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Comparing the living eastern Atlantic *Euthria* Gray, 1839 (Gastropoda: Buccinoidea), with brief remarks on the paleontological and biogeographical context

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Abstract: West African species belonging to the genus *Euthria* are briefly discussed and compared to *Euthria cornea* (Linnaeus, 1758) from the Mediterranean Sea and to Pliocene and Miocene *Euthria* species.

Introduction: The vast coastline along the West African continent harbours a unique molluscan fauna. The genus *Euthria* Gray, 1850 is well- known from the far offshore Cape Verde Archipelago, with more than 25 species (Fraussen & Swinnen 2016), and by the highly variable *E. cornea* (Linnaeus, 1758) from the Mediterranean and adjacent Atlantic. Along the continental coast, however, no *Euthria* species was recorded until recently. A couple of years ago, Mr. Schoenherr showed us a peculiar shell belonging to an unknown species collected offshore Angola. This species was described as *Euthria annegretae* Schoenherr & Rolán, 2017 in the previous article. It has a particular shape, similar to some fossil *Euthria* known from the Miocene and Pliocene. In the present paper, we add some additional comparisons while trying to place the species in a broader paleontological context.

Abbreviations:

MNHN: Muséum national d'Histoire naturelle, Paris, France.
MFNB: Museum für Naturkunde, Berlin, Germany.
MNHNL: Museum Nacional de Historia Natural, Luanda, Angola.
MNCN: Museo Nacional de Ciencias Naturales, Madrid, Spain.
CCS: collection of Christfried Schoenherr, Luanda, Angola.
CPR: collection of Peter Ryall, Maria Rain, Austria.
KF: collection of Koen Fraussen, Belgium

SYSTEMATICS

BUCCINOIDEA Rafinesque, 1815

Remarks: The heterogenity of what we know as **Buccinidae** was confirmed by molecular evidence by Galindo et al. (2016: 337-353), who already elevated Pisaniinae to the family level **Pisaniidae** (Galindo et al. 2016: 341, 349). At present we mainly rely on radula morphology (see Cooke, 1917 and Powell, 1929) to distinguish the *Pisania*-group from the *Buccinulum*-group, but further study may mean the same for the subfamily Buccinuliinae. In the present paper, we therefore still use the name **Buccinidae** in the conservative way. Finlay (1928: 250) already introduced the family **Buccinulidae** to separate several genera such as *Euthria* and *Buccinulum* from **Buccinidae**. This was followed in several revisions by Powell. Yet, discussing the taxonomic level of the group called Buccinuliinae is beyond the scope of the present publication, we tentatively keep this subfamily within **Buccinidae**.

Genus ***Euthria*** M. E. Gray, 1850

Type species by original designation: "*Fusus lignarius* Chiaje" (this is *Fusus lignarius* Lamarck, 1816, a junior synonym of *Murex corneus* Linnaeus, 1758) from the Mediterranean, Recent.

Indo-West Pacific *Euthria* (including *Siphonofusus*) are a moderately heterogenous group with important differences in the shape of the central tooth (see Cooke

1917: 234-235), while the Atlantic *Euthria* are moderately similar in shell morphology, yet with similar but weaker differences in radula morphology (see Rolán & Monteiro 2007: fig. 12 and 23). A similar difference in radula morphology is observed among the species assigned to the genus *Buccinulum* (see Powell, 1929: figs 83-99).

Comparison: The genera *Afer* Conrad, 1858 and *Euthriostoma* Marche-Marchard & Brebion, 1977 are present along the West African continental coast but, remarkably, are not known from the Cape Verde Islands, yet.

Afer species differ in having a larger, bulbous protoconch, a longer siphonal canal and an outer lip that usually has more accentuated internal lirae, while *Euthriostoma* species differ in having a smaller protoconch and a large, heavy, white shell with high spire.

The genus *Buccinulum* Deshayes, 1830 (type species: Buccin linea Martyn, 1784, SD by Iredale, 1921) has a remarkable range concentrated around New Zealand and we regard them distinct from *Euthria*. A discussion of *Buccinulum* is beyond the scope of this paper. For the use of the name *Euthria* as a genus distinct from *Buccinulum* we refer to Shuto (1978: 358-361), Beets (1986: 92-93), Fraussen (1999: 73), Fraussen & Hadorn (1999: 120-121) and Rolán, Monteiro & Fraussen (2003: 125-126). Virtually all species assigned to the genus *Buccinulum* have convex whorls without subsutural concavity and we discuss this characteristic in the comparisons below.

Euthria cornea (Linnaeus, 1758)
Figs 20-21, 34-36, 37-39, 67-103

Murex corneus Linnaeus, 1758: 754, n. 491. Mediterranean, Recent. Europe, Pliocene to Pleistocene, probably also Miocene.

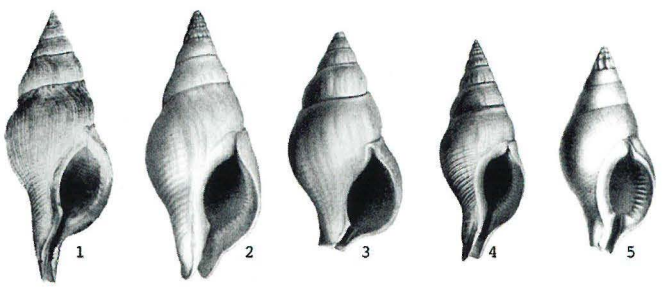
E. cornea, the type species of the genus, is characterised by the presence of a broad and moderately deep subsutural concavity, by the distinctive subsutural cord or band that forms a big callus along the anal notch, the rather short siphonal canal that is weakly curved and the glossy shell surface.

The species displays a high variability in size, ranging from 22 to at least 75 mm, and pattern, ranging from uniformly pale to dark, the presence or absence of spiral bands, large and/or small dots and spots and occasionally some axially orientated streaks.

The oldest shells that we could assign to *E. cornea* with certainty are from the late Pliocene to early Pleistocene (see Figs 34-36 and 37-39).

Since the early Pleistocene, the species has evolved into a wide range of forms. The question is whether those forms are ecophenotypes or whether they are of a subspecific status or, as assumed among conchologists, deserve the status of a full species. We believe that populations of *E. cornea* are still in contact and exchange genetic material, as suggested by the presence of clines along the Italian and Greek coasts and the presence of intermediates when one is able to collect or observe a larger amount of specimens from the same locality. Some populations, however, are quite uniform in size and shape. Yet, we can usually find shells with an identical appearance and identical conchological characteristics from remote places (see for example the Portugese population from Albufeira that has identical fellows off Italy: Figs 92-98; see also the brown shells with white bands that are found at distant places: Figs 67-77). Here too, we can find intermediates in nearby populations and we therefore use the name *E. cornea* for all Mediterranean specimens, until further studies reveal solid proof for a different conclusion.

Bellardi (1872: 190-191, pl. 13, fig. 2-3) recorded *E. cornea* from the Pliocene and Miocene of Italy. Both shells he figured, however, are not conspecific with *E. cornea*. According to our observations and in the opinion of Brunetti & Della Bella (2016) the species *E. cornea* did not yet exist in the Pliocene. Unfortunately, we did not have the possibility to search for the Bellardi material or to add more fossils to the material studied. We therefore follow the conclusions of Brunetti & Della Bella (2016: 3-37), our confirmation being based on the conchological characteristics that are obvious and well-visible in the figures. Both shells figured by Bellardi are discussed below as *E. perpiniana* (Fontannes, 1879) and *E.* species B.



1: *Euthria* cf. *plioelongata,* taken from Cossmann 1901: pl. 6, fig. 24 as *Euthria cornea*. Pliocene.
2: *Euthria magna* Bellardi, 1872, type figure taken from Bellardi 1872: pl. 13, fig. 1. Miocene
3: *Euthria inflata* Bellardi, 1872, type figure taken from Bellardi 1872: pl. 13, fig. 4. Miocene.
4: *Euthria perpiniana* (Fontannes, 1879), taken from Bellardi 1872: pl. 13, fig. 2: *Euthria cornea* Varieta A. Pliocene.
5: *Euthria* species B, taken from Bellardi 1872: pl. 13, fig. 3: *Euthria cornea* Varieta B. Miocene.

Euthria perpiniana (Fontannes, 1879)
Figs 4, 40-48

Euthria cornea Varieta A (Bellardi 1872: 190-191, pl. 13, fig. 2) from the Pliocene of Italy.
Euthria cornea var. *perpiniana* Fontannes, 1879: 22, pl. 2, fig. 15 from the Pliocene.
Euthria cornea var. *plioelongata* – Gignoux, 1913: 496, fig. 9, from the Pliocene of Italy.

Gignoux (1913: 496) listed the shell figured by Bellardi (as *Euthria cornea* Varieta A) as belonging to *C. plioelongata*, but Brunetti & Della Bella (2016: 8) state that the type specimen of *C. plioelongata* is distinct from the shell figured by Bellardi.

E. perpiniana is characterised by the alternatingly strong and fine spiral cords along the base, laterally flattened spire whorls with a weak subsutural cord and the moderately curved columella usually without strong columellar fold on the transition to the siphonal canal.

E. cornea differs by the broader spiral cords that are equal in strength, usually with a broad interspace, the usually stronger subsutural cord, the usually broader and deeper subsutural concavity and the presence of a weak columellar fold on the transition to the siphonal canal.

Euthria species B, this is Bellardi's "Varieta B", differs by the broader spiral cords that are of equal strength (instead of alternatingly strong and fine) with a fine interspace, the presence of spiral sculpture all over the shell, the quite inflated spire whorls, the much straighter subsutural slope without subsutural cord, the twisted siphonal canal and the sharp columellar fold on the transition to the siphonal canal. This species is known from the Miocene, instead of Pliocene.

Euthria plioelongata (Sacco, 1890)
Fig. 1, 26-33

Euthria cornea Cossmann 1901: pl. 6, fig. 24.
Euthria plioelongata – Brunetti & Della Bella, 1916: 8, fig. 2A-E.

Cossmann (1901: 119, pl. 6, fig. 24) recorded *E. cornea* from the Pliocene of France (Biot). This shell is similar to *E. cornea* but differs by the weak or absent subsutural cord, the absence of axial knobs (occasionally also absent in *E. cornea*) and the presence of a fine spiral sculpture covering the entire shell. This shell belongs to *E. plioelongata*, as far as we can judge from Cosmanns' figure. We wonder whether this shell is part of a cline, subject to phenotypical evolution that runs from *E. magna* in the Miocene to *E. cornea* in the present, or whether it is part of a wide radiation (speciation instead of phenotypical evolution alone). Whatever the case, this shell is much closer to recent *E. plioelongata* than any other fossil or recent *Euthria* species we know and we therefore follow Brunetti & Della Bella (2016).

Euthria species A
Figs 51-52

A number of fossils from Cyprus, probably from Pliocene deposits, are smaller and smoother than the species we know. They have the appearance of *Pisania.*

Euthria species B
Figs 5, 18

Euthria cornea Varieta B (Bellardi 1872: 191, pl. 13, fig. 3) from the Miocene of Italy.

This shell figured as "Varieta B" is characterised by broad spiral cords that are equal in size with a narrow line as interspace, the presence of this spiral sculpture all over the shell, the quite inflated teleoconch whorls with a straight or weakly concave subsutural slope, the long and moderately twisted siphonal canal and a strong, rather sharp columellar fold on the transition to the siphonal canal.

E. perpiniana (this is Bellardi's "Varieta A" – see above) differs by the spiral cords that are alternatingly strong and fine, the presence of spiral sculpture mainly along the base (instead of all over the shell), the laterally flattened spire whorls, the distinct subsutural cord, the subsutural concavity, the curved columella, the straight siphonal canal and the absence of a strong columellar fold on the transition to the siphonal canal. This species is known from the Pliocene, instead of Miocene.

Bellardi (1872: 191) noted that "Varieta B" has a higher number of teleoconch whorls (7 instead of 6). The size of "Varieta B", however, is slightly larger (52 mm instead of 40 mm). We therefore regard this difference as of minor importance, until we are able to study the specimens in question in order to trace the exact location of the transition of protoconch to teleoconch.

E. cornea differs by the spiral cords that are usually broader, fewer in number and usually with a broad interspace, the presence of spiral sculpture mainly along the base (instead of all over the shell), the laterally flattened spire whorls, the distinct subsutural cord, the subsutural concavity, the curved columella, the straight siphonal canal and the weaker columellar fold on the transition to the siphonal canal.

E. annegretae has a slightly longer, but similarly shaped siphonal canal with a similarly shaped strong, rather sharp columellar fold on the transition to the siphonal

canal. Moreover, the weak parietal callus bordering the anal canal is also quite similar. We regard those similarities as important; together with this fossil specimen it is the only *Euthria* species in the Atlantic region known to us that has such a siphonal canal.

E. annegretae differs from this fossil specimen by the by laterally flattened spire whorls and the entirely smooth lower teleoconch whorls.

***Euthria magna* Bellardi, 1872**
Figs 2, 22-25

Euthria magna Bellardi, 1872 (1872: 190, pl. 13, fig. 1) from the Miocene (Tortonian) of Italy (Stazzano).

Euthria inflata Bellardi, 1872 (1872: 191-192, pl. 13, fig. 4) from the Miocene (Tortonian) of Italy (Baldissero) may be conspecific. The conchological differences are weak and it appears to us as a broader and eroded specimen of this very species. See fig. 3.

E. magna is characterised by the large and solid shell, the weak or rather indistinct subsutural concavity, the laterally flattened whorls that are well-adpressed to the previous whorl, the absence of a subsutural cord, a moderately long last whorl with moderately stretched base and a straight siphonal canal and the presence of weak spiral cords along the base.

E. cornea looks very similar to this fossil species, but differs by the shape of the spire whorls, which is more convex with a broad subsutural concavity along all whorls, the slightly shorter last whorl with a more constricted base and it is often ornamented with weak axial ribs along the adapical part of the whorls.

Bellardi already questioned the similarity between his *E. magna* and *E. cornea* (Bellardi, 1872: 190 "E questa una forma intimamente collegata coll' *E. cornea* (Linn.) dei mari attuali, ..."). He observed six differences: the larger size, the flattened spire whorls without posterior depression (= without subsutural concavity), the shallower suture, the whorls are not 'bordered' at the suture, the weakly curved siphon and the large last whorl when compared to overall shell size. It therfore remains a mystery why he figured two distinct shells under the name *E. cornea* ("varieta A" and "varieta B" discussed as *E. perpiniana* and species B above).

E. magna was recorded from the Miocene-Pliocene of Santa Maria, Azores, by Cotter, 1953 (see Morton & Britton (2000: 68, table 16) but we could not verify the identification.

E. annegretae has a much similar shape with laterally flattened spire whorls, while the last whorl is more convex, and a quite similar weak parietal callus bordering the anal canal that results in a thin lip where the aperture and penultimate whorl join. *E. annegretae* differs from *E. magna* by the entirely smooth lower teleoconch whorls, the slightly broader last whorl, the stronger columellar fold on the transition to the siphonal canal and the longer siphonal canal.

Euthria annegretae Schoenherr & Rolán, 2017
Figs 6-16, 17, 19, 53-66

For information on the type material we refer to the previous paper (Schoenherr & Rolán, 2017) with the description of this species

E. annegretae is characterised by having a moderately high spire with laterally flattened whorls, while the last whorl is broader and more convex without subsutural concavity. The subsutural concavity that is typical of all know living *Euthria* species is weak but still visible on the 3 uppermost spire whorls, while the following 3 whorls are characterised by a convex subsutural slope rather than a concavity. This makes the species unique among all Recent *Euthria* species, as the only other species with convex subsutural slope, *Euthria rolani* Von Cosel, 1982 from the Cape Verde Islands, has a much broader shape with short spire.

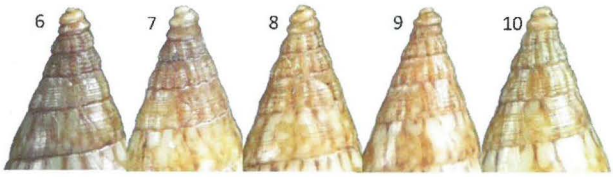
The siphonal canal is long and strongly curved towards the dorsum, longer than any other Atlantic *Euthria* species known to us and more similar to some Indo-West Pacific species. It shares this shape with the fossil *Euthria* species 2, but the shape of the whorls and the sculpture are different (for comparison we refer to the text under *Euthria* species 2, above).

The protoconch, consisting of 2¼ to 2½ whorls, is characterised by the weak to moderately strong angulation along the last 1 to 1½ whorl (Schoenherr & Rolan 2017: fig. I). Some protoconches do not show this angulation, probably due to erosion.

The transition to the teleoconch is distinct, marked by a sharp line and the sudden appearance of the spiral and axial teleoconch sculpture. We can therefore only count 6½ to 6¾ teleoconch whorls rather than 8, as pointed out in the original description.

The sculpture along the upper spire whorls is rather typical of *Euthria* while the last 3 or 4 whorls are smooth and glossy. Nevertheless, this species is easy to recognise. We consider the sculpture an important feature of *Euthria* species and therefore offer a re-description of this sculpture: First whorl starting with 4 fine spiral cords of which the 2 subsutural ones are slightly finer. Their number increasing along first whorl, transition to second whorl with 7 fine spiral cords. Second whorl with 8

broader, flatter spiral cords. Third whorl starting with about 18 spiral cords of unequal strength, sculpture quickly becoming weaker, fourth whorl smooth.



Figs 6-10: Apex and upper spire whorls of *E. annegretae* Schoenherr & Rolán, 2017.
6: 39.4 mm. **7:** 40.9 mm. **8-9:** 36.8 mm. **10:** 34.6 mm.
All coll. Fraussen.

The columella is gently twisted, smooth, with a weak parietal callus bordering the anal canal, but characterised by a strong, rather sharp columellar fold on the transition to the siphonal canal. This fold is well recognisable and clearly extending far inside the aperture along the columella.

The pattern is characterised by a delicate network of fine, dark reddish-brown, irregular axial lines ornamenting the last 3 to 3½ teleoconch whorls, often interrupted and forming dots or specks, occasionally fusing and forming a rather reticulate pattern, often enlarged to a straighter and broader axial line or band. In some shells this pattern may be interrupted at midwhorl by one (this is the spiral line described in the original description) or two narrow spiral bands in the ground colour. The apex is brown, with paler spots appearing along the third or fourth whorl, where the characteristic fine pattern starts.The tip of the siphonal canal and the outer side of the apertural lip of adult specimens may be paler, the pattern weaker or absent.

E. cornea differs by the presence of a broad and moderately deep subsutural concavity, the much bigger callus and anal canal, the much weaker columellar fold on the transition to the siphonal canal, the usually shorter siphonal canal with a much weaker curl, the often paler colour and the pattern usually comes without fine axial lines.

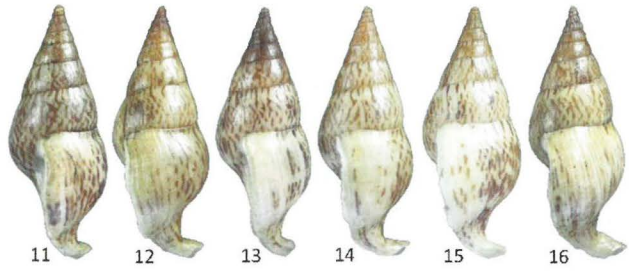
E. cornea displays a high variability in colour and pattern within a single population. Despite the fact we only know a single population of *E. annegretae* we may assume with some certainty that its variability within a single population is much weaker or almost absent.

E. cornea also displays a high variability in size, to a lesser extent within a single population, but especially among distinct populations.

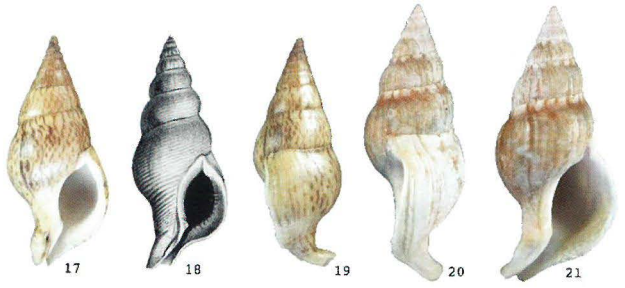
Euthria "species 2" figured by Fraussen & Swinnen (2016: fig. 95) differs from *E. annegretae* by the broader shape, the big callus along the anal canal, the short and straight siphonal canal, the subsutural concavity with thick suture, the more convex whorls, the presence of fine spiral lines, which makes the pattern reticulate, the pink aperture and the glossier surface. This shell is from an unknown locality, stored in the Bernard collection in MNHN. Even though the locality is unknown and no similar shells have been found on the Cape Verde Archipelago yet, we do not have any indication that it may originate from the continent. Apart from the presence of spiral lines, which makes the pattern reticulate, the pattern is closer to *E. annegretae* than to any other *Euthria* species; while the shape is closer to *E. cornea* than to any species from the Cape Verde Archipelago.

Euthria species B, figured by Bellardi (1872: 191, pl. 13, fig. 3) as *Euthria cornea* Varieta B, from the Miocene of Italy, has an identical, medium-sized siphonal canal with a moderately strong twist and a strong, rather sharp columellar fold on the transition to the siphonal canal, and has (convex) whorls without subsutural concavity. It differs from *E. annegretae* by convex whorls (instead of laterally flattened) and the spiral sculpture covering the entire shell.

Both *E. annegretae* and the fossil *E.* species 2, two geographically and stratigraphically widely separated species, share the same conchological morphology and we assume they have a common ancestor.



Figs 11-16: *Euthria annegretae* Schoenherr & Rolán, 2017.
11: 39.4 mm. **12:** 40.9 mm. **13:** 39.4 mm. **14:** 36.8 mm.
15: 34.6 mm. **16:** 39.0 mm. All coll. Fraussen.



17: *Euthria annegretae* Schoenherr & Rolán, 2017. 11. 39.0 mm, coll. Fraussen.
18: *Euthria* species B, taken from Bellardi 1872: pl. 13, fig. 3: *Euthria cornea* Varieta B.
19: *Euthria annegretae* Schoenherr & Rolán, 2017. 11. 40.9 mm, coll. Fraussen.
20-21: *Euthria cornea* (Linnaeus, 1758) with deformed siphonal canal. 1. 72.6 mm, Greece, Crete, coll. Fraussen.

Observations: Apart from *E. annegretae* no recent *Euthria* species in the Atlantic is known to have a similarly shaped shell with laterally flattened spire whorls while the last whorl is rather inflated and without subsutural concavity along the lower whorls.

All known Atlantic and Indo-West Pacific *Euthria* species, except for one, have a subsutural concavity. The only other species that has no concave subsutural slope is *Euthria rolani* from the Cape Verde Islands, a peculiarly shaped shallow water species.

Most related species from New Zealand and Australia that have convex whorls without subsutural concavity are assigned to the genus *Buccinulum* and its allied subgenera or genera.
Other somewhat similarly shaped fossil species, thus without a subsutural concavity along the lower whorls, are *Euthria abbreviata* Bellardi, 1872 (1872: 193, pl. 13, fig. 7) from the Miocene of Italy, *Euthria elongata* Bellardi, 1872 (1872: 193, pl. 13, fig. 9) from the Miocene of Italy and *Euthria intermedia* Michelotti in Sowerby, 1839 (Malac. and Conch. Mag. Tav. 3 fig. 5-6) from the Miocene of Italy.

All Atlantic *Euthria* species have a short to moderately short siphonal canal. The longest siphonal canals, still moderately short to medium, can be found in some specimens of *Euthria soniae* Rolán, Monteiro & Fraussen, 2003 and in some specimens *E. annegretae*. Some occasional atypically shaped *Euthria calypso* Cosel & Burnay, 1983 have a longer siphonal canal, too (see Fraussen & Swinnen, 2016: figs. 53, 55-57). Among Indo-West Pacific species, however, a long siphonal canal is frequent and those species are often placed in *Siphonofusus* for that reason.

Other particular shapes or aspects of the shape are present all over the range in space (distributional range) as well as in time (fossils). For example, the peculiar angulation of *Euthria fernandezi* Rolán, Monteiro & Fraussen, 2003 and *Euthria placibilis* Fraussen, Monteiro & Swinnen, 2012 in the Cape Verde Archipelago is also found in *E. ponsonbyi* Sowerby, 1889 from South Africa and more or less in *Euthria aracanensis* Angas, 1873, from Indonesia; as well as in fossil species like *Euthria spinosa* Bellardi, 1872 from the Miocene of Italy and more or less in *Euthria pendopoense* Beets, 1986 and *Euthria sumatrense* Beets, 1986; both from the Preangerian in Indonesia.

The radula of *E. ponsonbyi*, however, is quite different from the radula of *Euthria*, with a rectangularly shaped central tooth rather than a triangular shaped one, indicating that either the shape of the shell or the radula, or both, are not reliable to include groups, or genera, in the *Euthria*-group. We therefore mentain the position of all *Euthria*-groups in the same genus.

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PLATE 1 (p. 77)

22-25: ***Euthria magna*** Bellardi, 1872
53.4 mm, Austria, Miocene.

26-33: ***Euthria plioelongata*** Bellardi, 1872
26-29: 65.9 mm, Italy, Siena, Sangimignano, Pliocene, Piacenziane. coll. Fraussen.
30-33: 47.5 mm, Italy, Siena, Armaiolo, Pliocene, Piacenziane. coll. Fraussen.

34-36: ***Euthria cornea*** (Linnaeus, 1758)
30.5 mm, Greece, Cyprus, Paphos, Chloraka, Pliocene-Pleistocene. coll. Fraussen.

PLATE 2 (p. 78)

37-39: ***Euthria cornea*** (Linnaeus, 1758)
33.3 mm, Turkey, Akbuk, Pliocene-Pleistocene. coll. Fraussen.

40-48: ***Euthria perpiniana*** (Fontannes, 1879)
Italy, Piacenza, Rio dei Carbonari, Pliocene, Piacenziane.
40-43: 39.2 mm.
44-45: 54.6 mm.
46-48: 48.9 mm.
All coll. Fraussen.

49-50: ***Euthria* cf. *nodosa*** (Bellardi, 1872)
35.7 mm, Spain, Malaga, Velerin, Pliocene, Zancliane. Coll. Fraussen.

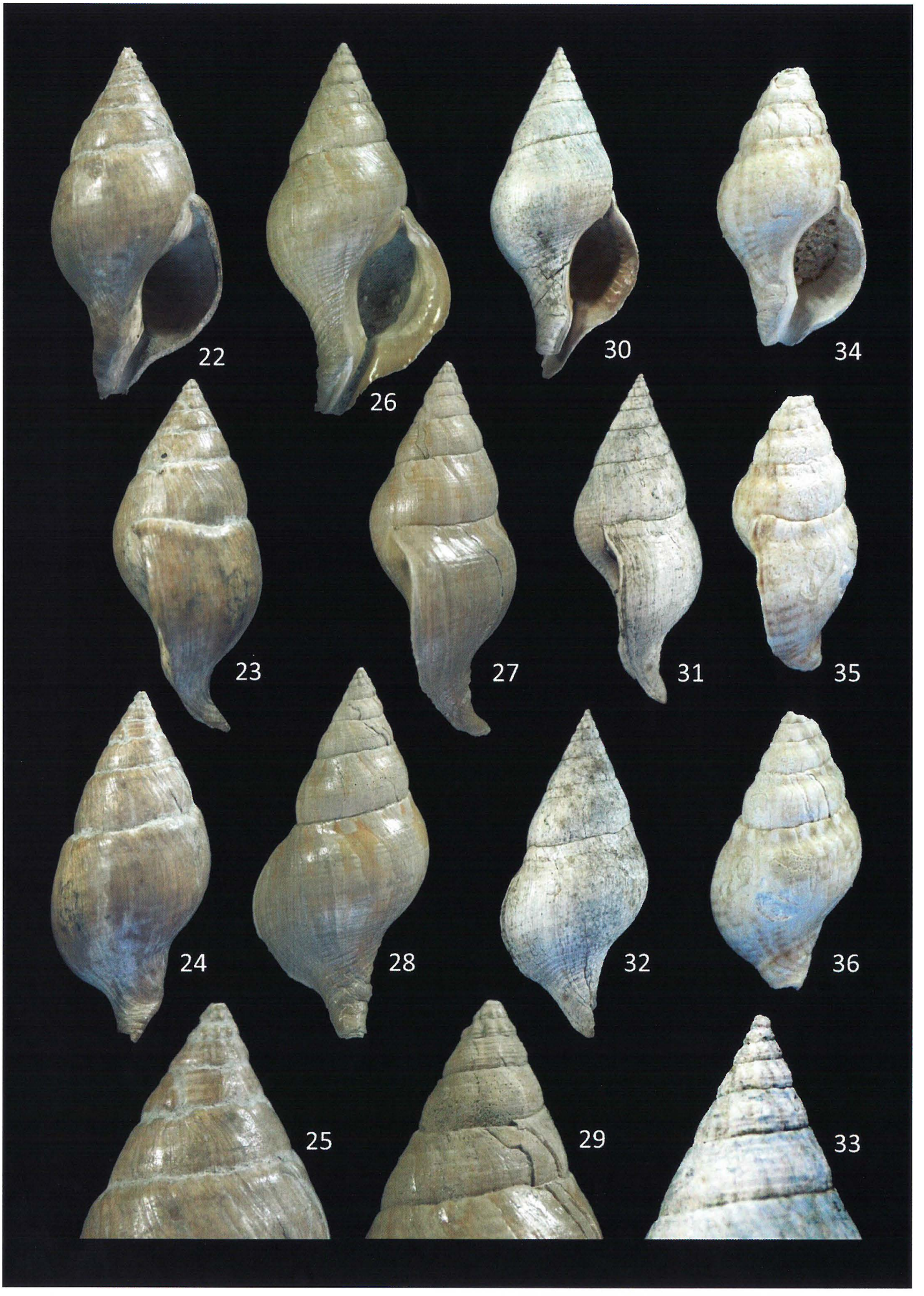
51-52: ***Euthria* species A**
Cyprus, Pliocene.
51: 26.7 mm.
52: 30.5 mm.
Both coll. Fraussen.

PLATE 3 (p. 79)

53-66: ***Euthria annegretae*** Schoenherr & Rolán, 2017, Angola.
53-55: 39.4 mm.
56-58: 39.4 mm.
59-60: 39.4 mm.
61-62: 39.0 mm.
63-64: 34.6 mm.
65-66: 36.8 mm.
All coll. Fraussen.

PLATE 4 (p. 80)

67-84: ***Euthria cornea*** (Linnaeus, 1758).
67-68: 46.6 mm, Spain, Mallorca, Palma de Mallorca.
70-71: 27.4 mm, Croatia.
72-74: 23.2 mm, Greece, Saronikos.
75-77: 46.9 mm, Turkey, Bodrum.
78-79: 23.4 mm,
80-81: 22.3 mm, Greece, Paxos Island.
82-83: 31.1 mm, Italy, Sicily, Siracusa.
84: 68:7 mm, Italy, Archipelago Toscana.
All coll. Fraussen.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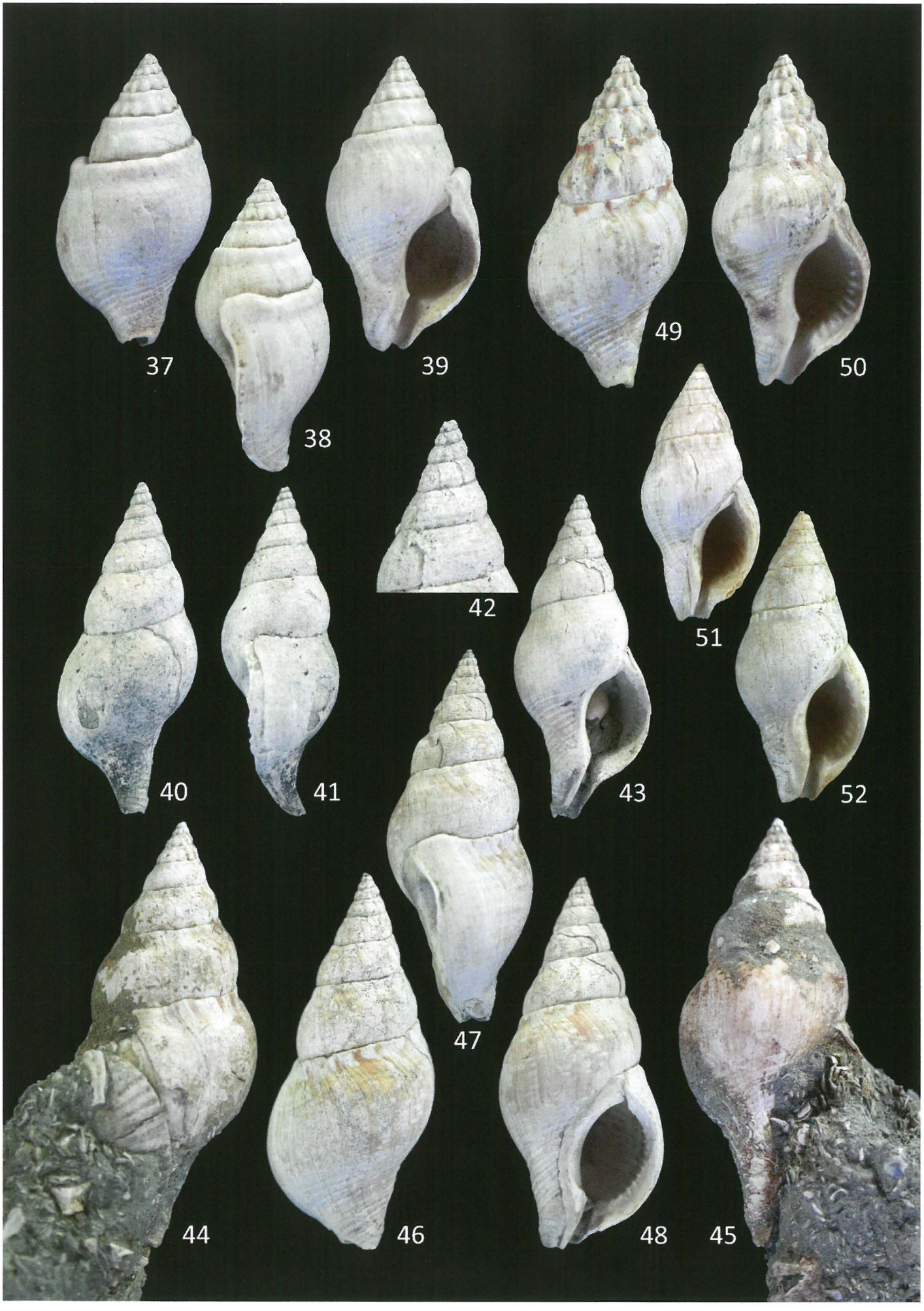
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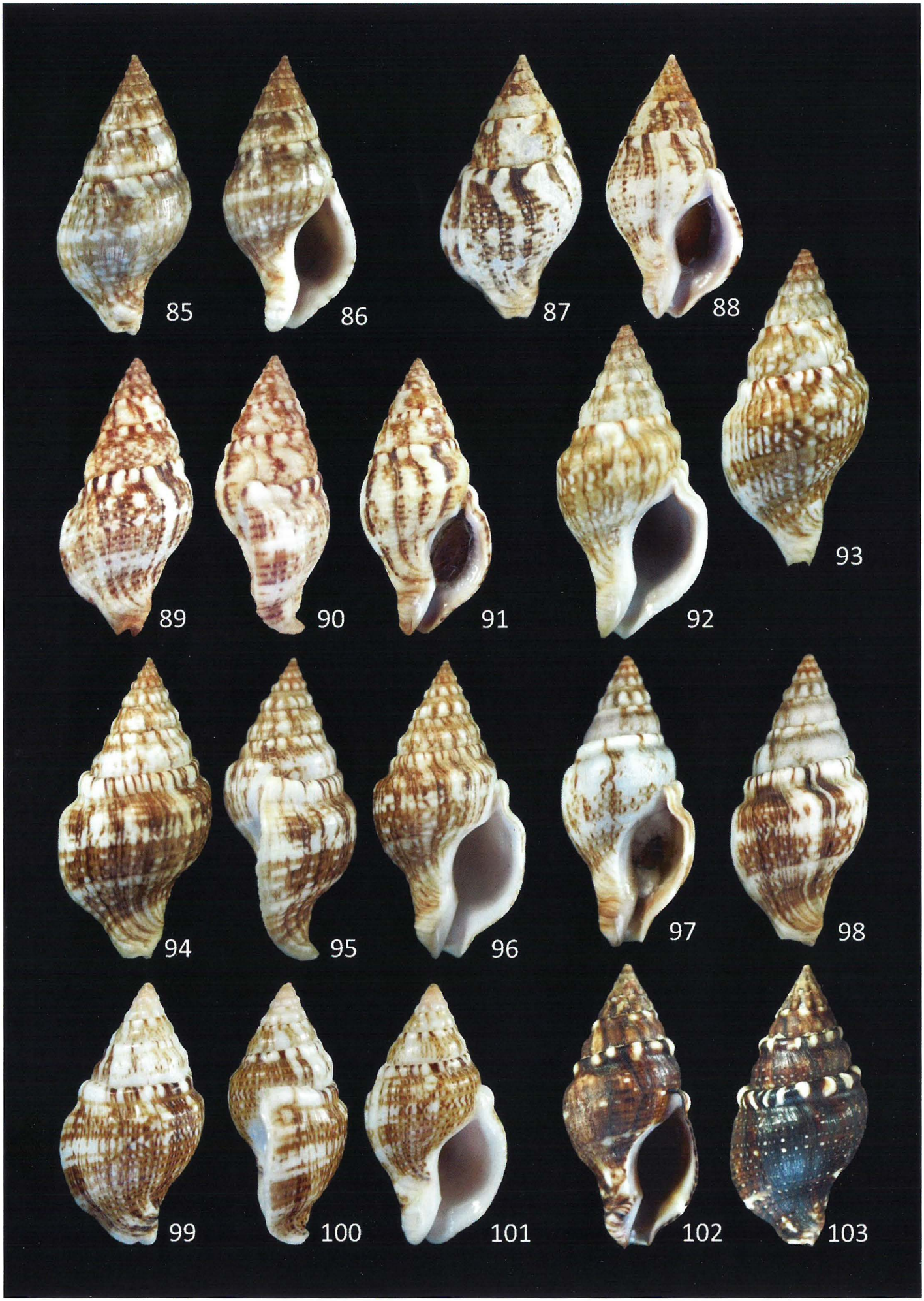
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PLATE 5

85-103: ***Euthria cornea*** (Linnaeus, 1758).

85-86: 29.6 mm, France, Marseille.
87-88: 31.4 mm, Croatia, Porec.
89-91: 36.9 mm, Greece, Naxos Island.
92-93: 41.6 mm, Italy, Archipelago Toscana
94-96: 43.1 mm, Portugal, Albufeira.
97-98: 37.6 mm, Italy, Archipelago Toscana.
99-101: 29.0 mm, Turkey.
102-103: 35.4 mm, Greece, Evia Island.