



Fusinus buzzurroi (Gastropoda: Fasciolariidae), a new species from Croatian coasts

Fusinus buzzurroi (Gastropoda: Fasciolariidae), una nueva especie de las costas croatas

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ABSTRACT

A new species of *Fusinus* from Croatian coasts of Dalmatia is described and figured. Type material was collected off Mljet Island, Croatia, at depths of 60 to 100 m in association with *Corallium rubrum* (Linnaeus, 1758), but the species was also recorded from other localities along Dalmatian coasts at different habitats and bathymetrical ranges.

RESUMEN

Se describe y figura una nueva especie de *Fusinus* procedente de la costa dálmata de Croacia. El material tipo se recolectó frente a la isla de Mljet, Croacia, en profundidades de 60 a 100 m asociado con *Corallium rubrum* (Linnaeus, 1758), pero la especie se encontró también en otras localidades de la costa dálmata, en habitats y profundidades distintos.

KEY WORDS: Gastropoda, Fasciolariidae, *Fusinus buzzurroi*, new species, Mediterranean Sea, recent.

PALABRAS CLAVE: Gastropoda, Fasciolariidae, *Fusinus buzzurroi*, nueva especie, Mediterráneo, reciente.

INTRODUCTION

The family Fasciolariidae J. E. Gray, 1853 is represented in the Mediterranean by two genera, *Fasciolaria* Lamarck, 1799 and *Fusinus* Rafinesque, 1815, belonging to the subfamilies Fasciolariinae J. E. Gray, 1853, and Fusininae Wrigley, 1927, respectively. Some specimens ascribable to *Fusinus* are commonly found along the Dalmatian coasts; our samplings pointed out the presence of several individuals of a peculiar *Fusinus*, collected in association with *Corallium rubrum* (Linnaeus, 1758) at different depths, depending on the locality: 60 to 100 m off the islands of

Mljet, Lastovo and Sušac, 35 to 60 m off Molat, Sestrunj, Škarda and Premuda, 80 to 90 m off Žirje. This fasciolarid also occurs in other habitats, being observed off Rivanj Island at a depth of 20 m living on rocky bottoms rich in gorgonians, associated with the bryozoan *Reteporella beaniana* (King, 1846) (Alen Petani, Zadar, pers. comm.). An accurate investigation of shell morphology of these specimens revealed that we are in the presence of a species new to science. The methods for the evaluation of protoconch whorls follow AARTSEN AND VERDUIN (1978).

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| Abbreviations: | CPR Collection Paolo Russo, Venice, Italy |
| CGB Collection Giovanni Buzzurro, Biassono, Milan, Italy | MNHM Museo di Storia Naturale di Milano, Milan, Italy |
| CJP Collection Jakov Prkić, Split, Croatia | d= diameter h = height |

SYSTEMATICS

Family FASCIOLARIIDAE J. E. Gray, 1853

Subfamily FUSININAE Wrigley, 1927

Genus *Fusinus* Rafinesque, 1815

Fusinus buzzurroi n. sp. (Figs. 1-3)

Type material: The holotype MNHM Mo 33638 is housed at Collezione Malacologica del Museo Civico di Storia Naturale di Milano (MNHM), Italy. The paratypes are the following: paratype A, 21.8 x 10.4 mm (CPR); paratype B, 21.4 x 10.7 mm (CPR); paratype C, 19.8 x 8.6 mm (CPR); paratype D, 18.4 x 8.9 mm (CPR); paratype E, 17.4 x 8.3 mm (CPR); paratype F, 22.4 x 10.2 mm (CJP); paratype G, 21.0 x 9.8 mm (CJP); paratype H, 19.4 x 8.7 mm (CJP); paratype I, 20.5 x 9.6 mm (CJP); paratype J, 17.5 x 7.8 mm (CJP); paratype K, 16.2 x 7.5 mm (CJP); paratype L, 17.4 x 8.2 mm (CGB); paratype M, 17.7 x 7.9 mm (CGB); paratype N, 19.0 x 8.4 mm (CGB); paratype O, 16.8 x 7.9 mm (CGB); all from the type locality.

Other material examined: About twenty specimens from the islands of Lastovo, Molat and Žrje (Dalmatia, Croatia).

Locus typicus: Mljet Island, Dalmatia (Croatia), in association with *Corallium rubrum*, at depths of 60 to 100 m.

Derivatio nominis: This species is named after our unforgettable and unforgotten friend Giovanni Buzzurro.

Description: Shell solid and fusiform, consisting of 1.3-1.4 protoconch whorls and 6-7 teleoconch whorls, rather small for genus, measuring up to 26.4 x 11.7 mm, usually from 16 to 22 mm in height.

Protoconch brownish, mamillate, striated by 6 obvious, equidistant spiral threads, with interspaces completely smooth, about 755 μ m in diameter, with an apical nucleus measuring 252 μ m across (Fig. 2).

Teleoconch whorls convex, slightly carinated by an obvious, but not very raised, keel, separated by well-marked, but not canalculated sutures. The sculpture consists of strong, raised and well-spaced axial ribs, 6-7 on each whorl, rarely 8, and closely spaced primary spiral cords, which are stronger where they pass over the axial ribs. The spiral sculpture also consists of secondary threads, which are more evident on the last two or three whorls.

The body whorl represents 60-64 % of the total shell height. Aperture oval, outer lip varicose, internally liriate with 7-10 elongate teeth, columellar callus thin, but obvious. A parietal tooth is well evident in the upper part of aperture. Some studied specimens show two or three columellar folds, more or less evident, which are caused by the underlying primary spiral cords, at the base of the columella. Siphonal canal short, broad and curved, slightly deviating to the left when seen in apertural view. Operculum corneous, brown in colour, with an apical nucleus.

The shell colour varies, usually is brownish, rarely whitish or pale beige, with spiral cords only slightly darker than the background colour, sometimes with a whitish keel. In some studied specimens the spiral cords are dark brown or reddish-brown, conspicuously darker than the background colour.



Figure 1. *Fusinus buzzurroi* n. sp., Mljet Island (Croatia), 60-100 m. A-C: holotype (MNHM Mo 33638), apertural, lateral and dorsal views, 26.4 x 11.7 mm; D: paratype A, apertural view, 21.8 x 10.4 mm; E: paratype I, apertural view, 20.5 x 9.6 mm; F: paratype D, dorsal view, 18.4 x 8.9 mm; G: paratype F, apertural view, 22.4 x 10.2 mm; H, I: paratype B, apertural and dorsal views, 21.4 x 10.7 mm.

Figura 1. *Fusinus buzzurroi* n. sp., Mljet Island (Croatia), 60-100 m. A-C: holotipo (MNHM Mo 33638), vista apertural, lateral y dorsal, 26,4 x 11,7 mm; D: paratipo A, vista apertural, 21,8 x 10,4 mm; E: paratipo I, vista apertural, 20,5 x 9,6 mm; F: paratipo D, vista dorsal, 18,4 x 8,9 mm; G: paratipo F, vista apertural, 22,4 x 10,2 mm; H-I: paratipo B, vista apertural y dorsal, 21,4 x 10,7 mm.

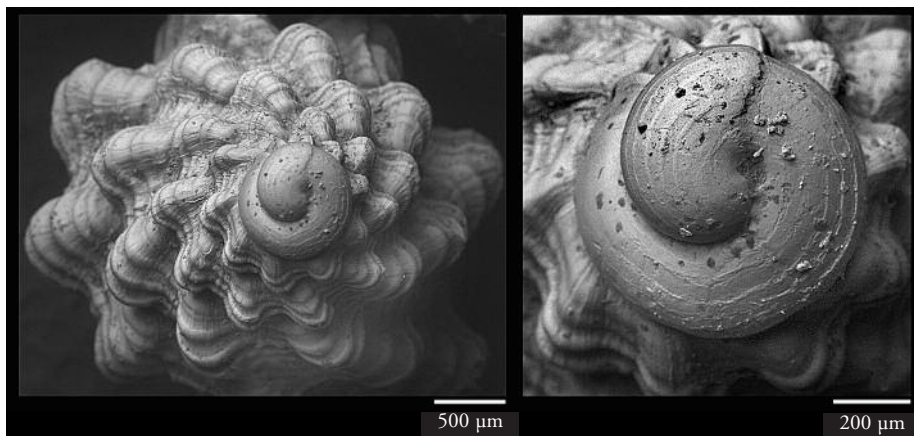


Figure 2. *Fusinus buzzurroi* n. sp., Mljet Island (Croatia), 60-100 m, protoconch.
 Figura 2. *Fusinus buzzurroi* n. sp., Mljet Island (Croatia), 60-100 m, protoconcha.

Holotype (Figs. 1A-1C) coloured pale beige, slightly darker between the axial ribs, consisting of 8.3 whorls, 1.3-1.4 of which belonging to the protoconch. There are 6 axial ribs on the body whorl, and 6-7 on the preceding whorls. There are 3 primary spiral cords on the first teleoconch whorl, 4 on the second and third whorls, 6 on the fourth to sixth whorls and 16 to 17 on the body whorl, the later ones reaching the base of siphonal canal. Secondary spiral cords are evident especially on the last two whorls, as well as along the siphonal canal. The body whorl represents 59.8% of the total shell height.

Geographic distribution: This species is presently known from the Croatian

coasts, its northern limit being represented by Premuda Island, and southern limit by Mljet Island.

Habitat: All the examined material was collected in association with *Corallium rubrum*, at depths of 35 to 100 m. *F. buzzurroi* is consistently found in the material collected by Dalmatian coral fishermen; it is more rarely recorded from rocky bottoms lacking red coral. At least one specimen was observed living in association with *Reteporella beaniana* (off Rivanj Island at a depth of 20 m), a bryozoan frequently associated with coralline assemblages. Our data suggest that this species does not live on either detritic or shallow rocky bottoms (0 to 15 m).

DISCUSSION

According to the recent revisions of Mediterranean species of the genus (BUZZURRO AND RUSSO, 2007, 2008), 15 species of *Fusinus* are known for the Mediterranean Sea:

F. alternatus Buzzurro and Russo, 2007 ex Settepassi

F. cretellai Buzzurro and Russo, 2008 (a replacement name for *Fusus crassus* Pallary, 1901)

F. dimassai Buzzurro and Russo, 2007

F. dimitrii Buzzurro and Ovalis, 2007

F. eviae Buzzurro and Russo, 2007

F. labronicus (Monterosato, 1884)

F. margaritae Buzzurro and Russo, 2007

F. parvulus (Monterosato, 1884)

F. profetai Nofroni, 1982

F. pulchellus (Philippi, 1844)

F. rolani Buzzurro and Ovalis, 2004

F. rostratus (Olivi, 1792)

F. rusticulus (Monterosato, 1880)

F. syracusanus (Linnaeus, 1758)

F. verrucosus (Gmelin, 1791)



Figure 3. A. *Fusinus buzzurroi* n. sp. 21.4 x 10.2 mm. B. *Fusinus dimitrii* Buzzurro and Ovalis, 2007 17.8 x 7.4 mm. C. *Fusinus rostratus* (Olivi, 1792) 43.8 x 16.6 mm. D. *Fusinus parvulus* (Monterosato, 1884) 13.4 x 7.4 mm.

Figura 3. A. *Fusinus buzzurroi* n. sp. 21,4 x 10,2 mm. B. *Fusinus dimitrii* Buzzurro and Ovalis, 2007 17,8 x 7,4 mm. C. *Fusinus rostratus* (Olivi, 1792) 43,8 x 16,6 mm. D. *Fusinus parvulus* (Monterosato, 1884) 13,4 x 7,4 mm.

F. rostratus, *F. syracusanus* and *F. buzzurroi* surely occur along the Dalmatian coasts. Recent investigations call into question the occurrence of two other species recorded from Dalmatia (*F. pulchellus* and *F. parvulus*), and no specimen has been recorded during the many years of research in this area by one of the authors (J. Prkić). The record of *F. pulchellus* in association with "corallo nobile" (*C. rubrum*) reported by BRUSINA (1866) is probably to be reinterpreted as a misidentification of the new species here described. The same goes for the record of *F. parvulus*, in that it may be confused with *F. buzzurroi* at some growth stages.

Fusinus buzzurroi can be compared to *F. rostratus* (Olivi, 1792), *F. dimitrii* Buzzurro and Ovalis, 2007, and *F. parvulus* (Monterosato, 1884) (see Figure 3). Conchometrical parameters (Table I) are reported for each species (following BUZZURRO AND RUSSO, 2007).

F. buzzurroi differs from *F. rostratus* (Fig. 3C) for the much smaller size, the stubbier shape, the smaller protoconch

(755 μ m against 910 μ m of North-Adriatic populations of *F. rostratus*). In *F. rostratus* the axial ribs start just after the suture in the adapical part (BUZZURRO AND RUSSO, 2007), while in *F. buzzurroi* they begin intersecting the ribs of the next whorl in the sutural area. *F. rostratus* shows a much longer siphonal canal. In *F. rostratus* there are some populations having a slight keel, others a well-developed keel, while others are quite acarinate (BOMBACE, 1971); *F. buzzurroi* has always a slight keel. In *F. buzzurroi* the average of conchometrical parameters h/d has a value of 2.14 against 2.65 in *F. rostratus* (Table I). In *F. rostratus* the habitat is more diversified, ranging from circalittoral (VIO AND DE MIN, 1994) to bathyal mud and white coral biocoenoses (DIEUZEIDE, 1950; CARPINE, 1965; BOMBACE, 1969), extending to a depth of 823 meters (D'AMICO, 1912). Records in association with red coral were never reported from Dalmatian coasts.

F. buzzurroi differs from *F. dimitrii* (Fig. 3B) in the larger size, the less elon-

Table I. Conchometrical parameters in *Fusinus buzzurroi*, *F. rostratus*, *F. dimitrii* and *F. parvulus* (h and d in mm).

Tabla I. Parámetros de la concha en *Fusinus buzzurroi*, *F. rostratus*, *F. dimitrii* y *F. parvulus* (h y d en mm).

| <i>Fusinus buzzurroi</i> | | | | <i>Fusinus dimitrii</i> | | | |
|--------------------------|-------|---------|------|-------------------------|-------|---------|------|
| No. | h | d | h/d | No. | h | d | h/d |
| 1 | 26.40 | 11.70 | 2.26 | 1 | 13.30 | 5.50 | 2.42 |
| 2 | 21.40 | 10.70 | 2.00 | 2 | 21.00 | 8.00 | 2.63 |
| 3 | 21.80 | 10.40 | 2.10 | 3 | 16.20 | 6.00 | 2.70 |
| 4 | 21.00 | 9.80 | 2.14 | 4 | 17.00 | 8.00 | 2.13 |
| 5 | 22.40 | 10.20 | 2.21 | 5 | 23.10 | 9.00 | 2.57 |
| 6 | 20.50 | 9.60 | 2.13 | 6 | 17.50 | 7.00 | 2.50 |
| 7 | 18.40 | 8.90 | 2.08 | 7 | 15.50 | 7.00 | 2.21 |
| 8 | 19.40 | 8.70 | 2.23 | 8 | 17.00 | 6.20 | 2.74 |
| | | average | 2.14 | | | average | 2.49 |

| <i>Fusinus rostratus</i> | | | | <i>Fusinus parvulus</i> | | | |
|--------------------------|-------|---------|------|-------------------------|-------|---------|------|
| No. | h | d | h/d | No. | h | d | h/d |
| 1 | 35.90 | 13.50 | 2.66 | 1 | 12.70 | 5.70 | 2.23 |
| 2 | 36.60 | 13.80 | 2.65 | 2 | 12.20 | 5.70 | 2.14 |
| 3 | 38.20 | 13.80 | 2.77 | 3 | 12.00 | 5.30 | 2.26 |
| 4 | 38.80 | 14.40 | 2.69 | 4 | 12.00 | 5.20 | 2.31 |
| 5 | 39.00 | 14.60 | 2.67 | 5 | 11.80 | 5.10 | 2.31 |
| 6 | 39.30 | 15.50 | 2.54 | 6 | 11.20 | 5.50 | 2.04 |
| 7 | 39.40 | 14.50 | 2.72 | 7 | 10.00 | 5.00 | 2.00 |
| 8 | 39.40 | 15.30 | 2.58 | 8 | 9.80 | 4.80 | 2.04 |
| | | average | 2.65 | | | average | 2.17 |

gated profile, the lower number of axial ribs (numbering 8-9 in *F. dimitrii* against 6-7 in *F. buzzurroi* on the body whorl), the keel (always absent in *F. dimitrii*), the axial ribs broader and more prominent with wider interspaces, the presence of an obvious secondary spiral sculpture. *F. buzzurroi* has a shorter and more widely open siphonal canal; the protoconch is marked by 6 spiral threads, while it appears to be smooth in *F. dimitrii*; the operculum is brown in colour, being yellowish in *F. dimitrii*. With respect to conchometrical parameters, in *F. dimitrii* the average of h/d has a value of 2.49 against 2.14 in *F. buzzurroi*. Habitat is similar.

F. buzzurroi differs from *F. parvulus* (Fig. 3D) in the stouter and heavier shell, the number of axial ribs, (6-7 in *F. buzzurroi* and 8-9 in *F. parvulus*), the presence of secondary spiral cords and a

keel, always absent in *F. parvulus*, the suture which is more marked in *F. parvulus*, the spire whorls more flattened in *F. parvulus*, the colour always uniform in *F. parvulus*, while in *F. buzzurroi* only the juveniles can be uniformly coloured, sometimes having spiral cords darker than background colour, the protoconch more raised in *F. parvulus*, more rounded in *F. buzzurroi*. Habitats and distributional ranges are different. Conchometrical parameters are similar.

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