BASTERIA, 70: 1-6, 2006

Indo-Pacific migrants into the Mediterranean. 2[1]. *Monotigma lauta* (A. Adams, 1853) and *Leucotina natalensis* Smith, 1910 (Gastropoda, Pyramidellidae)

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The Red Sea species referred to as *Monotygma fulva* (A. Adams, 1853) and *Monotygma amoena* (A. Adams, 1853) in the Mediterranean should be named *Monotigma lauta* (A. Adams, 1853) and *Leucotina natalensis* Smith, 1910, respectively. Both species are known to occur in the Mediterranean from 1978 onwards. A lectotype of *Monoptygma fulva* A. Adams, 1853, is designated.

Key words: Gastropoda, Opisthobranchia, Pyramidellidae, *Monotigma, Leucotina, Monotygma, Monoptygma*, Red Sea , migrant species.

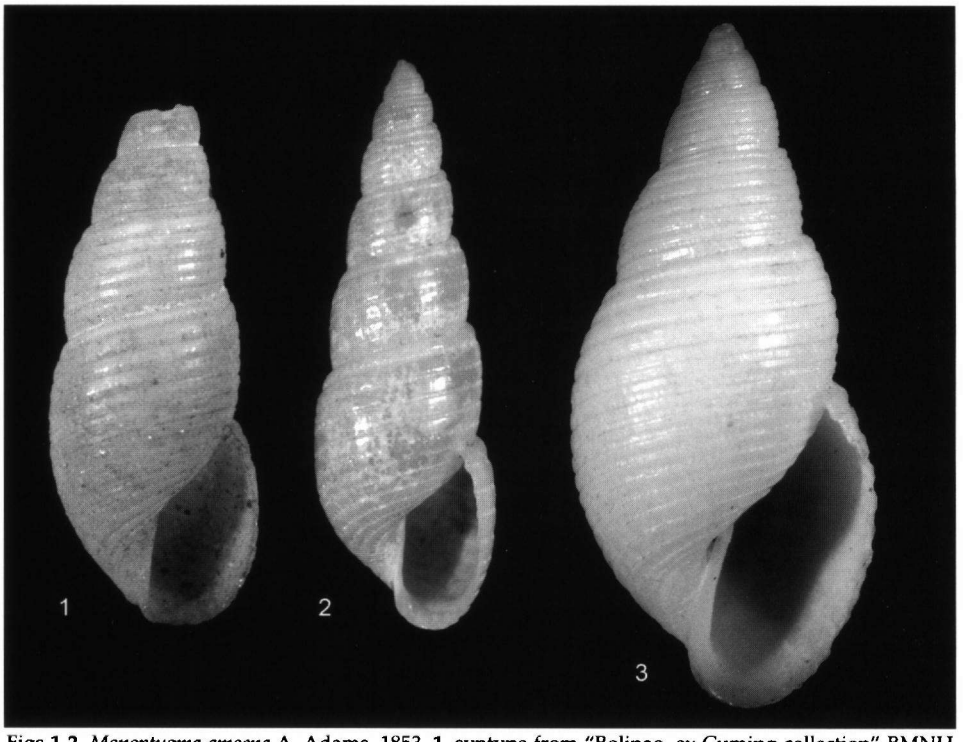
The recent CIESM Atlas by Zenetos et al. (2004: 142-145) records the species with which we deal in this note as *Adelactaeon fulvus* (A. Adams, 1851) and *Adelactaeon amoenus* (A. Adams, 1851). The first species was noted along the Israeli coast by Lavaleye & Barash (1981: 87-89) as *Kleinella (Actaeopyramis) fulva* and subsequently by Mienis (1984: 579). Micali & Palazzi (1992: 87, 89 fig. 2) then recorded *A. fulvus* from the Turkish South coast as did Buzzurro & Greppi (1996: 8) as *Monotygma fulva*. This species has not been found in Cyprus up till now.

A. amoenus was first mentioned by Mienis (1985: 620) from Israel, as *Kleinella (Actaeopyramis) amoena*. The species was reported by Micali & Palazzi (1992: 87, 89 fig. 1), by Oliverio (1994: 81 figs 1, 2), as well as by Buzzurro & Greppi (1996: 8) as *Monotygma amoena*. It has been found in Cyprus also by Cecalupo & Quadri (1996: 109, sub 263) as well as by Buzzurro & Greppi (1997: 28).

In order to establish the real identity of both these species the syntypes were studied. These are housed in the Natural History Museum, London (BMNH), and have been figured by Higo et al. (2001: 135, fig. G4699 and 136, fig. G4702). Although the status of this material is somewhat doubtful, as it is for all of A. Adam's material, it is the best we have. The largest of the three shells of *Monoptygma fulva* A. Adams (1853: 202) that are accepted as syntypes here, is figured by Higo et al. (2001: 135, fig. G4699), who were the first to cite the year of publication correctly as 1853 (following Trew, 1992).

There are widely different interpretations of this nominal species in the literature, viz. by Dall & Bartsch [1906: 328, pl. 23 fig. 4, *Pyramidella (Actaeopyramis) fulva*], by Lavaleye & Barash [1981: 87, figs 1, 2, *Kleinella (Actaeopyramis) fulva*] and by Robba et al. (2004: 162, pl. 22 fig. 4, *Leucotina fulva*). Moreover, each of these authors deals with a different species. Therefore the specimen figured by Higo et al. (2001: 135, fig. G4699) is here designated as lectotype. This specimen is 22 mm long and brown coloured. There are nine whorls but the

[1]) No. 1: La Conchiglia 34 (303): 56-58 [2002].



Figs 1-2. *Monoptygma amoena* A. Adams, 1853. 1, syntype from "Bolinao, ex Cuming collection" BMNH 1968326, length 8.2+ mm; 2, possible syntype, ex H. Adams collection, BMNH 1878.1.28.346, length 9.2 mm. Fig. 3. *Leucotina natalensis* Smith, 1910. Holotype from Natal (South Africa), BMNH 1911.8.30.5, length 10.8 mm.

top is abraded, as it is in the other two specimens. It has about six spiral cords, separated by narrow grooves. The axial ridgelets between these grooves are relatively fine and dense.

Obviously, *Monoptygma fulva* is not the species to which the shells belong that were reported from the Mediterranean under that name. Their real identity is discussed later.

The case of *Monoptygma amoena* is more complicated. The BMNH houses two samples under this name. When studying these in 1988 it was found that one specimen, registered as 1968326 was marked " Bolinao, ex Cuming collection". The upper part of the shell was apparently broken off. This specimen is here figured as fig.1. The second specimen was complete and originated from the collection of H. Adams. It was registered as 1878.1.28.346. This is the specimen figured by Higo et al. (2001: 135, fig. G4702, by error denoted as 1968326) who considered this specimen the holotype. As there are two specimens, which we recently studied again, neither can be said to be the holotype.The original description by A. Adams (1853: 223; 1854: 818, pl. 172 fig.21) clearly states: " .. it is from Bolinao, 10 fathoms water. Mus. Cuming", which corresponds exactly with the label with the damaged specimen. Unfortunately this specimen cannot be recognized with certainty. Compared with the complete specimen from the H. Adams collection (here figured as fig. 2) it does not seem quite certain to be conspecific.

Moreover, the original description (A. Adams, 1853: 223) reads: "M(onoptygma) testa ovato-acuminata...columella recta.." and " ..the whorls are rounded and punctate-striate".

In our opinion this cannot be confidently applied to either of the two specimens. We therefore do not designate a lectotype. One thing is very clear however, neither specimen is identical to the specimens cited with the epithet *amoena* from the Mediterranean.

One additional species, viz. *Monoptygma lauta* A. Adams, 1853, should be discussed here. It closely resembles *M. amoena* but differs by: "M(onoptygma) testa turrito-subulata, ...anfractibus planiusculis,....columella obliqua et curvata" (A. Adams, 1853: 223).

In view of the rather great variability of these species, as recently stressed by Beu (2004: 225-233) it may well be that the nominal species *M. lauta* and *M. amoena* are forms of the same biological species. Acting as first revisers, we here give priority to the species name *M. lauta*. See the figure of the holotype of *Monoptygma lauta* in Higo et al. (2001: 135, fig. G4700), and the figure of the syntype BMNH 1968326 of *M. amoena* by Beu (2004, fig. 25B).

Shells of the species called *Monotygma amoena* from the Mediterranean, cited above, are more oval and thus much less slender. This species turns out to be identical with *Leucotina natalensis* Smith (1910: 183, pl. 7 fig. 1, here figured as fig.3). Described from South Africa, it does occur in the Red Sea, just as for example the well-known *Modiolus auriculatus* (Krauss, 1848), and *Anadara natalensis* (Krauss, 1848). *Leucotina natalensis* was found by MacAndrew (1870: 439) and identified by A. Adams (1870: 126) as *Myonia casta*. The shells in the MacAndrew collection in the Cambridge University Museum of Zoology, labelled *M. casta*, are without doubt identical. The shell figured by Moazzo (1939: 132, fig. 7) as *Leucotina casta* does not represent that species. In the real *Monoptygma casta* A. Adams, 1853, there are much more (±10) spirals and also the shell shape differs (see Higo et al., 2001: 136, fig. G4704).

The shells named *Monoptygma fulva* A. Adams in the MacAndrew collection consist of two fragments which cannot be identified with certainty, as well as one (young) specimen 6.0 mm long, with a curved columella and no visible tooth. The specimen shows an intorted embryonic whorl and six to seven spiral incisions. [Note that the descriptive term " intorted" is used here for a heterostrophic embryonal whorl which is completely hidden in the first teleoconch whorl, as redefined by van Aartsen (1977: 50; 1987: 1, 2]. Axial ridgelets could not be detected clearly. We agree with Cooke (1885: 41) that this is not *M. fulva* as described by A. Adams (1853), but we do not call it *M. amoena* but rather *M. lauta* as discussed above.

After the discovery by Hori & Tsuchida (1995) that the type species of the genus *Leucotina*, viz. *Leucotina niphonensis* A. Adams, 1860, is identical with *Acteon dianae* A. Adams, 1855 = *Odostomia gigantea* Dunker, 1877, we use the generic name *Leucotina* for species with more oval shells, such as *Leucotina natalensis*. We consider *Adelactaeon* Cossmann, 1895, a junior synonym of *Leucotina* A. Adams, 1860.

Whether *Monotigma* Sowerby, 1839, should be considered a different genus is under study. Meanwhile we consider species with relatively slender shells, such as *M. lauta*, to belong to this genus. More material of the genotype, *Monotygma striata* Gray, 1847, must be available before a justified decision can be made. Note that we recognize the validity of the genus name *Monotigma* (as of Gray). As proposed by Sowerby (1839: 66) this is an available name (ICZN art. 12.2.7) and should be used instead of *Monotygma* Gray, 1847, as proposed by Van Aartsen (1986: 183) as well as Schander et al. (1999: 149, 150). Thus we agree with Lozouet et al. (2001: 78) in the spelling of the name of this genus. However, as there is no indication of any involvement of Gray in Sowerby's Manual, one has to consider Sowerby, 1839, as the author of *Monotigma*.

The two species that have been discussed here can be identified as follows.

Monotigma lauta (A. Adams, 1853) (figs 4-6)

Monoptygma lauta A. Adams, 1853: 223; 1854: 817, pl. 172 fig. 20.
?*Monoptygma amoena* A. Adams, 1853: 223; 1854: 818, pl. 172 fig. 21.
Monoptygma fulva A. Adams; MacAndrew, 1870: 439. A. Adams, 1870: 126.
Myonia amoena A. Adams; Cooke, 1885: 41.
Kleinella (Actaeopyramis) fulva; Lavaleye & Barash, 1981: 87-89, figs 1, 2. Mienis, 1984: 579.
Monotygma fulva; Micali & Palazzi, 1992: 87,89 fig. 2. Buzzurro & Greppi, 1996: 8.
Adelactaeon fulvus (A. Adams, 1851[sic.]); Zenetos et al., 2004: 142, 143.

Monotigma lauta and *Leucotina natalensis* are frequently found together in the Mediterranean, where the former species is the rarer one.

The shell is rather slender, with 5-6 spiral cords and rather coarse axial ridgelets in the grooves between them. The length/breadth ratio varies from 2.5 (at 5.5 mm) to 3.0 (at 10.9 mm). There is no tooth on the columella and the embryonic whorls are nearly intorted, making an angle of about 150° with the shell axis. The whorls are nearly flat and the columella is more or less curved, but the appearance can be influenced by the state of preservation of the aperture.

Pyramidella (Actaeopyramis) norna Bartsch, 1915, may well be a junior synonym but we did not see any material of this South African species.

Leucotina natalensis Smith, 1910 (figs 3, 7, 8, 9)

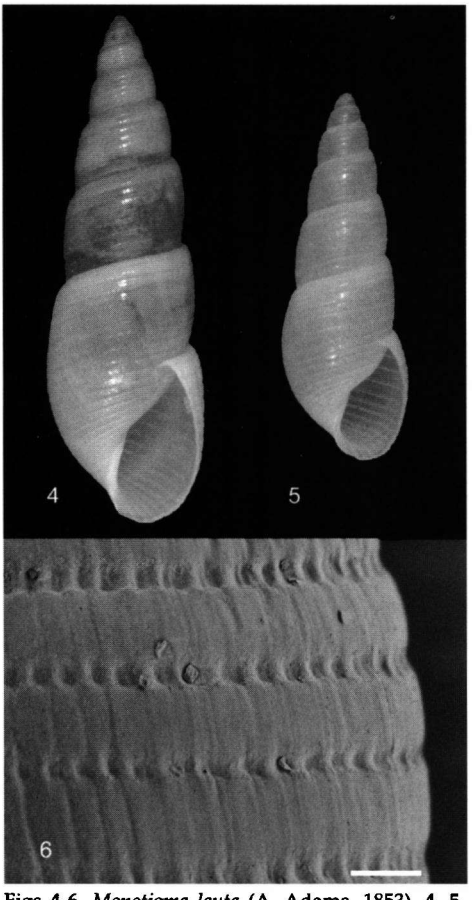
Leucotina natalensis Smith, 1910: 183, pl. 7 fig. 1
Myonia casta A. Adams; MacAndrew, 1870: 439. A. Adams, 1870: 126. Cooke, 1885: 41.
Kleinella (Actaeopyramis) amoena (A. Adams); Mienis, 1985: 620.
Monotygma amoena (A. Adams); Micali & Palazzi, 1992: 87, 89 fig.1. Oliverio, 1994: 81 figs 1, 2. Buzzurro & Greppi, 1996: 8. Cecalupo & Quadri, 1996: 109. Buzzurro & Greppi, 1997: 28.
Adelactaeon amoenus (A. Adams, 1851[sic.]); Zenetos et al., 2004: 144, 145.

This species is more common than *Monotigma lauta* at present and was also the first one along the Israeli coast (1978). It was found in Mersin on the Turkish south coast in 1986 by H. Menkhorst (personal communication).

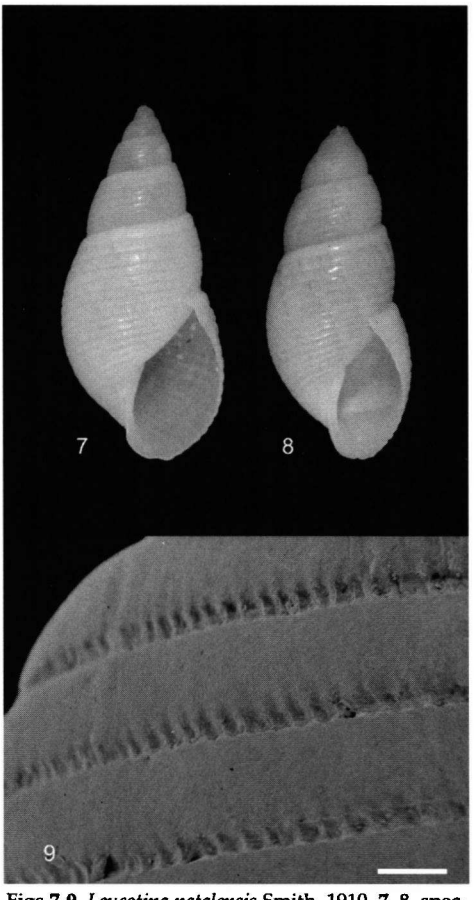
The shell is oval and obviously less slender than in *M. lauta*. It also has 5-7 spirals, but the axial ridgelets in the grooves are much finer. The length/breadth ratio varies between 1.6 (at 4.0 mm) to 2.2 (at 10.5 mm). There is only a very weak fold on the columella and the embryonic whorls are usually fully intorted. The columella is rather straight but this also depends on the state of preservation. An inconspicuous umbilicus is usually present in more or less full-grown specimens.

Shells of both *Monotigma lauta* and *Leucotina natalensis* are white, but *M. lauta* seems to have a brownish periostracum (Hori, in Okutani, 2000: 731, no. 171).

Concluding our research we have demonstrated that the above discussed specimens found in the Mediterranean belong to two, rather variable, species, viz. *Monotigma lauta* (A. Adams, 1853) and *Leucotina natalensis* Smith, 1910. Both species live in the Red Sea and were mentioned in the literature under the erroneous names of *Monoptygma fulva* and *Myonia casta* respectively.



Figs **4-6**. *Monotigma lauta* (A. Adams, 1853). **4, 5,** specimens from Viransehir (Mersin, South Turkey), length 10.8 mm and 8.1 mm respectively, showing variability (AD 28547); **6,** detail of sculpture (scale bar 100 μm).



Figs **7-9**. *Leucotina natalensis* Smith, 1910. **7, 8,** specimens from Viransehir (Mersin, South Turkey), length 8.0 mm and 7.3 mm respectively, showing variability (AD 28550); **9,** detail of sculpture (scale bar 100 μm).

ACKNOWLEDGEMENTS

We thank Mrs Kathy Way (BMNH) for her permission to study the types in her care. We also thank Dr R.C. Preece (Cambridge), curator of the MacAndrew collection for his willingness to grant us access to this collection. Discussions with Dr Allan Beu are greatly appreciated. Jeroen Goud (Naturalis, Leiden) gave us indispensable help by making the photographs.

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