

On *Parthenina monozona* (Brusina, 1869) and its variability (Gastropoda Heterobranchia Pyramidellidae)

Pasquale Micali^{1*}, Italo Nofroni², Riccardo Giannuzzi Savelli³, Francesco Pusateri⁴ & Stefano Bartolini⁵

¹Via Papiria 17, 61032 Fano, Pesaro-Urbino, Italy; e-mail: lino.micali@virgilio.it

²Via B. Croce 97, 00142 Roma, Italy; e-mail: italo.nofroni@uniroma1.it

³Via Mater Dolorosa 54, 90146 Palermo, Italy; e-mail: malakos@tin.it

⁴Via Castellana 64, 90135 Palermo, Italy; e-mail: francesco@pusateri.it

⁵Via E. Zaccani 16, 50137 Firenze, Italy; e-mail: stefmaria.bartolini@libero.it

*Corresponding author

ABSTRACT

Study of type material of *Parthenina monozona* (Brusina, 1869), preserved at Croatian Natural History Museum (CNHM), consisting of four specimens, three of which well preserved, has proved that this species is senior synonym of *Parthenina intermixta* (Monterosato, 1884). Brusina's name has priority over Monterosato's name, because it is older. The polymorphism of this species is discussed.

KEY WORDS

Pyramidellidae; *Parthenina*; *monozona*; type; recent; Mediterranean Sea.

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INTRODUCTION

Study of type material is the only way to know some species not properly described/figured, because apart from personal interpretations of the various Authors, really some species have never been clarified. The present work illustrates the result of *Parthenina monozona* (Brusina, 1869) type material investigation. Even if the result of the study, that is the synonymy between *P. monozona* and *P. intermixta* (Monterosato, 1884), has been mentioned by most Authors (e.g. Aartsen, 1977; Linden & Eikenboom, 1992; Peñas et al., 1996), it was based on personal interpretations, without any study of typical or Author's named material.

SYSTEMATICS

Subclass Heterobranchia J.E. Gray, 1840

Order Heterostropha P. Fischer, 1885

Superfamily Pyramidelloidea J.E. Gray, 1840

Family PYRAMIDELLIDAE J.E. Gray, 1840

Subfamily Chrysallidinae Saurin, 1958

Genus *Parthenina* B.D.D., 1883

Type species: *Odostomia interstincta* Montagu, 1803 = *Turbo interstinctus* J. Adams, 1797, European Seas by original designation

Parthenina monozona (Brusina, 1869)

Odostomia monozona Brusina, 1869: 240

Odostomia monozona - Monterosato, 1872a: 31

Odostomia monozona - Monterosato, 1872b: 42

Odostomia monozona - Aradas & Benoit, 1874: 240

Odostomia monozona - Monterosato, 1875: 32

Odostomia monozona - Monterosato, 1877a: 39

Odostomia (Pyrgulina) monozona - Monterosato, 1877b: 35

- Odostomia (Pyrgulina) monozona* - Monterosato, 1877c: 421
- Odostomia monozona* - Monterosato, 1878: 93
- Odostomia monozona* - Stossich, 1876: 79
- Odostomia (Parthenina) jeffreysi* B.D.D., 1883: 170, pl. 20, figs. 8–10 (var.)
- Odostomia monozona* - Bucquoy et al., 1883: 173, pl. 20, figs. 12, 13 (see discussion)
- Pyrgulina monozona* - Monterosato, 1884: 87
- Pyrgulina intermixta* - Monterosato, 1884: 87
- Pyrgulina monozona* - Monterosato, 1885: 81
- Pyrgulina intermixta* - Monterosato, 1885: 81
- Odostomia monozona* - Brusina, 1886: 31
- Parthenina monozona* - Locard, 1886: 235
- Parthenina intermixta* - Locard, 1891: 144
- Parthenina monozona* - Locard, 1891: 145
- Parthenina monozona* - Ancey, 1898: 53
- Odostomia intermixta* - Pallary, 1900: 341
- Parthenina monozona* - Kobelt, 1903: 117–118
- Odostomia intermixta* - Pallary, 1912: 133
- Parthenina intermixta* - Cerulli-Irelli, 1914: 435, pl. 54, figs. 7–9
- Pyrgulina monozona* - Monterosato, 1917: 17
- Pyrgulina monozona* var. *attenuata* Monterosato - Monterosato, 1917: 17
- Pyrgulina (Parthenina) intermixta* - Fekih, 1969: 19, pl. 3, fig. 3
- Chrysallida monozona* - Parenzan, 1970: 125, fig. 45
- Parthenina intermixta* - Parenzan, 1970: 125
- Chrysallida monozona* - Ghisotti, 1972: 102
- Chrysallida (Parthenina) monozona* - Nordsieck, 1972: 93, pl. PI fig. 12 (see discussion)
- Chrysallida (Parthenina) intermixta* - Nordsieck, 1972: 93, pl. PI, fig. 10
- Chrysallida (Parthenina) intermixta* - Di Geronimo, 1975: 104
- Chrysallida monozona* - van Aartsen, 1977: 57–58
- Chrysallida intermixta* - van Aartsen, 1977: 57–59, pl. 3, fig. 21
- Chrysallida intermixta* - Ruggieri, 1982: 260
- Chrysallida intermixta* - Rolán Mosquera, 1983: fig. pag. 297, 298
- Chrysallida intermixta* - Mietto & Quaggiotto, 1983: 137, pl. 1, fig. 18
- Chrysallida intermixta* - van Aartsen et al., 1984: 49 n. 238
- Chrysallida intermixta* - Ballesteros et al., 1986: 43
- Chrysallida intermixta* - Martin-Sintes et al., 1990: 452
- Chrysallida intermixta* - Poppe & Goto, 1991: 49, 200
- Chrysallida monozona* - Riedl, 1991: 270, pl. 105
- Chrysallida intermixta* - Barash & Danin, 1992: 164
- Chrysallida intermixta* - van der Linden & Eikenboom, 1992: 20, fig. 33
- Chrysallida rara* - Gaglini, 1992: 149, fig. 130
- Chrysallida intermixta* - Cachia et al., 1993: 37
- Chrysallida intermixta* - Mifsud, 1994: 34, fig. 27
- Chrysallida intermixta* - Cecalupo & Quadri, 1996: 95, 118
- Chrysallida intermixta* - Peñas et al., 1996: 22, figs. 40, 42
- Chrysallida intermixta* - Giribet & Peñas, 1997: 53
- Chrysallida intermixta* - Cachia, 1999: 97, fig. pag. 98
- Chrysallida intermixta* - Öztürk & Çevik, 2000: 37
- Chrysallida intermixta* - Cachia et al., 2001: 87, pl. 13, fig. 11
- Chrysallida intermixta* - Öztürk et al., 2004: 60
- Chrysallida intermixta* - Micali & Nofroni, 2004: 179
- Chrysallida intermixta* - Coppini et al., 2005: 3
- Chrysallida intermixta* - Brunet Navarro & Capdevila, 2005: 36, 79 fig. 307
- Chrysallida intermixta* - Peñas et al., 2006: 44
- Chrysallida intermixta* - Trono, 2006: 61
- Chrysallida monozona* - Trono, 2006: 61
- Chrysallida intermixta* - Mazziotti et al., 2008: 78
- Chrysallida intermixta* - Cecalupo et al., 2008: 32, pl. 71, figs. 10–13.
- Chrysallida monozona* - Cosentino & Giacobbe, 2008: 166
- Chrysallida intermixta* - Vazzana, 2010: 71
- Chrysallida monozona* - Cossignani & Ardovini, 2011: 347
- Chrysallida intermixta* - Cossignani & Ardovini, 2011: 347
- Chrysallida intermixta* - Peñas & Rolán in Gofas et al., 2011: 373 (with SEM photos)
- Chrysallida intermixta* - Chirli & Micali, 2011: 34
- Parthenina intermixta* - Trono & Macri, 2013: 36
- Chrysallida monozona* - Trono & Macri, 2013: 36
- Chrysallida intermixta* - Öztürk, 2014: 28
- Parthenina monozona* - Giannuzzi-Savelli et al., 2014: 19, 67, figs. 163–168
- ORIGINAL DESCRIPTION. Brusina (1869: 240): “*O. testa subulato-turrita obtusiuscula, nitida, lactea; anfractibus 5 ½ convexiusculis, sutura satis profunda disjunctis, longitudinaliter plicata, plicis subcontinuis, rectis, interstitia aequantibus, basi evanidis; cingulo transversali ad basin anfractuum*

ornata; apertura ovata, tertiam totius longitudinis partem non aequante. - Long. 2 ¼ mill., lat. 1 mill." [shell elongate-turriculate, with blunt top, clear, white; 5 ½ whorls, quite convex, separated by very deep suture, axial ribs near aligned from one whorl to the other, straight, as large as the interspaces, evanescent on the base; one spiral ridge in the abapical portion of the whorls; aperture ovate; less than one third of the whole height. Length 2 ¼ mm, breadth 1 mm"].

TYPE MATERIAL. It is preserved at Croatian Natural History Museum (CNHM), with register number 1374. The material includes four specimens, three of which are in good conditions (Figs. 1–5), while one (Fig. 6) is quite eroded but possibly conspecific with the others. Specimen at figures 1–3 is designated as lectotype and the other three specimens are then paralectotypes. The well preserved specimens are clearly conspecific with *P. intermixta*, showing also the characteristic spiral striature in the interspaces between axial ribs. Brusina's name, that is older, has the priority and *P. intermixta* becomes junior synonym of *P. monoazona*.

TYPE LOCALITY. Mica cape, Melada (Molat) island, Croatia. The Museum's label (Fig. 7) indicates this locality: "P Med. Mulat, Zadar".

DESCRIPTION OF TYPE MATERIAL. Shell conical, semi-transparent, white color. The protoconch is heterostrophic, making an angle of about 150° with the axis of the teleoconch (type B). The teleoconch is composed of about 5 whorls, flat, slightly gradate at the adapical suture, while abapically are angulated by the spiral on the initial whorls, gently curved in the last whorls and restricted toward the suture. The teleoconch whorls are covered by robust axial ribs, large as the interspaces, orthocone, straight. The ribs are in number of 20–22 on the last two whorls. The ribs extend, slightly attenuated, on the base. The spiral sculpture consists in a spiral rib placed at about ¼ of whorl height from abapical suture, present in all whorls. In the interspaces and on the base is present a microscopic spiral striature. The base is convex, covered by the extension of the axial ribs and the concentric spiral striature. Aperture oval. The columella is angulated in the middle. The columellar lip is slightly expanded. The inner lip forms a thin film over the adapical part of the aperture and joins the outer, to form a continuous peristome. The columellar plica is oblique, well

developed, reaching the margin of columellar lip about at the middle of it. The outer lip is simple, with external sculpture visible in transparency. Seen from the side, the outer lip is a little arched, following the flexuous profile of the axial ribs.

VARIABILITY. Protoconch: the angle of the protoconch ranges between 135° and 150° in the Adriatic specimens, while specimens from other areas normally show an angle of 135°. Outline and whorl profile: outline is conical, more or less slender (compare Fig. 8 with Fig. 11). The whorls may be flat, curved toward the adapical suture, angulated at the spiral rib and restricted toward the abapical suture (Figs. 9, 10, 12) or more regularly curved toward the sutures (Figs. 1–4, 8). Sometimes the adapical suture is coronate by the ribs, other times the ribs become weaker toward the suture, and it is linear (compare Figs. 8 and 12 with Figs. 9, 10, 11).

Axial ribs: in the type series the axial ribs are orthocone. Linden & Eikenboom (1992) indicate that "Mostly the ribs incline to the left [i. e. prosocone], sometimes they are almost vertical, but they never incline to the right [i. e. opisthocline]". In the studied material all the three cases have been observed, even if opisthocline only rarely (Fig. 9).

Presence of axial ribs on the base: the type series and all specimens from Vela Luka (Korčula island, Croatia) (Fig. 8) as well as the specimen from Otranto (Fig. 12) have the axial ribs extending all over the base, while specimens from other areas normally have the ribs ending at the periphery and only concentric striature on the base. Linden & Eikenboom (1992) states that the ribs are "seldom decreasing or even continuing to the base".

The specimens of *P. monoazona* having elongate outline, well spaced ribs, spiral striature and deep suture may be easily separated from *P. interstincta*. The type series, as well as specimens found in other points of Middle and North Adriatic Sea has a form tending towards *P. interstincta*, from which may be separated (Fig. 13) for the more pointed apex, stronger axial ribs and spiral rib, spiral rib positioned more distant from the suture, presence of microscopic spiral striature in the ribs interspaces and on the base.

DISTRIBUTION. The species is distributed in the whole Mediterranean sea and along European coasts from Portugal to NW Spain (fide Linden & Eikenboom, 1992). Record of Rolán Mosquera (1983) for

Vigo was based on *P. interstincta* (Rolán pers. com., mail dated 26.08.2014). Not reported for west Africa. As fossil it occurs in the Pliocene of Tuscany and Tunisia and in the Pleistocene of Latium and Sicily.

DISCUSSION

First investigated matter is the origin of synonymy with *P. intermixta*. Synonymy originates from Aartsen (1977) statement that “*the two species which Nordsieck described and figures with the name of intermixta (Monterosato) and monozona (Brusina) are in really only one species*” and the indicated synonymy. Possibly even Aartsen felt that the synonymy was not well proved, and this could be the reason for not using Brusina’s name, which has priority. Nordsieck (1972: 93, pl. PI fig. 12) drawing of *monozona* is based on a specimen from Ibiza, therefore this is no more than a Nordsieck’s personal interpretation of the species. Nordsieck’s (1972) drawing shows a specimen without spiral rib on the whorls, possibly following the name etymology of “*monozona*” which may be translated as “*single zone*”.

About Nordsieck’s drawings Ronald Janssen, curator of molluscs at Senckenberg Museum, Frankfurt/M (pers. comm. to R. Giannuzzi Savelli) tells us: “*You need to have always in mind that Nordsieck’s «descriptions» are not necessarily based on his own specimens but a compilation also from literature! Also his drawings most often are «free style» compositions using also figures from the literature. This explains why only rarely specimens can be found which match his figures*”.

In addition to be highlighted that Brusina’s original description states “*cingulo transversali ad basim anfractuum ornata*”, where “*anfractuum*” is in the plural, therefore the spiral rib is indicated as present along all the whorls. What above does not prove at all the synonymy.

In the original description Brusina (1869) compares the new species only with his *Odostomia turbonilloides* Brusina, 1869 non Deshayes, 1861 (today the valid name is *Partulida incerta* (Milaschewitch, 1916)) from which it is anyway so different that a comparison is not needed.

Aradas & Benoit (1874) report that this species has been found in various Sicilian localities and

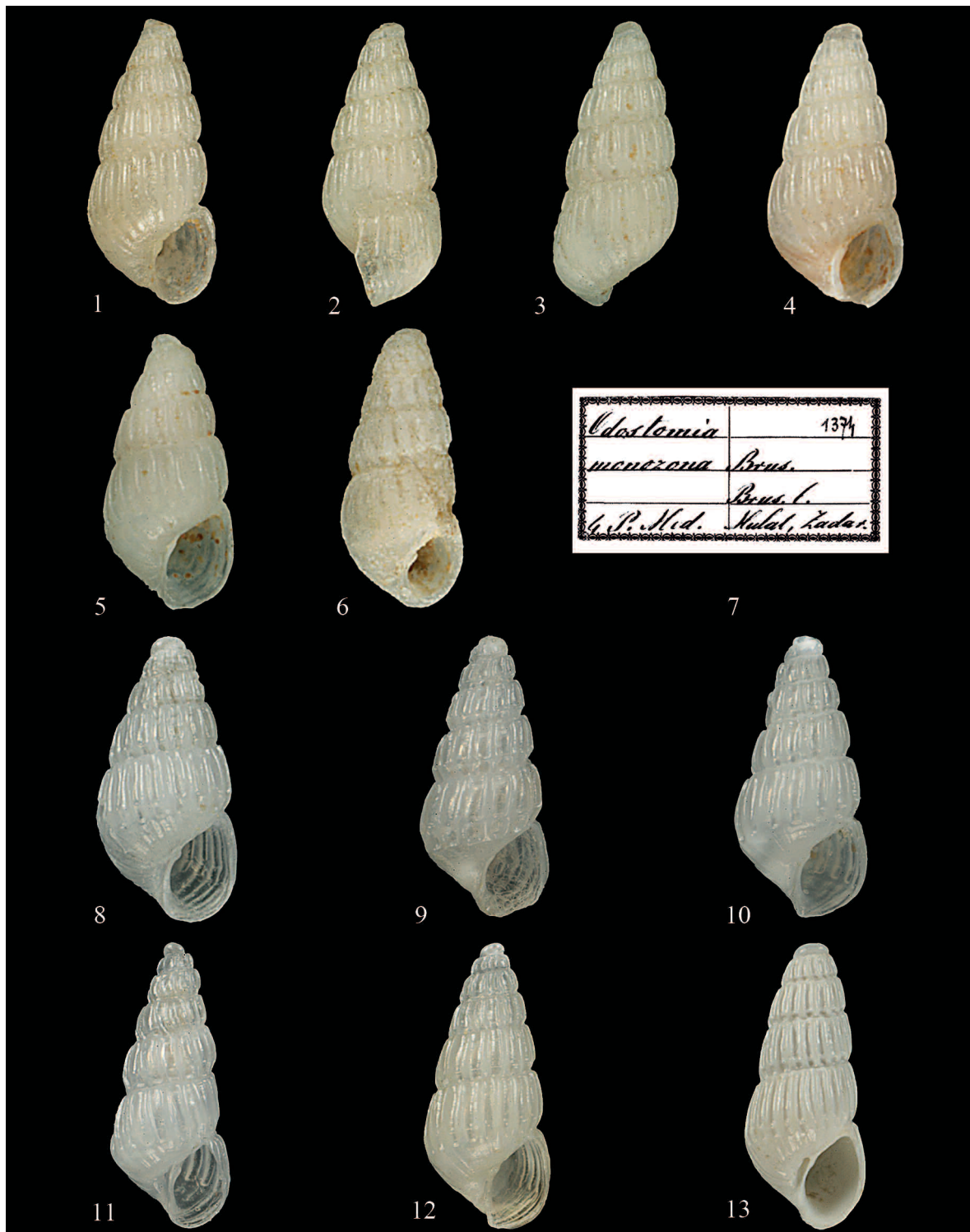
state that it is similar to *C. interstincta* but “*Quantunque la specie del Montagu presenti molte varietà, nessuna di quelle che abbiamo avuto per le mani, offre gli anfratti così arrotondati e la sutura così profonda come nella specie del Brusina*.” [Notwithstanding the several varieties of Montagu’s species, no one of those we had in our hands, has inflated whorls and deep suture as the Brusina’s species]”.

Monterosato (1872b) only lists the name as “var.” of *P. interstincta*, specifying “(ex typ.)”, to indicate that he examined the type material. However in this list also *P. suturalis* and *P. emaciata* are considered varieties of *P. interstincta*. Monterosato (1875) only lists the name as “var. 3” of *P. interstincta*, while later on (Monterosato, 1878) the species is listed as valid.

B.D.D. (1883: 173, pl. XX, figs. 12 and 13) describe and draw *Odostomia monozona*, but they do not mention the study of type material or the origin of material. The description mentions “*On remarque en outre sur les intervalles des côtes plusieurs rangées de trabicules qui entourent la partie inférieure des tours et se prolongent sur la partie médiane du dernier*” [in the interspaces of the ribs there are some rows of nodules that encircle the lower part of the whorls and extend up to the central part]”. Kobelt (1903) considers that B.D.D. erroneously interpreted Brusina’s species and base his new species *Parthenina dollfusi* on *monozona* sensu B.D.D., “*nec Brusina*”. In B.D.D. it is not mentioned the study of *monozona* type material, therefore it is not surprising that these Authors wrongly interpreted Brusina’s species.

Monterosato (1884) states that he examined the type material, but includes, without any comment, the B.D.D.’s reference and indicates that this species is quite abundant. We suppose that he realised B.D.D.’s mistake, but due to good relation with these malacologists he avoided to highlight.

In proposing the new name *Pyrgulina intermixta*, Monterosato states: “*È la forma littorale Mediterranea erroneamente confusa con la P. interstincta, Mtg. che ha un maggiore numero di coste più sottili ed una forma più tarchiata. Varie forme; piuttosto frequente* [This is a Mediterranean littoral species, erroneously confused with *P. interstincta*, Mtg., that has more numerous and narrower axial ribs, and a stouter profile. Various forms; quite frequent]”.



Figures 1–7. *Parthenina monoazona*, Melada (= Molat) island (Croatia), syntypes. Figs. 1–3: lectotype, H = 2.2 mm. Fig. 1: front view. Fig. 2: lateral view. Fig. 3: dorsal view. Fig. 4: paralectotype “A”, H = 1.9 mm. Fig. 5: paralectotype “B”, H = 2 mm. Fig. 6: paralectotype “C”, H = 1.9 mm. Fig. 7: Museum’s label. Figures 8–12. *Parthenina monoazona*. Fig. 8: Vela Luka (Korčula island, Croatia), -26/32 m, H = 1.9 mm. Fig. 9: Algeciras (E), -3/6 m, H = 2.1 mm. Fig. 10: Umag (Croatia), beach, H = 2.2 mm. Fig. 11: Portopalo (Sicily, Italy), -3 m, H = 2.3 mm. Fig. 12: Otranto (South Adriatic Sea), -20 m, H = 2.7 mm. Figure 13. *Parthenina interstincta*, Marina di Camerota (Tyrrhenian Sea), - 25 m, H = 2.1 mm.

Pallary (1900) mentions *P. monozona* for Algerian coast.

Nordsieck (1972: 93, pl. PI, fig. 12) draws an un-realistic specimen of *Chrysallida monozona* from Ibiza, completely lacking spiral cords.

As discussed above, van Aartsen (1977: 58) considers *P. monozona* synonym of *P. intermixta* (Monterosato, 1884) only based on Nordsieck's drawings, but this is not correct from a taxonomic point of view, because the name *monozona* is much older therefore has the precedence over *Pyrgulina intermixta* Monterosato, 1884, that is a new name for *Odostomia (Parthenina) jeffreysi* B.D.D., 1883, non Koch & Weichmann, 1872 [*Turbonilla*], nec Bell A., 1871 [Menestho]. Really the B.D.D.'s name is not a secondary homonym of the others, therefore could be used. According to art. 23.9.1 of ICZN, dealing with the prevailing usage, it seems that the B.D.D.'s name has been immediately forgotten once Monterosato proposed the new name, therefore conditions of art. 23.9.1.1 "the senior synonym has not been used as valid name after 1899" and 23.9.1.2 "the junior synonym has been used (omissis) in at least 25 works published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years" are both complied with, therefore *O. (P.) jeffreysi* Bucquoy et al., 1883 is nomen oblitum, while *P. intermixta* is nomen protectum. Anyway this situation does not protect *intermixta* when it is proved to be junior synonym of *monozona*.

From what above it is clear that, apart the mistakes, many Authors, except Monterosato and possibly Pallary, feel that *P. monozona* (Brusina, 1869) is synonym of *P. intermixta* Monterosato, 1884, but they do not prefer Brusina's name because of the poor knowledge of his species. Monterosato is the only one who saw the type material, and is also the Author of *P. intermixta*, a species surely well known to him, who had close contacts with Dautzenberg. Monterosato (1884: 87) makes two sections under *Pyrgulina* and in the "group A" includes the species with axial ribs evanescent on the base: *P. monozona*, *P. intermixta*, *P. suturalis*, *P. emaciata* and *P. brevicula* Monterosato nomen nudum: = *P. monterosatii* (Clessin, 1900). As stated above, *P. monozona* is indicated as quite abundant. By comparing the above list with real situation and considering the indicated frequency, the result is that *P. monozona* is applied to the

species normally determined as *P. interstincta*, because the latter name is not mentioned. Really it is not possible to know if Monterosato had specimens by Brusina, if he saw the material and, due to the remarkable difference from Sicilian form, considered Brusina's species different from his *P. intermixta*, or if Brusina mixed together *P. monozona* and *P. interstincta* specimens, due to similarity and lacking of comparison with this latter species.

Similarly, Pallary (1900) mentions for Algerian coast *P. monozona* and *P. jeffreysi*, but not *P. interstincta*, which cannot be missing in that area.

From what above it is clear that some Authors used the name *monozona* for the species actually named *interstincta*.

Chrysallida rara Gaglini, 1992 ex Monterosato ms, based on material from Sfax (south Tunisia), clearly falls inside the range of variability of *P. monozona*, showing remarkable similarity with Sicilian forms, and is considered synonym.

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