

Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay, with similar representatives from adjacent waters: part II

Frank Nolf¹ & Jean-Paul Kreps²

¹ Pr. Stefanieplein, 43/8 – B-8400 Oostende
frank.nolf@pandora.be

² Rode Kruisstraat, 5 – B-8300 Knokke-Heist
jpkreps@skynet.be

Keywords: Bay of Biscay, W. France, Belgian fishery, Gastropoda, molluscs.

Abstract: In this paper some of the most interesting gastropod molluscs, trawled by the Belgian fishery in the Bay of Biscay during the last decade, are briefly described yet comprehensively figured. A comparison is made with similar specimens from North Atlantic waters, the Mediterranean Sea or West Africa.

Abbreviations:

FN: private collection of Frank Nolf.

H.: height.

JPK: private collection of Jean-Paul Kreps.

JV: private collection of Johan Verstraeten.

L.: length.

PEMARCO: Pêche Maritime du Congo.

RBINS: Royal Belgian Institute for Natural Sciences, Brussels, Belgium.

Description of species:

TONNIDAE

***Semicassis saburon* (Bruguière, 1792)**

Plate XXII, Figs 161-164; Plate XXIII, Figs 165-168; Plate XXIV, Figs 169-172

= *Cassidea saburon* Bruguière, 1792

= *Cassis laevigatus* DeFrance, 1817

= *Cassis pomum* Schubert & Wagner, 1829

= *Cassis nucleus* Küster, 1857

= *Cassis abbreviata* Monterosato, 1878

= *Cassis platystomus* Brugnone, 1880

= *Cassis adansoni* Locard, 1886

= *Cassis saburoni* Locard, 1886

= *Semicassis miolaevigatus* Sacco, 1890

S. saburon is mainly known from the Mediterranean Sea (Plate XXIV, Figs 169-171), the Canaries, the Cape Verde Islands (Plate XXIV, Fig. 172) and West Africa extending to Angola (Plate XXIII, Figs 166-168). Seldom

reported from Western Europe, except northwards up to Vigo (NW Spain) (Rolán, 1983; Dautzenberg 1927). This species is not mentioned by Bouchet & Warén (1993) because it is not considered to be a deep-water species. It is rarely found in the Bay of Biscay (Plate XXII, Figs 161-164; Plate XXIII, Fig 165) and it lives on all kinds of bottoms of the continental plate. Specimens were collected by the Belgian fishery at depths of 90 to 160 m.

***Galeodea rugosa* (Linnaeus, 1771)**

Plate XXV, Figs 173-176; Plate XXVI, Figs 177-180; Plate XXVII, Figs 181-182

= *Buccinum rugosum* Linnaeus, 1771

= *Buccinum tyrrhenum* Gmelin, 1791

= *Cassidaria depressa* Philippi, 1844

This species differs from the similar *G. echinophora* (Linnaeus, 1758) by its regular and equally spaced ridges. *G. rugosa* is larger and has a lighter colour. Most specimens have a light shell, with a high spire. Knobs are generally absent, but sometimes traces of them are present on the backside of the shell. The exact identity of specimens of *Galeodea* that lack tubercles but are common also in shallow waters of the Adriatic is a much discussed topic in literature. These shells belong to *G. echinophora* var. *mutica* Tiberi, 1863 or *G. echinophora* var. *adriatica* Coen, 1914 (Bouchet & Warén, 1993; Settepassi, 1970). *G. rugosa* is less variable than *G. echinophora*, but nevertheless does it vary enough to create confusion. Specimens from the Ibero-Moroccan Gulf tend to develop an undulating keel on the shoulder of the body-whorl, forming indistinct nodules, but the general appearance of the shells is like that of other areas. We have remarked the same aberration in specimens of *G. keyteri* (Kilburn, 1975), trawled at a depth of 700 m in the Strait of Mozambique (Nolf & Verstraeten, 2003).

Usually the colour of the shell is creamy white but light brown or pinkish shells are not uncommon off the coast of NW Spain (Rolán, 1983) and W France. Full-grown ones can reach more than 120 mm in length. We show two giant specimens on Plate XXVII, Figs 181-182 measuring 156.5 mm and 135 mm respectively.

This species too is a rare mollusc in the Bay of Biscay (Plate XXV, Figs 173-176) at a depth of 90-160 m. None have been reported by Dautzenberg (1927) in the waters off W France, but Bouchet & Warén (1993) mention 23 samples with good data in 290-1000 m and 8 samples from old collections with less accurate data. Its range extends from the southern extremities of the British Isles (Plate XXVI, Figs 177-178), through the western part of the Mediterranean (Plate XXVI, Figs 179-180; Plate XXVII, Figs 181-182) as far south as southern Morocco. The southernmost record is 22°52' N. (Bouchet & Warén, 1993). *G. rugosa* lives on a muddy bottom in deep water between 70 and 700 m.

RANELLIDAE

***Charonia lampas* (Linnaeus, 1758)**

Plate XXVIII, Figs 183-184; Plate XXIX, Figs 185-187; Plate XXX, Figs 188-189; Plate XXXI, Figs 190-191; Plate XXXII, Figs 192-195; Plate XXXIII, Figs 196-197

- = *Murex lampas* Linnaeus, 1758
- = *Tritonium opis* Röding, 1798
- = *Murex gyrinoides* Brocchi, 1814
- = *Triton nodiferum* Lamarck, 1822
- = *Tritonium mediterraneum* Risso, 1826
- = *Triton ventricosum* Grateloup, 1833
- = *Triton ranelliforme* Sismoda, 1846
- = *Triton glabrum* Locard, 1886

Charonia lampas is scattered throughout most of the warm-temperate to subtropical waters, from the north-eastern Atlantic (from the British Channel Islands, SW England and SW Ireland) as far south as Angola, Madeira, the Canary Islands, the Cape Verde Islands and into the western Mediterranean Sea, but rarely on the Azores. Further south it extends to Southern Africa, Tristan da Cunha and the Indian Ocean, the south-western Pacific (southern Queensland to SW Australia and New Zealand, the Philippines, Japan and Taiwan). It is not present in the Eastern Pacific waters of the American continent, but it is occasionally found along the Brazilian coast. It is also mostly absent from the eastern Mediterranean, where it appears to have been replaced by *Charonia variegata* (Lamarck, 1816). In the East Atlantic the northern limit of

reasonably common occurrence is on the southern part of the Bay of Biscay (Plate XXVIII, Figs 183-184; Plate XXIX, Figs 185-187). Only sporadically specimens are caught further north (between Lands End and the Isles of Scilly, the Channel Islands).

This rather variable and widespread species has received an enormous number of names, probably exceeded only by those applied to *Ranella olearia* (Linnaeus, 1758). It is beyond the purpose of this paper to enumerate all these synonyms, but we would like to mention and illustrate some of the better known forms formerly recognised as separate subspecies (see Henning & Hemmen, 1993, amongst others):

- ***Charonia lampas lampas* (Linnaeus, 1758)**

Plate XXVIII, Figs 183-184; Plate XXIX, Figs 185-187; Plate XXX, Figs 188-189; Plate XXXI, Figs 190-191

This is the largest and heaviest form which belongs to the Eastern Atlantic and western Mediterranean waters. Specimens measure from 120 to 350 mm, but shells of about 450 mm are also known (Franchini, 1974). It lives in deeper waters in the northern part of its range. It may be collected from extreme low tide and as deep as 700 m, on rocky and less solid bottoms such as gravel, sand and mud. In the East Atlantic the animals feed on the starfish *Echinaster sepositus* (Retzius, 1783) and on scallops. The shells from the Bay of Biscay are often covered with specimens of *Neopycnodonte cochlear* (Poli, 1795) (Plate XXIX, figs 185-186).

The colour of the shells very often contains tinges of green, probably caused by algae. The shells from the British Channel are generally completely ruined with encrustations (Plate XXIX, fig. 187).

- ***Charonia lampas pustulata* (Euthyme, 1889)**

Plate XXXII, Fig. 192

- = *Nyctilochus alfredensis* Bartsch, 1915
- = *Cymatium weisbordi* Gibson-Smith & Gibson-Smith, 1970

Range: Southern Africa (Cape of Good Hope to Natal, Tristan da Cunha, Indian Ocean).

From 90 to 220 mm, heavy but squat and coarsely sculptured with strong varices and huge shoulder tubercles. Strong teeth inside the outer lip. Basic colour dull brownish, bluish- and purplish-tinged and patterned with dark brown markings. Columellar plicae whitish on the dark inner wall.

It differs from the Australian form *C. lampas rubicunda* (Perry, 1811) by its stronger nodules and more developed columellar plicae.

- ***Charonia lampas rubicunda* (Perry, 1811)**
Plate XXXII, Figs 193-195; Plate XXXIII, Figs 196-197

- = *Triton australe* Lamarck, 1822
- = *Charonia lampas* var. *euclia* Hedley, 1914
- = *Charonia capax* Finlay, 1927
- = *Charonia capax euclioides* Finlay, 1927
- = *Charonia euclia instructa* Iredale, 1929
- = *Charonia powelli* Cotton, 1957

Range: Southwestern Pacific (Western Australia to southern Queensland, New Caledonia and around both mainlands of New Zealand).

From 120 to 160 mm, up to 260 mm (var. *capax*). Typical specimens are squat and low-spined. Spiral sculpture very coarse but shoulder nodules very weak or absent. Aperture subcircular, columella smooth except for a few weak anterior plicae and one parietal ridge. Colour pinkish to orange.

There are intergrades between this form and the form described as *C. powelli* by Cotton (1957) from Western and South Australia. The latter is more elongate, pale cream coloured to dark brownish and bears stronger nodules and more numerous columellar plicae.

The form described as *C. capax* by Finlay (1927) lives off New Zealand, Stewart Island and the Kermadec Islands. This shell looks very much like *C. lampas lampas*, with wider primary cords, finer secondary cords and stronger nodules. It interbreeds with *C. lampas rubicunda* in northern New Zealand. So, we can assume all *Charonia* populations in the southwestern Pacific are varieties of the single subspecies *C. lampas rubicunda* (Perry, 1811).

- ***Charonia lampas sauliae* (Reeve, 1844)**
Plate XXXII, Figs 198-199

- = *Charonia sauliae macilenta* Kuroda & Habe in Habe, 1961.

Range: Japan, Taiwan.

Up to 245 mm. Shell rather light, slender and high-spined. Shoulder nodules narrow, but prominent. Varices very low. Aperture bearing a smooth columellar wall and a weakly dentate outer lip. Usually brightly coloured with dark brown patches on a pale cream, orange to brownish background, sometimes suffused with pale pink or lilac.

It is now established (Beu, 1998) that the depth at which the animals live, causes differences among shells of *Charonia lampas* from various

localities. The geographic races have been named on the basis of shallow-water forms, whereas specimens from relatively deeper water (ca 100-300 m) are all closely similar to each other all around the world. That means that differences are caused by ecophenotypic rather than to genetic variations. For instance light coloured, slender, weakly sculptured shells are typical of deep water anywhere. In the future it will turn out that the use of geographic subspecies names serves little purpose in most of the widely distributed RANELLIDAE. The use of the abovementioned names is no more than an interim measure, reflecting an uncertain status.

***Ranella olearia* (Linnaeus, 1758)**

Plate XXXIV, Figs 200-202; Plate XXXV, Figs 203-206; Plate XXXVI, Figs 207-210

- = *Murex olearium* Linnaeus, 1758
- = *Murex reticularis* Born, 1778 [non Linnaeus, 1758]
- = *Ranella gigantea* Lamarck, 1816
- = *Ranella ranina* Lamarck, 1816
- = *Gyrina maculata* Schumacher, 1817
- = *Murex mulus* Dillwyn, 1817
- = *Murex gyrinus* de Blainville, 1825 [non Linnaeus, 1758]
- = *Murex boveus* Risso, 1826
- = *Triton parmense* Sismonda, 1842
- = *Ranella bronni* Michelotti, 1847
- = *Ranella incerta* Michelotti, 1847
- = *Ranella miocenica* Michelotti, 1847
- = *Argobuccinum pertuberculiferum* Bellardi in Sacco, 1872
- = *Mayena multinodosa* Bucknill, 1927
- = *Ranella ostenfeldi* Iredale, 1937
- = *Ranella barcellosi* Matthews, Rios & Coelho, 1973

This is another species which is nearly cosmopolitan distributed: the western and central Mediterranean Sea, the eastern Atlantic (from the British Isles, the Bay of Biscay, the Canary Islands and St. Helena) and the western Atlantic from Brazil to Uruguay, the Azores (where specimens do not exceed 80 mm), Namibia (Plate XXXVI, Figs 207-208), South Africa (Plate XXXVI, Fig. 209), Tristan da Cunha, the Indian Ocean (Réunion, St. Paul and Amsterdam Island) and the southwestern Pacific (New Zealand) (Plate XXXVI, Fig. 210). Records from SW Great Britain are probably the result of successful veliger settlement during particularly warm summers as there is no evidence of permanent breeding populations in British waters (Saunders, 1980).

Shells grow up to 160-210 mm, exceptionally up to 240 mm (Poppe & Goto, 1991) and are found at depths ranging from 20 to 400 m.

The Belgian fishery caught specimens in the Bay of Biscay at a depth of 90-160 m (Plate XXXIV, Figs 200-202).

Shells from deep waters in the East Atlantic (*Ranella gigantea* var. *atlantica* Monterosato, 1890: Plate XXXVI, Figs 207-208) tend to be smaller and lighter with a coarser spiral sculpture consisting of many small nodules. However, Atlantic and Mediterranean specimens do not differ enough to justify recognition of separate subspecies. Generally shells are creamy white with large brown blotches, occasionally uniformly white or brown in colour.

***Cymatium corrugatum* (Lamarck, 1816)**

Plate XXXVII, Figs 211-214; Plate XXXVIII, Figs 215-220; Plate XXXIX, Figs 221-224; Plate XL, Figs 227-231

= *Triton corrugatum* Lamarck, 1816

= *Triton affine* Deshayes, 1833

This species is restricted to the eastern Atlantic: the Bay of Biscay (Plate XXXVII, Figs 211-212), NW Africa (Plate XXXIX, Fig. 222), Madeira (Plate XXXIX, Fig. 221), the Canary Islands (Plate XXXIX, Figs 225-226), Senegal (Plate XXXIX, Figs 223-224) as far south as Namibia (Plate XL, Figs 227-231) and in the Mediterranean where it is more abundant in the western part (Plate XXXVII, Figs 213-214; Plate XXXVIII, Figs 215-220).

Shells measure from 70 to 125 mm. However, a dwarf form described by Pallary (1900) as *Simpulum corrugatum* var. *minor* and var. *minor-obesum* (35-65 mm) (Nordsieck & Talavera, 1979) lives in the Canaries. The animals live on any type of bottom between 15 and 200 m.

Saunders (1980) ascertained that Mediterranean specimens are white in colour, and coastal Atlantic shells have brown markings on the varices and on the teeth of the outer lip. We do not agree with this conclusion as shells with tinged teeth are frequently obtained from very different localities both in the eastern Atlantic and in the Mediterranean Sea. Eventually this characteristic is caused by the depth at which the shells were caught. In connection with this statement we refer to the very special specimens obtained by Belgian fishermen (PEMARCO-fishery) from a depth of 300 m off Cape Fria, Namibia, SW Africa from 1963 to 1973. One of these shells was already earlier illustrated by Saunders (1980) ('Angola' - sic). They are of a remarkable light weight, with no varices or only traces, completely white and with a large

aperture. The teeth in the outer lip are also white as well.

MURICIDAE

Subfamily Coralliophilinae Chenu, 1859 [= Magilidae Thiele, 1925; = Rapididae Kuroda, 1941]

***Coralliophila squamosa* (Bivona Ant. in Bivona And., 1838)**

Plate XLI, Figs 232-236

= *Fusus squamosus* Bivona Ant. In Bivona And., 1838

= *Murex aluoides* de Blainville, 1830 [non Olivi, 1792]

= *Fusus lamellosus* de Cristofori & Jan in Philippi, 1836 [non Borson, 1821]

= *Fusus squamulosus* Philippi, 1836 [non Deshayes, 1835]

= *Pseudomurex perfectus* P. Fischer, 1882 (nomen dubium)

= *Pseudomurex ruderatus* Monterosato in Sturany 1896

= *Fusus craticulatus* var. *pianosana* Sturany, 1896

This species has always been known under the names *aluoides* de Blainville, 1830 and *lamellosus* de Cristofori & Jan in Philippi, 1836. However, these two names appeared to be preoccupied so Bouchet & Warén (1985) selected a neotype from Corsica that fairly well agrees with the figure of Bivona.

Range: From the Bay of Biscay (collected by Belgian fishermen at about 160 m) (Plate XLI, figs 232-234), along the Iberian Peninsula into the Mediterranean and south to NW Africa. It also lives in the Canaries and the Azores. In the Mediterranean Sea (Plate XLI, figs 235-236) it is found at depths between 100 and 600 m, often associated to *Anemonia sulcata* (Pennant, 1777). Records from a depth of 900 m are known. Atlantic specimens appear to have a broader and more open siphonal canal. Moreover they reach a larger size (maximum about 50 mm instead of about 40 mm and an average size of 35 mm in the Mediterranean). *C. squamosa* is not frequently found in the Bay of Biscay.

BUCCINIDAE

***Neptunea contraria* (Linnaeus, 1771)**

Plate XLII, Figs 237-239; Plate XLIII, Figs 240-242

= *Murex contrarius* Linnaeus, 1771

= *Fusus sinistrorsus* Deshayes, 1830

= *Fusus perversus* Kiener, 1840

This species lives from the south of the Bay of Biscay (Plate XLII, Figs 237-238), along the Atlantic coasts of the Iberian Peninsula (Plate XLII, Fig. 239) towards Morocco in the south (Plate XLIII, Figs 240-242).

Specimens were collected by the Belgian fishery at a depth of 100-160 m, south of La Rochelle in the Bay of Biscay. These shells are generally thicker and heavier than those from NW Africa, which are probably caught in deeper waters.

Neptunea contraria is the only neptune in the Atlantic waters showing normal sinistral chirality, while *Neptunea laeva* Golikov, Goryachev & Kantor, 1987 is the only Pacific one. It is distinguished from the rarely collected left-

handed *Neptunea antiqua* (Linnaeus, 1758) by its rough spiral sculpture, its slenderer form and its more southerly range.

Acknowledgements: First of all we are grateful to all the fishermen from Zeebrugge who placed so many interesting shells from their yearly (from June to August) trawling in the Bay of Biscay at our disposal. Emile Utterwulghé (ship owner from Zeebrugge, Belgium) kindly provided useful information about the Belgian fishery in the French Atlantic waters and Johan Verstraeten (Oostende, Belgium) was helpful in loaning a few samples of shells. David Monsecour (Aarschot, Belgium) and Kelly Surmont (Oostende, Belgium) carefully corrected the English version.

References:

- Beu, A.G., 1998. Indo-West Pacific Ranellidae, Bursidae and Personidae (Mollusca: Gastropoda). A monograph of the New Caledonian fauna and revisions of related taxa. *Mémoires du Muséum National d'Histoire Naturelle. Tome 178. Résultats des Campagnes MUSORSTROM, Volume 19.* Paris. 255 pp., pls 1-70.
- Bouchet, Ph. & Rocroi, J.-P., 2005. Classification and Nomenclator of Gastropod Families. *Malacologia*, **47**(1-2): 1-397.
- Bouchet, Ph. & Warén, A., 1985. Revision of the Northeast Atlantic bathyal and abyssal Neogastropoda excluding Turridae (Mollusca, Gastropoda). *Bollettino Malacologico*, Suppl. 1. pp.123-296.
- Bouchet, Ph. & Warén, A., 1993. Revision of the Northeast Atlantic bathyal and abyssal Mesogastropoda. *Bollettino Malacologico*, Suppl. 3. pp. 579-840.
- Bucquoy, E., Dautzenberg, Ph. & Dollfus, G., 1882-1886. Les Mollusques marins du Roussillon, t. I: Gastéropodes. 570 pp., 66 plates.
- CLEMAM. Check List of European Marine Molluscs. <http://www.somali.asso.fr/clemam>
- Dautzenberg, Ph., 1891. Campagne scientifique du yacht l' «Hirondelle» en 1886: Contribution à la faune malacologique du Golfe de Gascogne. *Mémoires de la Société Zoologique de France*, IV, 604-619, pl. XVI-XVII.
- Dautzenberg, Ph., 1927. Mollusques provenant des campagnes scientifiques du Prince Albert Ier de Monaco dans l'Océan Atlantique et dans le Golfe de Gascogne. *Résultats des Campagnes Scientifiques accomplies sur son yacht par Albert Ier Prince Souverain de Monaco*, Fascicule **LXXII**: 1-400, 9 pls.
- Dautzenberg, Ph. & Fischer, H., 1896. Campagnes scientifiques du Prince de Monaco. Dragages effectués par l' «Hirondelle» et la «Princesse Alice», 1888-1895. Gastéropodes. *Mémoires de la Société Zoologique de France*, IX, 395-498, pl. XV-XXII.
- Dautzenberg, Ph. & Fischer, P.-H., 1925. Les Mollusques marins du Finistère et en particulier de la région de Roscoff. *Travaux de la Station Biologique de Roscoff*, fasc. 3, 180 pp. Paris.
- Franchini, D., 1974. Mediterranean Conchology. Familia Cymatidae (sic!). *La Conchiglia*, **6**(61): 3-9, figs.; Roma.
- Fraussen, K. & Terryn, Y., 2007. A Conchological Iconography. The Family BUCCINIDAE. Genus *Neptunea*. ConchBooks, Hackenheim. 166 pp., 154 pls.
- Fretter, V. & Graham, A., 1981. The prosobranch Molluscs of Britain and Denmark. Part 6. Cerithiacea, Strombacea, Hipponicacea, Calyptraeacea, Lamellariacea, Cypraeacea, Naticacea, Tonnacea, Heteropoda. *The Journal of Molluscan Studies*, Suppl. 9: 285-363. London.
- Henning, T. & Hemmen, J., 1993. *Ranellidae and Personidae of the world*. Christa Hemmen, Wiesbaden. 263 pp., pls 1-30.
- Kreipl, K., 1997. *Recent Cassidae*. Wiesbaden. 151 pp.
- Millard, V., 2008. *Classification of Mollusca. A classification of Worldwide Mollusca*. Vol. 1. Fourth Edition. Clareinch. 1026 pp.
- Nolf, F. & Kreps, J.-P., 2008. Comparison of some interesting molluscs, trawled by the Belgian fishery in the Bay of Biscay, with similar representatives from adjacent waters: part I. *Neptunea*, **7**(3): 1-33.

- Nolf, F. & Verstraeten, J., 2003. Diepwatersoorten van Mollusca in de Straat van Mozambique, Deel II. *Neptunea*, **2**(4): 1-26.
- Nordsieck, F., 1982. *Die europäischen Meeres-Gehäuseschnecken (Prosobranchia)*. 2. Auflage. G. Fischer, Stuttgart. 540 pp.
- Nordsieck, F. & Talavera, F. G., 1979. *Moluscos marinos de Canarias y Madera (Gastropoda)*. 208 pp., 46 pls. Madrid. Aula de Cultura de Tenerife.
- Pallary, P., 1900. Coquilles marines du littoral du département d'Oran. *J. conch.*, **48**(3): 211-422, 18 figs, pls. 6-8. Paris.
- Poppe, G.T. & Goto, Y., 1991. *European Seashells* (vol. I). Verlag Christa Hemmen. Wiesbaden. 352 pp.
- Poppe, G.T. & Goto, Y., 1993. *European Seashells* (vol. II). Verlag Christa Hemmen. Wiesbaden. 221 pp.
- Repetto, G., Orlando, F. & Arduino, G., 2005. *Conchiglie del Mediterraneo*. Torino. 392 pp.
- Rolán, E.M., 1983. *Moluscos de la Ria de Vigo. I, Gasteropodos*. Santiago de Compostela. 383 pp.
- Rolán, E., 2005. *Malacological Fauna from the Cape Verde Archipelago*. Part 1. Polyplacophora and Gastropoda. Hackenheim. 455 pp.
- Saunders, G.D., 1980. A reconciliation of available information on the superfamily CYMATIACEA in the waters around Europe, in the Mediterranean Sea, and the Eastern Atlantic Ocean. Part I. *La Conchiglia*, **12**(134-135): 3-10, figs. Roma.
- Settepassi, F., 1970. *Atlante Malacologico. Molluschi marini viventi nel Mediterraneo*, volume I. Museo di Zoologia, Roma. (Title page dated 1967, indication "finito di stampare: dicembre 1970" on last printed page).
- Settepassi, F., 1971. *Atlante Malacologico. Molluschi marini viventi nel Mediterraneo*, volume II. Museo di Zoologia, Roma.
- Sneli, J.-A., Schiøtte, T., Jensen, K.R., Wikander, P.B., Stokland, Ø. & Sørensen, J., 2005. The Marine Mollusca of the Faroes. *Annales Societatis Scientiarum Færoensis*, Supplementum XXXII, 190 pp. Tórshavn.
- Vanwalleghem, R., Verhaeghe, Y. & Swinnen, F., 2007. Seashells taken by Belgian trawlers in the eastern Bay of Biscay, Western France. *Xenophora*, **120**: 10-14.
- Vaught, K.C., 1989. *A classification of the living Mollusca*. American Malacologists. Melbourne, Florida. xii + 189 pp.



Bay of Biscay

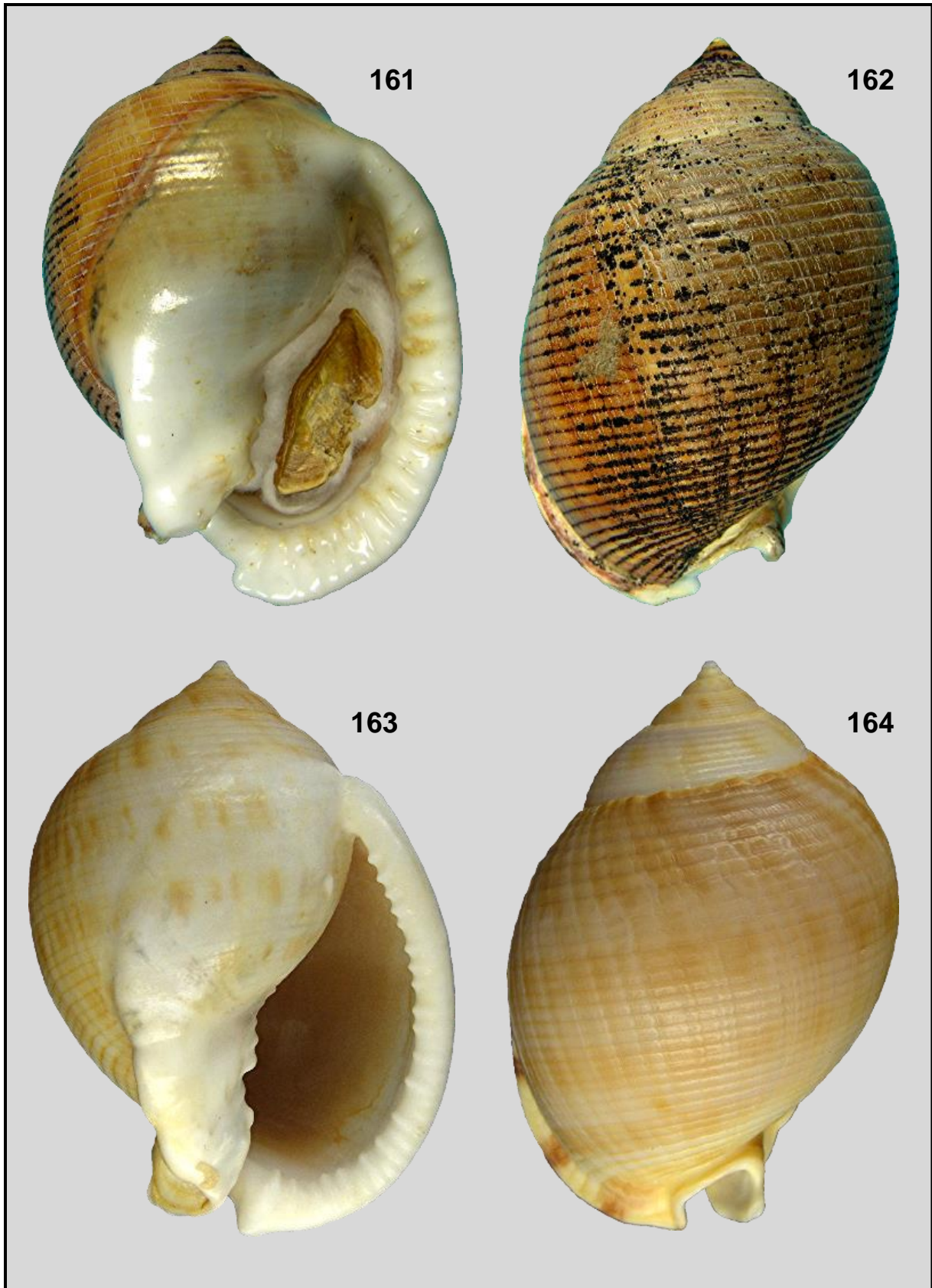


Plate XXII. Figs 161-164: *Semicassis saburon* (Bruguère, 1792); 161-162: Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 90-160 m. 66.0 mm. JPK (RBINS); 163-164: South of La Rochelle, W France. 45°18' N., 01°46' W. Trawled by Belgian fishermen (O.231-trawler) at a depth of 120 m. June 1999. 67.46 mm. FN.

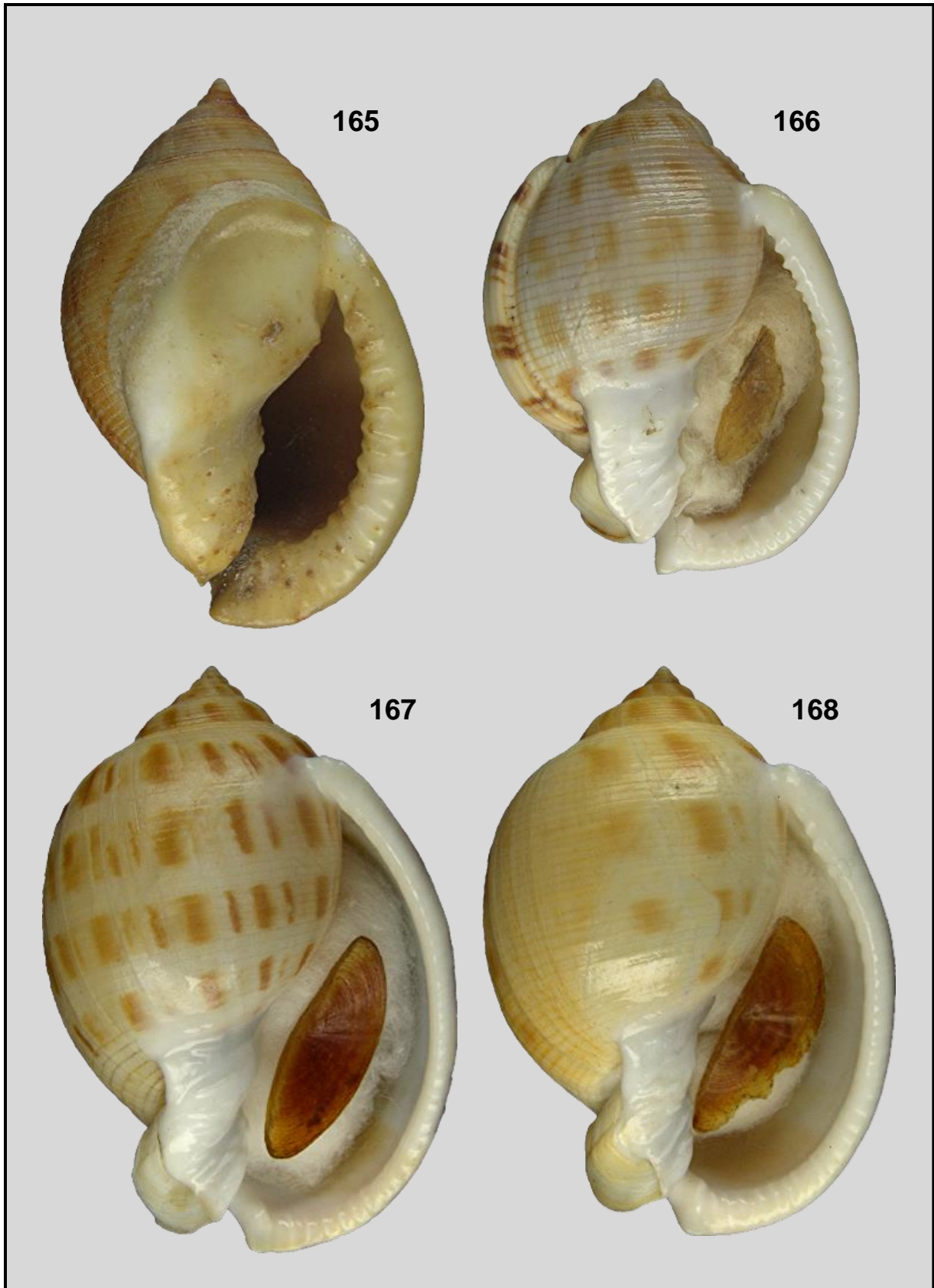


Plate XXIII. Figs 165-168: *Semicassis saburon* (Bruguère, 1792). FN; 165: South of La Rochelle, Bay of Biscay, W France. 45°18' N., 01°46' W. Trawled by Belgian fishermen (O.231) at a depth of 120 m. June 1999. 75.56 mm; 166-168: Quicombo, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 70 m. 1968; 166: 59.95 mm; 167: 74.71 mm; 168: 69.42 mm.

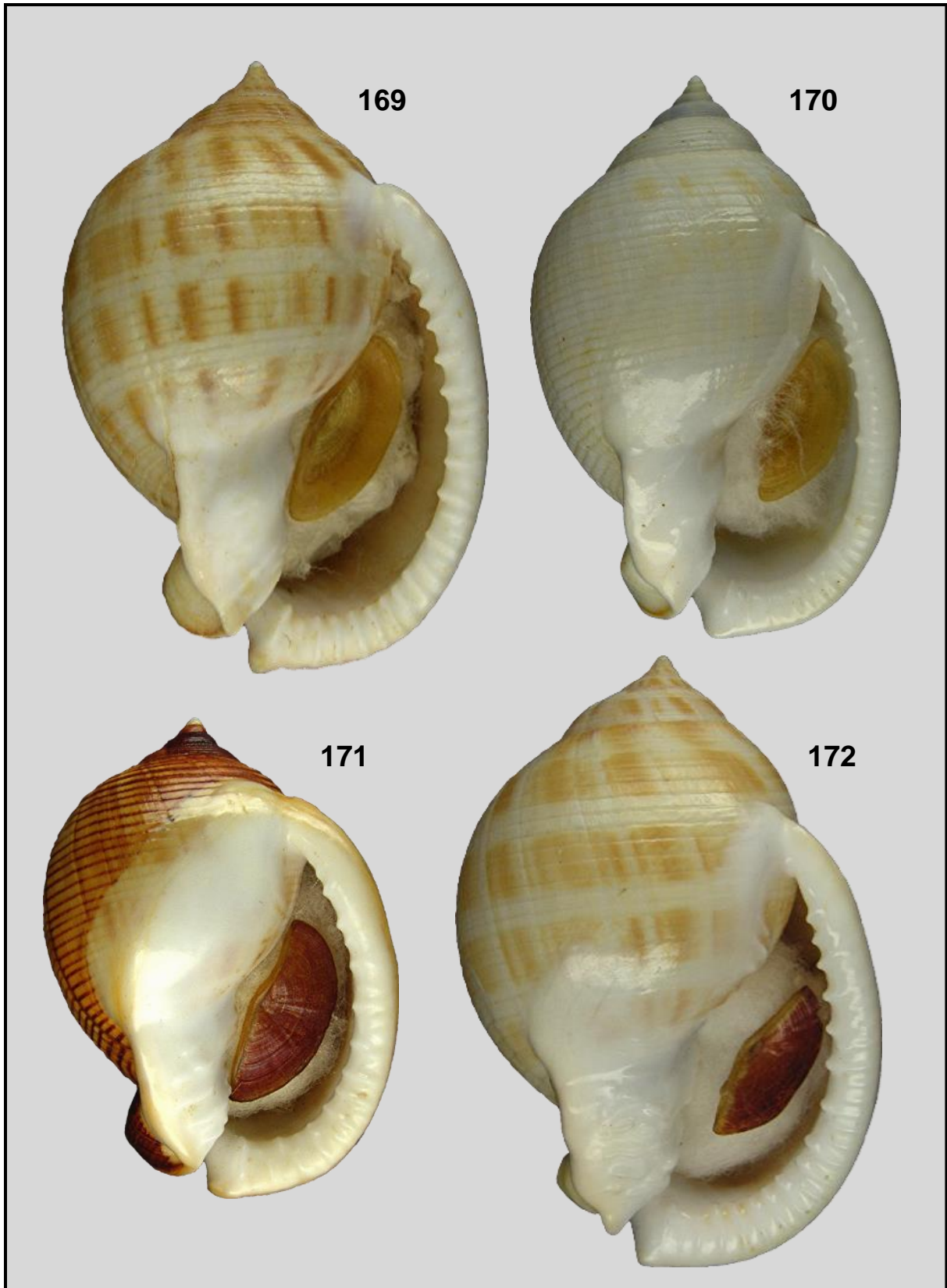


Plate XXIV. Figs 169-172: *Semicassis saburon* (Bruguière, 1792). FN; 169-170: Off Ibiza, Balearic Islands, Spain. Dredged by fishermen; 169: 74.03 mm; 170: 72.17 mm; 171: Off Almeria, Spain. Trawled by fishermen. 1976. 54.83 mm; 172: Cape Verde Islands, W Africa. Trawled by 'The Folgar' at a depth of 70 m. May 1968. 73.79 mm.

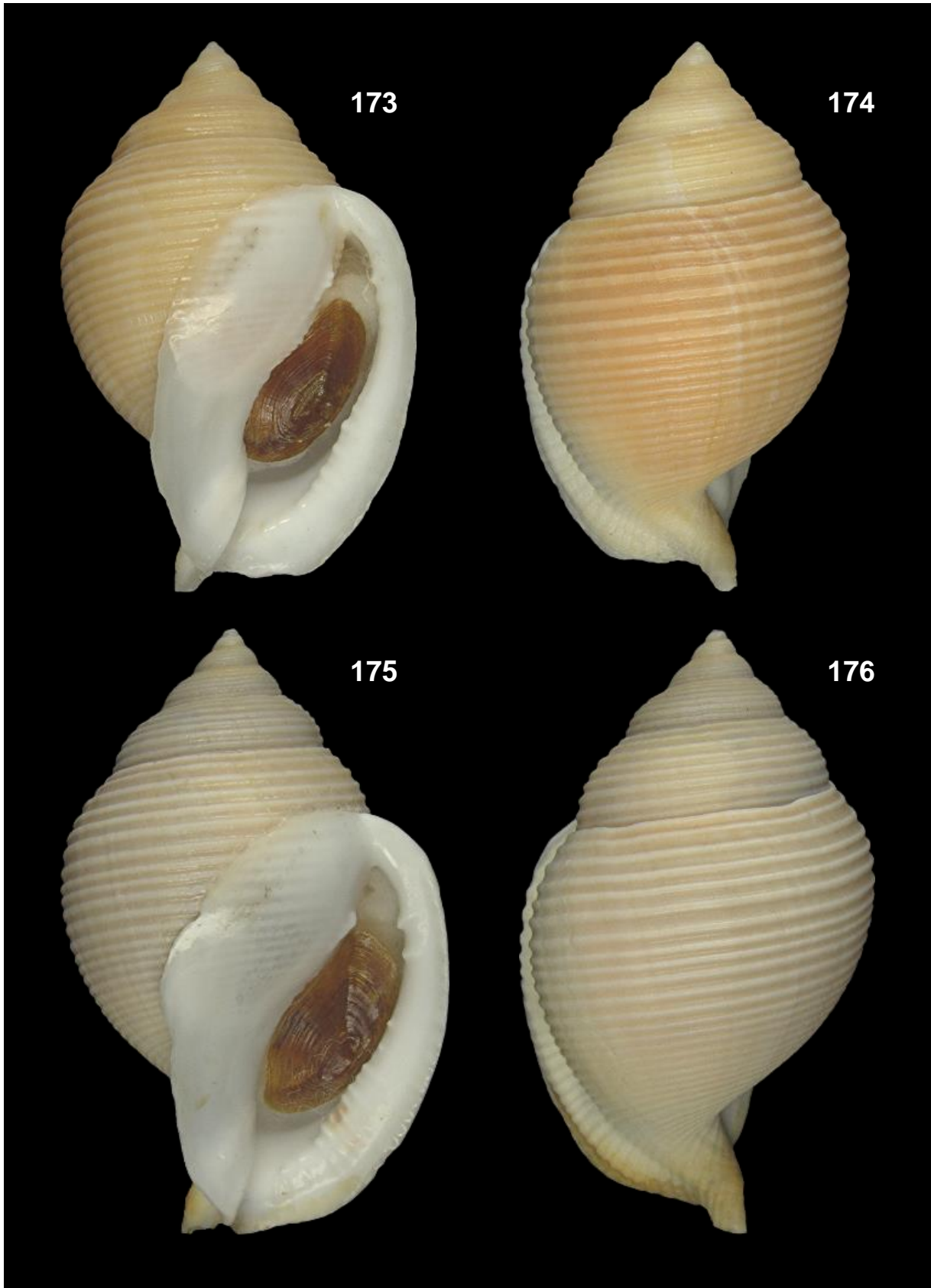


Plate XXV. Figs 173-176: *Galeodea rugosa* (Linnaeus, 1771). South of La Rochelle, Bay of Biscay, W France. Trawled by Belgian fishermen. July 2004. FN; 173-174: 78.96 mm; 175-176: 90.99 mm.

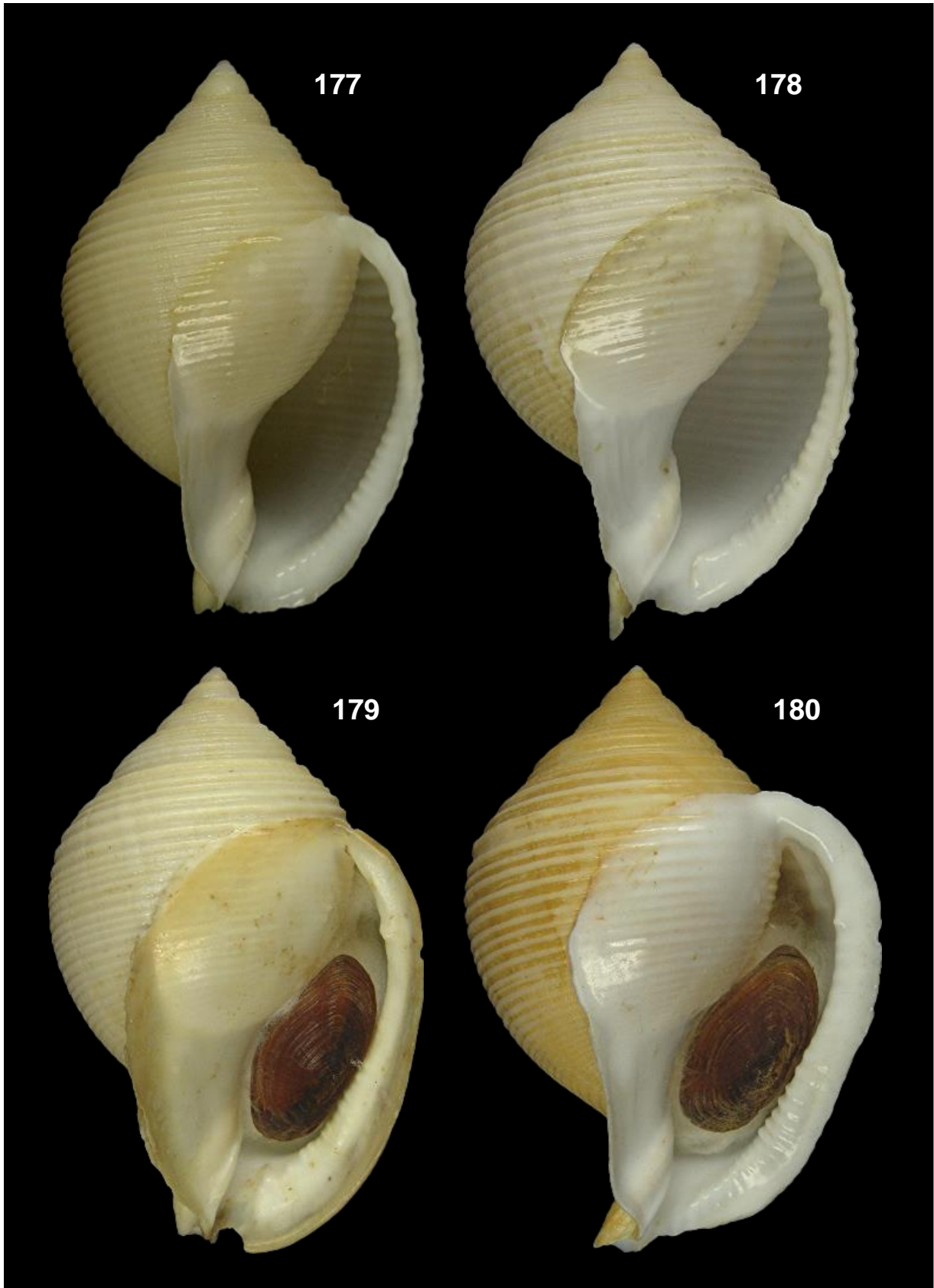


Plate XXVI. Figs 177-180: *Galeodea rugosa* (Linnaeus, 1771). FN; 177-178: Off SW Ireland, UK. 52° 30' N. 14°20' W. Trawled at a depth of 335 m. On mud and coral bottom. June 1999; 177: 86.76 mm; 178: 100.42 mm; 179-180: Trawled by fishermen off Torre Vieja, Spain. 1975; 179: 92.41 mm; 180: 93.98 mm.



Plate XXVII. Figs 181-182: *Galeodea rugosa* (Linnaeus, 1771). FN; 181: Santa Pola, Spain. Trawled by fishermen. 156.5 mm; 182: Dredged by fishermen off Ibiza, Balearic Islands, Spain. 1961. 135.1 mm.

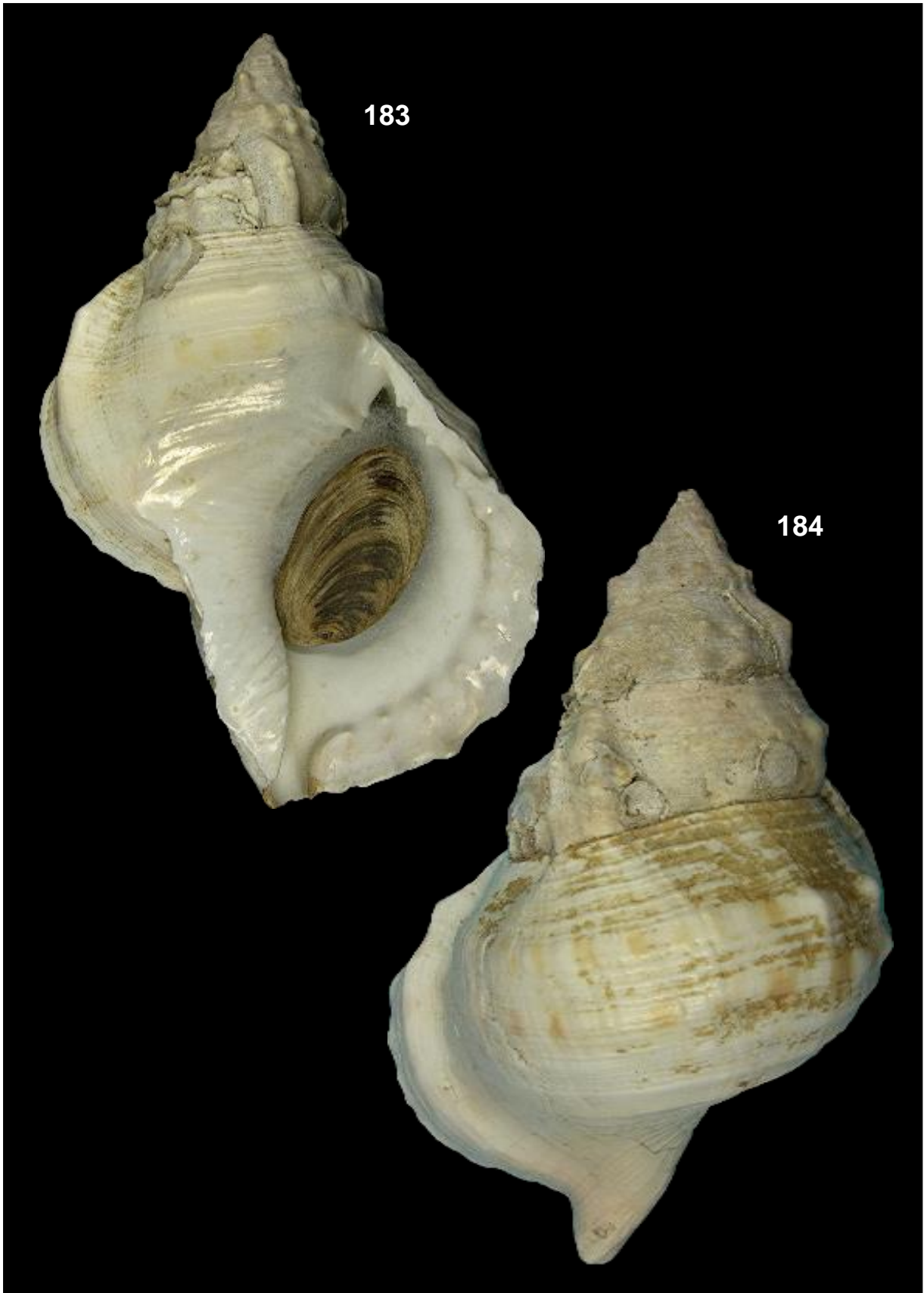


Plate XXVIII. Figs 183-184: *Charonia lampas* (Linnaeus, 1758). 45°18' N., 01°46' W., Bay of Biscay, W France. Trawled by Belgian fishermen. 213 mm. JPK.



Plate XXIX. Figs 185-187: *Charonia lampas* (Linnaeus, 1758); 185-186: North of La Rochebonne Bank, Bay of Biscay, W France. Trawled by Belgian fishermen with V-net at a depth of 130 m. July 2001. 204 mm. FN; 185: front; 186: back covered with specimens of *Neopycnodonte cochlear* (Poli, 1795); 187: Channel Islands, The English Channel. Trawled by fishing boat 'Marseillaise' (Zeebrugge, Belgium). 1924. 139.6 mm. FN.



Plate XXX. Figs 188-189: *Charonia lampas* (Linnaeus, 1758). Dredged by fishermen off Ibiza, Balearic Islands, Spain. 1961. FN; 188: 301 mm; 189: 340 mm.



Plate XXXI. Figs 190-191: *Charonia lampas* (Linnaeus, 1758). FN; 190: Santa Cruz de la Palma, La Palma, Canary Islands. Trawled by local fishermen at a depth of 70 m. 1969. 238 mm; 191: Off Lobito, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 73 m. 1965. 295 mm.

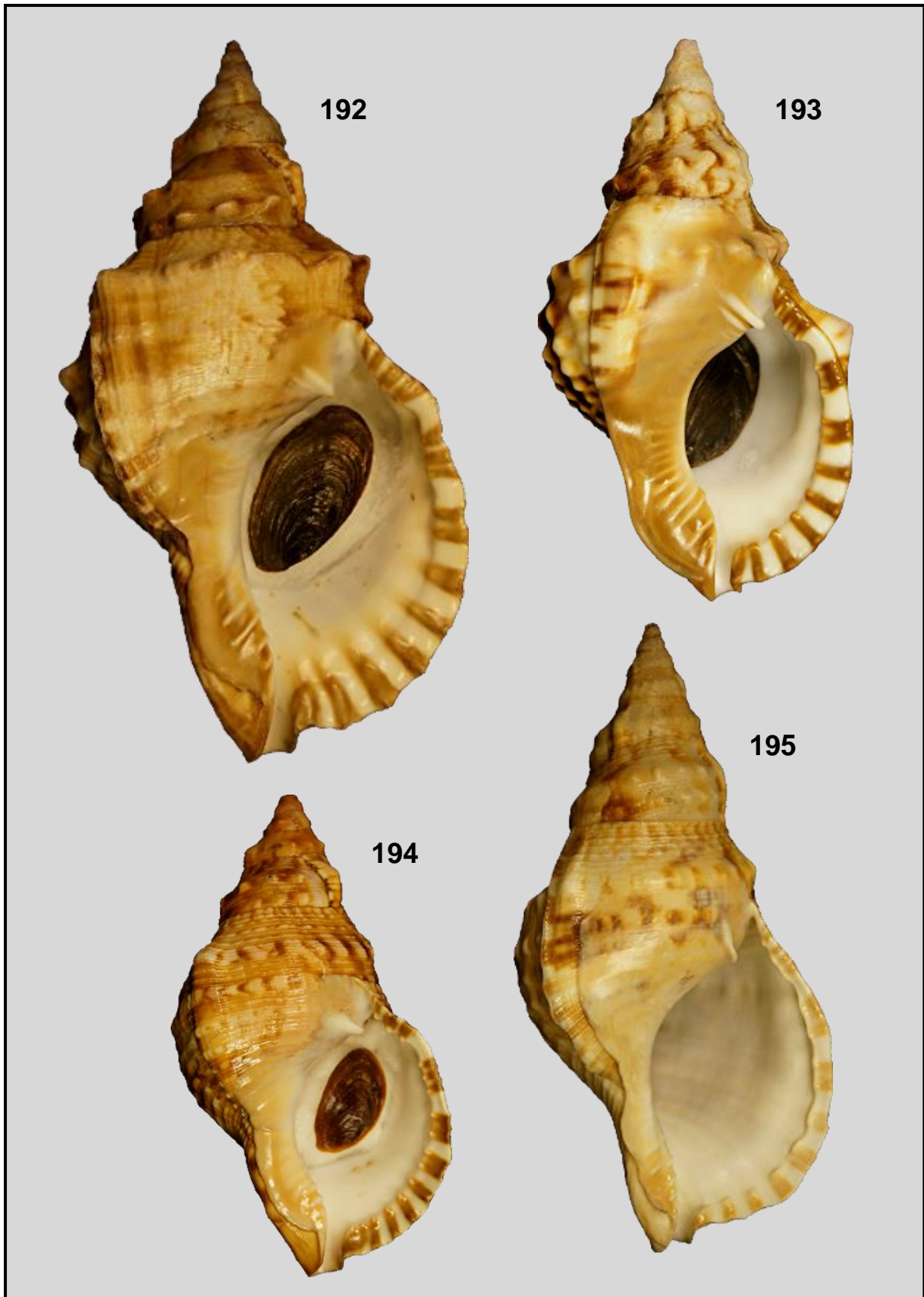


Plate XXXII. Fig. 192: *Charonia lampas pustulata* (Euthyme, 1889). Trawled at a depth of 55 m off Port Alfred, South Africa. 206 mm. FN; Figs 193-195: *Charonia lampas rubicunda* (Perry, 1811). FN; 193: Off Margaret River, Western Australia. On reef at mid tide level. 148.78 mm; 194: South Australia. 1968. 174 mm; 195: Cape Conran, Victoria, Australia. 128.23 mm.

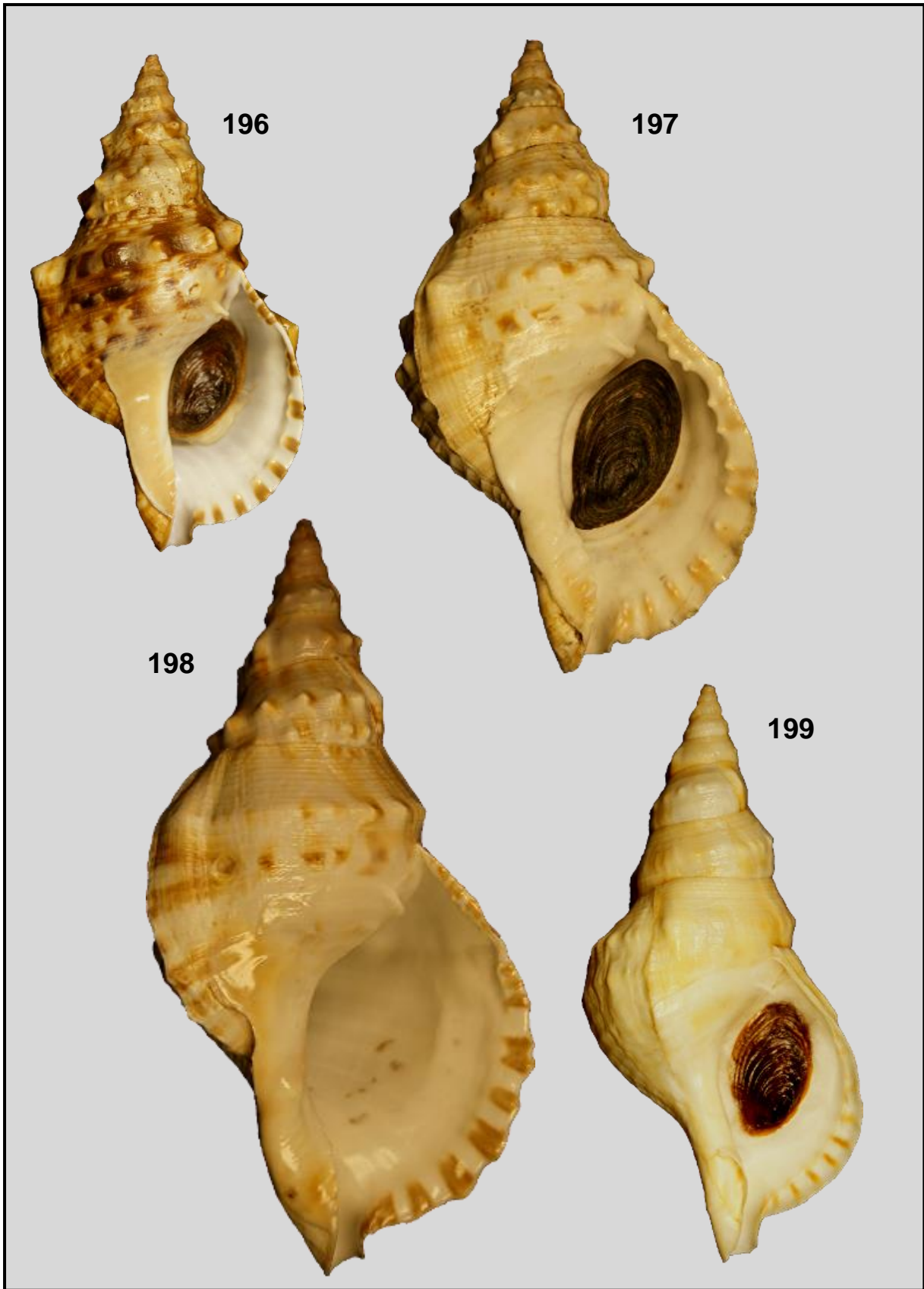


Plate XXXIII. Figs 196-197: *Charonia lampas rubicunda* (Perry, 1811). Golden Bay, New Zealand. Dredged by fishermen. FN; Figs 198-199: *Charonia lampas sauliae* (Reeve, 1844). FN; 198: Off An Ping, Taiwan. 238 mm; 199: Mikawa, Aichi Prefecture, Japan. Trawled at a depth of 155 mm. 151.10 mm.



Plate XXXIV. Figs 200-202: *Ranella olearia* (Linnaeus, 1758). South of La Rochebonne Bank, off La Rochelle, Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 100-160 m. 2006. JPK; 200: 179 mm; 201-202: 139 mm.



Plate XXXV. Figs 203-206: *Ranella olearia* (Linnaeus, 1758). FN; 203: Trawled by fishermen off Ibiza, Balearic Islands, Spain. May 1960. 205 mm; 204: Trawled by fishermen off Torrevieja, Spain. 1973. 198 mm; 205-206: Trawled by Spanish fishermen off NW Africa. 1975; 205: 185 mm; 206: 147.30 mm.



Plate XXXVI. Figs 207-210: *Ranella olearia* (Linnaeus, 1758). FN; 207-208: Trawled by Belgian fishermen (PEMARCO) off Cape Fria, Namibia, SW Africa. Depth: -180 m. 1965; 207: 185 mm; 208: 147.30 mm; 209: Trawled at a depth of 92 m off Durban, KwaZulu-Natal, South Africa. December 1968. 175 mm; 210: Poverty Bay, Northland, New Zealand. Trawled in deep water. June 1974.

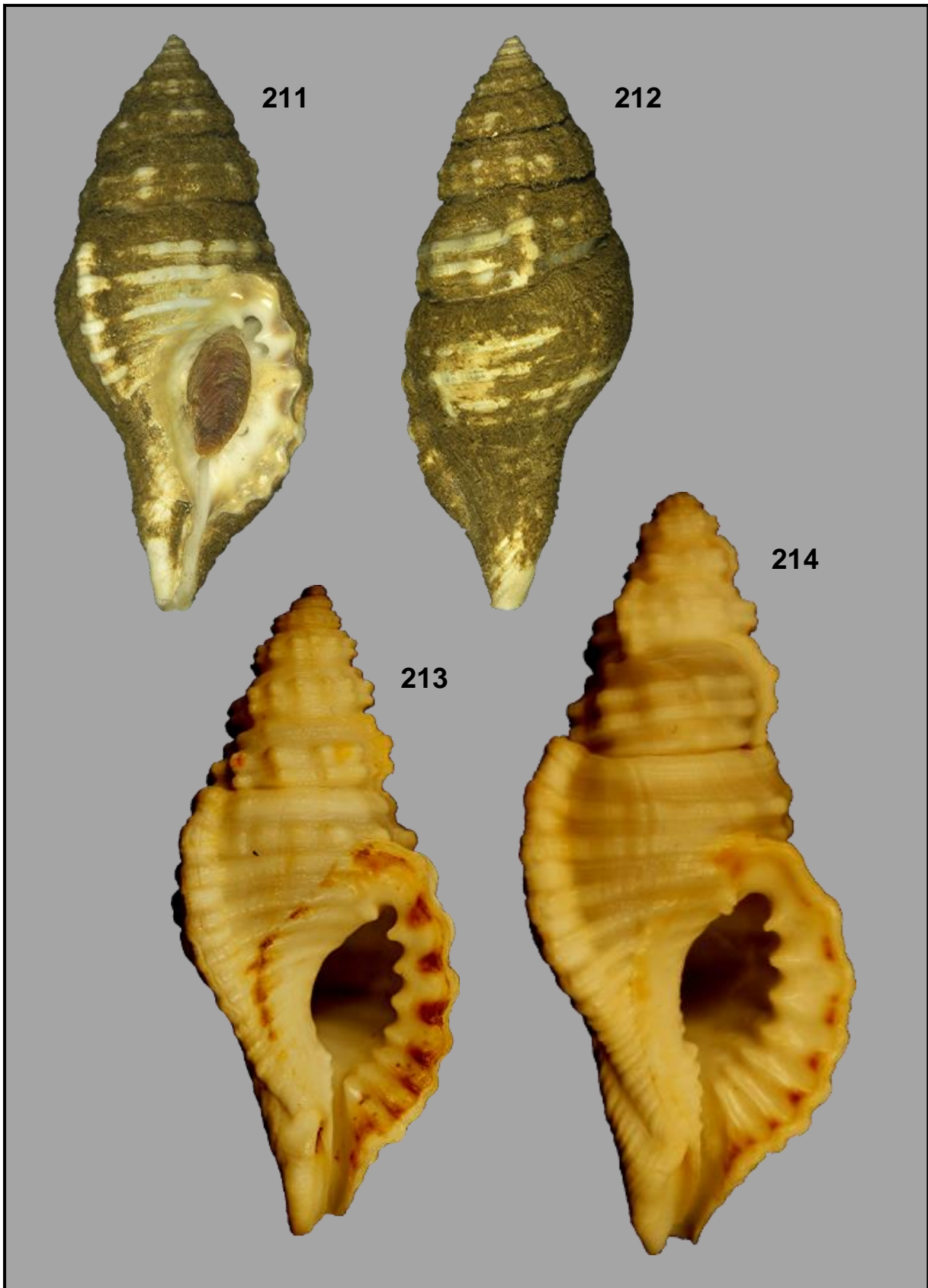


Plate XXXVII. Figs 211-214: *Cymatium corrugatum* (Lamarck, 1816); 211-212: South of La Rochelle, Bay of Biscay. Trawled at a depth of 130 m. On sand. July 2008. 80.90 mm. JPK; 213-214: Santa Pola, Spain. Trawled by local fishermen. FN; 213: 107.32 mm; 214: 126.61 mm.

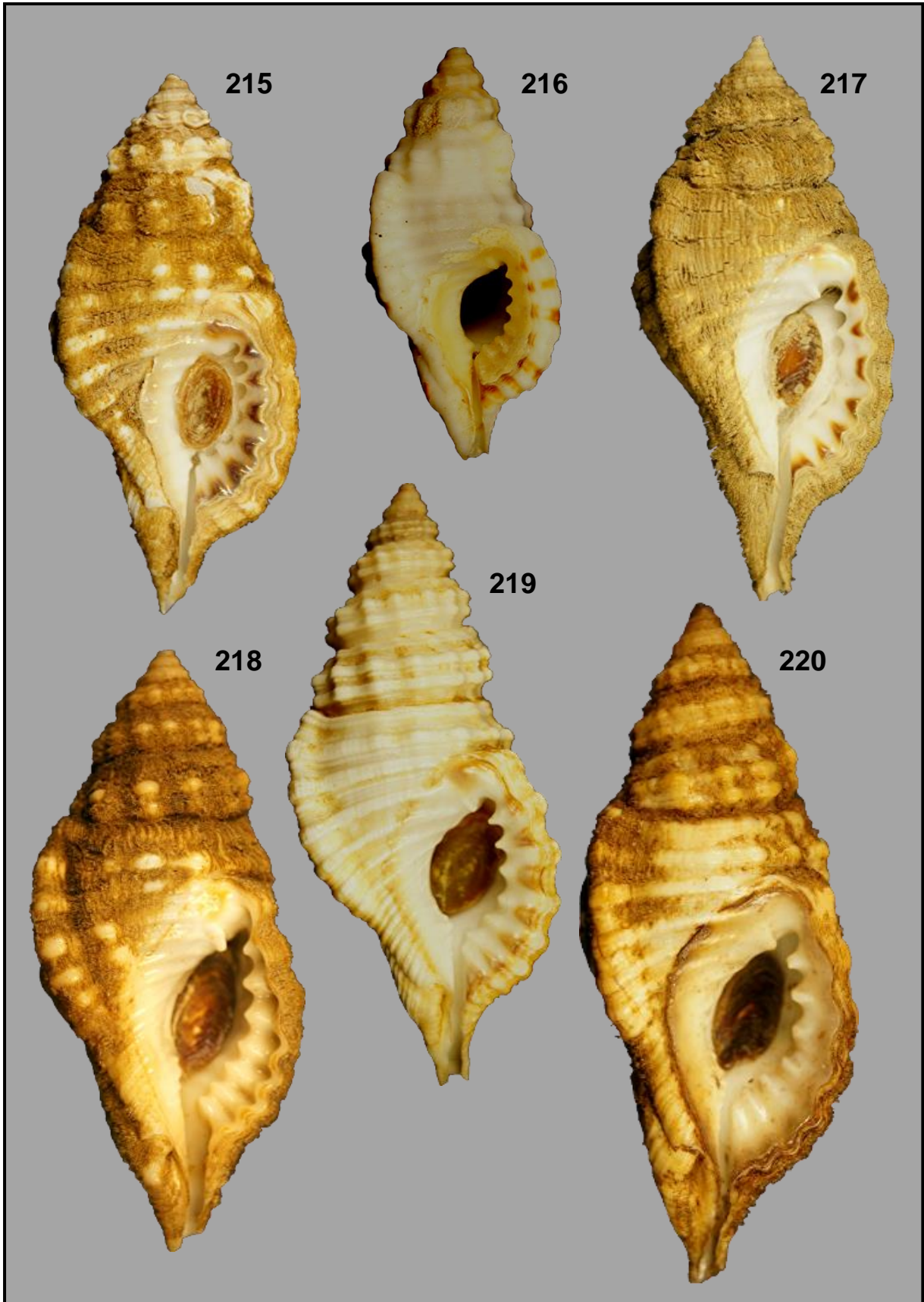


Plate XXXVIII. Figs 215-220: *Cymatium corrugatum* (Lamarck, 1816); 215: Blanes, Spain. Trawled by fishermen. May 1985. 64.52 mm. JV; 216: Trapani, Sicily, Italy. Dredged. 1973. 45.72 mm. JV; 217: Capraia Island, Italy. Dredged at a depth of 100-120 m. October 1979. 69.28 mm. JV; 218-220: Trawled by fishermen off Torrevieja, Spain. FN; 218: 89.12 mm; 219: 89.92 mm; 220: 100.43 mm.

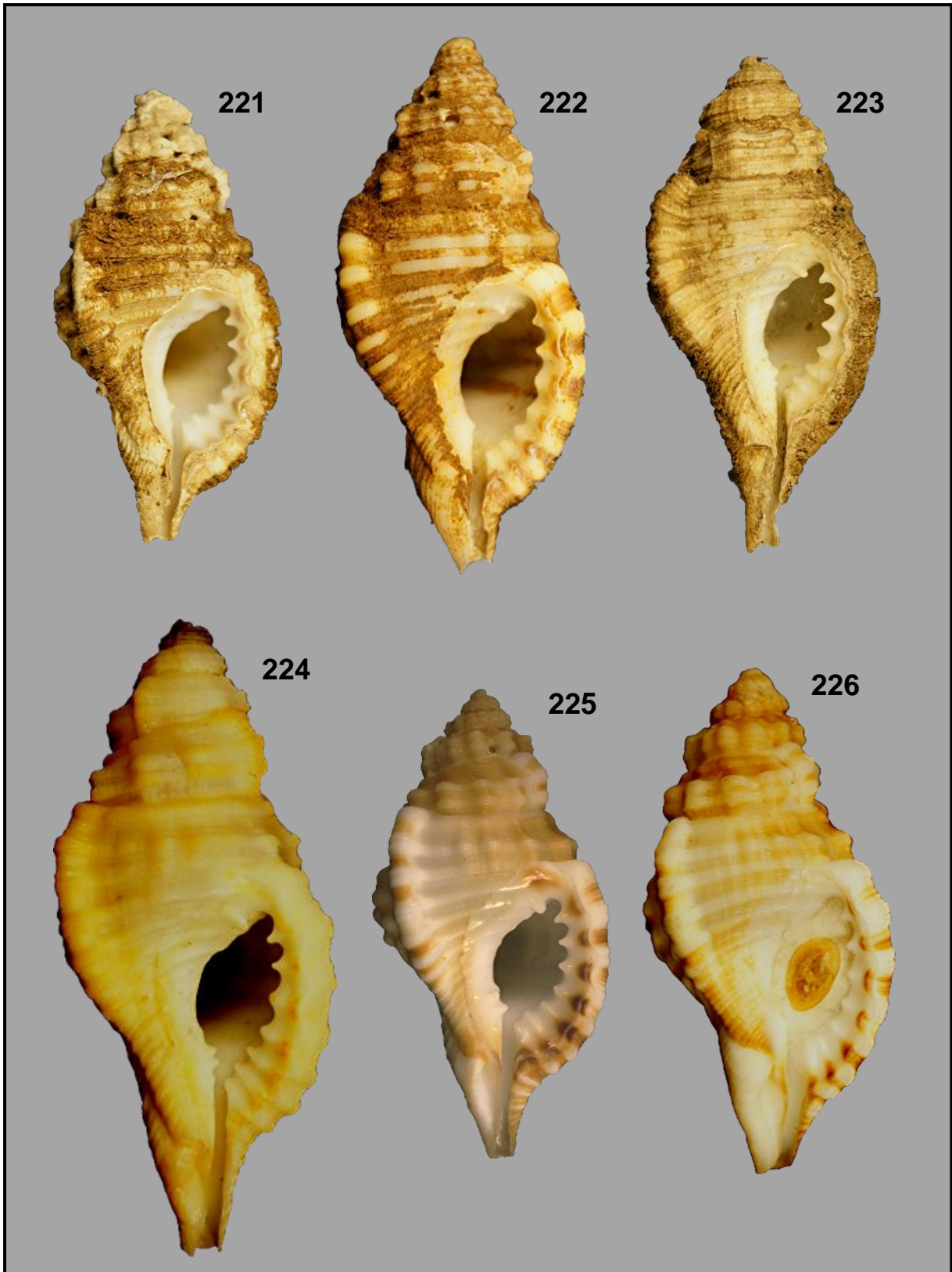


Plate XXXIX. Figs 221-224: *Cymatium corrugatum* (Lamarck, 1816); 221-223: JV; 221: Madeira. From SCUBA diver. 1980. 46.13 mm; 222: Essaouira, Morocco. October 1993. 59.83 mm; 223: Cayar, Senegal. Trawled by fishermen. 1990. 51.21 mm; 224: Trawled by fishermen off St. Louis, Senegal. January 1977. 73.80 mm. FN; Figs 225-226: *Cymatium corrugatum* var. *minor* (Pallary, 1900); 225: Santa Cruz de la Palma, La Palma, Canary Islands. Trawled by local fishermen. 46.49 mm. FN; 226: Lanzarote, Canary Islands. From SCUBA diver. October 1995. 48.04 mm. JV.

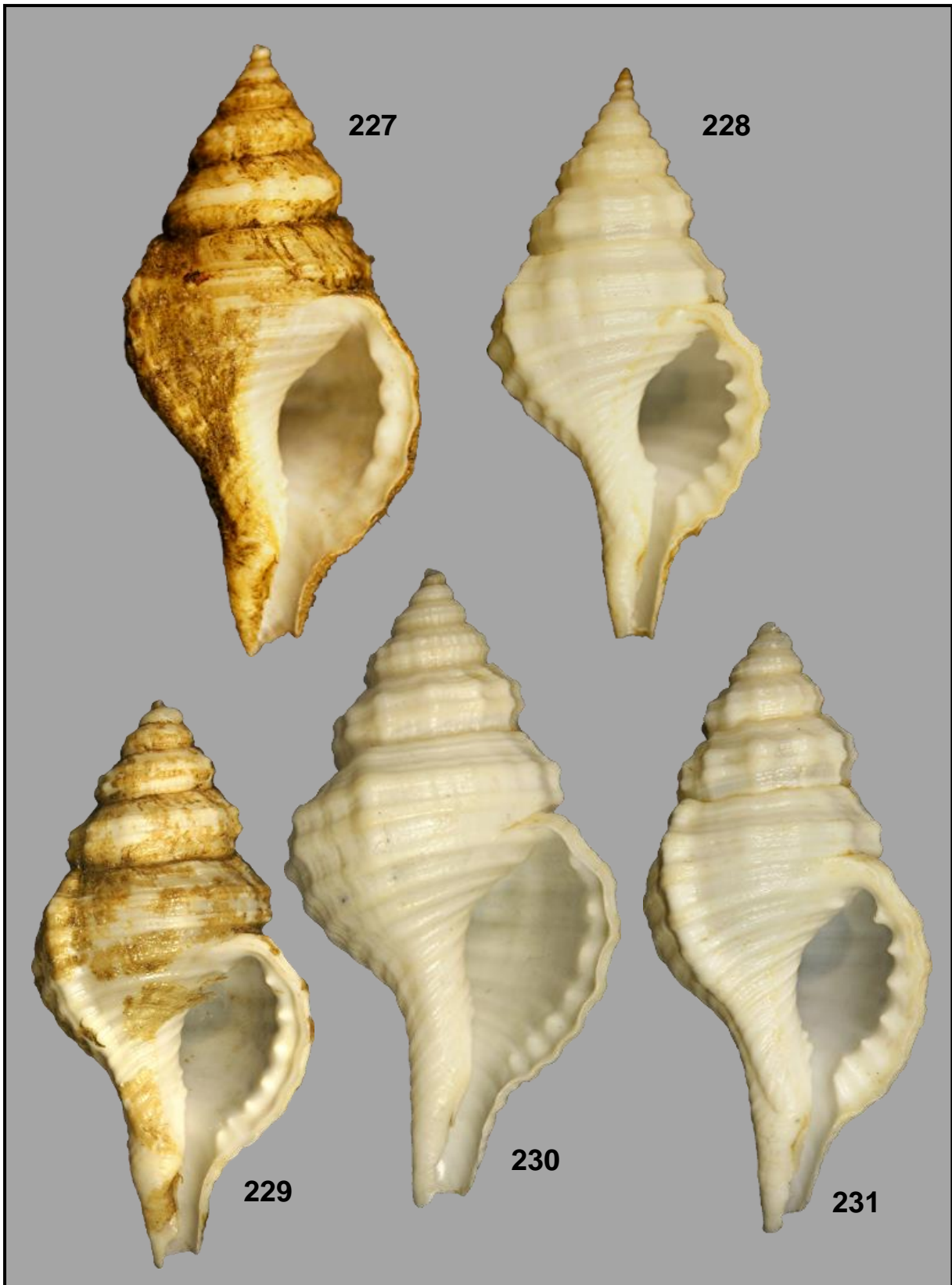


Plate XL. Figs 227-231: *Cymatium corrugatum* (Lamarck, 1816). Trawled by Belgian fishermen (PEMARCO) at a depth of 200 m among eelgrass off Cape Fria, Namibia, SW Africa. 1972. FN; 227: 62.48 mm; 228: 58.46 mm; 229: 57.46 mm; 230: 63.30 mm; 231: 62.04 mm.

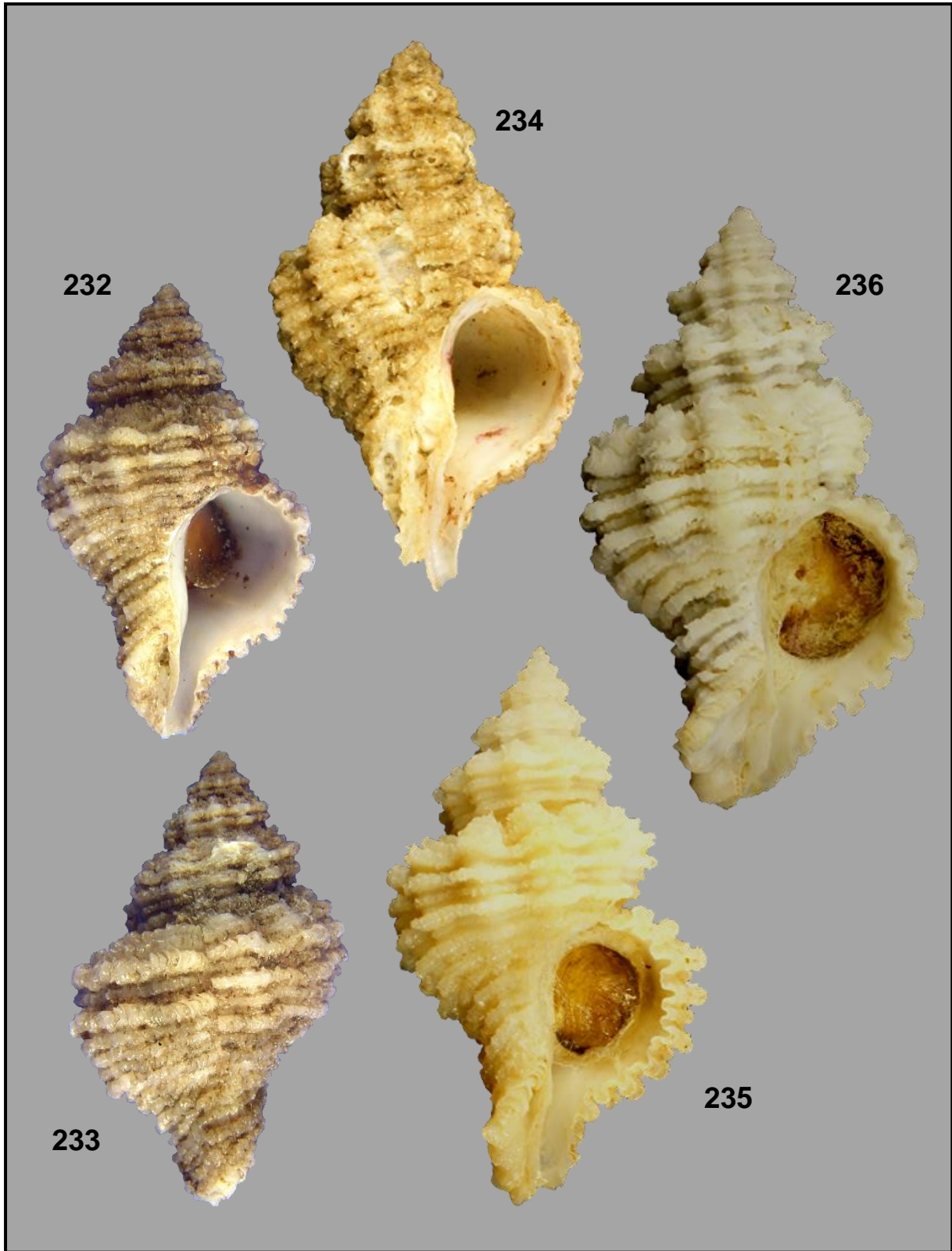


Plate XLI. Figs 232-236: *Coralliophila squamosa* (Bivona Ant. in Bivona And., 1838); 232-234: South of La Rochelle, Bay of Biscay, W France. Trawled by Belgian fishermen. August 2006. JPK; 232-233: 27 mm; 234: 36.86 mm; 235-236: Benicarlo, Spain. Trawled by local fishermen at -90 m. FN; 235: 37.41 mm; 236: 39.70 mm.

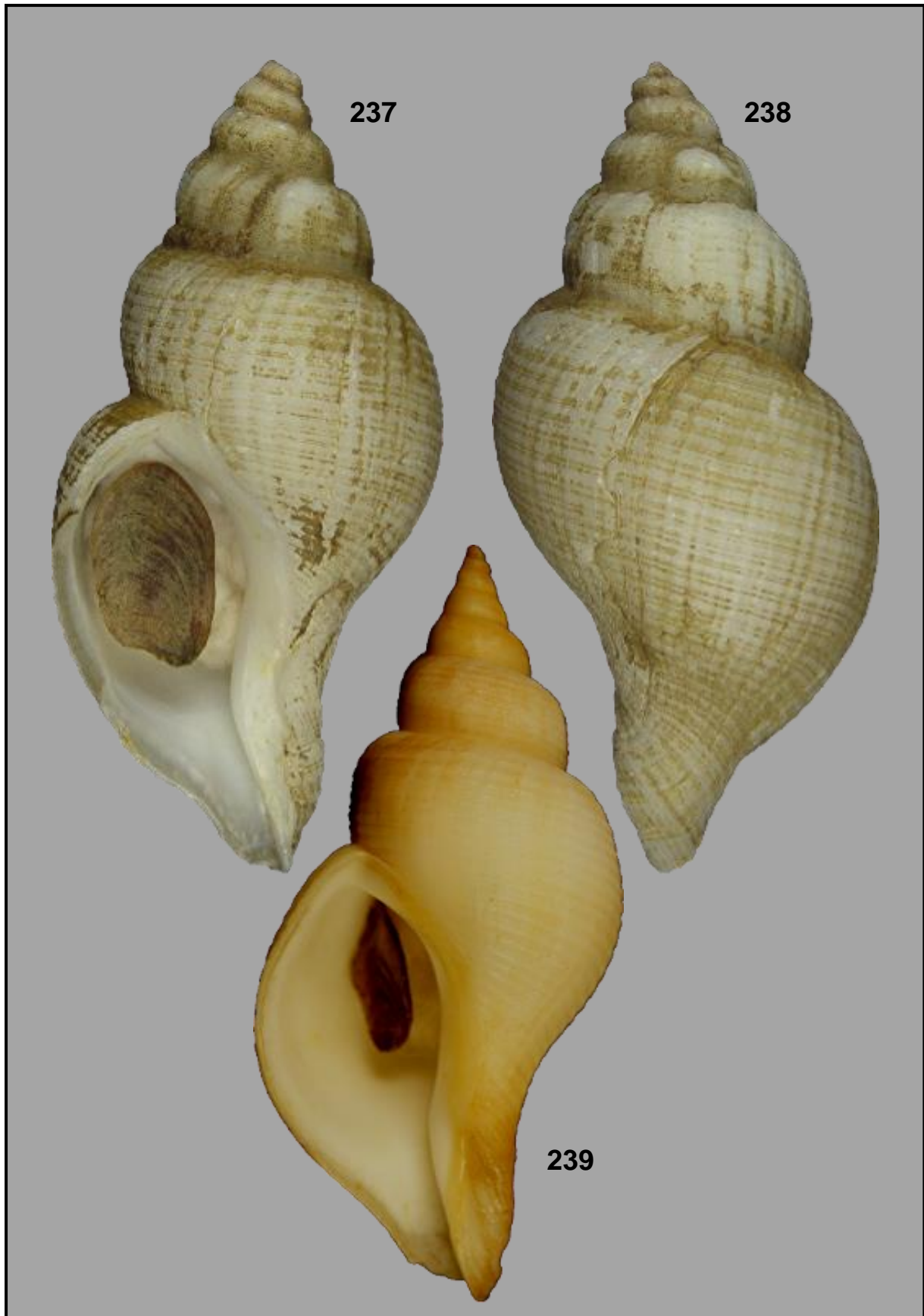


Plate XLII. Figs 237-239: *Neptunea contraria* (Linnaeus, 1771); 237-238: Trawled south of La Rochelle, Bay of Biscay, W France. 2006. 127 mm. JPK; 239: Trawled by fishermen off Vigo, Galicia, North Spain. 1988. 94.97 mm. FN.

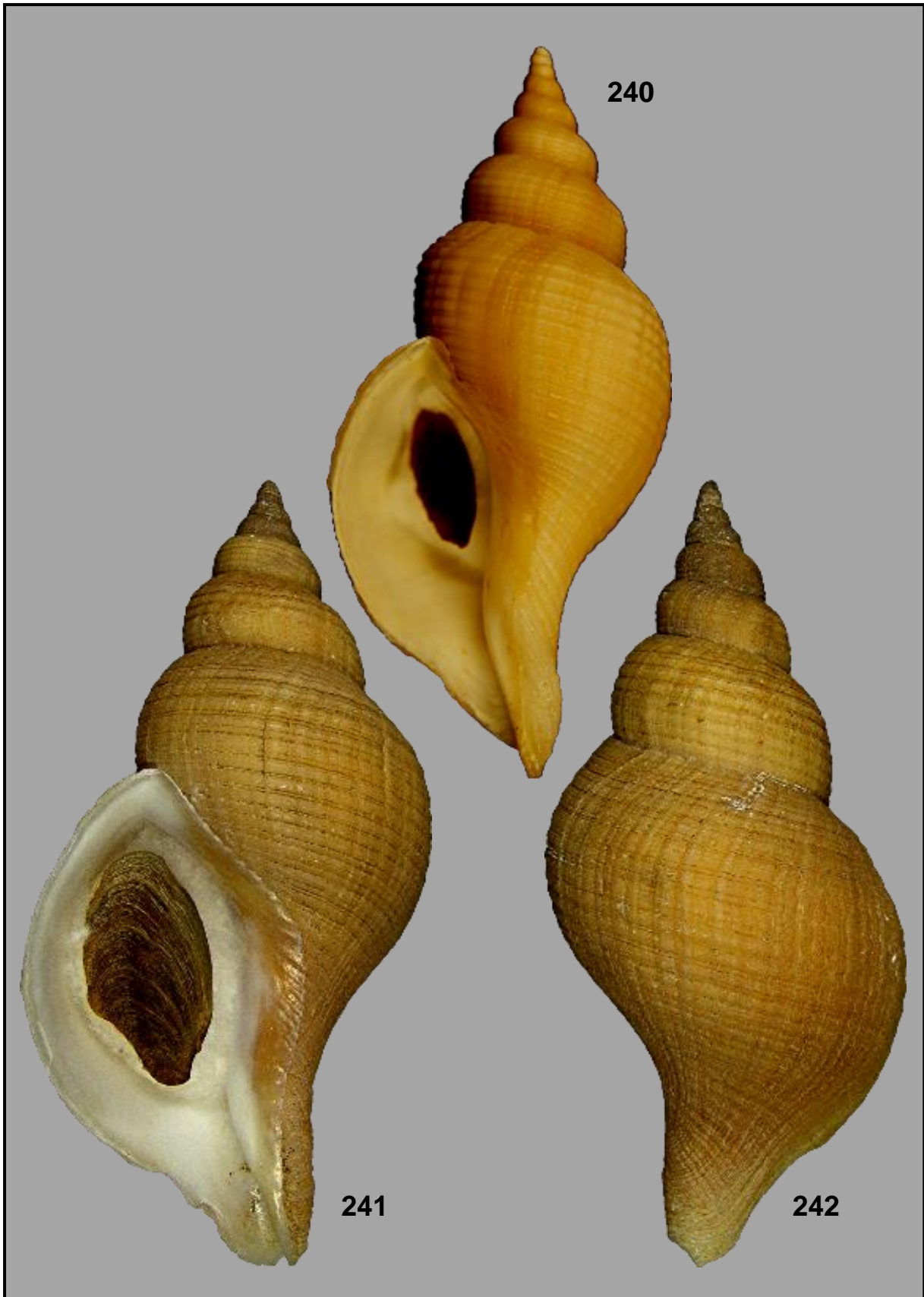


Plate XLIII. Figs 240-242: *Neptunea contraria* (Linnaeus, 1771). Trawled by Spanish fishermen off Morocco, W Africa. 1972. FN; 240: 112.57 mm; 241-242: 121.47 mm.