Aquatic Invasions (2006) Volume 1, Issue 4: 241-244
DOI 10.3391/ai.2006.1.4.7

Research article

Indo-Pacific species in the Mediterranean. 5. *Chrysallida micronana* nom. nov. for *Chrysallida nana* (Hornung and Mermod, 1924) (Gastropoda: Pyramidellidae)

Bilal Öztürk[1*] and Jacobus J. van Aartsen[2]
[1]*Ege University, Faculty of Fisheries, Department of Hydrobiology, 35100 Bornova, Izmir, Turkey*
E-mail: bilal.ozturk@ege.edu.tr
[2]*National Museum of Natural History Naturalis, P.O.Box 9517, NL2300 RA Leiden, The Netherlands*
E-mail: vanaartsen@hetnet.nl
**Corresponding author*

Received 13 November 2006; accepted in revised form 28 November 2006

Abstract

The occurrence of the alien species *Chrysallida micronana* [nom. nov. for *Chrysallida nana* (Hornung and Mermod, 1924) not Adams, A., 1861] (Gastropoda: Pyramidellidae) in the Mediterranean was investigated. In studies performed between 1997 and 2000, a total of 6 specimens were encountered from the Turkish coast of the Levantine and Aegean Seas. Descriptions of morphological features of the shell, along with the ecological and distributional aspects of the species are provided.

Key words: Mollusca, Gastropoda, Pyramidellidae, *Pyrgulina nana*, *Chrysallida micronana*, nomen novum, alien species, Mediterranean Sea

Introduction

The genus *Chrysallida* Carpenter 1856 is one of the genera within the Pyramidellidae with many representatives in the Mediterranean Sea (Sabelli et al. 1990). Since Nordsieck's study in 1972, the first modern reviser of the genus *Chrysallida*, a lot of research covering this genus was realized, including some revisions (e. g. van Aartsen 1977, van der Linden and Eikenboom 1992, Nofroni and Tringali 1995, van Aartsen and Menkhorst 1996, Peñas et al. 1996, Micali and Nofroni 2004).

As for the Mediterranean fauna, the *Chrysallida* species distributed in this ecosystem are heterogeneous concerning their origin. Although some of them are Atlanto-Mediterranean, boreal or endemic in the Mediterranean, others are alien species, reached into the Mediterranean by various means. Nowadays, according to Mienis (2004), three alien *Chrysallida* species (*C. fischeri*, *C. maiae* and *C. pirinthella*) are known from the Mediterranean, inhabiting the Levantin Basin. The first two species of which are considered to have entered into the region through the Suez Canal and the third one to have been transferred possibly via the Suez Canal. These species also have been reported from the Turkish Levantine coast in various studies (Tringali and Villa 1990, Micali and Palazzi 1992, Buzzurro and Greppi 1995) performed in the area during the last two decades. Among the samples taken from Turkish coasts between 1997 - 2000, another alien *Chrysallida* species was found at two stations along the Turkish Levantine and Aegean Sea coasts.

The present study, which is the fift of the series Indo-Pacific species in the Mediterranean fallowing Aartsen 2002; Aartsen 2006; Aartsen and Goud 2006 and Aartsen and Hori 2006, is dealing with this additional species, being reported for the first time from the Mediterranean.

Materials and Methods

The samples in which *C. micronana* was found, were collected from the Levantine coast of Turkey in 1997 and 2000 and from the Turkish Aegean coast in 2000 (Figure 1). The material from the Levantine Sea was taken near Viransehir (Mersin Bay) from a depth of 0.5m by hand whereas the Aegean Sea material was sampled from Güllük Bay from a depth of 13 m by means of a dredge.

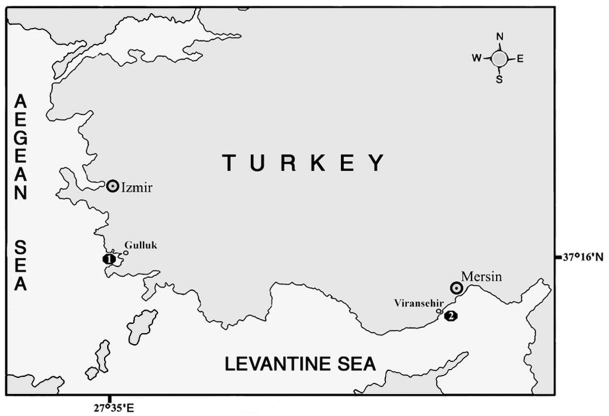

Figure 1. Map of the study area with location of the sampling stations where *Chrysallida micronana* was found

A part of the sampled material was studied within the framework of the project TBAG 2343 (103 T 154) supported by TUBITAK. The studied specimens are deposited in the Museum of the Faculty of Fisheries, Ege University, Turkey (ESFM) [the individual collected in the Aegean Sea] and in the private collection of van Aartsen, The Netherlands (AD 28455) [the individuals sampled from the Levantine Sea].

Results and Discussion

Chrysallida micronana nom. nov.
(Figures 2 and 3)

Pyrgulina nana Hornung and Mermod 1924: 18 (300), figure 15, not *Chrysallida nana* (Adams, A. 1861).

A total of 6 specimens were studied in this work. Of which one specimen was collected in Station 1 (37 16'00"N - 27 35'30"E, 17 September 2000, 13 m, dark clay) having a shell of 1.40 mm in height, the body whorl and the aperture respectively 900 µm and 520 µm in height and a maximum diameter of 580 µm. Five specimens were sampled in Station 2 (1997 and 2000, 0.5m,

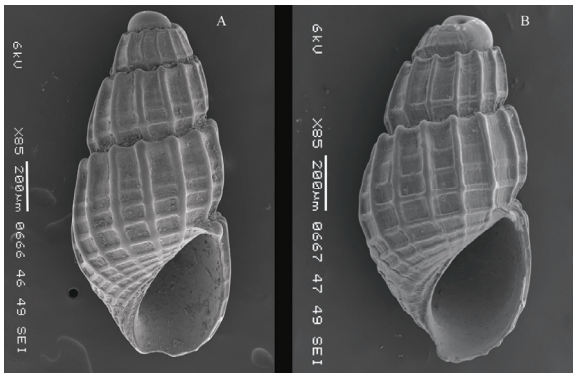

Figure 2. *Chrysallida micronana* : Two different specimens sampled at station 2 (Viransehir: Levantine Sea)

Figure 3. *Chrysallida micronana*: the specimen from Güllük Bay (station 1) (h= 1.4 mm). Photographed by Bilal Öztürk

shellgrit). The largest one of these with a shell of 1.41 mm in height, the body whorl and the aperture respectively 890 µm and 530 µm in height and a maximum diameter of 630 µm. Terminology used for the description of the species follows Aartsen (1987) and Peñas et al. (1996).

Chrysallida micronana has a small and almost white shell, ovoid-conical in shape, with a fairly blunt top. The intorted protococh is of type "B" and the apex appears immerged in the following whorl. There are nearly three teleoconch whorls, of which the first adult is flat and the others are slightly convex. The body whorl forms more than half of the shell. The sutures are deep and wide (canaliculate); the lowest one is evidently oblique. The axial ribs, narrow and continuing to the base, are well marked and stronger than the spiral cords. On the body whorl there are 17-18 straight, vertical or slightly prosocline ribs, becoming weaker at the base. The interspace between the ribs is two or three times wider than their thickness. There are more or less conspicous spirals on each whorl, covering ribs and

interspaces alike. The first whorl has only one weakly marked spiral cord found near the abapical suture. On the penultimate whorl the spirals are more numerous but only the lowest two are more conspicuous. The body whorl has 8-13 spiral cords, of which those in the upper part are less evident than the others. Whereas the spirals located in the middle part of the whorl are much more distant from each other, the cords found on the upper and lower sides are closer. At the base, where the axial ribs are weaker, the spiral cords are more evident. There is no umbilicus. The aperture is oval lengthened (egg-shaped) and there is a hardly visible tooth on the columella, which can be seen only when turning the shell to the left.

Chrysallida micronana was originally described by Hornung and Mermod (1924: 18) as *Pyrgulina nana* on two specimens found at a depth between 10-30 m in Massaua (Red Sea). There is no other record of the species than this report. The specific name should be cited as *Chrysallida nana*, because conspecific species are placed in the genus *Chrysallida* Carpenter 1856. But this specific name is preoccupied by *Chrysallida nana* A.Adams 1861, which is a valid species and, due to this fact, we propose *Chrysallida micronana* as *nomen novum*, regarding its small size.

According to Buzzurro and Nofroni (1995: 42), the type material of *Pyrgulina nana* and consequently therefore now also of *C. micronana* is present in the Natural History Civic Museum in Genova. Unfortunately this material was not available for study. Identification is therefore based on literature only.

Among the species distributed in the Mediterranean, *C. micronana* has some similarities with *C. pirinthella* (Melvill 1910), which is also an alien species, but it differs from *C. pirinthella* by having a deeper suture, conspicuous spiral cords, especially in the lower part of the body whorl, and an indistinct tooth on the columella. *C. micronana* presents also features similar to *Chrysallida* spec. C, which was collected from a locality near Mersin (Turkish Levantine coast) and described by van der Linden and Eikenboom (1992: 36; fig. 41). But the last one has a different dispersed spiral pattern, different shape of the aperture and, may be the most important, it has an umbilical groove, whereas no umbilicus is found in *C. micronana*. This species can be easily distinguished from the other *Chrysallida* species distributed, especially, in the Levantine Sea, by its small size and shell sculpture.

It seems that *C. micronana* is a shallow water species, inhabiting clay and shellgrit at depths up to 30 m. Hornung and Mermod (1924: 300) reported this species from a depth 10-30 m. In this study, one specimen was collected at station 1 in Güllük Bay in a depth of 13 m. The other 5 specimens were found at station 2 in Mersin Bay, inhabiting shellgrit at a depth of 0.5m. In this station 2 several other alien species belonging to the family Pyramidellidae, i. e. *Chrysallida pirinthella*, *Chrysallida maiae*, *Odostomia barashi*, *Turbonilla edgari*, *Cingulina isseli*, *Syrnola fasciata*, *Murchisonella columna*, *Monotigma lauta* and *Leucotina natalensis* were also collected. Both localities, where the specimens were found, are along a shipping route due to existence of harbours in Güllük and Mersin and the sea water is, more or less, influenced by the pollution originating from different activities. Disturbed conditions, especially harbour environments with rich nutrients and little competition among species, are known to support the settlement achievement of alien species (Zibrowius 1991).

Chrysallida micronana is only known from Red Sea up to now. The pathway through which *C. micronana* enters new localities is unknown at this stage, but most probably through the discharge of ballast waters from ships arriving in the aformentioned harbours to load or unload.

Hard copies of the present paper are deposited in 5 libraries (Annex).

Acknowledgements

We are indebted to Henk K. Mienis (Tel Aviv University) for help with literature and Jeroen Goud (Naturalis) for taking the SEM photographs of the individuals. This work has been partially supported by TUBITAK [Project Number: TBAG 2343 (103T154), coordinated by Bilal Öztürk].

References

Aartsen JJ van (1977) European Pyramidellidae: I. *Chrysallida*. Conchiglie 13: 49-64

Aartsen JJ van (1987) European Pyramidellidae: III. *Odostomia* and *Ondina*. Bollettino Malacologico 23: 1-34

Aartsen JJ van (2002) Indo-Pacific migrants into the Mediterranean. 1. *Gibborissoa virgata* (Philippi 1849). La Conchiglia 34: 56-58

Aartsen JJ van (2006) Indo-Pacific migrants into the Mediterranean. 4. *Cerithidium diplax* (Watson 1886) and *Cerithidium perparvulum* (Watson 1886) (Gastropoda, Caenogastropoda). Basteria 70: 33-39

Aartsen JJ van, Barash A and Carrozza F (1989) Addition to the knowledge of the Mediterranean Mollusca of Israel and Sinai. Bollettino Malacologico 25: 63-76

Aartsen JJ van and Goud J (2006) Indo-Pacific migrants into the Mediterranean. 3. *Atys angustatus* Smith, 1872 (Gastropoda, Opisthobranchia). Basteria 70: 29-31

Aartsen JJ van and Hori S (2006) Indo-Pacific migrants into the Mediterranean. 2. *Monotigma lauta* (A.Adams 1853) and *Leucotina natalensis* Smith 1910 (Gastropoda, Pyramidellidae). Basteria 70: 1-6.

Aartsen J J van and Menkhorst HPMG (1996) Nordsiek's Pyramidellidae (Gastropoda: Prosobranchia): a revision of the types. Part 1: The genera *Chrysallida*, *Ondina* (s. n. *Evalea*) and *Menestho*. Basteria 60: 45-56

Buzzurro G and Greppi E (1995) Sull'identita' di *Pyrgulina pirintella* Melvill, 1910 (Heterobranchia: Heterostropha). Notiziario CISMA 16:41-43

Hornung A and Mermod G (1924) Mollusques de la mer Rouge recueillis par A. Issel faisant partie des collections du Musee Civique d'Histoire Naturelle de Genes. Premiere partie, Pyramidellides. Annali del Museo Civico di Storia Naturale di Genova 51:283-311

Linden J van der and Eikenboom JCA (1992) On the taxonomy of recent species of the genus *Chrysallida* Carpenter, from Europe, the Canary Islands and the Azores (Gastropoda; Pyramidellidae). Basteria 56: 3-63

Micali P and Nofroni I (2004) On the specific validity of *Chrysallida penchynati* (B. D. D.,1883) and description of *Chrysallida rinaldii* n. sp. Bollettino Malacologico 39: 177-180

Micali P and Palazzi S (1992) Contributo alla conoscenza dei Pyramidellidae della Turchia, con segnalazione di due nouve immigrazioni dal mar Rosso. Bollettino Malacologico 28: 83-90

Mienis HK (2004) New data concerning the presence of Lessepsian and Indo-Pacific migrants among the molluscs in the Mediterranean Sea with emphasize on the situation in Israel. In Öztürk, B, Salman, A., (Eds.), Ist National Malacology Congress, 1-3 September 2004, Izmir-Turkey, Turkish Marine Research Foundation Press, Istanbul, pp 117-131

Nofroni I and Tringali LP (1995) Random notes on E. Atlantic, Mediterranean and Lessepsian Pyramidellidae (Gastropoda: Heterobranchia: Pyramidelloidea). Notiziario CISMA 17: 21-49

Nordsieck F (1972) Die europaischen Meeresschnecken Opistobranchia mit Pyramidellidae, Rissoacae. G. Fischer Verlag, Stuttgart, 327 pp.

Peñas A, Templado J and Martinez JL (1996) Contributión al conocimento de los Pyramidelloidea (Gastropoda: Heterostropha) del Mediterráneo Español. Iberus 14: 1-82

Sabelli B, Giannuzzi-Savelli R and Bedulli D (1990) Catalogo annotato dei Molluschi marini del Mediterraneo. Libreria naturalistica bolognese, Bologna, 348 pp.

Tringali L and Villa R (1990) Rinvenimenti malacologici dalle coste Turche (Gastropoda, Polyplacophora, Bivalvia). Notiziario CISMA 12: 33-41

Zibrowius H (1991) Ongoing modification of the Mediterranean marine fauna and flora by the establishment of exotic species. Mésogée 51: 83-107

Annex

List of libraries holding hard copies of this paper

1. The library of the National Museum of Natural History "Naturalis", Leiden, Netherlands
2. The malacological library in Hebrew University, Jerusalem, Israel
3. The malacological library in Tel Aviv University, Israel
4. The library of the British Natural History Museum, London, UK
5. The library of Zoological Institute of the Russian Academy of Sciences, St.Petersburg, Russia