848). 22: *figuras originales en REEVE, 1848, lám. 21, figs. 87a-b*; 23, 24: *Sahara Occidental, Cabo Barba, 32 m de profundidad, 26,9 mm (CJH)*. *Figuras 25-33. Fusinus hernandezii* sp. nov., *Islas Canarias, noroeste de Gran Canaria, 28° 06' 46" N, 15° 48' 85" W, 150-200 m de profundidad*. 25, 26: *holotipo (MNCN 15.05/51.017), 16,4 mm*; 27, 28: *paratipo 1 (MHNS), 14,0 mm*; 29, 30: *paratipo 3 (CRH), 14,6 mm*; 31: *opérculo*; 32: *protoconcha*; 33: *detalle del periostracum*.

axial ribs and the finer, less conspicuous and more numerous spiral cords. The smooth subsutural concavity in *F. elegans* is only well visible in large adult specimens.

F. elegans (Figs. 22-24) from the Western Sahara differs from *F. saundersi* sp. nov. by the white to cream coloured shell, the white protoconch, the longer, more delicate and more slender spire, the whorls excavated below the suture (only in adult specimens), the weaker and less distinct white axial ribs, the

more close-set spiral cords and the shallower interspaces between them.

F. maroccensis (Figs. 18-21) from West Morocco differs from *F. saundersi* sp. nov. by the light brown to cream coloured shell, the light brown protoconch, the longer, more delicate and more slender spire, the more incised suture, the more convex whorls, the weaker, narrower and slightly oblique white axial ribs, the more prominent spiral cords and the deeper grooves between them.

Fusinus hernandezi sp. nov. (Figs. 25-33)

Type material: Holotype (Figs. 25-26) (MNCN 15.05/51.017) (16.4 x 7.7 mm, lv). – Paratype 1 (Figs. 27-28) (MHNS) (14.0 x 6.7 mm, lv). – Paratype 2 (CJH) (12.7 x 6.4 mm, lv). – Paratype 3 (Figs. 29-30) (CRH) (14.6 x 6.9 mm, lv).

Additional material: 2 juvenile specimens (6.4 mm / 5.7 mm) from type locality (CJH). 1 shell (14.5 mm) from Canary Islands, northwest Gran Canaria, 28° 02' 049" N, 15° 52' 580" W, 250 m deep (CFD).

Type locality: Northwest Gran Canaria, Canary Islands, 28° 06' 46" N, 15° 48' 85" W, 150-200 m deep.

Etymology: Named after José María Hernández who collected the studied material.

Description: Shell (Figs. 25-30) small (up to 17 mm), white with inconspicuously brownish tinged interspaces between axial ribs, fusiform, spire elongate but rather broad, consisting of about 7 convex whorls including protoconch. Suture constricted, incised, wavy according to the axial sculpture of preceding whorl.

Protoconch (Fig. 32) white to cream, bulbous, smooth, glossy, consisting of 1 ½ whorls, last part (¼ whorl) ornamented with 4-6 axial riblets reaching from suture to suture, becoming stronger and broader towards the end of protoconch. Diameter 0.8-1.0 mm.

Axial sculpture consisting of about 9 or 10 strong, broad axial ribs per whorl, 11 or 12 on body whorl, reaching from just below the upper suture to the lower suture, separated by rather deep narrow interspaces.

Spiral sculpture consisting of 5 rather fine, rounded, primary spiral cords, separated by broad interspaces and by 2 fine subsutural inconspicuous cords. An intercalated fine secondary

spiral cord appears from the fourth postnuclear whorl onwards.

Aperture round-ovate, white, with about 10 or 11 strong internal lirae. Outer lip crenulated. Parietal callus adherent, thin, inconspicuous, smooth, underlying spiral sculpture of the body whorl well visible through the callus. Columellar folds absent.

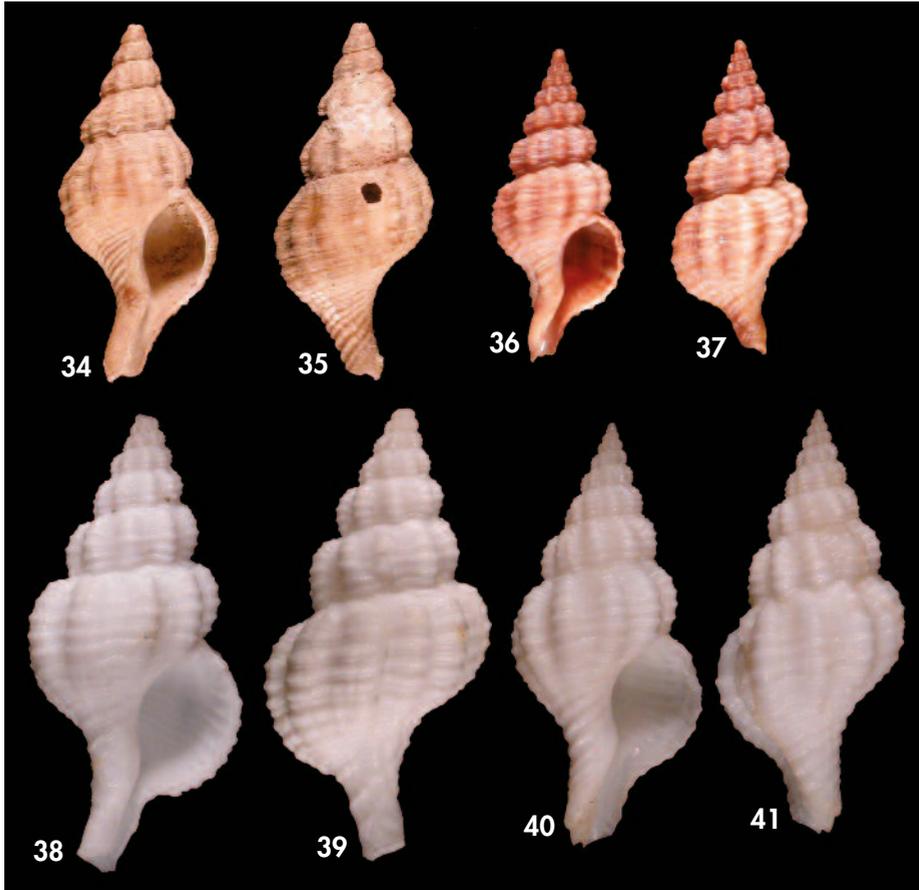
Siphonal canal about as long as aperture length, open, slightly curved to the left and backwards. Outer side ornamented alternating strong primary and fine secondary spiral cords. Aperture and siphonal canal together about ½ of total shell length.

Periostracum (Fig. 33) thin, transparent, light brown, slightly hairy.

Operculum (Fig. 31) corneous, thin, light brown, with terminal nucleus, filling aperture.

Animal and radula were not studied due to the scarcity of the material available.

Range and habitat: Known only from northwest Gran Canaria, Canary Islands, 150-250 m deep.



Figures 34, 35. *Fusinus sectus* (Locard, 1897), Holotype (MNHN), off Mauritania, 24.5 mm. Figures 36, 37. *Fusinus tenerifensis* Hadorn and Rolán, 1999, Canary Islands, La Palma, Santa Cruz de La Palma (CRH), 21.5 mm. Figures 38-41. *Fusinus* species, Canary Islands, northwest Gran Canaria. 38, 39: 180 m deep, 39.3 mm (CJH); 40, 41: 280 m deep, 36.9 mm (CFD).
 Figuras 34, 35. *Fusinus sectus* (Locard, 1897), Holotipo (MNHN), frente a Mauritania, 24,5 mm. Figuras 36, 37. *Fusinus tenerifensis* Hadorn and Rolán, 1999, Islas Canarias, La Palma, Santa Cruz de La Palma (CRH), 21,5 mm. Figuras 38-41. *Fusinus* species, Islas Canarias, noroeste de Gran Canaria. 38, 39: 180 m de profundidad, 39,3 mm (CJH); 40, 41: 280 m de profundidad, 36,9 mm (CFD).

Comparison: 2 large, dead, entirely white specimens (Figs. 38-41) were collected near the type locality (28° 07' N, 15° 50' W, 180 m deep, 39.3 x 19.1 mm, CJH / 28° 03' 280" N, 15° 53' 708" W, 280 m deep, 36.9 x 16.9 mm, CFD). Both shells resemble superficially *F. hernandezi* sp. nov., but differ by the much larger size, the smaller number (about 8-10 per whorl) of stronger and broader axial ribs and the wider interspaces

between them. Until more material is collected, we prefer to leave this distinct species undescribed.

F. sectus (Locard, 1897) (Figs. 34-35) differs from *F. hernandezi* sp. nov. in the less constricted suture, the less convex whorls, the smaller number of strong primary spiral cords with broader interspaces between them, the conspicuously large number of fine secondary spiral cords mainly on the shoulder but

also between the primary spiral cords, and the less conspicuous axial ribs.

F. tenerifensis Hadorn and Rolán, 1999 (Figs. 36-37) differs from *F. hernandezii* sp. nov. by the larger size, the more elongate spire, the brown coloured shell

with brown protoconch, the more pronounced axial sculpture, the deeper interspaces between the axial ribs, the smaller number of axial ribs, and the stronger primary spiral cords with strong intercalated secondary cords.

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