

**Addition to the knowledge of the European *Chrysallida* species, with notes  
on a recent work by Van der Linden & Eikenboom (Gastropoda,  
Opisthobranchia)**

P. MICALI

Via Papiria 17, 61032 Fano (PS), Italy

I. NOFRONI

Via B. Croce 97, 00142 Roma, Italy

& J.J. VAN AARTSEN

Adm. Helfrichlaan 33, 6952 GB, Dieren, Holland

Additional material and different interpretation of European *Chrysallida* have led to the following conclusions. *C. interspatiosa* Van der Linden & Eikenboom, 1992, is a synonym of *C. flexuosa* (Monterosato, 1874). Details are given of species and/or names not mentioned by Van der Linden & Eikenboom (1992). The replacement name *C. interita* Van der Linden & Eikenboom, 1992, appears to be unnecessary as earlier names are available.

Key words: Gastropoda, Opisthobranchia, Pyramidellidae, *Chrysallida*, East Atlantic, Canary Islands, Azores, Mediterranean.

## INTRODUCTION

This paper is meant to be an addition to the voluminous review on the representatives of the genus *Chrysallida* in European seas by Van der Linden & Eikenboom (1992), abbreviated L & E in the following text. We examine more carefully some of the species dealt with by L & E. At the same time we illustrate some little-known species of this family. This is possible as one of us (I.N.) is engaged in a revision of the Pyramidellidae described by Monterosato and kept in the Malacological Section of the Museo Civico di Zoologia del Comune di Roma (MCZR).

The abbreviations h (height) and d (diameter) are used as customary. The material examined is kept in the collection Micali unless otherwise stated, e.g. AD for collection Van Aartsen in Dieren.

## SYSTEMATIC PART

### *Chrysallida flexuosa* (Monterosato, 1874) (fig. 1)

*Odostomia flexuosa* Monterosato, 1874: 267; Jeffreys, 1884: 335, pl. 26 fig. 10.

*Chrysallida flexuosa* — Van Aartsen, 1977: 55, pl. 4 fig. 25; Carrozza, 1985: 221; Warén, 1991: 101, fig. 32E, F.

*Chrysallida interspatiosa* Van der Linden & Eikenboom, 1992: 21, figs. 10, 25, 26.

Notes. — *Chrysallida interspatiosa* was described by L & E as a new species, based on specimens found near the Azores at 225-480 m depth. The axial sculpture is considered a specific character: vertical, flexuous ribs, with broad interspaces. Unfortunately,

L & E have wrongly understood *C. flexuosa*, giving this name to a form of *C. indistincta* with flexuous axial ribs. Therefore they conclude that *C. flexuosa* is a synonym of *C. indistincta*. From their fig. 10 and the description it becomes obvious that *C. interspatiosa* is based on specimens of the true *C. flexuosa*. For a good picture, see Warén (1991: fig. 32). In the Monterosato collection there are over 80 syntypes from Palermo (type locality). All the specimens are small (maximal height 1.5 mm). One of the syntypes is designated as lectotype here (fig. 1). *C. flexuosa* is widely distributed in the Lusitanic Province, characteristically found on mud bottoms below 100 m depth. The maximum shell-height indicated by L & E is 2.4 mm, while specimens examined by us (see below) are up to 2.0 mm high.

Material examined. — Mediterranean: Central Adriatic Sea, -90 m (9 specimens); Capraia Island, -300/350 m (1); Capo Vaticano (Tropea, Catanzaro), -200 m (6); Alboran Island, -270/290 m (6); Palermo (over 80 in the Monterosato collection, MCZR); Central Tyrrhenean Sea, -250 m (1 in AD); Gaeta (3 in AD); Sardinia, -350/400 m (8 in AD); Corsica, -150/200 m (1 in AD); Malta (3 in AD).

#### *Chrysallida monterosatii* (Clessin, 1900)

*Pyrgulina brevicula* Monterosato, 1884: 88. Not *Odostomia brevicula* Jeffreys, 1883.

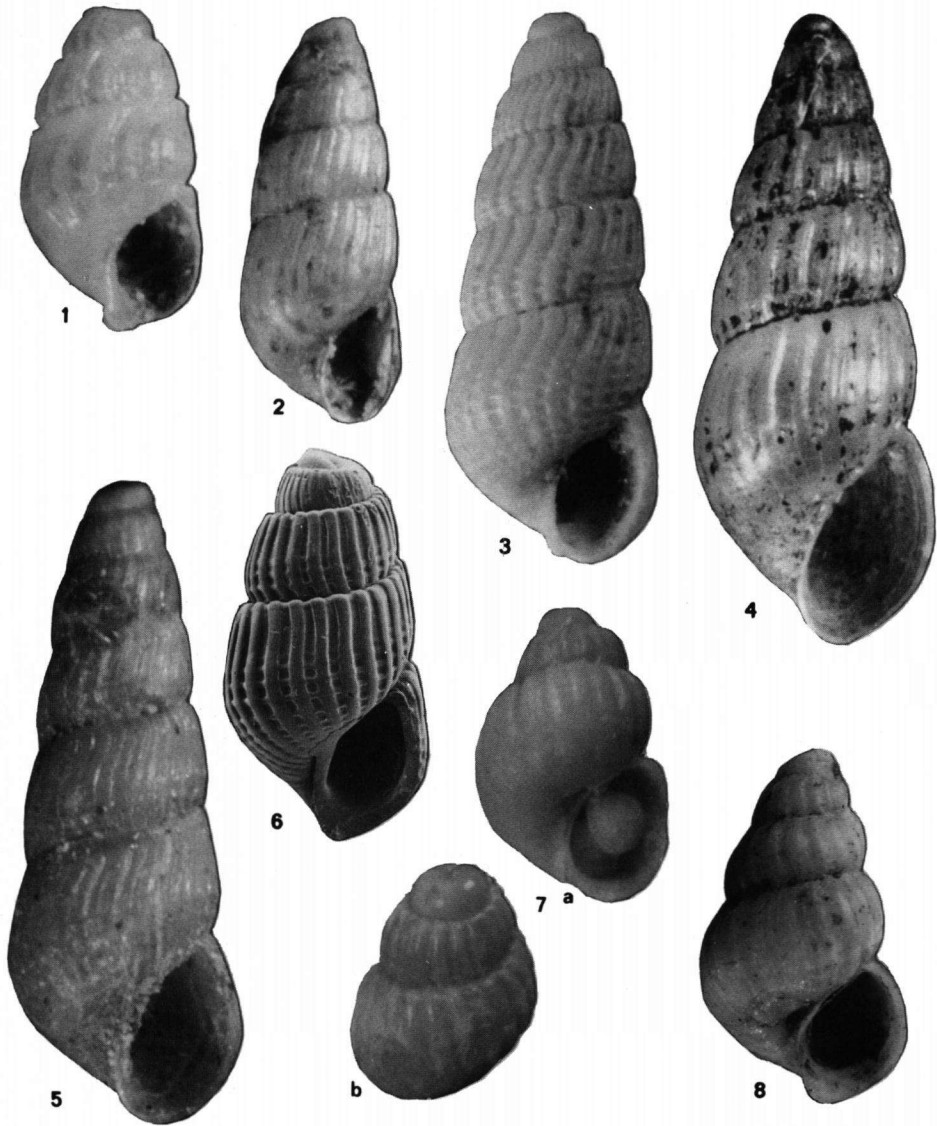
*Parthenia monterosatii* Clessin, 1900: 188.

*Parthenia alleryi* Kobelt, 1903: 134, pl. 73 figs. 9, 10.

Description. — Shell rather tall and slender conical, semitransparent and glossy. The cyrtocoenoid spire tapers to a blunt and oblique apex. The protoconch is smooth, with c. 1-1.5 whorls, at an angle of c. 160° with the axis of the shell. It measures about 300-320 µm in diameter. Up to 6.3 postlarval whorls, nearly flat in profile, and separated by a shallow suture. The shell bears costae and spiral ridges. Initial 1.5 whorls smooth, then start costae that are flat-topped and about double as broad as the interstices. Costae slightly opisthocline and flexuous especially on the last whorls; there are about 30 costae on the last whorl and 27 on the penultimate one. Each whorl has one spiral ridge, situated just above the suture. On the last whorls there are two spiral ridges on the lower ends of the costae. Base smooth. Aperture oval to rhomboid. Columella straight, its lip is upstanding alongside a small umbilical groove. A thin parietal callus completes the peristome. The tooth is visible in frontal view. Size: up to 3.2 × 1.5 mm. Last whorl measuring c. 50% of the total shell height; aperture 30% of the shell height, h/d = 36-44%.

Shells of this species can be distinguished from congeneric ones by the conical general shape, the initial 1.5 smooth teleoconch whorls and narrow interstices.

Notes. — *Parthenia monterosatii* was established by Clessin as a nomen novum for *Pyrgulina brevicula* Monterosato, 1884, non *Odostomia brevicula* Jeffreys, 1883 (considered secondary homonyms in *Chrysallida*). *Parthenia (Pyrgulina) alleryi* Kobelt, 1903, was introduced for the same reason. It was not possible, up to now, to find specimens labeled *Pyrgulina brevicula* in Monterosato's collection. However, in the Brugnone collection (bought by Monterosato before 1912), there is a glass tube with three specimens labelled as "*brevicula* M1RS". These specimens exactly fit Kobelt's (1903: 134, pl. 73 figs. 9, 10) interpretation, followed by later authors. One specimen is figured here (fig. 2). L & E do not mention this name. *C. monterosatii* is known from the Tyrrhenian Sea, where it occurs at a depth of 50-200 m.



Figs. 1-8. *Chrysallida* spec. — 1, *C. flexuosa* (Monterosato, 1874), lectotype, from Palermo, Monterosato collection (h 1.5 mm); 2, *C. monterosatii* (Clessin, 1900), specimen marked "brevicula MTRS", from Trapani, ex Brugnone collection (h 3.2 mm); 3, 4, *C. juliae* (De Folin, 1872), lectotype of *Odostomia nanodea* (Monterosato, 1878), from Palermo, Monterosato collection (h 2.4 mm) [3] and specimen labeled "tenuistriata", from Golfo di Tendra, Monterosato collection (h 2.7 mm) [4]; 5, *C. indistincta* (Montagu, 1808), lectotype of *Turbonilla delpretei* Sullioti, 1889, from Viareggio, Monterosato collection (h 2.8 mm); 6, *C. palazzii* Micali, 1984, holotype, from the central Adriatic Sea, Museum for Zoology of the University of Bologna (h 1.3 mm); 7, *C. brattstroemi* Warén, 1991, specimens from Capraia island, Nofroni collection (h 1.16 mm); 8, *C. sublustris* (Friele, 1886), holotype, from Vöringen, Sta. 124 (no. 21612), Friele collection (h 4.3 mm).

Material examined. — Mediterranean: Capo Vaticano, -50/70 m (15 specimens); Fiumicino (Rome), -70 m (in *Astropecten*, 24); Terrasini (Palermo), -80/150 m (15); Patti (Messina), -200 m (2); Trapani (3 in Brugnone collection, MCZR).

*C. juliae* (De Folin, 1872) (figs. 3, 4, 9, 10)

*Truncatella juliae* De Folin, 1872: 49, pl. 2 fig. 4.

*Odostomia nanodea* Monterosato, 1878: 317.

*Parthenina tenuistriata* Milachewitch, 1909: 314.

In the Monterosato collection there are four syntypes of *O. nanodea* from Palermo (type locality). One of these is designated lectotype here (fig. 3); it is 2.38 mm high. Examination of these specimens convinced us that *C. juliae* (De Folin, 1872) is a senior synonym of *C. nanodea*. The interpretation of *C. nanodea*, given in the literature (e.g. Nordsieck, 1972: 95, pl. P1 fig. 20) is clearly wrong. As Nordsieck considered *C. tenuistriata* (Milaschewitch, 1909) synonymous with *C. nanodea*, it should be mentioned that there are four specimens in the Monterosato collection labelled "*tenuistriata*" from Golfo di Tendra, which fit well with Nordsieck's interpretation. One of these specimens is figured here (fig. 4). In our opinion, specimens figured as *C. nanodea* by L & E are a slender form of the variable *C. obtusa*.

*Chrysallida indistincta* (Montagu, 1808) (figs. 5, 11)

*Turbo indistinctus* Montagu, 1808: 129.

*Turbonilla delpretei* Sullioti, 1889b: 68.

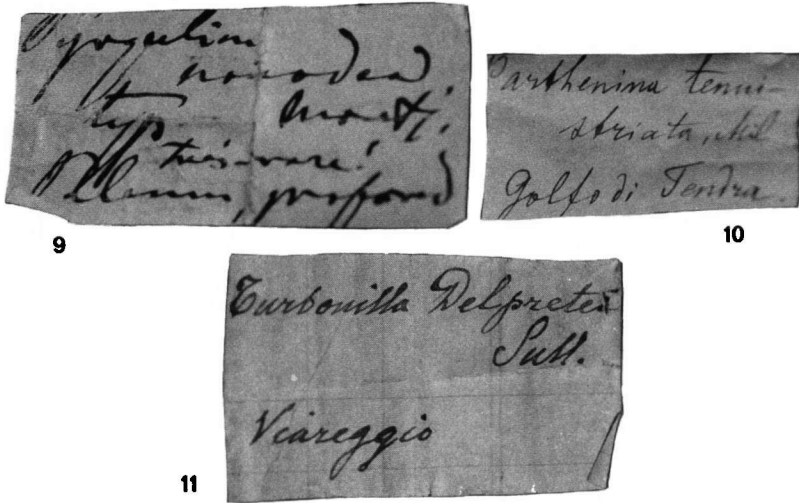
From the description by Sullioti it cannot be concluded whether *Turbonilla delpretei* really belongs to *Turbonilla* Risso, 1826, or should be placed in *Chrysallida* Carpenter, 1856. The usual interpretation of this species follows Nordsieck (1972: 96, pl. P1 fig. 23) and Van Aartsen (1977: 57, fig. 20).

In the Monterosato collection there are four specimens of "*delpretei*" from Viareggio (Lucca), the type locality. These shells are very fresh and clearly conspecific. They were most probably labelled by Sullioti himself and considered syntypes here; we know from Sullioti (1889a: 33) that he had close relations with Monterosato. One of these specimens (h = 2.8 mm) is designated lectotype (fig. 5). Examination of these type specimens convinced us of the identity with *C. indistincta*. We suppose that *C. delpretei* sensu Nordsieck may be *C. terebellum*. The synonym *C. delpretei* is not mentioned by L & E.

*Chrysallida palazzii* Micali, 1984 (fig. 6)

*Chrysallida palazzii* Micali, 1984: 246.

We assume that L & E have not studied specimens that really belong to this species, as they consider it to be a form of *C. indistincta*. *C. palazzii* is in fact a rather rare species in the Mediterranean, distributed from Gibraltar to the Adriatic Sea. It lives normally from 30 to 100 m depth. It is similar to *C. indistincta*, differing however by (1) a higher number of spiral ridges, namely two on the first teleoconch whorl, three on the second, four on the third and twelve on the last whorl (*C. indistincta* has a maximum of five ridges on the last whorl), (2) spiral ridges on the base (in *C. indistincta* the base is smooth) and (3) shouldered whorls and a deeper suture. The holotype of *Chrysallida palazzii* is figured in fig. 6.



Figs. 9-11. Original labels of the specimens shown in figs. 3-5, viz. "*Pygulina nanodea*", "*Parthenina tenuistriata*" and "*Turbonilla Delpretei*".

Material examined. — Mediterranean: Central Adriatic Sea, -90 m (type locality) (34 specimens plus 1 in RMNH); Malta, -130 m (1); between Estepona and Tetuan (Morocco), -25/35 m (26); Capraia Island, -120 m (3); Capo Pecora (Cagliari), -80/100 m (1); Civitavecchia (Roma), (1 in *Astropecten*); Corsica, -150/200 m (3 in AD); Central Tyrrhenean Sea, -250 m (17 in AD); Capo Ferro, -50/70 m (4 in AD); St. Andrea, -70 m (1 in AD); Civitanova, -80/100 m (1 in AD); Aegean Sea, -88 m (1 in AD).

*Chrysallida simulans* (Chaster, 1898)

*Pygulina indistincta* var. *simulans* Chaster, 1898: 22.

This species was established by Chaster (1898: 22) as a variety of *C. indistincta* (Montagu, 1808), although a certain resemblance with *C. clathrata* (Jeffreys, 1848) was mentioned too. L & E conclude that it falls within the range of variation of *C. indistincta*. From their discussion it is not clear, however, whether these authors have seen type material. We were not able to study type material, but we did study specimens which were clearly different from both *C. indistincta* and *C. clathrata*, corresponding exactly with the description of Chaster. Therefore, the identity of *C. simulans* and *C. indistincta* does not seem to be settled yet.

*Chrysallida pygmaea* (Grateloup, 1838)

*Acteon pygmaea* Grateloup, 1838: 282, pl. 6 figs. 77, 78.

*Chrysallida interita* Van der Linden & Eikenboom, 1992: 41.

Notes. — As *Acteon pygmaea* Grateloup, 1838, is preoccupied by *Acteon pygmaea* Lea, 1833, the former name should be replaced. The present species, or a close relative, occurs from the Miocene to the Recent. Several forms that might belong to it have been named. The oldest name for a member of this group is *Rissoa stefanisi* Jeffreys, 1869, based on Recent material. However, L & E consider the differences between the Miocene specimens on the one hand and the Pliocene to Recent shells on the other hand of specific value and, therefore, they propose the replacement name *C. interita* for the Miocene specimens. However, they do not discuss the many names which are already available for the Miocene forms such as *Pyrgulina (pygmaea var.) subtypica* Sacco, 1892, *Pyrgulina peraffinis* Boettger, 1901, *Pyrgulina longula* Boettger, 1906, *Pyrgulina falunica* Peyrot, 1938, *Pyrgulina pulcherrima* Peyrot, 1938, *Chrysallida (pygmaea ssp) belgica* Glibert, 1958, and *Chrysallida (pygmaea ssp) hemmoorica* Nordsieck, 1972. Why none of these seven available names can be used for the species in question is not mentioned.

Names of this group based on Pliocene material are *Menestho jeffreysi* Bell, 1871, *Pyrgulina formosa* G. Seguenza, 1876, *Pyrgulina crispata* G. Seguenza, 1876, *Pyrgulina (pygmaea ssp) postica* Sacco, 1892, and *Thapsiella menesthoides* Cossmann, 1921. Thus, as far as we know, the name *Pyrgulina subtypica* Sacco, 1892, is the oldest one which is applicable with certainty to Miocene material; it is based on *Turbonilla pygmaea* as described and figured by Hoernes (1856: 502, pl. 43 fig. 32) and is therefore only a subjective synonym of Grateloup's species.

It should be noted that the original drawing of Grateloup (1838: pl. 6 figs. 77, 78) shows a very slender specimen, with six teleoconch whorls; it might be different from *C. pygmaea* as interpreted by later authors. As far as we know, no one examined Grateloup's type material (still existing?). As we do not have enough data to clarify this point, we further leave the question open.

We agree with L & E that there are differences between Miocene and Pliocene specimens as stated by these authors. It should be pointed out, however, that the so-called "Miocene" form was also found in the lower Pliocene (Zanclean) at Bussana (Imperia) as well as at Bozzoli (Genova). Especially the Bussana-material was very carefully collected and studied by Dr. C. Crovato and a mixing with Miocene material has to be excluded. Moreover, the differences in average length, in slenderness as well as in convexity of the whorls as mentioned by L & E, are no more than the usual differences between fully mature and younger specimens. Also the slight differences in protoconch are not convincing. It should be remembered that in other Pyramidellidae a relatively broad variation in dimension of the protoconch and its form is encountered too. For instance we have found the ratio of maximum and minimum protoconch diameter in the species *Turbonilla rufa* (Philippi, 1836) and *Turbonilla striatula* (L., 1758) to be about 1.2 for recent Mediterranean specimens. So we prefer the view that there is only one species.

Material examined. — Miocene: Dingden (Germany), Bislicher Schichten (6 specimens); Stazzano (Alessandria, Italy), Tortonian (1); Montegibbio (Modena, Italy), Tortonian (2); Ferrière-Larcon (France), Helvetien (7 in AD); Charenton (France), Helvetien (5 in AD); Paulmy (France), Helvetien (3 in AD).

Pliocene (Italy): Salea (Savona) (1); Trappeto (Palermo) (1); Rio Torsero (Savona) (6); Altavilla (Palermo) (4); Bussana (Imperia) (5); Bozzoli (Genova) (5).

Recent, Mediterranean: Alghero (Sassari), -180 m (2); Secca di Capo Palummo (Napoli), -75 m (1); Central Adriatic Sea, -90 m (1); Capo Vaticano (Catanzaro), -200 m (1); Bocche di Bonifacio (between Sardinia and Corsica), -100/200 m (5); Sardinia (K1),

-300 m (2 in AD); Haifa Bay, -75 m (1 in AD); Mersin (Turkey) (1 in AD); Capo Ferro, -60 m (1 in AD); Cyclades, -150 m (1 in AD).

*Chrysallida obtusa* (Brown, 1827)

*Jaminia obtusa* Brown, 1827: pl. 50 fig. 38.

*Chrysallida farolita* Nordsieck, 1972: 96, pl. P1 fig. 22.

The study of the type material in the Senckenberg Museum in Frankfurt (Van Aartsen & Menkhorst, to be published) has confirmed the identity of *Chrysallida farolita* Nordsieck, 1972, and *Chrysallida obtusa* (Brown, 1827).

*Chrysallida brattstroemi* Warén, 1991 (fig. 7)

*Chrysallida brattstroemi* Warén, 1991: 100, fig. 32A-C.

Warén (1991: 100) described *C. brattstroemi* after material from Norway as well as from the Mediterranean in the Sykes collection (British Museum [Nat. Hist.]). We have found fossil specimens in the Italian Lower Pleistocene and Recent. Our findings prove that this species was living in the Mediterranean since the Lower Pleistocene.

*Chrysallida brattstroemi* is not mentioned by L & E.

Material examined. — Pleistocene (Sicilian): Archi (Reggio Calabria), bathyal mud (5 specimens identified by Warén); San Procopio (Reggio Calabria) (4).

Recent, Mediterranean: Capraia Island, -400 m (5 in coll. Nofroni, see fig. 7); Pantelleria Island (5 without name, in Monterosato collection, MCZR).

*Chrysallida sublustris* (Friele, 1886) (fig. 8)

*Ostostomia sublustris* Friele, 1886: 29, pl. 11 figs. 11, 11a.

This species is limited to northern latitudes (Iceland and northwestern Norway). In fig. 8 a specimen from Friele's collection, marked "21612 Vöringen St. 124, type" is figured. This specimen is 4.3 mm high. In Monterosato's collection another specimen is present, marked "Arctic sea", which may have been obtained from Jeffreys with whom Monterosato had close relations. *Chrysallida sublustris* is not mentioned by L & E.

We are grateful to Dr. Vincenzo Vomero (MCZR), who gave us the opportunity of examining the typical material in the Monterosato collection. Without his help this work would not have been possible. We thank A.W. Janssen, who sent specimens of *C. pygmaea*.

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