

**Nomenclatural notes on *Amaea arabica* (Nyst, 1871) *comb. nov.*  
and *Cirsotrema fimbriolatum* (Melvill, 1897) (Gastropoda: Epitoniidae),  
two similar species from the Indo-Pacific faunal province**

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**ABSTRACT.** *Scalaria decussata* 'Lamarck' Kiener, 1838, and *S. decussata* 'Lamarck' Sowerby II, 1844, are shown to refer to a Recent species different from the true *S. decussata* Lamarck, 1804, a fossil. The illustration of the holotype of *Scalaria arabica* Nyst, 1871, is compared to photographs of the probable holotype of *Cirsotrema kieneri* Tapparone-Canefri, 1876, to document that the two species are conspecific, that Nyst's name has precedence, and that *S. arabica* belongs to the genus *Amaea*. *Scalaria fimbriolata* Melvill, 1897, a similar species from the Indo-Pacific faunal province that has been confused with *A. arabica*, is shown to be specifically and generically distinct from *A. arabica*.

## INTRODUCTION

A review of the literature on the Epitoniidae, e. g. Nakayama (2003: 21) illustrates that questions exist regarding the relationship between *Scalaria decussata* Lamarck, 1804, an Eocene fossil species collected near Paris, France, and the Recent species *Scalaria arabica* Nyst, 1871 [= *Scalaria decussata* Lamarck *sensu* Sowerby II (1844: 103, pl. 35, fig. 140)] and *Cirsotrema kieneri* Tapparone-Canefri, 1876 [= *Scalaria decussata* Lamarck *sensu* Kiener (1838: 21, pl. 7, fig. 23)].

To resolve these questions, we set out to track down photographs of the type specimens of *S. decussata*, *S. arabica*, and *C. kieneri* and also conducted a thorough review of the literature that included references to these species names. In the course of our research, we discovered that the species listed above have also been confused with the species described under the name *Scalaria fimbriolata* Melvill, 1897, a similar Recent species referable to the genus *Cirsotrema*. Therefore, in addition to documenting our conclusion that the correct name for the species illustrated by Kiener and Sowerby is *Amaea arabica* (Nyst, 1871), we have included a discussion of Melvill's species to document that it is not a synonym of *A. arabica*.

## Abbreviations

NHMUK: Natural History Museum, London.  
MHNG: Muséum d'Histoire Naturelle de Genève.  
dd: specimen(s) collected dead.  
lv: specimen(s) collected alive.

## SYSTEMATICS

Family EPITONIIDAE S. S. Berry, 1910  
Genus *Amaea* H. & A. Adams, 1853: 223  
Type species: *Scalaria magnifica* G. B. Sowerby II, 1844, by subsequent designation (Boury, 1909: 258)

### *Amaea decussata* (Lamarck, 1804)

Fig 1-2

*Scalaria decussata* Lamarck, 1804: 213; Lamarck, 1806: pl. 10, fig. 3; Lamarck, 1822: 229; MHNG, 1918: pl. 6, figs. 74 a, b, 75 a, b; non *Scalaria decussata* Pease, 1867: 289 [= *Epitonium sandwichense* (Nyst, 1871)].

**Distribution.** France. Fossil, Eocene.

**Remarks.** The original engravings of Lamarck's *S. decussata* (Lamarck, 1806) show both spiral and axial sculpture, though the axial sculpture overlays the spiral. Photographs of the syntypes of Lamarck's *S. decussata* published by the MHNG (1918) show that this fossil species has convex teleoconch whorls that are not angular below the suture and the axial costae are not raised where they cross the spiral cords (Fig. 1-2). The sculpture indicates that the species is correctly placed in the genus *Amaea*.

Pease (1867: 289) also named a *Scalaria decussata*. Pease's shell, however, is an *Epitonium* and the name was also replaced by Nyst (1871: 132) with *Scalaria sandwichensis*.

***Amaea arabica* (Nyst, 1871)**

Figs 3-7, 11

*Scalaria decussata* Kiener, 1838: 21, pl. 7, fig. 23; Sowerby II, 1844: 103, pl. 35, fig. 140; Sowerby II, 1874: species 114, pl. 15, fig. 114a; Clessin, 1897: 39, pl. 12, fig. 2.; non *Scalaria decussata* Lamarck, 1804.

*Scalaria arabica* Nyst, 1871: 105; Boury, n.d., pl. 35, fig. 1, 3. *Nom. nov.* for *Scalaria decussata* Sow. (non Lam.). Type locality: coast of Arabia.

*Cirsotrema Kieneri* Tapparone-Canefri, 1876: 155; Kaicher, 1983: 3584. *Nom. nov.* for *Scalaria decussata* Kiener (non. Lam.). Type locality: none given.

*Amaea Sowerbyi* Dunker, 1882: 69; *nom. nov.* for *Scalaria decussata* Sow. (non Lam.)

*Scalaria kieneri*: Tryon, 1887: 81, pl. 17, fig. 21, 22, 26.

*Amaea decussata*: Cleevely, 1980: 240, fig. 2, 7.

*Amaea (Amaea) decussata*: Weil, *et. al.*, 1999: 82, fig. 234.

**Material Examined.** Urgan, south Queensland, Australia, 2 dd. Palandra Beach, Townsville, Queensland, Australia, 1dd. Swan Reefs, Queensland, Australia, trawled, 1dd.

**Distribution.** Red Sea, south to Mauritius, east to Queensland, Australia. Intertidal to 15 m.

**Remarks.** In their respective monographs of the genus *Scalaria*, Kiener (1838) and Sowerby II (1844) each illustrated species labeled *Scalaria decussata* Lamarck. Nyst, in his *Tableau Synoptique et Synonymique* (the "Tableau") presented at the December 3, 1871, meeting of the Société Malacologique de Belgique, erected the replacement name *Scalaria arabica* for the species illustrated by Sowerby. Apparently, Nyst concluded that the species illustrated by Sowerby was not the same as Lamarck's fossil species. Tapparone-Canefri (1876) erected the replacement name *Cirsotrema kieneri* for the species illustrated by Kiener because it was his opinion that Kiener's species was distinguishable from both *S. decussata* Lamarck, 1804, and *S. decussata sensu* Sowerby II, 1844. Dunker (1882) also recognized that Sowerby's species differed from Lamarck's and erected the replacement name *Amaea Sowerbyi*, which is a junior objective synonym of *Scalaria arabica* Nyst, 1871. While Tryon (1887: 81) agreed that the

species illustrated by Kiener was distinct from Lamarck's fossil species, he went on to say that in his opinion, Kiener and Sowerby illustrated the same Recent species. Tryon, who apparently overlooked the replacement name erected by Nyst, used the name *Scalaria kieneri* for this species. Cleevely (1980: 240) commented that the species labeled *Amaea decussata* in his paper is virtually indistinguishable from '*Cirsotrema*' *kieneri*, documenting that there were not only questions regarding a possible synonymy at the species level, but also questions regarding the correct generic assignment of this species.

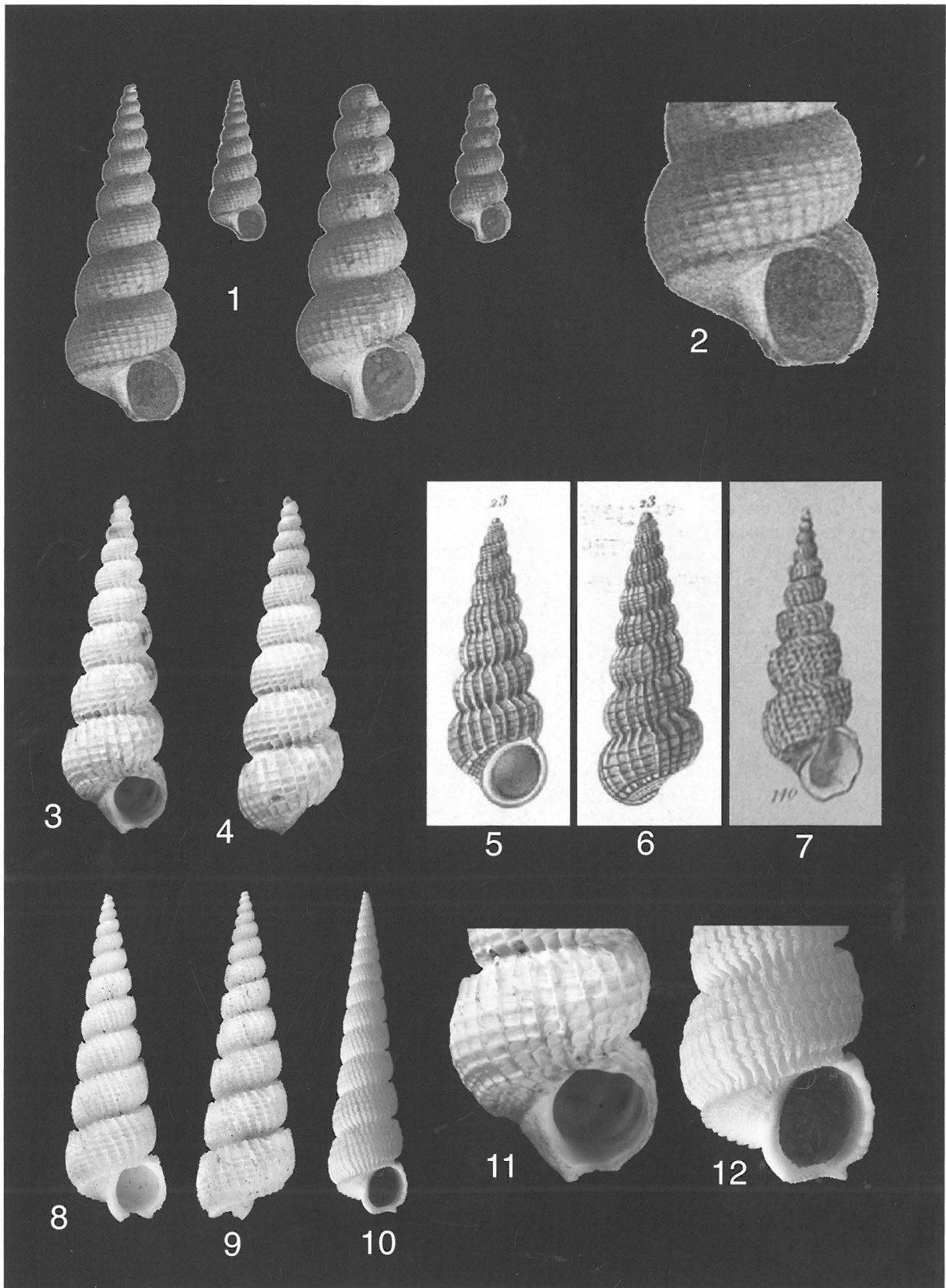
Because Nyst erected the replacement name *S. arabica* based on the specimen figured by Sowerby under the name *S. decussata*, Sowerby's figured specimen is the holotype of *S. arabica* (ICZN, 1999: Art. 72.7). Kathie Way at NHMUK has informed us that the specimen from Arabia figured by Sowerby under the name *Scalaria decussata* is supposed to be in the collection at her institution. She was, however, unable to locate it. We have therefore reproduced an enlarged illustration of Sowerby's figure (Fig. 7).

Similarly, because Tapparone-Canefri erected the replacement name *C. kieneri* for the specimen figured by Kiener under the name *S. decussata*, Kiener's specimen is the holotype of *C. kieneri*. We have reproduced Kiener's figures (Fig. 5-6). Kiener noted that the figured specimen is in "the Museum collection." Kiener's material, which presumably included this specimen, was acquired by Delessert and is now in the collection at the MHNG (Y. Finet pers. comm.). Yves Finet provided photographs of the sole specimen of *Scalaria decussata* in the Delessert collection (Fig. 3-4). Because it matches well, and is consistent in size with, the specimen figured by Kiener, we consider this specimen to be the probable holotype of *Scalaria decussata* Kiener, 1838, and, by extension, *Cirsotrema kieneri*.

Comparison of these figures confirms that the species figured by Kiener is conspecific with the species figured by Sowerby. Both specimens have the same angular teleoconch whorls with cancellate sculpture and the basal ridge and the sculpture on the base of the shell appears to be the same. Because of the combination of the cancellate sculpture on the convex teleoconch whorls, the occasional varices, and the strong basal ridge, we consider this taxon to be referable to the genus *Amaea*.

**Figures 1-12**

1-2. *Scalaria decussata* Lamarck, 1804, MHNG, syntypes, photo of Fig 74 & 75 in *Catalogue illustré de la Collection Lamarck. Mollusques Trachélipodes Fossiles*, with permission. 3-4, 11. *Scalaria decussata* Lamarck, *sensu* Kiener, 1838, length 40 mm, no locality data, MNHG 67919, probable holotype of *Cirsotrema kieneri* Tapparone-Canefri, 1876. 5-6. *Scalaria decussata* Lamarck, *sensu* Kiener, 1838 (Kiener's figure). 7. *Scalaria decussata* Lamarck, *sensu* Sowerby II, 1844 (Sowerby's figure), holotype of *Scalaria arabica* Nyst, 1871. 8-9. *Scalaria fimbriolata* Melvill, 1897, length 19 mm, width 5 mm, Karachi, NHMUK 1897.7.30.90. (holotype). 10, 12. *Cirsotrema fimbriolatum* (Melvill, 1897), length 59.6 mm, width 14.5 mm, Broome, Western Australia, 15 m, B. Neville coll. no. 1256.



Therefore, Tryon and Tapparone-Canefri were correct in concluding that the Recent species figured by Kiener and Sowerby is not synonymous with the fossil species *S. decussata* Lamarck, 1804, because *S. decussata* has a different sculpture that is evident in the photographs of the syntypes.

Finally, in the course of preparing this manuscript, we discovered there is a question regarding the publication date of Nyst's *Tableau*, which included his replacement name *S. arabica*, as well as replacement names for a number of other epitioid taxa. While it has generally been given as 1871, the actual publication date could be as late as 1874. The World Register of Marine Species (WoRMS) database gives the date of *Elegantiscala arabica* as 1872, though the source of the date is "not documented." Nyst's other names from the *Tableau* are cited in WoRMS as 1871. Nakayama (2003: 21) gives the date of *Scalaria arabica* as 1873, citing Boury (1913). This is evidently a typographical error on Nakayama's part, however, as Boury (1913: 103) clearly gives 1871 as the date for the *Tableau*; Nakayama (2003: 94) in his own bibliography gives the date of the *Tableau* as 1871. Because the *Tableau* was presented at a December 3, 1871, meeting, we question whether it would have been published that same year. When we checked the *Zoological Record*, we discovered that Nyst's *Tableau* appeared for the first time in the 1874 volume, although it was listed with an 1871 date. While not definitive, it is an indication that the *Tableau* was published after 1871 and certainly no later than 1874. Buckhuys (1985) prepared a bibliographic note on the journals published by the Société Malacologique de Belgique. However, he began with the volume for 1872 and did not provide information on individual publication dates. Because we were unable to resolve this publication date question, we are following earlier authors in using an 1871 publication date for the *Tableau*.

Notwithstanding the uncertainty regarding the publication date, since it is clear that Nyst's *Tableau* was published prior to Tapparone-Canefri's 1876 paper proposing the name *C. kieneri* for this Recent species, there is no question that the oldest available, and valid, name for the Recent taxon is therefore Nyst's replacement name, *Amaea arabica* (Nyst, 1871).

Genus *Cirsotrema* Mörch, 1852: 49

Type species: *Scalaria varicosa* Lamarck, 1822, by monotypy.

***Cirsotrema fimbriolatum* (Melvill, 1897)**

Figs 8-10, 12

*Scalaria fimbriolata* Melvill, 1897: 11, pl. 6, fig. 10; Melvill, 1898: 2, pl. 1, fig. 12. Type locality: Karachi. *Scala (Cirsotrema) fimbriolata*: Melvill and Standen, 1903: 349.

*Cirsotrema kieneri*: Wilson, 1993: 274, pl. 44, fig. 3; Weil, *et. al.* 1999: 128, fig. 401 (non Tapparone-Canefri, 1876).

*Epitonium fimbriolatum*: Bosch and Bosch, 1982: 52.

*Amaea fimbriolata*: Bosch, Dance, Moolenbeek, *et. al.*, 1995: species no. 400.

*Amaea (Scalina) kieneri*: Nakayama, 2003: 21, pl. 20, fig. 1-3 (non Tapparone-Canefri, 1876).

**Material Examined.** Off Hervey Bay, Queensland, Australia, 61-79 m, 1 dd. Urangan, south Queensland, Australia, 1 dd. Broome, Western Australia, 15 m, 1 lv. 80 Mile Beach, Western Australia, 1 lv.

**Distribution.** Gulf of Oman and Persian Gulf, east to Japan and Queensland, Australia. Intertidal to 79 m.

**Remarks.** *Cirsotrema fimbriolatum* has also been confused with *A. arabica*, but differs from it markedly in structure, indeed belonging to a different genus. The original figures of *Scalaria fimbriolata* (Melvill, 1897, and particularly Melvill, 1898) illustrate particularly well the characters of this species. Unfortunately the quality of the original image is not suitable for enlargement and reproduction here.

While it is superficially similar to *A. arabica*, this species can be distinguished by the characteristic *Cirsotrema* costae and the base of the shell. The base of *C. fimbriolatum* is ringed by a series of triangular projections resembling teeth on a cog, whereas *A. arabica* has a simple basal ridge lacking these triangular projections (Fig. 11, 12).

*Scalaria fimbriolata* is referable to the genus *Cirsotrema* because of the combination of the strong basal disk, spiral lirae, and the strongly crispate costae that consist of numerous plates that are fused together. This combination of teleoconch characters is present in *Cirsotrema varicosum* (Lamarck, 1822) and a number of other species that have been referred to the genus *Cirsotrema s.s.* Species in the genus *Amaea* can have similar teleoconch sculpture, but lack the crispate costae consisting of numerous fused plates.

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We want to thank Yves Finet at the MHNG, Geneva, Switzerland, who furnished the photographs of the specimen of *S. decussata* (*sensu* Kiener) in the Delessert collection and authorized us to reproduce the figured specimens of *S. decussata* Lamarck in this manuscript. We also want to thank Kathie Way at NHMUK, London, England, who provided information on the holotype of *S. arabica* and furnished the photographs of the holotype of *S. fimbriolata*. Henry Domke photographed the illustrated specimen in the Bruce Neville collection. Alan J. Kohn of University of Washington Biology provided excerpts of the catalog of Lamarck's types. Emilio García called our attention to the question of the dates of Nyst's *Tableau*, and Paul Callomon at the



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