

A new and elegant *Colus* Röding, 1798 (Gastropoda: Buccinidae) from off Portugal

Koen FRAUSSEN
Leuvensestraat 25, B-3200 Aarschot, Belgium
koen.fraussen@skynet.be

José ROSADO
Rua Bernardo Santareno, n.10, 5e esq., Feijo, 2810-034 Almada, Portugal
joseirosadoi@hotmail.be

Carlos M. L. AFONSO
CCMAR, Campus de Gambelas-Universidade do Algarve, 8005-139 Faro, Portugal
cmlafonso@ualg.pt

Bernardino MONTEIRO
Rua Marques Sa da Bandeira, 665, 4400-217 Vila Nova de Gaia, Portugal
bernardino.monteiro@tvitel.pt

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ABSTRACT. *Colus aurariae* sp. nov., a deep water species from off Portugal, is described. Differences in protoconch, spiral sculpture and morphology of the head of the animal serve as criteria to distinguish this species from *Colus jeffreysianus* (Fischer, 1868) and *Colus gracilis* (Da Costa, 1778).

INTRODUCTION

North Atlantic species in the genus *Colus* display a great variability in spiral sculpture and shell shape, which is well reflected in the rich synonymy. Bouchet and Warén (1985: 226-248) have listed and discussed the type material of the known species, forms and synonyms. In the present paper we confirm the high variability and agree with their included synonyms of *Colus jeffreysianus* (Fischer, 1868).

In December 2004, the third author found a peculiar shell among the usual *Colus* specimens in a supermarket at Algarve. Some research revealed that the lot was fished off Sesimbra. Active collectors and keen fishermen found more specimens, dredged off Peniche by commercial fishing vessels between 2006 and 2008. Some specimens with animal became available for a comparative study, allowing us to describe the species. We are glad to add this species to the N.E. Atlantic fauna.

Abbreviations

BH: collection Bart van Heughten, Netherlands
BM: collection Bernardino Monteiro, Portugal
CA: collection Carlos Afonso, Portugal
JR: collection José Rosado, Portugal
JV: collection Johan Verstraeten, Belgium
KBIN: Koninklijk Belgisch Instituut voor
Natuurwetenschappen, Belgium

KF: collection Koen Fraussen, Belgium
KP: collection Kyriakos Papavasileiou, Greece
MNHN: Muséum national d'Histoire naturelle, Paris, France
NHM: Natural History Museum, London, England
NRM: Naturhistoriska Riksmuseet, Swedish Museum of Natural History, Stockholm, Sweden

SYSTEMATICS

Family **BUCCINIDAE** Rafinesque, 1815
Genus *Colus* Röding, 1798: 117
Type species *Colus islandicus* Möhr, 1786, by subsequent designation (Dall, 1906: 294), North Atlantic.

Remarks. Most species belonging to the genus *Colus* display a great variability in almost all conchological features: spiral sculpture, thickness of shell, size, shape and periostracum. To a lesser degree there is variability in colour and size of protoconch. Protoconch morphology (the number of whorls and the way they are whorled) may be regarded as being specific.

A large number of synonyms is known for *C. jeffreysianus* and we refer to Bouchet & Warén (1985: 230) for a listing and brief discussion. Populations in the northern part of the range (France, England, ...) usually have a broad shell with pronounced primary spiral cords and a deep suture. The southern

populations are distinct from these, with slenderer and thinner shells, a fine spiral sculpture and a finer suture. Sufficient intermediate populations are found in between them to recognize both forms as the extreme units of a cline. A similar cline can be recognized between populations in shallow water (usually a thick shell) and deep water (smaller and thinner shells), however exceptions are found. Contrary to the high variability between different populations (ecophenotypes), single populations of *C. jeffreysianus* are quite uniform and show a low degree of polymorphism (variability within the population). We here figure shells (type material) of both the northern form (Fig. 11, *Fusus jeffreysianus*) and the southern form (Figs 6-9, *Neptunia torra* Locard, 1897) for comparison. In addition we figure the head of the animal of both forms which is evidence for their conspecific status (Figs 15, 18). We have no material for comparison to express an opinion about the status of *Neptunia pupoidea* Locard, 1897 (Fig. 10) which has a completely smooth shell.

Colus islandicus is showing a similar cline, usually with broad shells in the north (British islands to the Arctic) and slender shells in the south (Portugal, Morocco). This species however always has a big and well recognizable protoconch.

We collected *C. jeffreysianus* and *C. islandicus* off Portugal, in the area covered by the new species. We found records of *C. gracilis* from off Portugal listed in literature (see also Bouchet & Warén, 1985: 227-228) but we collected not any specimen in the area of *Colus aurariae* sp. nov. *C. gracilis* is common off the British Islands and in the North Sea. We found this species as south as off northern Spain. *C. gracilis* is showing a similar high variability to *C. jeffreysianus*. Northern forms have a darker shell and smoother sculpture (*Sipho glaber* Verkrüzen in Kobelt, 1876). Also in this species plenty intermediate populations are found. We figure the head of the animal of *C. gracilis* for comparison (Fig. 20).

***Colus aurariae* sp. nov.**
Figs 1-5, 12-14

Type material. Holotype (71.0 mm), Portugal, off Peniche, 200-500 m, MNHN 22064.

Paratype 1 (71.3 mm), with animal preserved, KF-5717.

Paratype 2 (77.9 mm), diameter protoconch: 2.2 mm, off Peniche, 400-600 m deep, on mud, taken by gill nets, 3/2007, JV.

Paratype 3 (83.1 mm), same locality, JV.

Paratype 4 (67.1 mm), off Peniche, 275-400 m, deep, 2/2007, JV.

Paratype 5 (80.1 mm), off Sesimbra, 300-400 m, CA.

Paratypes 6-13 (68.8-92.2 mm), off Peniche, JR.

Paratypes 14-15 (72.9-77.1 mm), same locality, BM.

Paratype 16 (82.1 mm), same locality, on mud, 400-500 m, 3/2007, BH.

Paratype 17 (87.4 mm), off Sesimbra, trawled, 200-400 m, 3/2008, BH.

Paratype 18 (62.2 mm), subadult, off Peniche, with animal preserved, MNHN-22065.

Paratype 19 (67.8 mm), subadult, same locality, with animal preserved, KBIN.

Paratypes 20-21 (50.5-54.0 mm), subadults, same locality, with animal preserved, KF-5718.

Paratype 22 (74.4 mm), same locality, JR.

Paratype 23 (81.1 mm), same locality, KF-5719.

Paratype 24 (74.4 mm), same locality, NRM.

Paratype 25 (72.2 mm), same locality, KP.

Material examined. Only known from the type material.

Type locality. Portugal, off Peniche, 200-500 m.

Range and habitat. Known from Portugal, off Peniche and off Sesimbra. Bathymetric range 200-600 m (all living specimens).

Description. Shell large, up to 87 mm in length, thin, rather fragile, semi transparent, pale brownish pink. Shape slender, with high spire. Siphonal canal moderately long for genus. Teleoconch with about 7 whorls; upper spire whorls slightly flattened adapically, forming a rather straight subsutural slope; penultimate and body whorls weakly convex. Suture distinct.

Protoconch pink, smooth, consisting of 1 1/2 whorls. First whorl big, rapidly increasing in size, diameter 2.4 mm. Last 1/2 whorl narrower. Transition to teleoconch marked by minute axial thread.

Figures 1-11

1-5. *Colus aurariae* sp. nov.,

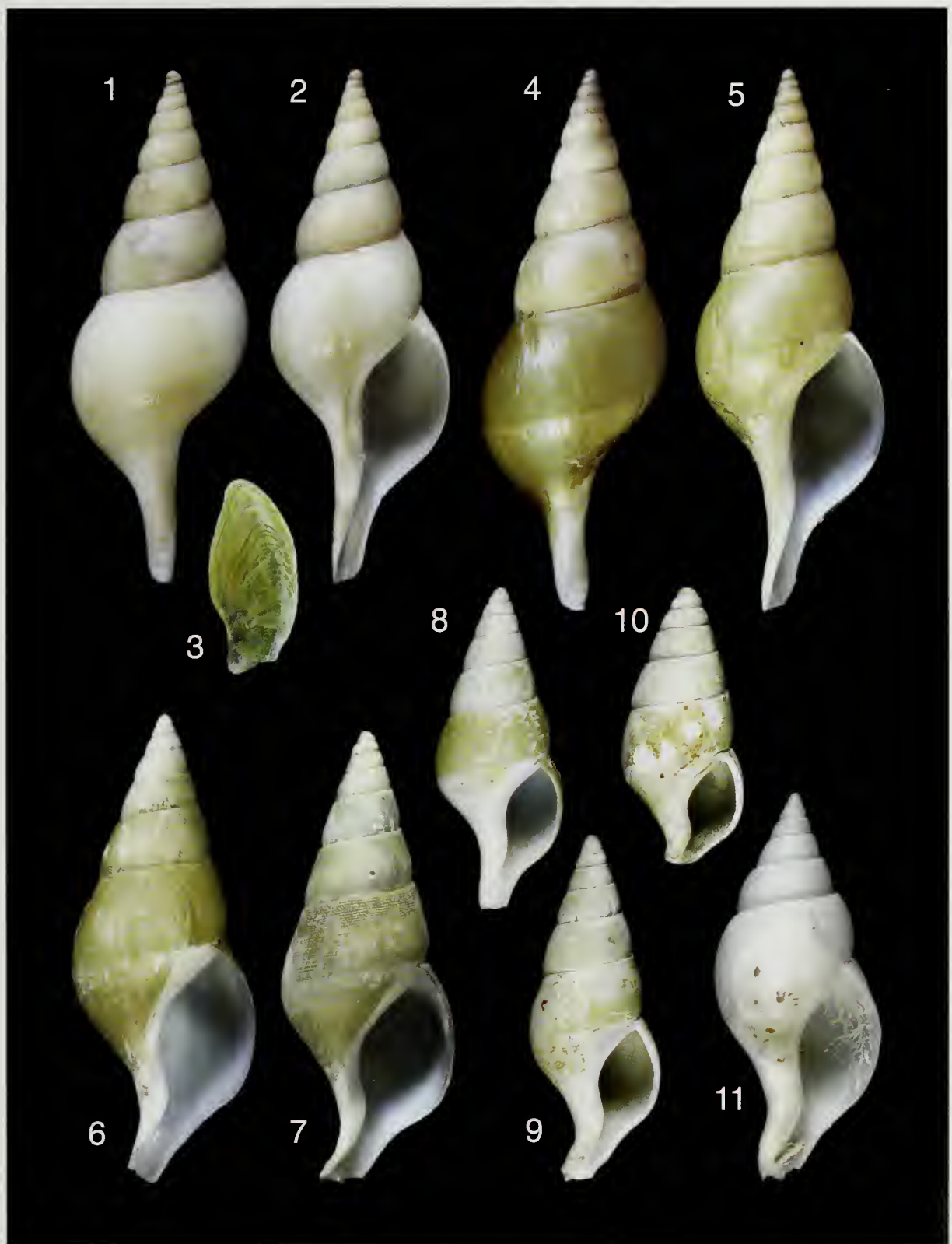
1-3. Holotype, 71.0 mm, operculum 17.7 mm, Portugal, off Peniche, 400-500 m, MNHN 22064; 4-5. Paratype 2, 77.9 mm, same locality, JV.

6-11. *Colus jeffreysianus* (Fischer, 1868)

6. 74.3 mm, Portugal, off Peniche, 400-500 m, KF-5805; 7. 77.7 mm, Portugal, off SW coast, 300-500 m, KF-5716;

8. Syntype of *Neptunia torra* Locard, 1897, 37.6 mm, MNHN 6606; 9. Syntype of *Neptunia torra* Locard, 1897,

41.1 mm, MNHN 6606; 10. Syntype of *Neptunia pupoidea* Locard, 1897, 22.1 mm, MNHN 6446; 11. Lectotype of *Fusus jeffreysianus*, 70.0 mm, MNHN 6453.



First teleoconch whorl with 5 or 6 fine spiral grooves. Interspaces broad, flat, smooth. Number of lines gradually increasing, fifth whorl with 12 fine, obscure spiral lines. Penultimate and body whorls almost smooth, with a few spiral lines on subsutural area and on base.

Axial sculpture absent, occasionally with some fine incremental lines.

Aperture semi-oval, slightly pinched apically, abapically gently narrowing towards siphonal canal without any constriction. Outer lip thin, fragile, edge smooth, fragile. Columella smooth, gently curved. Aperture and siphonal canal together 1/2 of total shell length, occasionally slightly smaller.

Periostracum thin, smooth, glossy, olive-green in colour, on adapical part of whorl darker, distinctly separated from paler abapical part.

Operculum thin, corneous, pale brown, slightly curved, nucleus terminal, pointed.

Animal creamy white. Head narrow, slender, rather triangular, tentacles long with broad base, eyes situated on head near base of tentacles.

Remarks. *Colus aurariae* sp. nov. is characterised by a slender, fragile, pinkish shell with almost smooth whorls, a moderately small protoconch with only slightly inflated whorls. The head of the animal is narrow: the eyes are situated near the base of the tentacles (instead of being on the tentacles).

Colus jeffreysianus (Fischer, 1868) (Figs 6-11, 15-19) is similar in shape but differs in the larger number of protoconch whorls (2 to 3) which are slowly increasing in size and gently whorled, the presence of (fine) spiral cords, the incised suture, the shorter siphonal canal and the hairy periostracum. The head of the animal is broad and short with the eyes situated on the tentacles.

Colus gracilis (Da Costa, 1778) (Figs 20-21) is similar in shape (upper spire whorls apically slightly flattened) but differs in the lower number of whorls compared to shell size, the larger protoconch with (usually) slightly inflated whorls and with the first

whorl slightly deviating from coiling axis, the usually pronounced spiral sculpture and the shorter siphonal canal. The head of the animal is much broader with broad but short tentacles, the eyes are situated on the tentacles in some distance from the head.

Colus gracilis f. *glaber* Verkrüzen in Kobelt, 1876 occurs in more northern waters (North Sea to Arctic) and has a smooth and brownish shell. This form differs from *C. aurariae* sp. nov. in the lower number of teleoconch whorls when compared to shell size, the white or pale columella and the shorter siphonal canal. We have no animal available for comparing the morphology of the head but we conclude from literature that this will be identical to *C. gracilis*.

Colus islandicus Möhr, 1786 (Figs 22-23) is similar in shape but differs in the larger protoconch with the first whorl inflated and deviated from coiling axis, the more convex teleoconch whorls and the spiral cords which are broader and lower in number. This is a northern species living mainly in boreal and arctic waters; shells from southern waters (Bay of Biscay, Portugal, northern Morocco) are slenderer and have a more pronounced spiral sculpture.

Etymology. *Colus aurariae* sp. nov. is named after the Roman character *auraria* (Latin, female singular), meaning "a woman who handcraft golden jewellery", which refers to the elegant shape of the shell in combination with its colour.

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Figures 12-23

12-14. *Colus aurariae* sp. nov.

12. Animal of paratype 1, distance between eyes 3.8 mm, KF-5717; **13.** Protoconch of holotype, scalebar 5 mm, MNHN 22064; **14.** Sculpture of holotype, scalebar 5 mm, MNHN 22064.

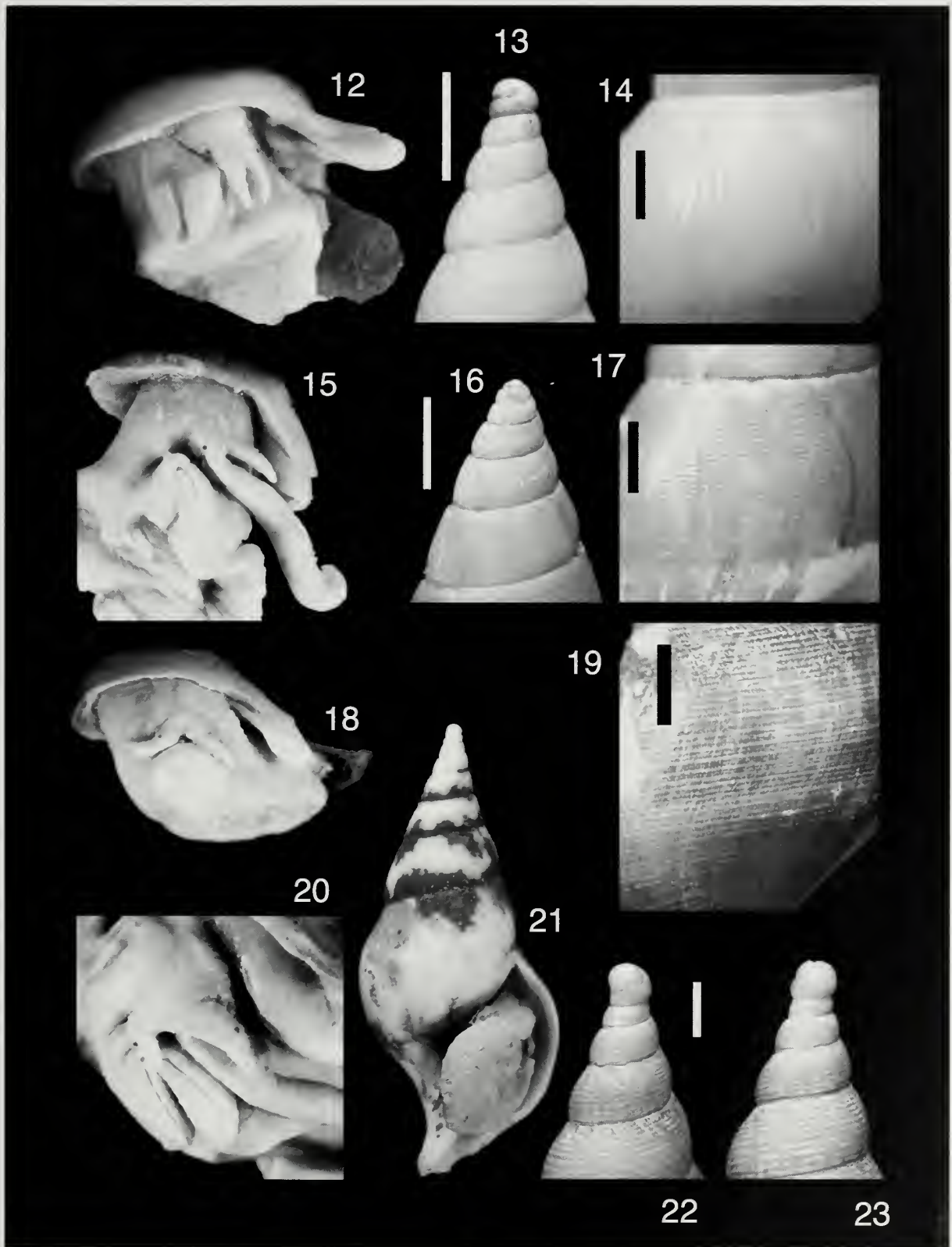
15-19. *Colus jeffreysianus* (Fischer, 1868)

15. Animal, distance between eyes 3.9 mm, France, south off la Rochelle, 133 m, KF-5250; **16.** Protoconch, scalebar: 6 mm, off Peniche, 400-500 m, same specimen as fig. 6, KF-5805; **17.** Sculpture, scale bar: 6 mm, same specimen; **18.** Animal, distance between eyes 5.7 mm, Portugal, off SW coast, 300-500 m, same specimen as fig. 7, KF-5716; **19.** Sculpture, scale bar 5 mm, same specimen.

20-21. *Colus gracilis* (Da Costa, 1778)

20. Animal, distance between eyes 12 mm, W England, Celtic Sea, 100 m, KF-5251; **21.** Shell, 81.1 mm, diameter protoconch 3.0 mm, W England, Celtic Sea, 100 m, KF-5251;

22-23. *Colus islandicus* Möhr, 1868, scalebar 10 mm, SE Ireland, off Waterford, 75-80 m, KF-1670.



REFERENCES

- Bouchet, P. & Warén, A. 1985. Revision of the northeast Atlantic bathyal and abyssal Neogastropoda excluding Turridae (Mollusa, Gastropoda). *Bolletino Malacologico*, suppl.1: 123-296.
- Dall, W. H. 1906. Early history of the generic name *Fusus*. *Journal of Conchology*, 11 (10): 289-297.
- Röding, P. F. 1798. Museum Boltenianum sive catalogus cimeliorum e tribus regnis naturæ quæ olim collegerat Joa. Fried Bolten, M. D. p. d. per XL. annos proto physicus Hamburgensis. Pars secunda continens conchylia sive testacea univalvia, bivalvia & multivalvia. pp. 1-199.