

Indo-Pacific migrants into the Mediterranean. 4.
***Cerithidium diplax* (Watson, 1886) and *Cerithidium parvulum* (Watson, 1886)**
(Gastropoda, Caenogastropoda)

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It is shown that there are two different *Cerithidium* species of Indo-Pacific origin living in the Mediterranean. These are to be named *Cerithidium diplax* (Watson, 1886) and *Cerithidium parvulum* (Watson, 1886) respectively. Both species are compared with *Cerithidium ferruginea* (A. Adams, 1860) and *Bitium furvum* (Watson, 1886). Lectotypes of all these species are designated and figured. Figures of *Cerithidium fusca* (A. Adams, 1860) and *Cerithidium submammillatum* (De Rayneval & Ponzi, 1854) are given for comparison.

Key words: Gastropoda, Caenogastropoda, Cerithiidae, *Cerithidium*, *Bittium*, Indo-Pacific, Mediterranean, migrant species.

INTRODUCTION

Barash & Danin (1977: 91, 109 fig. 5) were the first to record the species *Clathrofenella reticulata* (A. Adams, 1860) from the Mediterranean. They were not quite sure about the identification and wrote "The determination may however be considered tentative".

This record is repeated by the same authors (1992: 76 fig. 77). At the same time (1992: 77 fig. 78) the species *Cerithidium submammillatum* (De Rayneval & Ponzi, 1854) is mentioned as a new record for the Mediterranean coast of Israel. Comparing the figures 77 and 78 it seems more than likely that we deal here with the same species, showing about five spirals and (fig.77) even a darker top.

Although I could study most of the Indo-Pacific migrants mentioned by Barash & Danin from Israel I never did see the specimen on which Barash & Danin (1977: 91, 109 fig. 5) based their figure. This specimen was recently found in TAU with the original handwriting of prof. A. Barash [*Clathrofenella reticulata*/ Haifa Bay, -40m/ 11.07.74/ Reg. Number MO809 (formerly TAU 35)]. The specimen belongs to *Cerithidium submammillatum* indeed as already suspected.

In the meantime Habe (1977:157,158) studied the type specimens of a number of *Clathrofenella* species described by A. Adams (1860) and housed in the British Museum. He concluded that *Dunkeria fusca*, *Dunkeria asperulata* and *Dunkeria reticulata* belonged to one variable species for which he proposed to use the name *Clathrofenella fusca* (A. Adams, 1860).

This synonymy has recently been confirmed by Hasegawa (1998: 176). Habe (1977: 158) was not convinced about the position of *Dunkeria ferruginea* A. Adams, 1860, because he writes " *D. ferruginea* A. Adams, ... and ... also seem to be synonyms".

Mienis (1987: 712) published the discovery of another four specimens of *C. fusca* from

Israel. All four specimens turned out to belong to *Cerithidium diplax* (Watson, 1886). They were found near Hadera (Israel) in 1986.

Later on the species *C. fusca* was mentioned by Engl (1995: 46) and by Buzzurro & Greppi (1996: 4) from the southern coast of Turkey as well as by Cecalupo & Quadri (1995: 270, 273 figs 2, 2a) from Cyprus. The last-mentioned authors published figures of their specimens and from these it is immediately clear that these specimens do not belong to *C. fusca* as redescribed by Hasegawa (1998: 176, 167 fig. 9a, 9b, 10) which is a (much) bigger shell with a more pronounced sculpture (see fig. 1).

Hasegawa (1998: 179) suggests that the shells from Cecalupo & Quadri could belong to *Cerithidium perparvulum* (Watson, 1886). The same suggestion is made for "*Clathrofenella fusca*" in Giannuzzi-Savelli et al. (1997: 48, 49 fig. 97).

After very carefully studying shells of the type found by Cecalupo & Quadri both Hasegawa and I agree that they belong to *Cerithidium perparvulum* (Watson, 1886). I do not agree as far as the shell figured by Giannuzzi-Savelli et al. (1997: 48, 49 fig. 97) is concerned. This seems to represent an other species for which I suggested the name *C. ferruginea* at the discussions around the CIESM Atlas. On the basis of the literature it seemed likely that *C. ferruginea* was an older synonym for *C. diplax* (Watson, 1886).

According to Moolenbeek, a species called *C. diplax* was found in the Persian Gulf (Dance, 1995: 56). After comparing our specimens Moolenbeek and myself agreed that the specimens from the Persian Gulf and mine from Israel and the southern coast of Turkey belong to one and the same species.

At this point there was need for type material. As there was no type specimen of *Dunkeria ferruginea* A. Adams, 1860, in the British Museum, I obtained the only known sample of possible type material from the Museum of Victoria (Australia). This sample (F 31497) contains two shells of which I designate the largest one with dimensions 3.0 x 1.3 mm as lectotype of *Dunkeria ferruginea* A. Adams, 1860 (fig. 6).

The sample BMNH 1887.2.9.1739-43 contains four syntypes of *Bittium diplax* Watson, 1886, one of which was already marked "potential lectotype". This specimen with dimensions 2.6 x 1.0 mm is here formally designated as lectotype of *Bittium diplax* Watson, 1886, in consultation with W.F. Ponder (Australian Museum, Sydney) (fig. 7).

Comparing figures 6 and 7, it can be seen that the shell of *C. ferruginea* is larger than that of *C. diplax*; it is less slender and has a sculpture that is similar but more pronounced. It is also evident that the specimens from the Persian Gulf, my own specimens from the Israeli coast of the Mediterranean, as well as those from the southern coast of Turkey, belong to *C. diplax* (Watson, 1886).

As both *C. diplax* and *C. perparvulum* occur rather frequently along the southern coast of Turkey it is not clear what Buzzurro & Greppi had in hand. The shells referred to by Engl (l.c.) turned out to belong to *C. perparvulum* except for one juvenile specimen of *C. diplax*.

Two syntypes of the species *Bittium furvum* Watson, 1886, were obtained on loan from the British Museum (BMNH 1887.2.9.1744-5) the largest one is here designated as lectotype. This specimen, with dimensions 2.7 x 1.0 mm, is here figured as fig. 2. It looks somewhat like *Bittium latreillii* from the Mediterranean and is certainly not conspecific with *Cerithidium perparvulum* as suggested by Hasegawa (1998: 179), but is a real *Bittium*.

From the British Museum I also obtained on loan, thanks to the indispensable cooperation of Mrs Kathy Way, the sample 1887.2.9.1718-22 of *Bittium perparvulum* containing one shell only which was marked "potential lectotype" by W.F. Ponder who permitted me to designate this specimen as lectotype of *Bittium perparvulum* Watson, 1886. This specimen, with dimensions 2.8 x 1.1 mm, is here shown as fig. 4.

As to the generic placement of the species Hasegawa and myself have come to the

conclusion that *Cerithidium* Monterosato, 1884, is a senior synonym of *Clathrofenella* Kuroda & Habe, 1954, thereby corroborating the suggestion by Ponder (1994: 230). The type species of *Cerithidium*, viz. *C. submammillatum* (De Rayneval & Ponzi, 1854), is here figured for comparison (fig. 8).

Thus it is shown that there are two different migrant species of *Cerithidium* in the Mediterranean, which are sometimes confused and mostly denoted by the erroneous names *Clathrofenella fusca* and *Clathrofenella ferruginea*. The species can be recognized as follows.

SYSTEMATIC PART

Abbreviations: BMNH, The Natural History Museum, London, Great Britain; HUI, Hebrew University, Jerusalem, Israel; NMV, Museum of Victoria, Melbourne, Australia; TAU, Tel Aviv University, Tel Aviv, Israel.

Cerithidium diplax (Watson, 1886) (figs 3, 7, 9, 11, 12)

Bittium diplax Watson, 1886: 555, pl. 38 fig. 4.

Cerithidium diplax (Watson); Dance, 1995: 56, figs 181, 182.

Clathrofenella ferruginea (A. Adams, 1860); Zenetos et al., 2004: 74, figured.

Not *Cerithidium diplax* (Watson); Kay, 1979: 115, fig. 44D.

Not *Cerithidium cerithinum* (Philippi, 1849); Robba et al., 2004: 34, pl. 3 fig. 8.

This species was first dredged at Bat Yam (Israel) in 1961 (sample TAU-MO 32991). In 1986 many specimens of this species were found by H. Menkhorst along the southern coast of Turkey near Mersin.

All fresh specimens I have seen were uniformly brown, more or less dark. The specimens dredged from Haifa Bay were bleached and thus whitish. The very pronounced sculpture consists of two spirals and relatively few axial ribs forming knobs at their crossings. Later whorls show three spirals through generating a third weaker one adapically. The protoconch consists of 1.5 embryonic whorls as seen in figs 11, 12. Average dimensions are 2.0-2.5 x 0.9-1.0 mm.

Cerithidium perparvulum (Watson, 1886) (figs 4, 5, 10, 13)

Bittium perparvulum Watson, 1886: 554, pl. 38 fig. 3.

Cerithidium perparvulum (Watson); Kay, 1979: 116, 115 fig. 44E, F. Hasegawa, 1998: 167 figs 11,12; 177 figs 33-37. Hasegawa, in Okutani, 2000: 125 no. 56, pl. 62 fig. 56.

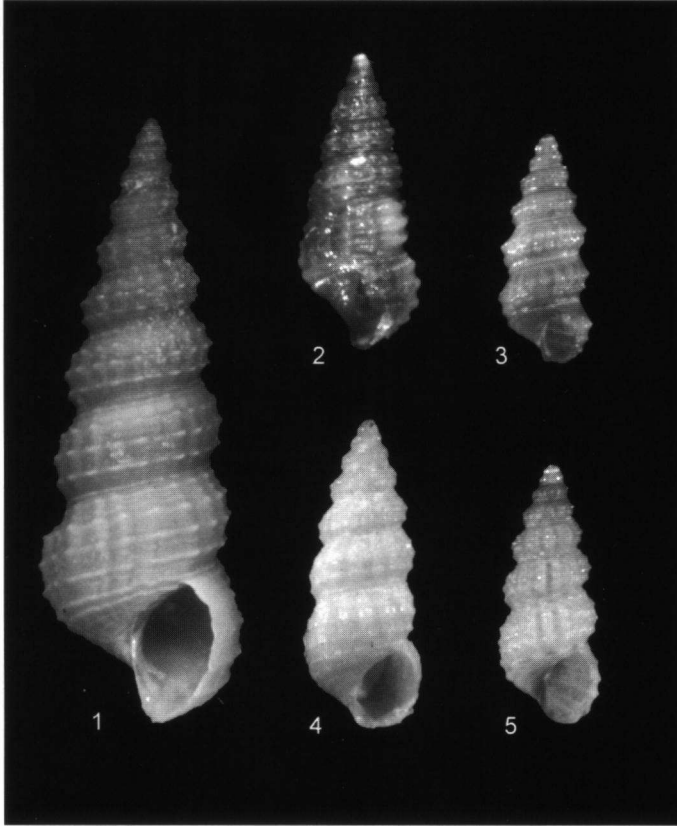
Clathrofenella fusca (A. Adams); Cecalupo & Quadri, 1995: 270, 273 figs 2, 2a.

Not *Obtortio elongella* Melvill, 1910; Dance, 1995: 56.

This species is much more like *Bittium*, except for the siphonal canal which is wanting. The whorls are evenly rounded and show three to four spirals. The shells are yellow-brown and the spirals are dotted with darker brown. A dark brown stain on the columella is very characteristic.

Average dimensions are 1.9-3.0 x 0.8-1.2 mm.

At present this species has not been reported from the Mediterranean coast of Israel.



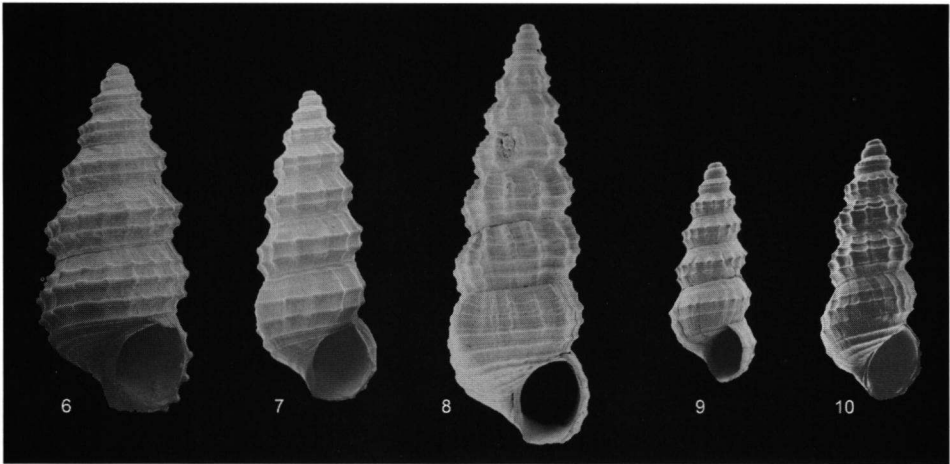
Figs 1-5. *Cerithidium* species, magnification 15x. 1, *C. fusca* (A. Adams, 1860), Japan; 2, *Bittium furva* (Watson, 1886), lectotype BMNH 1887.2.9.1744-5; 3, *C. diplax* (Watson, 1886), Mersin, Turkey; 4-5, *C. perparvulum* (Watson, 1886); 4, lectotype BMNH 1887.2.9.1718-22; 5, Mersin, Turkey.

After studying the holotype (BMNH 1912.8.16.96) I agree with Hasegawa (1998: 172) that *Obtortio elongella* Melvill, 1910, is a junior synonym of *Finella purpureoapicata* (Preston, 1905) and not synonymous with *C. perparvulum* as suggested by Dance (1995: 56).

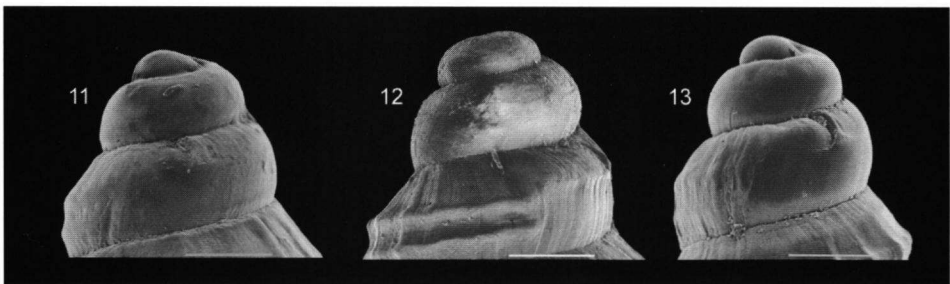
MacAndrew (1870: 442) and A. Adams (1870: 122) cite four species of what they call "Fenella" from the Red Sea, viz. *pupoides*, *scabra*, *reticulata* and *rufocincta*. All of these were first described by A. Adams from Japan. Of these the first and fourth are presently placed in *Finella* and discussed by Hasegawa (1998: 168, 169 fig. 13, 171 figs 18-20; 173, 169 fig.14, 171 figs 21, 22). *Finella pupoides* A. Adams, 1860, is also a well-known migrant species into the Mediterranean where I first found it in Iskenderun (Turkey) in 1958.

The species *Dunkeria scabra* A. Adams, 1860, does not belong to either *Finella* or to *Cerithidium* but should be placed in *Eucharilda* according to Habe (1977: 158, 159) and Hasegawa (1998: 185, 186). What Adams meant by *scabra* and *reticulata* is not evident.

Note that the recent check-list of the Red Sea Mollusca by Dekker & Orlin (2000: 20) only cites *Finella pupoides* and *Cerithidium cerithinum* (Philippi, 1849). Although Issel (1869:



Figs 6-10. *Cerithidium* species, magnification 20x. 6, *C. ferrugineum* (A. Adams, 1860), lectotype NMV-F31497; 7, *C. diplax* (Watson, 1886), lectotype BMNH 1887.2.9.1739-43; 8, *C. submammillatum* (De Rayneval & Ponzi, 1854), Haifa, Israel; 9. *C. diplax* (Watson, 1886), Mersin, Turkey; 10, *C. perparvulum* (Watson, 1886), Mersin, Turkey.



Figs 11-13. Protoconchs of *Cerithidium* species, highly magnified. 11-12, *C. diplax* (Watson, 1886); 11, migrant (fig.9); 12, lectotype (fig. 7); 13, *C. perparvulum* (Watson, 1886), migrant (fig. 10).

332) suggested that a shell figured by Savigny (1817: pl. 3 fig.23) was really *Alvania cerithina* Philippi, 1849, this figure was not recognised by Philippi himself (1849: 34) whereas he cites two other figures of the same plate of Savigny for two other species he described in the same article (Philippi, 1849: 34, 35).

Tryon (1887: 395, pl. 60 figs 80, 81) cites *Fenella cerithina* and gives a translation of the original description by Philippi. The figure of Savigny is reproduced as fig. 80. Although it is not impossible that the description and the figure were intended to denote the same species this seems rather doubtful. As Philippi (1849: 34) says "...lineae elevatae interstitia latitudine aequantia quatuor, a costellis decussatae grana formant; basis cingula elevata 3-4 laevia habet.." His description cannot be applied to either of the migrant species. Tryon (1887: 395) also suggests that "...*F. reticulata* A. Ads. (fig. 81), and *F. scabra* A. Ads. are synonyms.." which is at least partly and probably totally incorrect. I therefore agree with Hasegawa (1998: 181) and consider *Alvania cerithina* Philippi, 1849, unidentifiable at pres-

ent. Whether the species from the Red Sea mentioned by Dekker & Orlin is *Cerithidium fusca* (= *C. reticulata*) or maybe one of the two migrant species is undecided.

Recently Robba et al. (2004: 34 pl.3 fig.8) cite a species from Thailand as *Cerithidium cerithinum* (Philippi, 1849) and mention as synonyms *Fenella reticulata* A. Adams, 1868[!], *Clathrofenella reticulata* in Barash & Danin (1977: 90 fig.5 and 1992: 76 fig. 77) and *Cerithidium cerithinum* in Dance (1995: 56 fig. 181). As mentioned above the figures by Barash & Danin refer to *Cerithidium submammillatum* whereas the figures by Dance (1995: 56 fig. 181 as well as 182, which are the same) are taken from specimens of *C. diplax*, although recorded as *C. cerithinum* in the text. The real *Fenella reticulata* A. Adams, 1860, is a synonym of *C. fusca* (A. Adams, 1860).

As Robba et al. (2004: 34) pointed out themselves their specimens show about three embryonic whorls and thus cannot belong to *C. diplax* either, although the teleoconch sculpture is very similar.

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