

A record of *Solecortus scopula* (Turton, 1822) (Mollusca: Bivalvia: Solecortidae) from the Strait of Dover

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Keywords: BIVALVIA, SOLECORTIDAE, *Solecortus scopula*, Strait of Dover.

Abstract: The presence of *Solecortus scopula* (Turton, 1822) in waters near the North Sea is confirmed by the record of a single live-caught specimen trawled off Boulogne-sur-Mer, NE France.

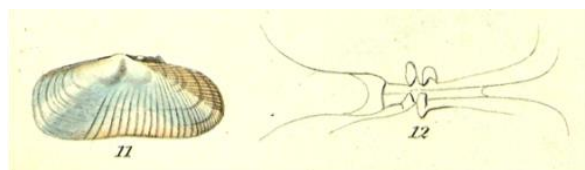
Abbreviations:

FN: Private collection of Frank Nolf

H: height

L: length

Material examined: One specimen of *Solecortus scopula* (Turton, 1822), trawled by fishermen from Zeebrugge (Belgium) at a depth of 40-42 m, 8 miles west of Boulogne-sur-Mer. November 2007. (Plate I, Figs 1-4).



Solecortus scopula Pl. 6, figs 11 & 12 from:

Turton, W., 1822. *Conchylia Insularum Britannicarum. The Shells of the British Islands, Systematically arranged.* Exeter. pp. xlvii, (1), 279, (1) p., 4to., pls 1-20.

Discussion: *Solecortus scopula* (Plate I, Figs 1-4; Plate II, Figs 5-8; Plate III, Figs 9-12; Plate IV, Figs 13-16) is a bivalve living in the North Atlantic south to the Canaries and the Mediterranean Sea, the Adriatic Sea being the easternmost situated area, where the species was found. We reported records of this species as '*Solecortus multistriatus* (Scacchi, 1835)' from the Irish Sea and even from the Shetland Islands, Scotland, UK in previous papers (Nolf & Verstraeten, 2002; Nolf & Verstraeten, 2003) before. The specimen was dredged dead by a scallop-trawler near Lerwick in 1996 and this constitutes the northernmost locality we can confirm.

Recently, in November 2007, a live specimen was caught by a fishing boat from Zeebrugge (Belgium) at a depth of 40-42 m at 8 miles west of Boulogne-sur-Mer, NE France. This species is rarely reported from this area. The specimen measures: H. 17.95 mm. and L. 42.36 mm.

Since Forbes & Hanley (1853), it has been assumed that the genus *Solecortus* is represented by a species initially named as *S. candidus* (Renier, 1804) in the British and Irish waters. The synonymy of Forbes & Hanley (1853) also contained *Psammobia scopula* Turton, 1822. Jeffreys (1865) considered *S. candidus*, *S. scopula* and the fossil species *S. multistriatus* (Scacchi, 1835) synonymous. After the rejection of Renier's work by the ICZN (1954), the British shells were named *S. scopula* (Turton, 1822). This is the name used by McMillan (1968) and Tebble (1969) who thought that only one *Solecortus*-species occurred in British waters. *Solecortus multistriatus* (Scacchi, 1835) was originally described as a fossil species but Mariottini, Smriglio & Ciommei (1994) recognized it as a living species in the Mediterranean. Nolf & Verstraeten (2002; 2003) followed that opinion and stated that *S. multistriatus* also lives in the Eastern Atlantic as far north as the Shetland Islands. Oliver, Nolf & Verstraeten (in press) consider all specimens attributed to *S. multistriatus* by Mariottini et al. (1994) and Nolf & Verstraeten (2002; 2003) as belonging to *S. scopula* (Turton, 1822) and specimens illustrated by the latter authors as *S. scopula* are *Solecortus candidus* (Brocchi, 1814), for which a lectotype will be designated. *S. scopula* can be found in the Mediterranean Sea and the European Atlantic waters north to the Shetland Islands, whereas *S. candidus* lives throughout the Mediterranean Sea and the European Atlantic as far north as the Celtic Sea. The large variety of names used for the East Atlantic and Mediterranean *Solecortus* species resulted in a vague knowledge of the real geographic distribution of the treated species. The report of a specimen living in the Strait of Dover constitutes an extension of the known range in northern waters.

It is the ultimate aim to gather as many records as possible to draw up a comprehensive survey of the presence of this species in European waters.

Animal: The soft parts of the body of *S. strigilatus* (Linnaeus, 1758), *S. scopula* (Turton, 1822) and *S. candidus* (Brocchi, 1814) cannot completely be retracted into the shell. A typical feature is the capacious posterior extension of the mantle cavity (mc), which can be extended to 1.5 times the length of the animal's shell during burrowing in the first two mentioned species.

As far as we can observe in the specimen found in the Strait of Dover, this cavity is of a much smaller size compared to the other species and the anterior foot is also much smaller. The diameter of the egestion siphon (e) is smaller than the one of the ingestion siphon (i), but this characteristic is also present in other species of the family SOLECURTIDAE.

If more live caught specimens of both *S. scopula* and *S. candidus* are recovered in the future a thorough comparison between the living conditions of both species will be possible.

Habitat: Only the so called 'tube builders' of the families SOLECURTIDAE, SOLENIDAE and SOLEMYIDAE live in permanent burrows with volumes exceeding that of the animal's body. Unfortunately, no data are available of the type of the burrow shapes and burrow openings of *S. scopula*, neither on environmental settings, like the nature of sediments, epifauna and cohabiting infauna-creatures. Dworschak (1987) made an excellent study on the 'burrows of *S. strigilatus* (Linné) and *S. multistriatus* (Scacchi)' in the northern Adriatic, describing the animal's morphology, the sediments, the associated fauna and the burrowing behaviour of the treated species. Of course the correct name is *S. scopula* (Turton, 1822) instead of *S. multistriatus*.

Acknowledgements:

Sincere thanks go to Jean-Paul Kreps (Knokke, Belgium) for the loan of material from different localities, especially for providing a live caught specimen of *Solecortus scopula* from Boulogne-sur-Mer (France). David Monsecour (Aarschot, Belgium), Kelly Surmont (Oostende, Belgium) and Johan Verstraeten (Oostende, Belgium) were so kind to thoroughly revise the text.

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Localization of the record of *Solecurtus scopula*

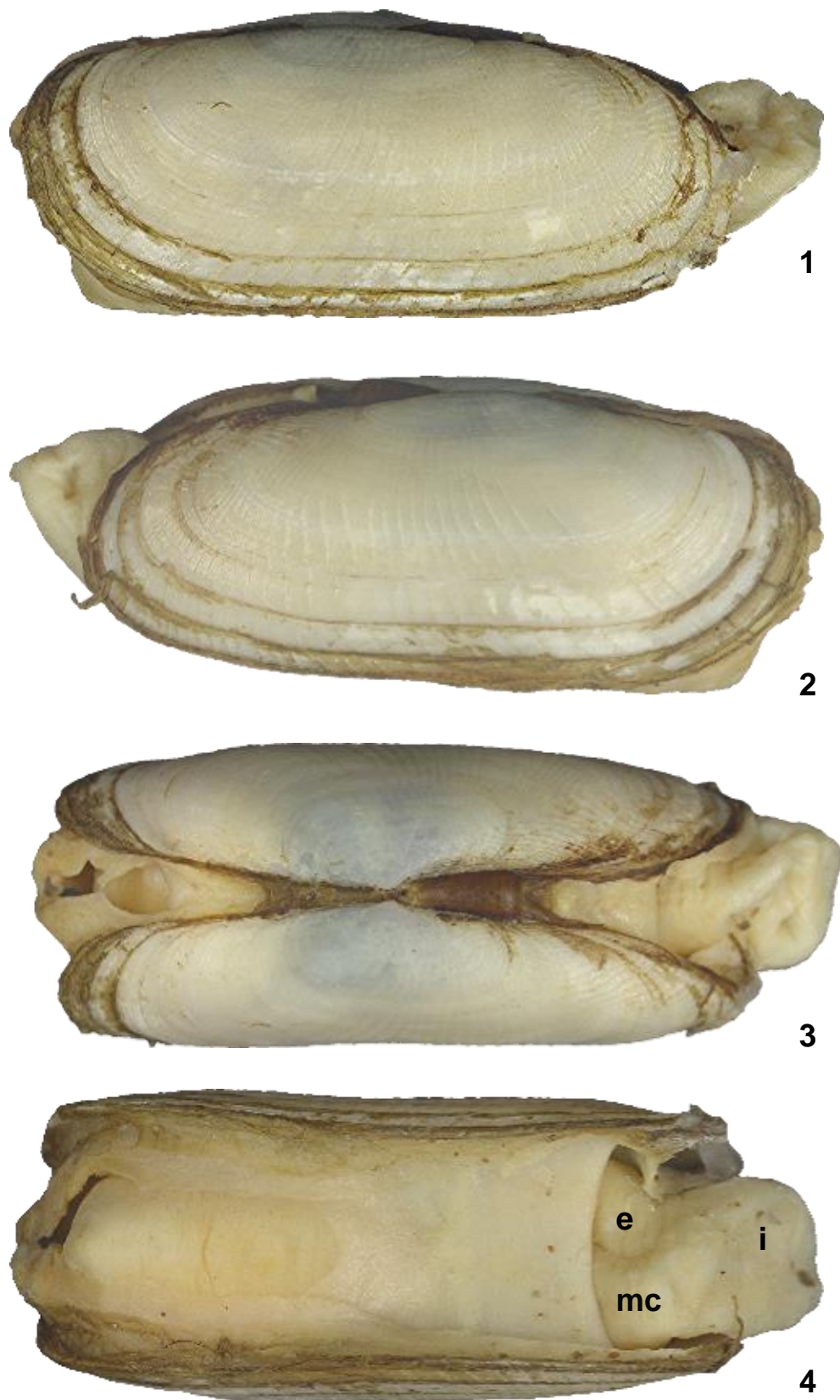


Plate I. Figs 1-4: *Solecurtus scopula* (Turton, 1822). 8 miles west off Boulogne-sur-Mer, NE France. Trawled by Belgian fishermen (Zeebrugge) at a depth of 40-42 m. November 2007. H. 17.95 mm. L. 42.36 mm. FN; e: egestion siphon; i: ingestion siphon; mc: mantle cavity.



Plate II. Figs 5-8: *Solecurtus scopula* (Turton, 1822). Bay of Cardigan, Irish Sea, UK. Trawled by Belgian fishermen. FN; 5-6: H. 20.19 mm L. 45.59 mm; 7-8: H. 22.68 mm L. 49.94 mm



Plate III. Figs 9-12: *Solecurtus scopula* (Turton, 1822). FN; 9-10: Off Pointe de Moustierlin, Finistère, Brittany, W France. Trawled by fishermen. H. 22.05 mm L. 49.64 mm; 11-12: South of La Rochelle, Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 90 m. June 1997. H. 21.09 mm L. 45.74 mm.



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Plate IV. Figs 13-16: *Solecortus scopula* (Turton, 1822). FN; 13-14: Chioggia, Adriatic Sea, Italy. Dredged by fishermen at a depth of 23 m. June 1999. H. 17.55 mm L. 38.55 mm; 15-16: 'Smalls'-fishing grounds, Bristol Channel, UK. 51°43' N./ 05°40' W. Trawled by Belgian fishermen at a depth of 70 m. H. 18.67 mm L. 40.27 mm.



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Plate V. Figs 17-18: *Solecortus scopula* (Turton, 1822). Bay of Liverpool, Irish Sea, UK. Trawled by Belgian fishermen at a depth of 45 m. April 1989. H. 15.67 mm L. 36.33 mm. FN; Figs 19-20: *Solecortus candidus* (Brocchi, 1814). South of La Rochelle, Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 140 m. June 2000. H. 27.55 mm L. 63.08 mm. FN.

***Thais lacera* (Born, 1778) (Mollusca: Gastropoda: Muricoidae: Muricidae): an early record of an exotic species from the western Mediterranean Sea**

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Keywords: *Thais lacera*, MURICIDAE, range extension, western Mediterranean Sea.

Abstract: *Thais lacera* is recorded and described from Ibiza. The shell was live trawled by Spanish fishermen in 1960, which means some decades before most of the other reports from the eastern Mediterranean Sea. It can be assumed that this Indo-Western Pacific species lives throughout the whole Mediterranean Sea.

***Thais lacera* (Born, 1778)**

Plate I, Figs 1-2; Plate II, Figs 3-6; Plate III, Figs 7-10; Plate IV, Figs 11-14.

Synonyms:

Murex lacera Born, 1778: 307, ref. to Martini, Fig.951

Mancinella mutabilis Link, 1807

Purpura carinifera Lamarck, 1822

Thais carinifera (Lamarck, 1822)

Purpura carinata Schubert & Wagner, 1829

Purpura scalaris Schubert & Wagner, 1829

Abbreviations:

FN: Private collection of Frank Nolf, Oostende, Belgium.

Diagnosis: Shell massive, solid, up to 60 mm in length, consisting of 3-3.5 protoconch whorls and 6 teleoconch whorls, of which the body whorl accounts for most of the volume. Protoconch conical, adapically keeled. Whorls with strong triangular knobs on a sharply peripheral keel. Last teleoconch whorl with an additional subsutural keel with projecting knobs and axial sculpture with 6-8 low, almost indistinct spiral cords. Spiral sculpture usually of 5 weak or strong, primary cords: one on shoulder, one carinal cord, and three weaker adapical ones. The entire surface ornamented with fine, irregular spiral striae. A stout fasciole borders the umbilical excavation.

Aperture large and broad, roundly ovate, with the outer lip strongly crenulated, lirate within. Columellar lip broad, smooth and thick. Siphonal canal short, broadly open.

Colour: Exteriorly the shell is of a plain greyish or yellowish tan colour, occasionally with some lighter coloured primary spiral cords, sometimes with few darker blotches on spiral cords. Interiorly the aperture is cream pale orange, whereas juveniles have darker lines in grooves inside the outer lip. Adapical part of the columellar lip may be peach.

Range: Western Pacific Ocean up to Taiwan (Habe, 1964) and Indian Ocean, but originally not the Red Sea. In the western part of its range reaching South Africa southerly and the Persian Gulf northerly. It was reported as common in the Suez Canal (Singer & Mienis, 1991) from which it reached the northern part of the Red Sea. During the 1960s *T. lacera* appeared in numbers on stakes at the head of Durban Bay (Kilburn & Rippey, 1982).

In the Mediterranean Sea it was first recorded from Port Said, Egypt as *Thais carinifera* (Moazzo, 1939), and successively from Israel (Barash & Danin, 1973) and southern Turkey (Engl, 1995). A punctual record is the Caprolace lagoon in Italy (Bini, 1983) (red dot on the map) yet without confirmation of more finds. Some of these records were confirmed by the find of beached, dead specimens 5 km W of Port Said and in Romani, NW Sinai by Hoffman et al (2006).

Discussion: *Thais lacera* is distinguished from the native *Stramonita haemastoma* (Linnaeus, 1758) by having a strong keel which gives the spire a pagoda-like aspect, and a much paler colour inside the aperture. *Rapana venosa* (Valenciennes, 1846) and *R. rapiformis* both have a flatter spire and a much more swollen aperture. This species was possibly introduced by shipping and then migrated from Port Said to the Suez Canal and into the eastern Mediterranean Sea (Singer & Mienis, 1991).

Finds of isolated specimens in the western Mediterranean Sea can be explained by tankers clearing away their ballast water and certainly not by an explosion of the population from Israel and Turkey westwards. In the latter waters this shell seems to be locally common (Zenetos et al, 2003).

Habitat: *T. lacera* lives on rocks near sea level. It lays clusters of cylindrical egg capsules attached to the substrate, which differ from capsules of *Stramonita haemastoma* by being rounded and pointed at their tip, instead of flaring and rectangular. The larvae are pelagic, planktotrophic.

Acknowledgements: I thank David Monsecour, Kelly Surmont and Johan Verstraeten, all from Belgium, for carefully reading and revising the manuscript.

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Geographic distribution of *Thais lacera* in the Mediterranean Sea

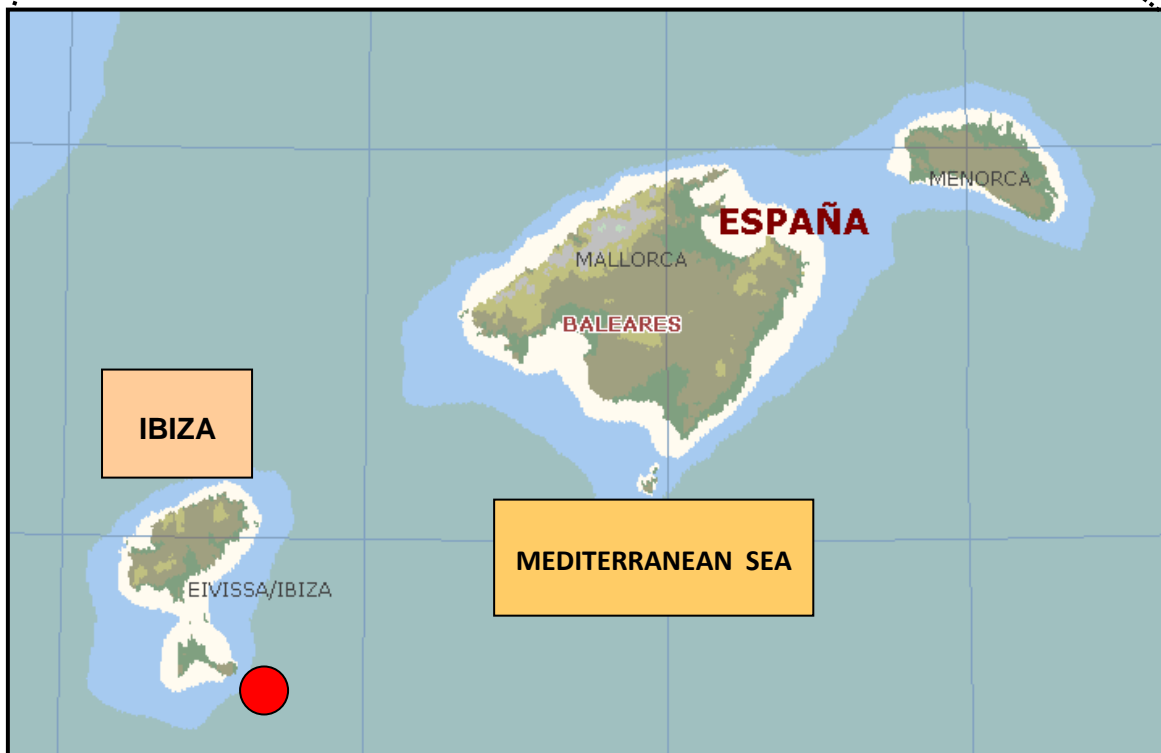
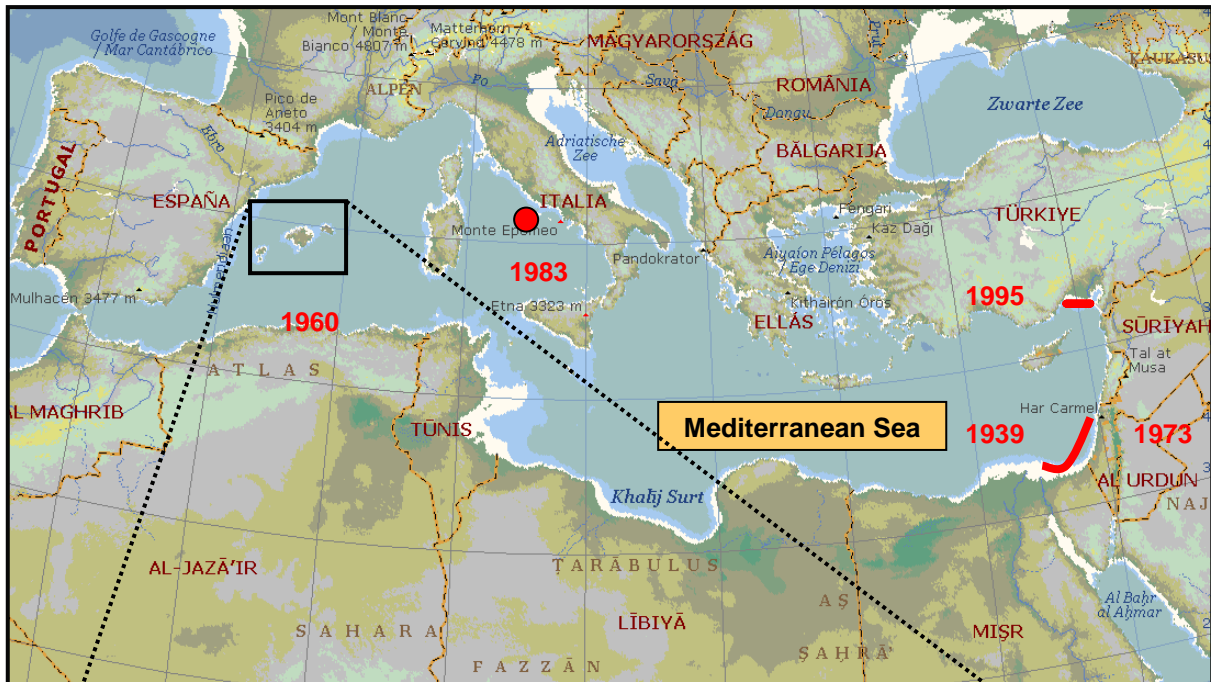




Plate I. Figs 1 & 2. *Thais lacera* (Born, 1778)
Trawled by Spanish fishermen off Ibiza, Spain. 1960.
42.7 mm.
Collection FN.

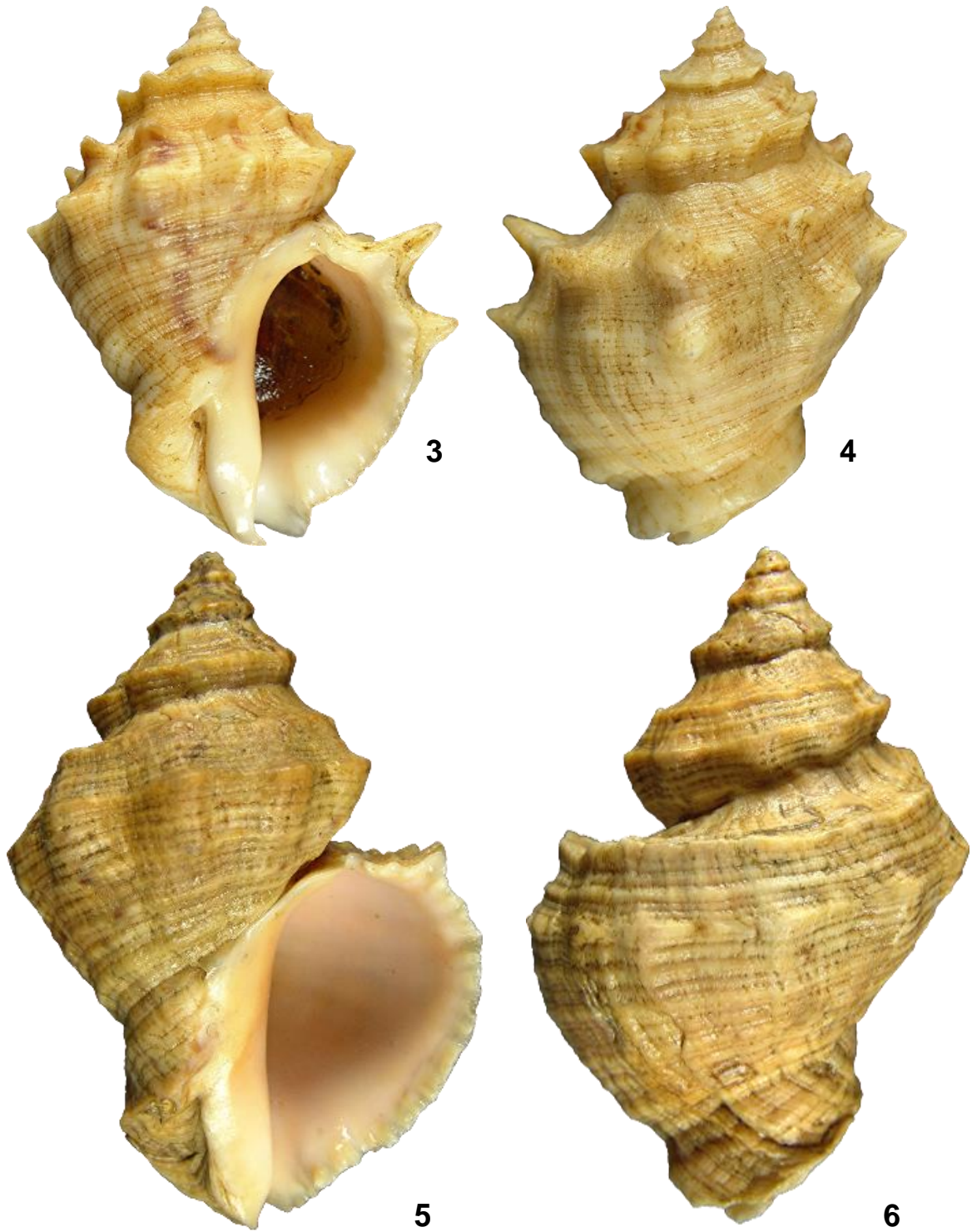


Plate II. *Thais lacera* (Born, 1778)
Figs 3 & 4. Durban Bay, KwaZulu-Natal, South Africa.
On isolated rock, on sandbar at low tide. July 1970.
31.7 mm.
Collection FN.
Figs 5 & 6. South Taiwan. Trawled by fishermen. 1974.
60.6 mm.
Collection FN.



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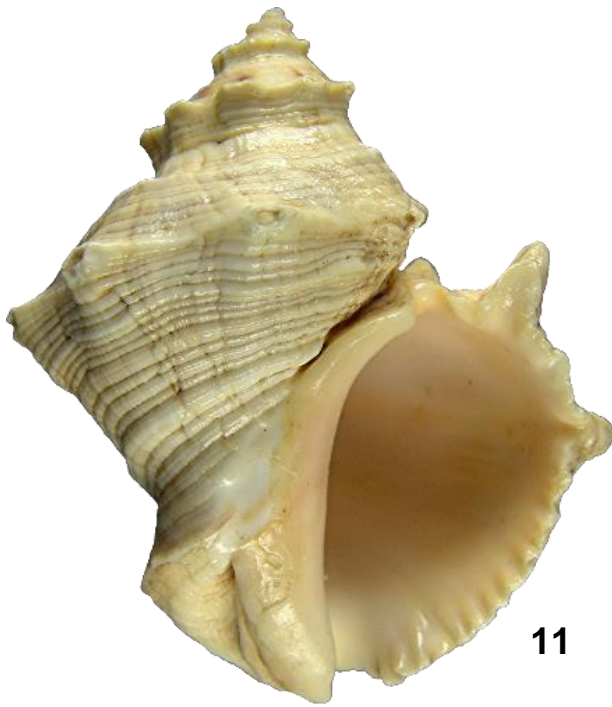


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Plate III. *Thais lacera* (Born, 1778)
Kilakarai, Tamil Nadu, S India. 1973. Trawled by local fishermen.
Collection FN.
Figs 7 & 8: 32.1 mm.
Figs 9 & 10: 31.8 mm.



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Plate IV. *Thais lacera* (Born, 1778)
Kilakarai, Tamil Nadu, S India. 1973. Trawled by local fishermen.
Collection FN.
Figs 11 & 12: 54.1 mm.
Figs 13 & 14: 56.2 mm.

On the occurrence of magenta-coloured juveniles of *Neopycnodonte cochlear* (Poli, 1795) (Mollusca: Bivalvia: Gryphaeidae) on the East Atlantic and Belgian coasts

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Keywords: *Neopycnodonte cochlear*, GRYPHAEIDAE, Koksijde, Roscoff, Galicia.

Abstract: A few juvenile specimens of *Neopycnodonte cochlear* (Poli, 1795) were found in Koksijde (Belgium) on 23 January 2005. This record in North Sea waters was confirmed by the find of more specimens in the harbour of Roscoff (Brittany, France) and of a sample in Galicia (North Spain).

Abbreviations:

H.: height
L.: length
LV: left valve
RV: right valve

Introduction: M.-Th. Vanhaelen (Koksijde, Belgium) found a sample of several juvenile oysters on a plastic box, washed ashore on the local beach of Koksijde, on 23 January 2005 (Pl. I, Figs 1-6 & Pl. II, Figs 7-10). This attentive beachcomber was especially attracted by the unique magenta and ochre-brown coloured specimens. Some of them had completely taken the cubic form of the substrate. At first glance we thought this was a new invader from exotic waters, but careful study revealed that the specimens belonged to *Neopycnodonte cochlear* (Poli, 1795), a worldwide species, occasionally attached to different drifting objects washed ashore in the southern North Sea (Belgian, Dutch and German coasts) (Visser *et al.*, 1967; Zoer & Visser, 1970; Slager, 1981; Adema, 1987 & 1988; Kerckhof, 1995). Fossil shells of this species are frequently found in Zeeland (The Netherlands). Later on, in August 2006, marine biologist Francis Kerckhof (Oostende, Belgium) found more specimens in trawl nets in the harbour of Roscoff (Brittany, France) (Pl. IV, Figs 16-19; Pl. V, Figs 20-25; Pl. VI, Figs 26-30). These specimens too were juvenile, pinkish cream coloured, very flattened and often very angled in shape. The latter characteristic could be explained by the very thin structure of the shell established in this species, resulting in a perfect adaptation to the substrate. None of them possessed the typical 'cupped' form of the species.

We obtained confirmation of the identification when F. Kerckhof was traveling along the Galician coast (Bay of Biscay, North Spain). He found several oysters on cables and large barnacles, which appeared to have been located on the bottom of the sea during a certain period. Specimens with the 'cupped' form were found among flattened ones, very similar to those found in Koksijde and Roscoff. Again the typical characteristics were present: the magenta colour of the shell, the very fragile thin structure and both flattened and cupped forms. Anyway, in the genus *Crassostrea* as well either 'cupped' or 'flattened' specimens exist. After careful study we found that all shells had the following features in common: the typical row of chomata in the area of the hinge, the vesicular structure at the margins of the lower valve and especially the position of the subcircular muscle scar. Moreover, a striking feature was the orange-red colour of the attaching muscle in all studied specimens. These observations were confirmed by comparing the juvenile specimens with other individuals attached to *Charonia lampas* (Linnaeus, 1758) from the Bay of Biscay (Pl. X, Figs 40-43 & Pl. XI, Figs 44-46). Several of them were rather flattened as well and every once in a while they possessed traces of the same magenta colour, even if they had thoroughly been cleaned with bleaching agent.

Diagnosis:

Genus *Neopycnodonte* Stenzel, 1971

Type species: *Ostrea cochlear* Poli, 1795

Medium sized shells (up to 9 cm high). Inequivalve, lower valve deeply concave, upper valve flat. Shell walls fragile, very thin and partly translucent. Irregular in outline, subcircular-elongate oval with the chalky shell layers vesicular. Sculpture usually lacking but occasionally with thin lamellae. LV mostly deep, capacious; attachment area small to fairly large, commonly situated in the region behind the umbo; posterior half of LV vertically rising from substratum attachment causing an angle of 45° hinge axis and level of attachment; LV mostly smooth, devoid of imbrications, but older

individuals have paper-thin foliaceous imbrications near the valve margin, sometimes ending in spoon-shaped extensions. Auricles on either side of hinge common, foliaceous, imbricate, extensive (to 2 cm), irregular in outline. LV with 7-10 gentle, rounded, irregular radial placcations of unequal length and cross-section; fairly deep, well-rounded radial posterior groove sets off small posterior flange that carries two plications, but absent in some specimens, and commonly difficult to discern. Adductor muscle scar large and subcircular. Chomata sparse, hardly detectable in some individuals, restricted to within 1 cm distance from the hinge; on LV these chomata are up to 2 mm long, smooth, very subdued. RV flat to concave, with scaly imbrications along margins parallel to contour of valve; showing fibrous prismatic structure where broken.

Species *Neopycnodonte cochlear* (Poli, 1795)

Ostrea cochlear Poli, 1795

? *Ostrea subucula* Jousseume in Lamy, 1925: until living specimens are found and examined *O. subucula* Jousseume is best left as a junior synonym of *N. cochlear*.

The genus *Neopycnodonte* (family GRYPHAEIDAE) was monospecific (Harry, 1985) for a long time. Recently Gofas et al. (2009) described *Neopycnodonte zibrowii* as the largest species in this genus (up to ca. 20 cm dorso-ventrally, to over 12 cm antero-posteriorly), living at a depth of about 500 m in the NE Atlantic (Azores and Bay of Biscay). This very large species is cemented to the substrate by the left valve which is slightly larger and thicker than the right valve. The ventral margin of both valves is roughly parallel to the attachment surface and does not make a distinct angle with it. The shell material is brittle and light-weight caused by extensive vesicular structure. The beaks are moderately prominent and nearly orthocline, with a triangular ligamental area. The central part of the ligament (the resilium) is very narrow and does not protrude over the hinge line at all. The scar of the adductor muscle is unusually small and situated closer to the hinge line than to the ventral edge of the endostracum.

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The edge next to the hinge line is provided with well developed chomata of the so-called 'neopycnodontine' type. The exterior of the valves is devoid of sculpture other than scale-shaped remnants of the shell margins, pale buff in colour.

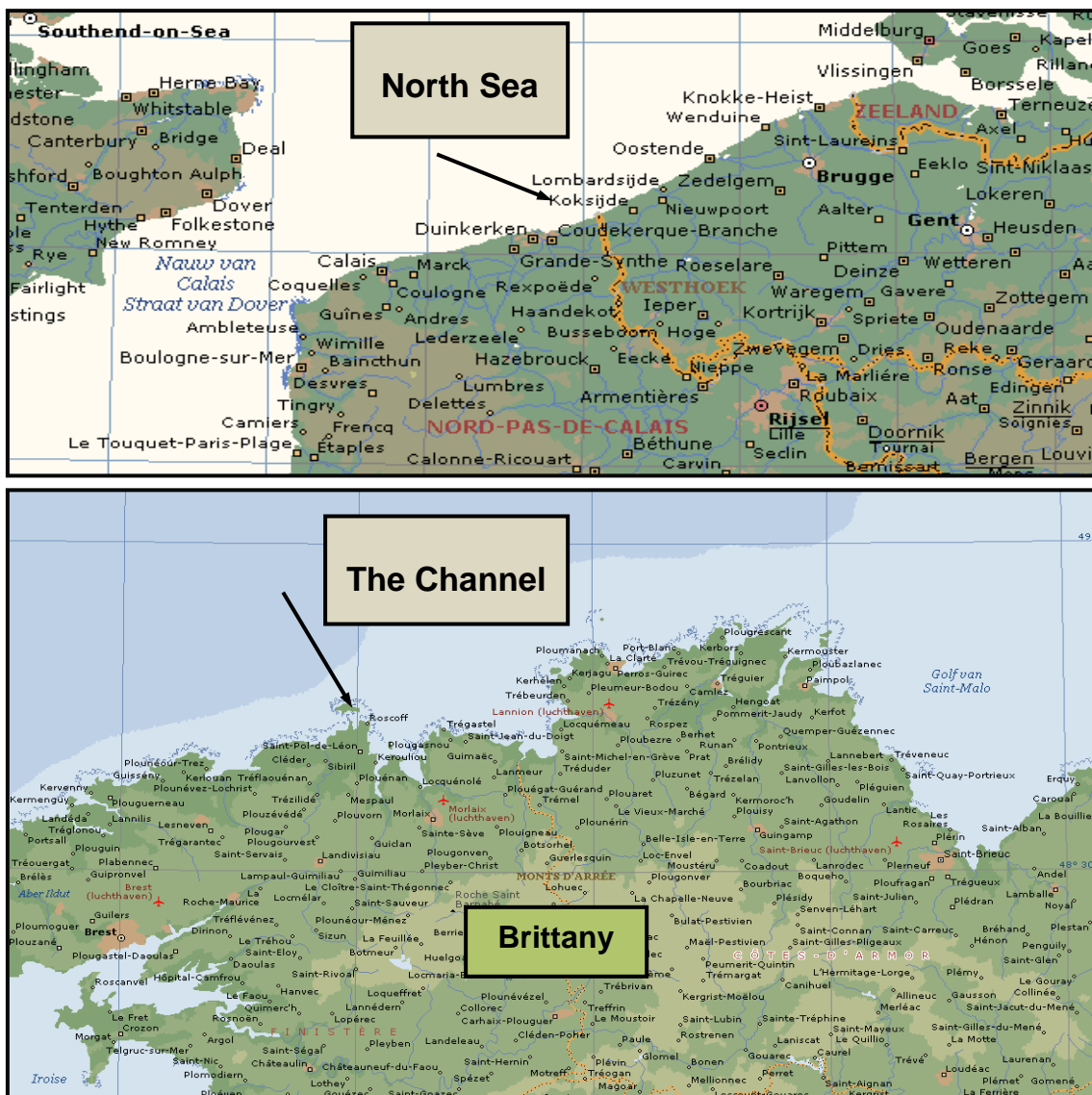
For a description of *N. cochlear*, we refer to the description of the genus. The species lives on any substrate chiefly in deeper water (coral, cables, wrecks as deep as 2,000 m) (Plate IX, Figs 38-39) but even in crevices in the sublittoral area and on drifting objects or on other shells such as *Charonia lampas* (Linnaeus, 1758) in the Bay of Biscay (Plate XI, Figs 44-46) and the Mediterranean Sea. In fact, it has a worldwide distribution. Most specimens are found on both sides of the Atlantic Ocean (Carolina, Florida, Spain, Portugal and the Bay of Biscay with Ireland as its northern limit). It is a current species in the Mediterranean Sea and even specimens from Japan have been recorded. Occasionally clusters containing 5-10 specimens are trawled (Plate IX, Figs 38-39).

The vesicular chalky layers are very sparse and this oyster is best identified by its subcircular muscle scar and thin semitransparent shell.

Conclusion: Apparently, specimens of *Neopycnodonte cochlear* (Poli, 1795) moved up northwards in the east Atlantic and even in the English Channel and the North Sea during the previous decades. Until now only small juvenile specimens have been obtained from fishery or have been found on different substrates washed ashore. A particular characteristic of the shells is the magenta colour and the fact that they perfectly adopt the form of the substrate even if it is angular.

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Localization of the records of *Neopycnodonte cochlear* on Belgian and French coasts

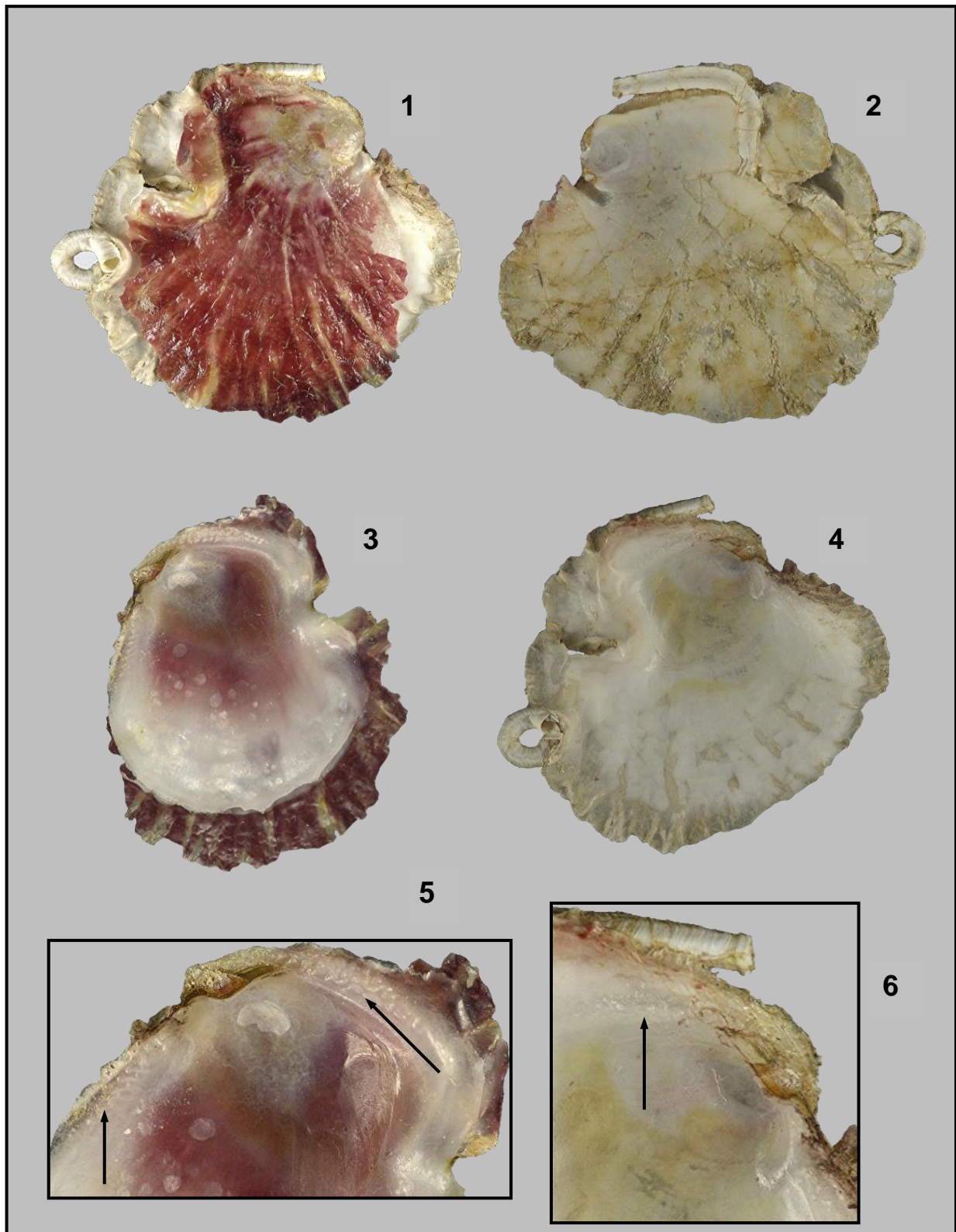


Plate I. Figs 1-6: *Neopycnodonte cochlear* (Poli, 1795). Koksijde, Belgium. Found attached to a plastic box on the beach after a gale. 23 January 2005. H. 24.30 mm L. 26.80 mm; 1: RV = outside of upper valve; 2: LV = outside of lower valve; 3: inside of RV; 4: inside of LV; 5: chomata in upper valve; 6: chomata in lower valve.

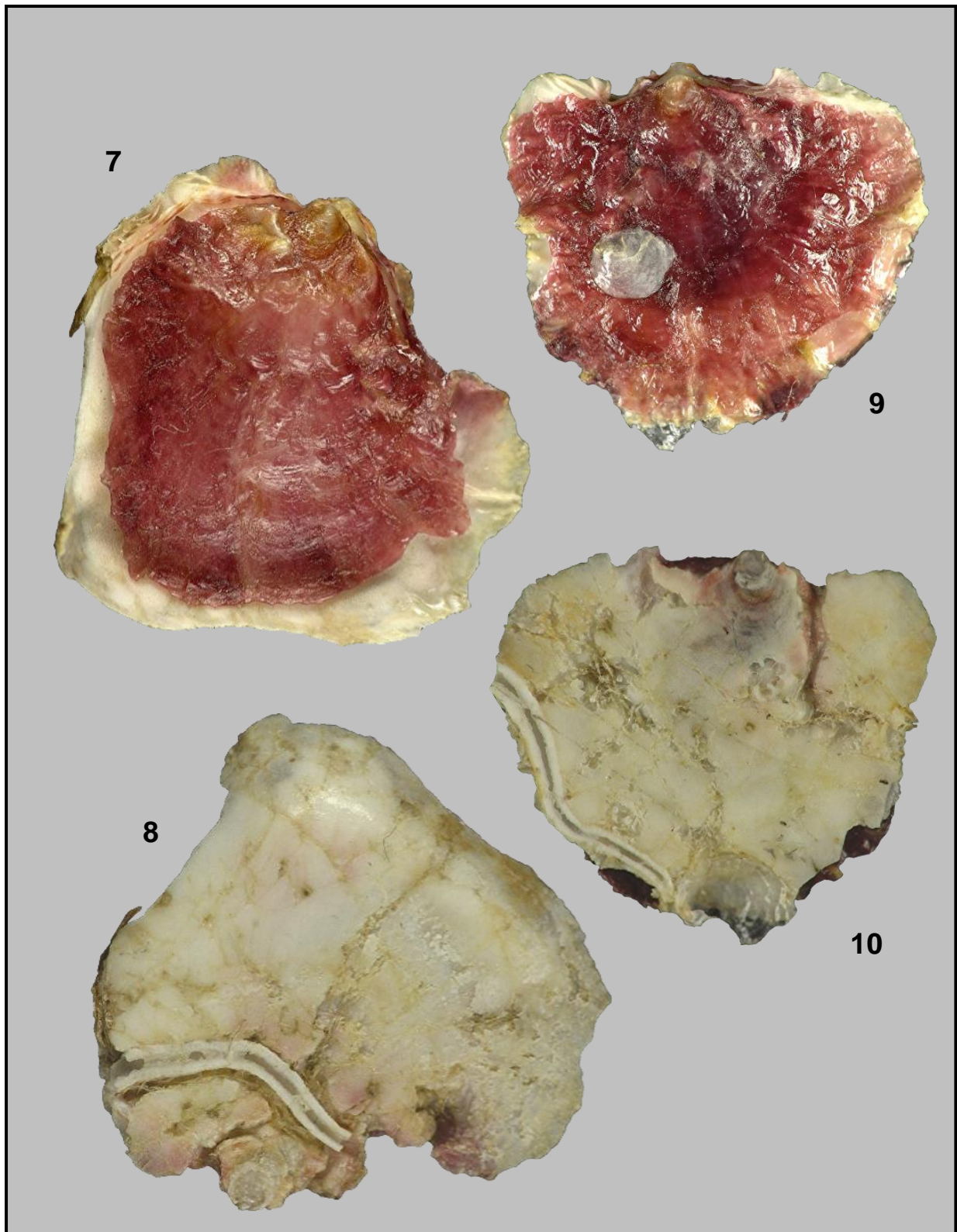


Plate II. Figs 7-10: *Neopycnodonte cochlear* (Poli, 1795). Koksijde, Belgium. Found attached to a plastic box on the beach after a gale. 23 January 2005; 7-8: H. 16.72 mm L. 17.19 mm; 7: RV = outside of upper valve; 8: LV = outside of lower valve; 9-10: H. 12.42 mm L. 13.87 mm; 9: outside of RV; 10: LV = outside of lower valve.

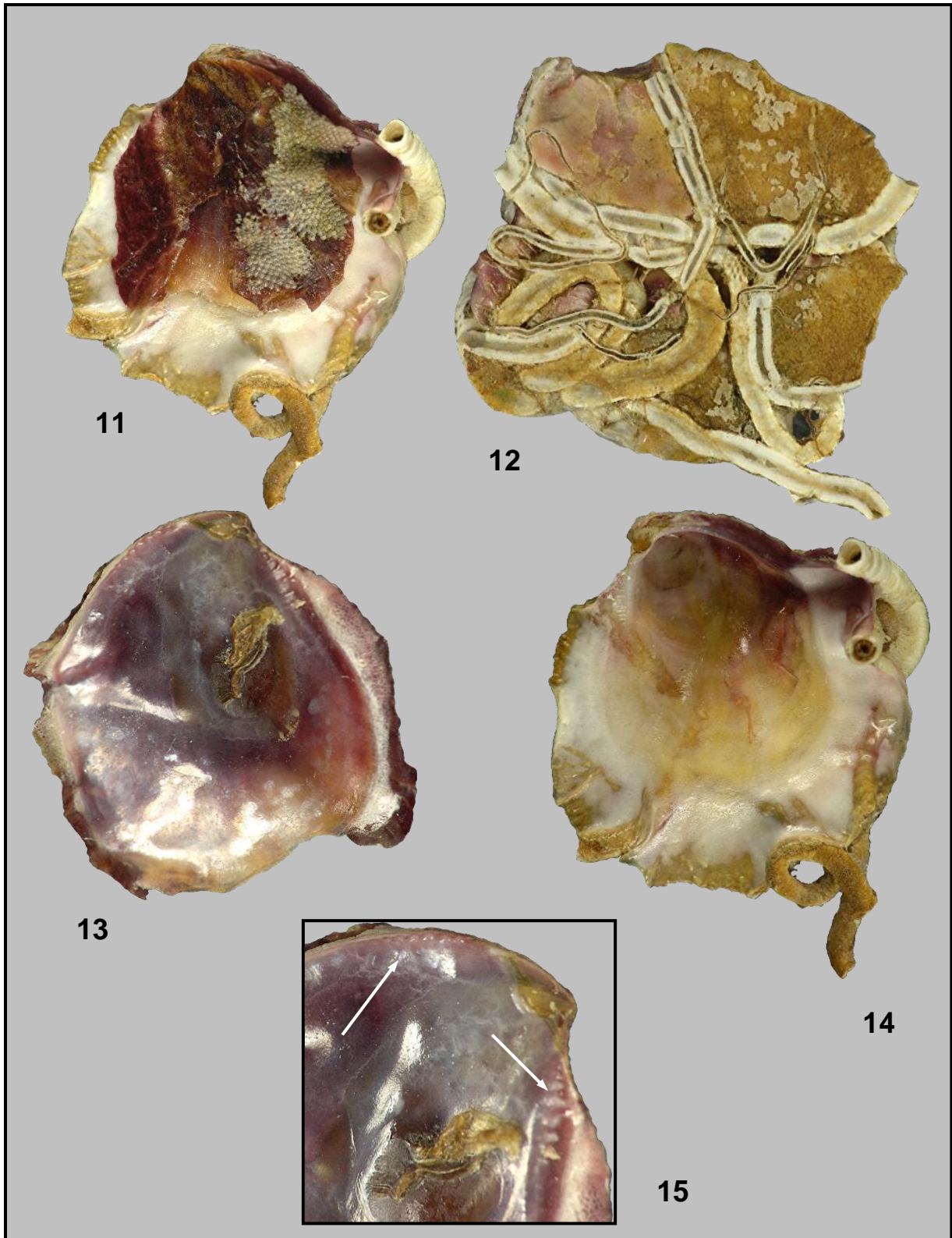


Plate III. Figs 11-15: *Neopycnodonte cochlear* (Poli, 1795). Koksijde, Belgium. Found attached to plastic box on the beach after a gale. 23 January 2005. H. 18.59 mm L. 17.31 mm; 11: RV = outside of upper valve; 12: LV = outside of lower valve; 13: inside of RV; 14: inside of LV; 15: chomata in upper valve.

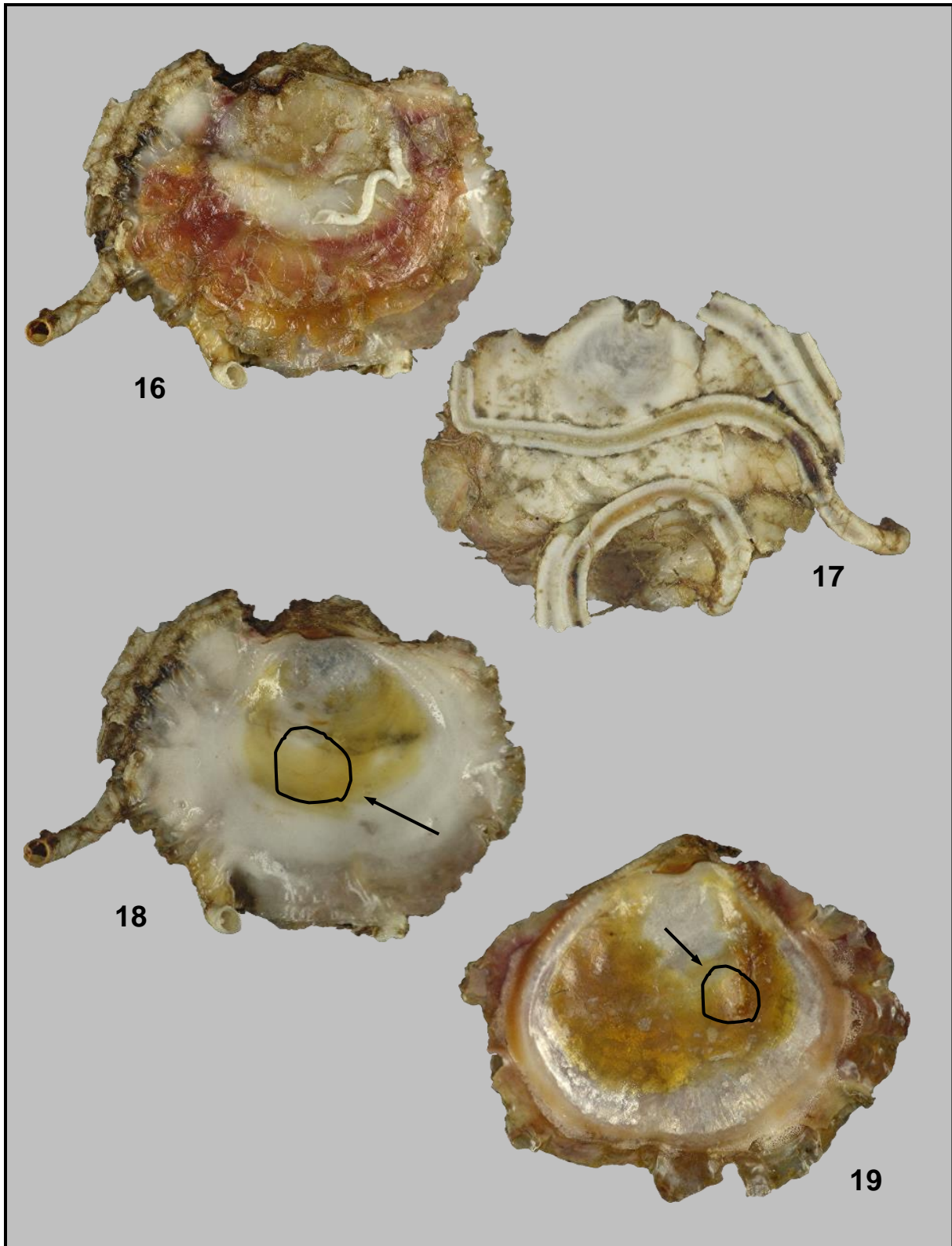


Plate IV. Figs 16-19: *Neopycnodonte cochlear* (Poli, 1795). Roscoff, Brittany, France. In trawl net in harbour. August 2006. H. 20.37 mm L. 24.83 mm; 16: RV = outside of upper valve; 17: LV = outside of lower valve; 18: inside of RV with slightly flattened circular muscle scar; 19: inside of LV with slightly flattened circular muscle scar.

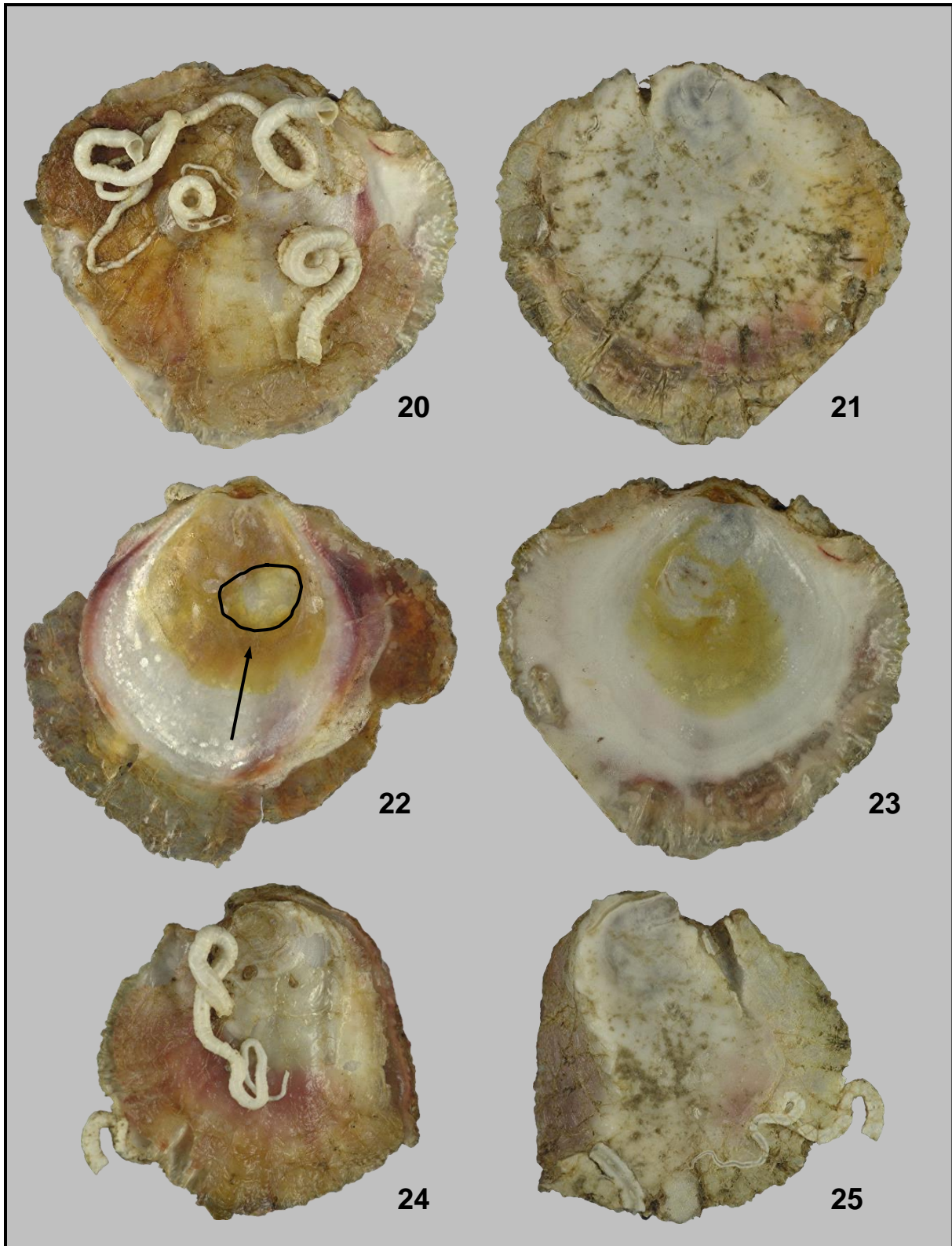


Plate V. Figs 20-25: *Neopycnodonte cochlear* (Poli, 1795). Roscoff, Brittany, France. In trawl net in harbour. August 2006; 20-23: H. 32.06 mm L. 34.26 mm; 20: RV = outside of upper valve; 21: LV = outside of lower valve; 22: inside of RV with slightly flattened circular muscle scar; 23: inside of LV; Figs 24-25: H. 23.81 mm L. 25.36 mm; 24: upper valve; 25: lower valve.

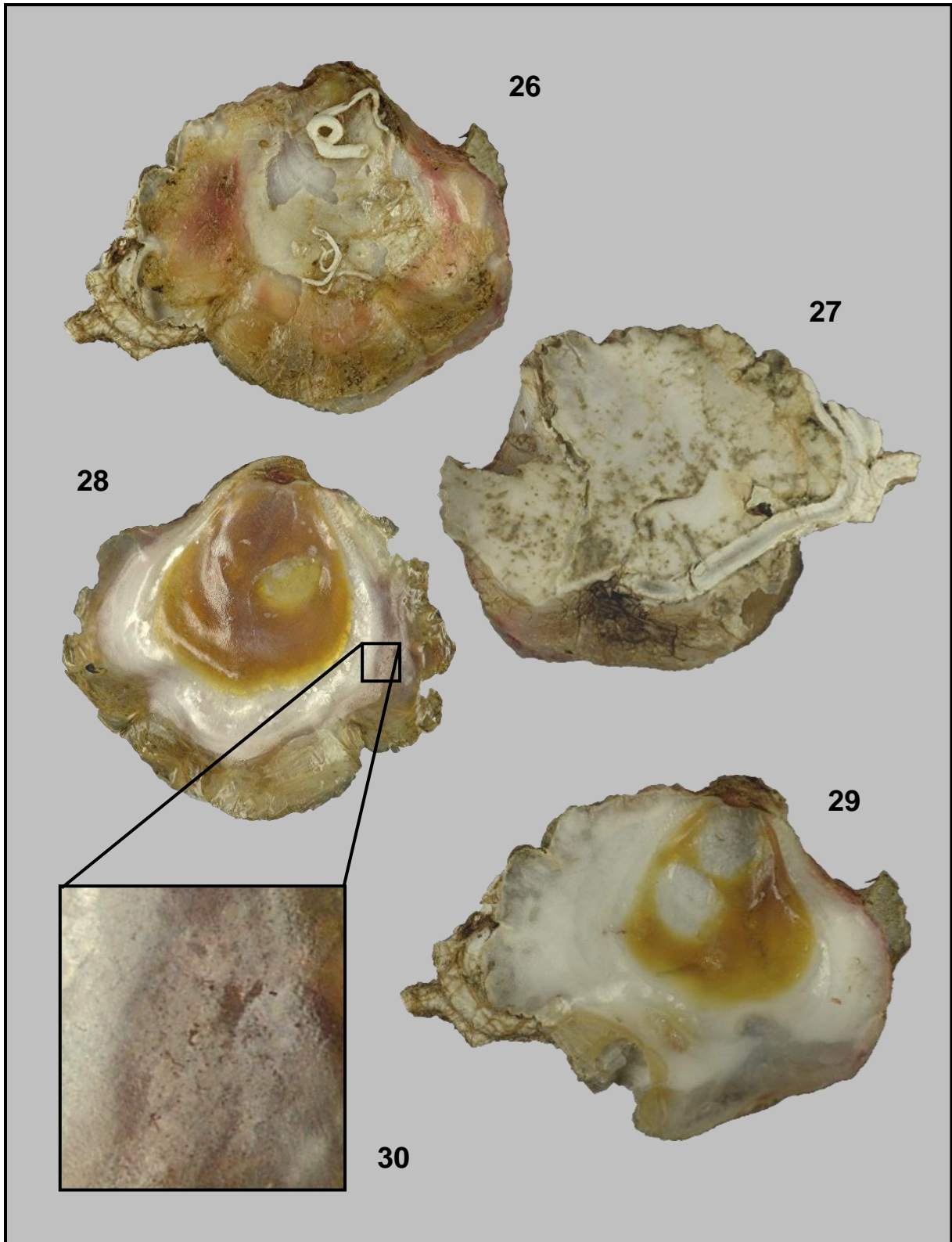


Plate VI. Figs 26-30: *Neopycnodonte cochlear* (Poli, 1795). Roscoff, Brittany, France. In trawl net in harbour. August 2006. H. 25.95 mm L. 30.10 mm; 26: RV = outside of upper valve; 27: LV = outside of lower valve; 28: inside of RV; 29: inside of LV; 30: vesicular structure.

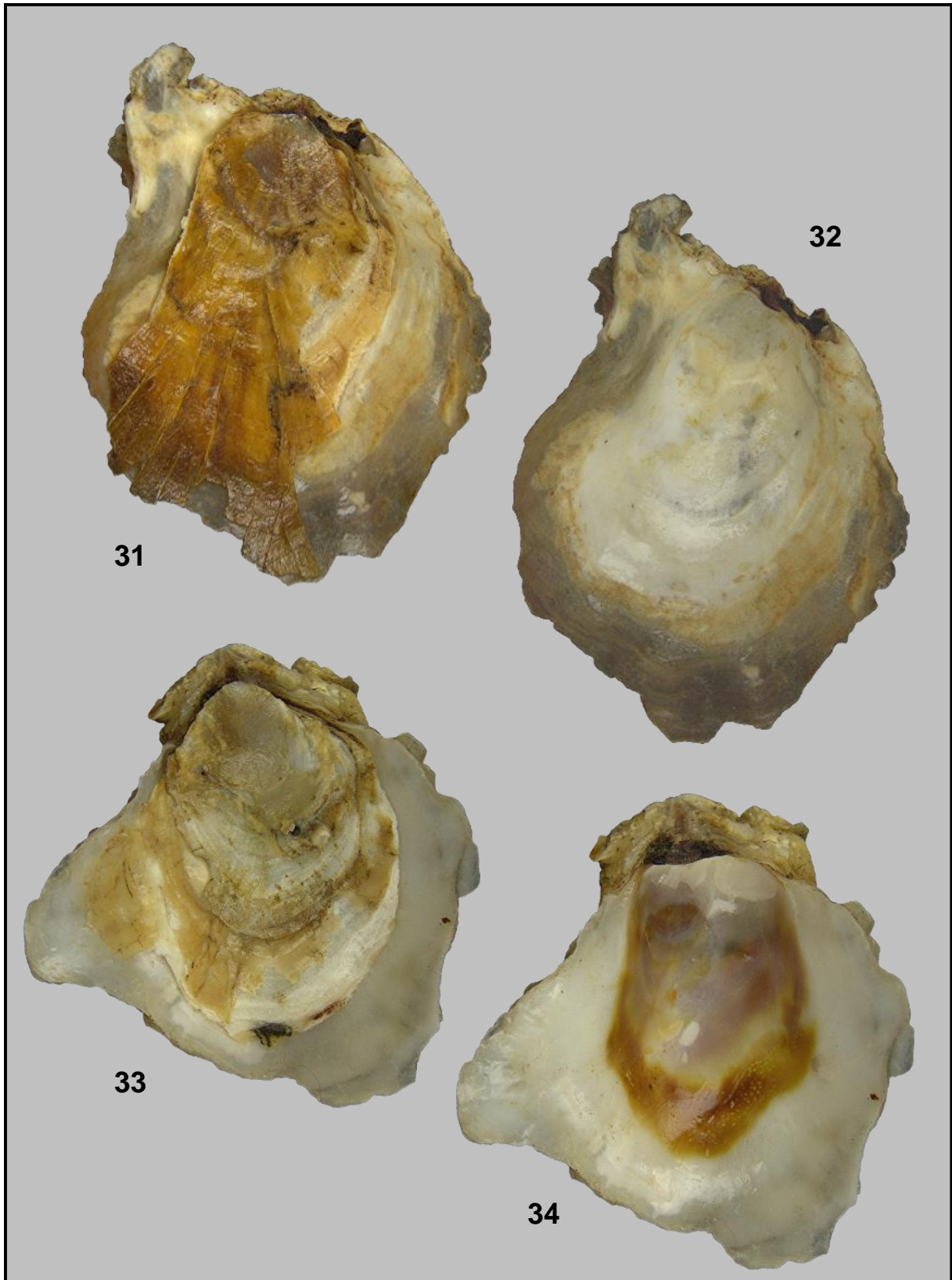


Plate VII. Figs 31-34: *Neopycnodonte cochlear* (Poli, 1795); 31-32: Canary Islands. Trawled by Spanish fishermen. H. 58.66 mm L. 46.75 mm; 31: complete specimen; 32: inside of lower valve; Figs 33-34: Venice, Italy. Dived at a depth of 20 m. 19 July 1983; 33: complete specimen; 34: inside of left valve.

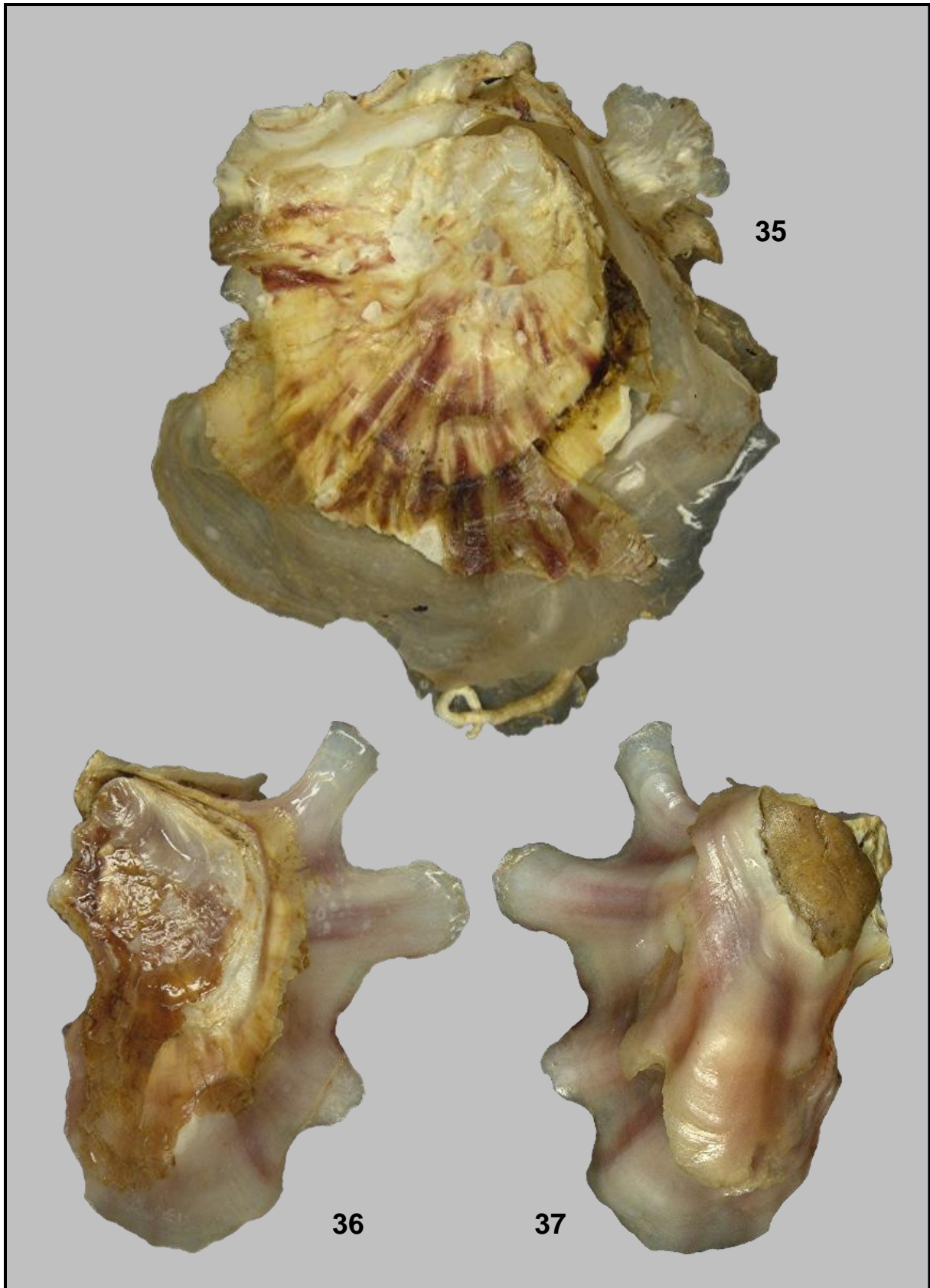


Plate VIII. Figs 35-37: *Neopycnodonte cochlear* (Poli, 1795); 35: Off San Carlos De La Rapita, Spain. Trawled by Spanish fishermen. 1990. H. 81.82 mm L. 79.53 mm; 36-37: off Ibiza, Balearic Islands, Spain. Dredged at a depth of 80 m; 36: complete specimen; 37: outside of lower valve.

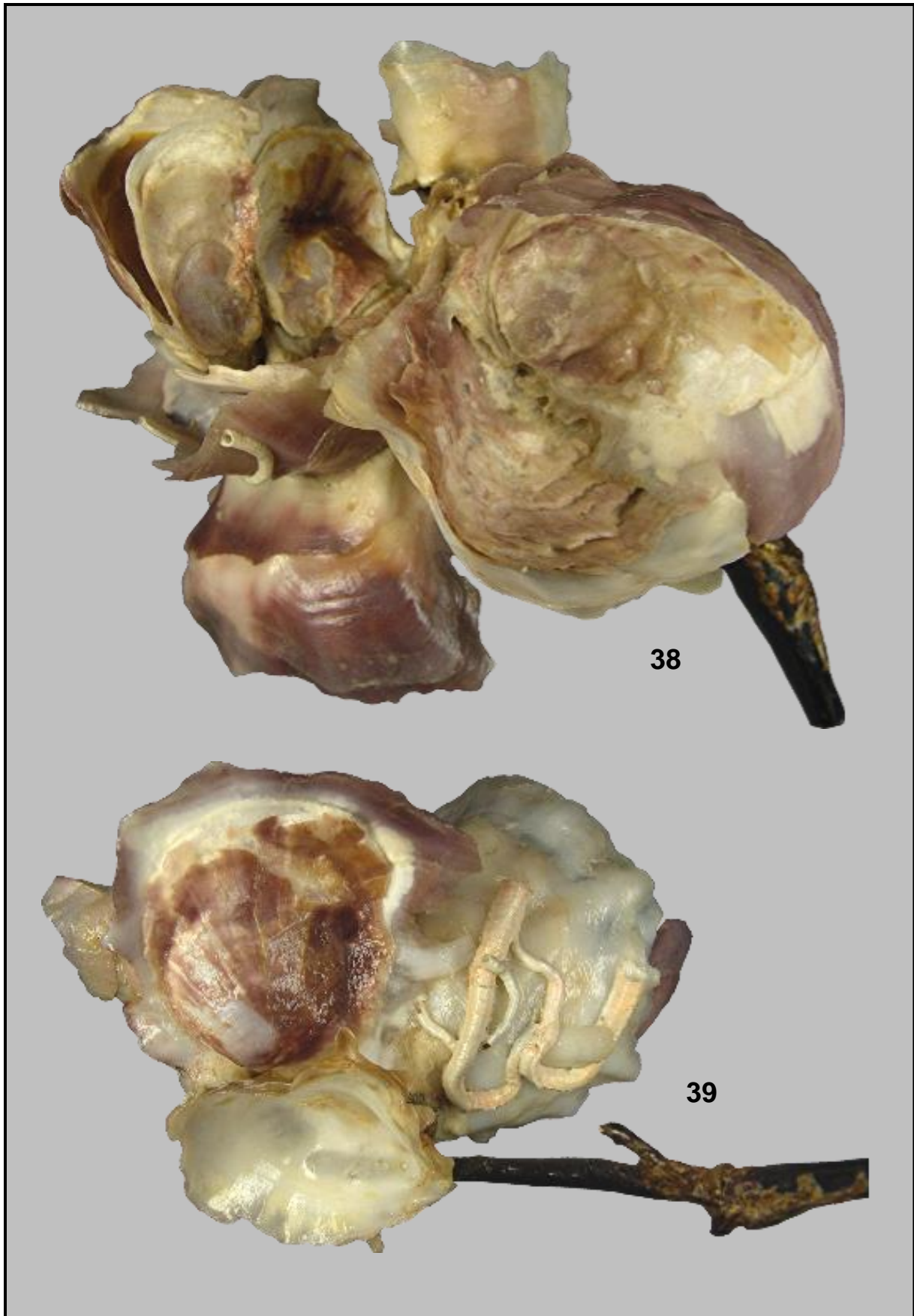


Plate IX. Figs 38-39: *Neopycnodonte cochlear* (Poli, 1795): clusters of several specimens on a substrate. Off Ibiza, Balearic Islands, Spain. Trawled by Spanish fishermen.

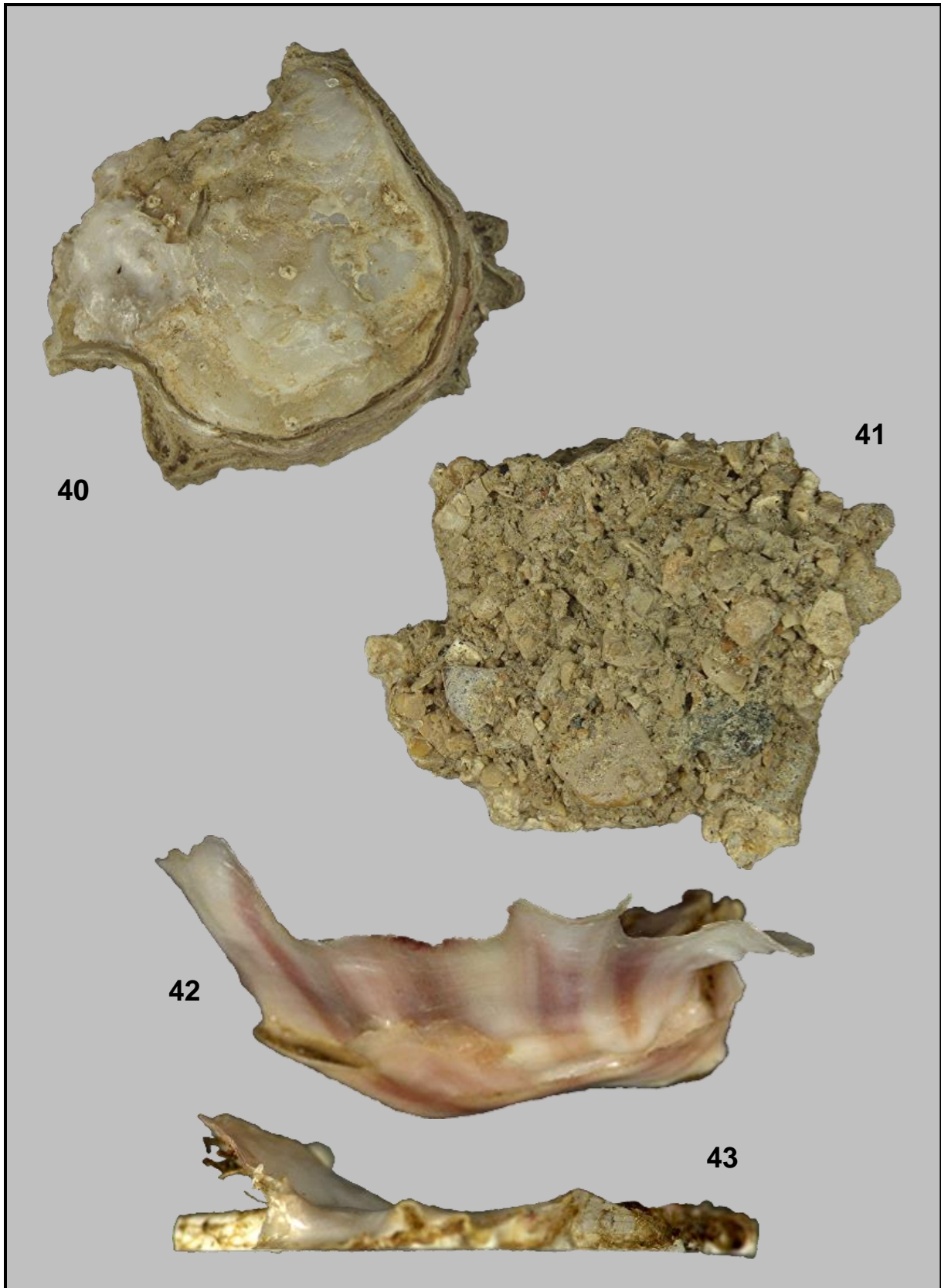


Plate X. Figs 40-43: *Neopycnodonte cochlear* (Poli, 1795). South of La Rochebonne Bank, Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 160 m. August 2007. H. 43.82 mm L. 45.52 mm; 40: complete specimen; 41: outside of lower valve; 42: cupped form; 43: flattened specimen.

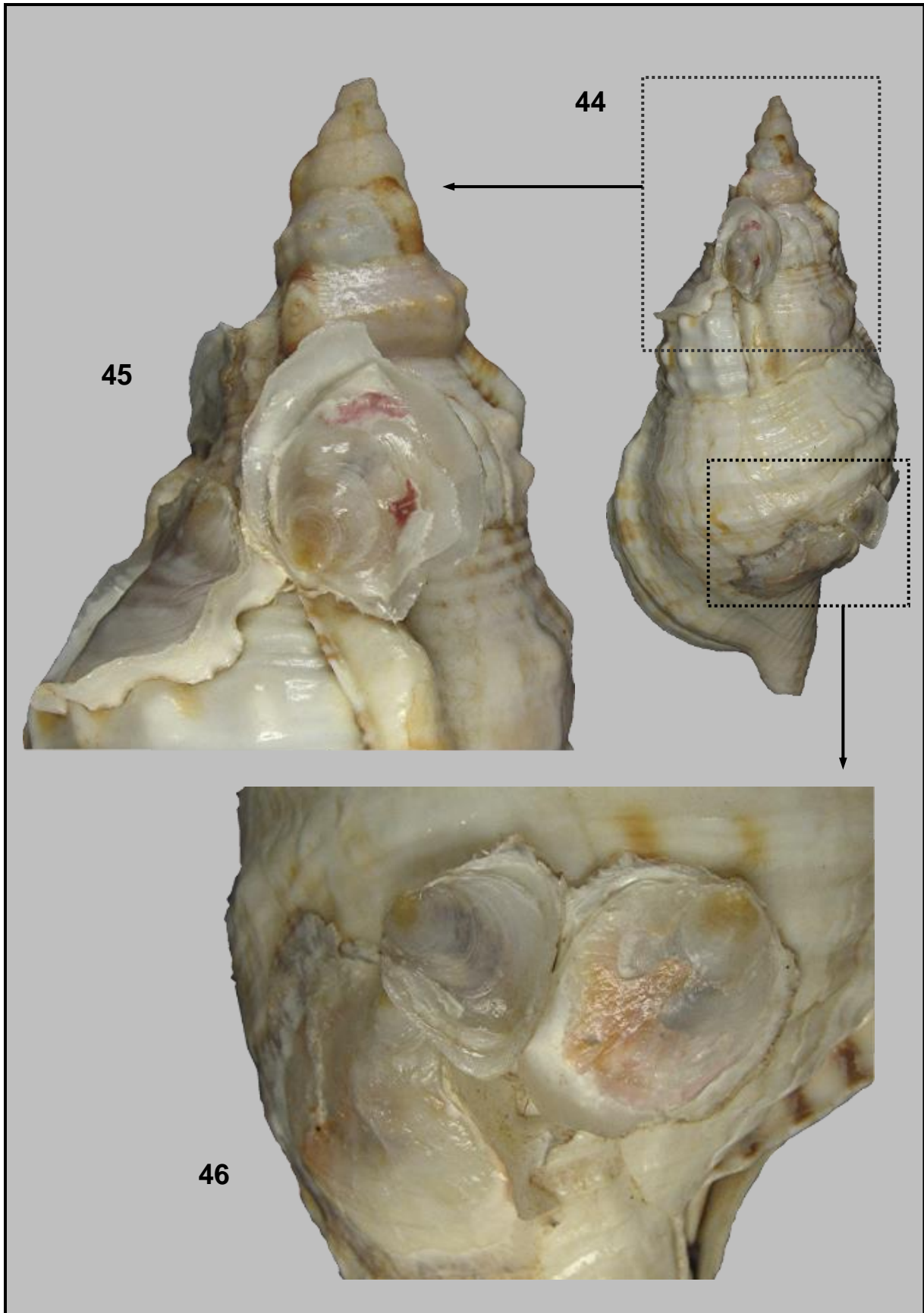


Plate XI. Figs 44-46: *Neopycnodonte cochlear* (Poli, 1795). North of La Rochebonne Bank, Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 130 m. July 2001. Specimens attached to *Charonia lampas* (Linnaeus, 1758).

Range extension for *Lepidochitona canariensis* (Thiele, 1909) (Mollusca: Polyplacophora: Tonicellidae)

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Keywords: *Lepidochitona canariensis*, TONICELLIDAE, Mauritania, range extension.

Abstract: *Lepidochitona canariensis* (Thiele, 1909) is reported to have been found in Mauritania. This is a southern range extension for a chiton until now only known from the Canary Islands, Madeira, the Selvagens Islands, a few localities west of the Strait of Gibraltar and one report from the Mediterranean (south of the Iberian Peninsula).

Abbreviations:

FN: Private collection of Frank Nolf

JV: Private collection of Johan Verstraeten

Systematics:

Class POLYPLACOPHORA

Order CHITONIDA

Suborder ACANTHOCHITONINA

Family TONICELLIDAE Simroth, 1894

Subfamily Tonicellinae Simroth, 1894

Genus *Lepidochitona* Gray, 1821

Type species: *Chiton marginatus* Pennant, 1777

(= *Chiton cinereus* Linnaeus, 1767)

Classification according to Sirenko (2006).

Discussion: In April 2006, Mr. Gérard Hervillard of France visited several locations situated on the Banc d'Arguin in Mauritania. At one location – the island of Agadir – he collected a few specimens of *Pugilina morio* (Linnaeus, 1758) on muddy sand bottoms at low tide. When cleaning these shells afterwards, a few small chiton specimens were recovered and quickly recognized as members of the genus *Lepidochitona* Gray, 1821. When consulting literature on the subject the species that could occur at the locality are on the one hand the widespread *Lepidochitona cinerea* (Linnaeus, 1767) which is found throughout the Europe and extending southwards in the Atlantic up to Senegal and on the other hand *Lepidochitona caboverdensis* Kaas & Strack, 1986 to be found in Senegal and the Cabo Verde Archipelago. A

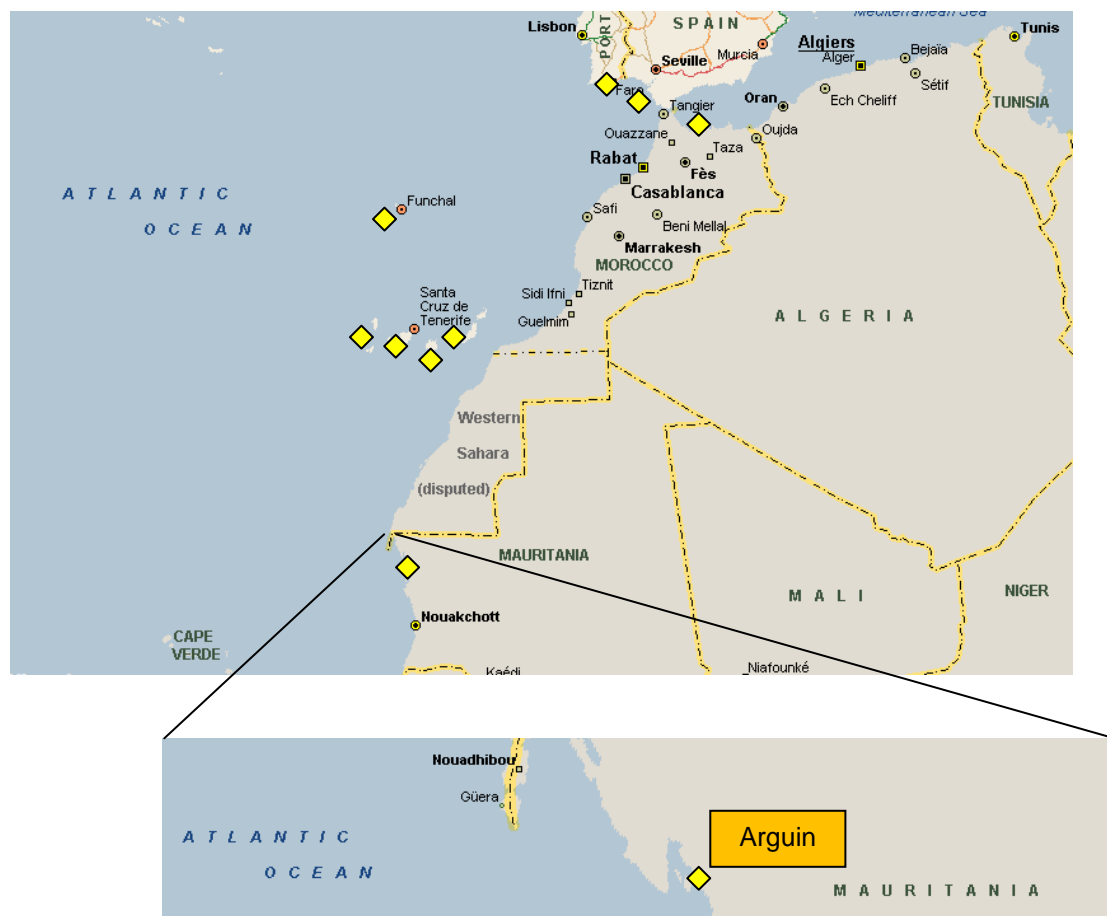
comparison between specimens of both species from the collection of the first author showed several differences, therefore a wider range of the species was investigated. The examined specimens were finally attributed to *Lepidochitona canariensis* (Thiele, 1909), a rather rare intertidal species, previously only known from southern Portugal and southwestern Spain (Atlantic side) (Carmona Zalvide & García García, 2000), Madeira (near Canical), the Canary Islands (Puerto de la Cruz, Tenerife; San Agustin, Gran Canaria; La Caleta, Lanzarote; off Faro de Orchilla, SW Hierro) (Kaas, 1991) and one locality in the Mediterranean Sea (Torres de Alcalá, Morocco at about a hundred km from the Strait of Gibraltar) (Dell'Angelo & Tringali, 2000). With the present find the geographical range has now significantly been extended southwards in the Atlantic. Shells from the Cape Verde Archipelago attributed to *L. canariensis* by several authors most probably belong to *L. caboverdensis* Kaas & Strack, 1986. The investigated specimens all show typical characteristics of *L. canariensis*: length of about 4 mm, creamy yellow colouration with some darker flecks; tegmental sculpture consisting of quincunxially arranged, diamond shaped granules, valves with strongly beaked apex, typical radula. The present species can mainly be distinguished from *L. cinerea* by its smaller size, the intermediate valves with a significant apex and the coarser granulation. It differs from *L. caboverdensis* by the much coarser granulation, the higher dorsal elevation, the girdle ornaments and the radula.

Acknowledgements: We thank Gérard Hervillard (France) for bringing the specimens of *L. canariensis* to our attention and Frank Nolf (Oostende, Belgium) for additional data, maps and photographs. David Monsecour (Aarschot, Belgium) and Kelly Surmont (Oostende, Belgium) thoroughly revised the text.

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Geographic distribution of *Lepidochitona canariensis* (Thiele, 1909)



Plate I. Figs 1-3: *Lepidochitona canariensis* (Thiele, 1909); 1: Island of Agadir, Arguin, Mauritania, NW Africa. On *Pugilina morio* (L., 1758) at low tide. April 2006. 3.86 mm. JV; 2: Arrecife, Lanzarote, Canary Islands. Under rocks on Island del Amor at low tide. 25 May 1971. 4.21 mm. FN; 3: San Agustin, south of Gran Canaria, Canary Islands. Under stones at low tide. 20 May 1971. 11.53 mm. FN.