

## Rediscovery and re-evaluation of a “ghost” taxon: the case of *Rissoa galvagni* Aradas et Maggiore, 1844 (Caenogastropoda Rissoidae)

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### ABSTRACT

The taxonomy of species of the family Rissoidae has always been source of debate and only a few of rissoid genera have been recently comprehensively revised. The need of revisional work is particularly obvious in the case of the genus *Crisilla* Monterosato, 1917, taxon showing open nomenclatural issues along with uncertainty and difficulty in delimitation of its species. In this study we revise the status of *Crisilla pseudocingulata* (Nordsiek, 1972) in the light of the recent rediscovery of type material of *Rissoa galvagni* (Aradas et Maggiore, 1844), to which the former is here compared. Based on observations on dimensions, colour and sculpture of the teleoconch and on the distinctive protoconch characters, *C. pseudocingulata* is here regarded as junior synonym of *C. galvagni*. Additional data on the morphology and colouration of the head-foot as well as on the variability of shell features are provided, contributing to an updated description of the taxon.

### KEY WORDS

$\alpha$ -taxonomy; Aradas collection; *Crisilla*; marine microgastropods; Mediterranean Sea.

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### INTRODUCTION

The caenogastropod family Rissoidae Gray, 1847 (Rissooidea) is one of the most diversified and widespread marine microgastropod families, including thirty-one available genus-group taxa, found from polar waters to the tropics and from the intertidal to the deep sea (Ponder, 1985). The generic-level classification of the family remained long based almost entirely on shell characters (Thiele, 1929-31; Wenz, 1938-44; Coan, 1964) until head-foot, radular and anatomical information was included (Ponder, 1968; 1985).

Molecular data, when employed at the generic level, have even suggested the possibility that Rissoidae are not a monophyletic group, but rather an assemblage of at least two family-level clades (Criscione & Ponder, 2013). Most of their  $\alpha$ -taxonomy,

however, still relies on shell morphology, as shown by the generic revisions available (e.g. Verduin, 1976; 1982a; 1983; 1985; 1986 for *Rissoa* Freminville in Desmarest, 1814; Verduin, 1984; 1988; van Aartsen & Verduin, 1982; van der Linden & Wagner, 1985 for *Setia* H. Adams et A. Adams, 1852).

The few attempts to question the presently accepted classification by combining anatomical and molecular data have revealed the considerable limits of a purely conchological approach (Criscione et al., 2009; Criscione & Patti, 2010). One major issue is the high degree of convergence shown by rissoids in several shell characters (such as protoconch morphology and sculpture, presence and number of axial ribs, etc.) often not reflecting the actual phylogenetic relationships. When studying taxonomy of Rissoidae, present-day malacologists also need to face some more “historical” problems.

Most Mediterranean rissoid species, for example, were described several decades ago (often by amateurs) and the interpretation of their original descriptions is quite often a challenging task. In some cases the alleged loss of type material and the erroneous interpretation of the original description have led to a considerable proliferation of nomina dubia in current check-lists and revisions of Mediterranean and Macaronesian rissoids (Verduin, 1984; 1988; Moolenbeck et al., 1991). Cases of valid taxa being neglected are also not uncommon (see for instance "*Rissoa*" *scillae* Aradas et Benoit, 1876 ex Seguenza G. in Verduin, 1984 and Gaglini, 1994).

We here examine the case of *Rissoa galvagni* Aradas et Maggiore, 1844, not 1843 as reported by Verduin (1984) and clarified by van Aartsen & Giannuzzi Savelli (1987), described for the shores of Ognina (Central Mediterranean, Ionian Sea, Catania), whose type material has long been considered lost (Verduin, 1984). The taxon was discussed by Verduin (1984) based on the examination of two lots of topotypic material, allegedly attributed to Aradas collection. One lot included only specimens of *Crisilla pseudocingulata* (Nordsieck, 1972) and the other mainly specimens of this latter species and a few ones of other congeneric species (Table 1). None of those specimens was however considered to match the original description and *R. galvagni* was listed as nomen dubium. After the publication of Verduin's revision (1984) the taxon was no longer mentioned in the literature, slipping into obscurity. Although it was first described for the waters of Ibiza (Balearic Islands), *Crisilla pseudocingulata* is also abundant along the Eastern coast of Sicily (Ionian Sea) and its distinctive shell features make it easy to differentiate it from other congeners. Many of the most active malacologists in the XIX century (such as Benoit, Philippi, Monterosato and Aradas) extensively collected microgastropods along E Sicily and it appears surprising that *C. pseudocingulata* was only found and described over a century later. The composition of the material studied by Verduin and the overlapping distribution of the two taxa have always represented good evidence for a case of synonymy of *C. pseudocingulata* and *R. galvagni* (DS pers. obs.), but nothing could be proven until now, when the type material of the latter taxon was found amongst the lots of a recently re-discovered section of the Aradas collection (MBAC) (Scuderi, 2007). Based on the examination of this

material and additional material of *R. galvagni* and *C. pseudocingulata* we here provide a revised and updated description of *R. galvagni* and discuss the evidence for the synonymy of the two taxa.

**ACRONYMS AND ABBREVIATIONS.** Bruno Amati collection, Rome, Italy (BAC); Italo Nofroni collection, Roma, Italy (INC); Museo del Dipartimento di Biologia Animale dell'Università, Catania, Italy (MBAC); Museo Civico di Zoologia, Roma, Italy (MCZR); U.S. National Museum, Washington, USA (USNM); Danilo Scuderi collection, Catania, Italy (DSC); d = diameter of protoconch nucleus; D = maximum diameter of protoconch; D0, = diameter of protoconch first half whorl; DN-1 = diameter of teleoconch; dry = dry shell; L = teleoconch height; live = live collected specimen; M = aperture height; N = number of whorls; SEM = scanning electronic microscope.

## MATERIALS AND METHODS

This study was based on dry shells, including types of *R. galvagni* (MBAC), further museum material and shells collected by the authors mainly in the Ionian Sea and Southern Spain from 1982 to 2012 and housed in their private collections.

Shells were observed by stereo microscope, photographed and measured by means of micrometre readings. Morphological characters of adult shells (dimension, colouration, sculpture) were assessed from a representative number of specimens from each lot. Adults were recognised by a complete apertural lip. Standard teleoconch parameters (L, M, DN-1) were measured on the type material and on further 20 specimens from three different localities. Protoconch parameters (d and D0) (Verduin, 1982b) were measured and the number of whorls (N), including protoconch, was counted (precise to 0.1 as shown in Verduin, 1982b). Details of protoconch and teleoconch microsculpture were recorded using the SEM. Live collected specimens of *C. pseudocingulata* were also observed under the stereomicroscope and features of their head-foot recorded by means of colour drawings.

## RESULTS

Observations and measurements of the studied dry material (Tables 2, 3) revealed a total identity

between samples *R. galvagni* and *C. pseudocingulata* in shell size, morphology, macro-, microsculpture and colouration. The evidence collected supported the synonymy of the two taxa and the reasons for this operation are discussed below. An updated description of the taxon is provided in the systematic section based on the above mentioned data on the shell and on new observations on the head-foot. Twelve shells incorrectly assigned to *R. galvagni* were found in one MBAC lot (AAC.005.02), isolated and placed in separate boxes. These specimens were not further examined in this study.

## SYSTEMATICS

Family RISSOIDAE Gray, 1847

Genus *Crisilla* Monterosato, 1917

***Crisilla galvagni*** (Aradas et Maggiore, 1844)

*Rissoaria galvagni* Aradas et Maggiore, 1844

*Rissoa galvagni* Aradas et Maggiore, 1844 in Calcara, 1845: 28

*Cingula maculata* Aradas et Benoit, 1870 not Monterosato, 1869

*Cingula concinna* Aradas et Benoit, 1870 not Monterosato, 1869

*Rissoa picta* Aradas et Benoit, 1870 not Jeffreys, 1867

*Rissoa depicta* Aradas et Benoit, 1870 not Manzoni, 1868

*Rissoa galvagni* Aradas et Maggiore, 1844 in Aradas & Benoit, 1870: 210

*Rissoa galvagni* var. *maculata* Monterosato, 1872 not Monterosato, 1869

*Rissoa galvagni* var. *concinna* Monterosato, 1872 not Monterosato, 1869

*Rissoa galvagni* var. *picta* Monterosato, 1872 not Jeffreys, 1867

*Rissoa galvagni* var. *depicta* Monterosato, 1872 not Manzoni, 1868

*Rissoa galvagni* var. *maculata* Seguenza, 1873 not Monterosato, 1869

*Rissoa galvagni* var. *concinna* Seguenza, 1873 not Monterosato, 1869

*Rissoa galvagni* var. *maculata* Monterosato, 1875 not Monterosato, 1869

*Rissoa galvagni* var. *concinna* Monterosato, 1875 not Monterosato, 1869

?*Rissoa granulum* Monterosato, 1875 not Philippi, 1844

*Rissoa galvagni* var. *depicta* Monterosato, 1875 not Manzoni, 1868

*Rissoa galvagni* var. *callosa* Monterosato, 1875 not Manzoni, 1868

*Rissoa galvagni* Aradas in Seguenza, 1876:180

*Rissoa (Cingula) pulcherrima* BDD, 1884 not Jeffreys, 1848

*Cingula galvagnii* Aradas et Maggiore, 1839 in Locard, 1886: 266

*Rissoa (Cingula) semistriata* (Carus, 1893) not Montagu, 1808

*Setia (Crisillosetia) pseudocingulata* Nordsieck, 1972

*Cingula* (s.l.) *pseudocingulata* (Nordsieck, 1972) in Verduin, 1984:50

*Alvania (Crisilla) pseudocingulata* (Nordsieck, 1972) in Ponder, 1985:43-44.

*Crisilla pseudocingulata* (Nordsieck, 1972: *Setia*) in CLEMAM (Oct 2012)

*Rissoa galvagni* Aradas et Maggiore, 1844 incertae sedis in CLEMAM (Oct 2012)

MATERIAL EXAMINED. Type material. Lectotype here designated. *Rissoa galvagni* Aradas et Maggiore, 1844, Central Mediterranean, Ionian Sea, Catania, Ognina, MBAC n° AAC.005.a. Paralectotypes: same data as lectotype (MBAC n° AAC.005.00, 20 dry).

Other museum material: *Rissoa galvagni* Aradas et Maggiore, 1844, (MBAC n° AAC.005.01, 10 dry); (AAC.005.02, 84 dry); *Rissoa maculata* Monterosato, 1869 sub nomine *calvagni* (sic) Aradas, Central Mediterranean, Ionian Sea, Catania, Ognina (MCZR sine numera cabinet of typical material, 3 dry). Newly collected material: Central Mediterranean, Ionian Sea, Punta Tonnara, Brucoli, -2m, rock scraping (DSC, 1 dry); Catania porto, -2m, rock scraping (DSC, 7 live); Catania porto, -10m, rock scraping (DSC, 1 live); Riposto, -2m, rock scraping (DSC, 12 live); Acitrezza, Lachea Island, -2/-40m, rock scraping (DSC, 344 dry, 21 live); S. Giovanni Li Cuti, -1/-20m, rock scraping and shell grit (DSC, 77 dry, 12 live); Capo Molini, beach, shell grit (DSC, 206 dry); Acitrezza, -2/-50m, rock scraping and fishing nets bycatch (DSC, 408 dry, 46 live); Pozzillo, -5/10m, shell grit (DSC, 2 dry); Ognina, rock scraping and shell grit (DSC, 7 dry, 10 live); Catania “Tavernetta”, shell grit (DSC, 9 dry); Aci Castello (DSC, 1 live); SW Mediterranean, Cabo de Palos, Murcia, Spain, -5m (BAC, 2 dry; INC, 20 dry).

DESCRIPTION. Shell (Figs. 1, 2, 4, 5) small, height (L) 1.4 - 2.1 mm, diameter (DN-1) 0.8 - 1.2 mm, height of aperture (M) 0.7 - 1 mm (Table 2), solid, semitransparent, ovate-conical. 4.5-4.8 whorls moderately flat to convex, with a shallow suture slightly canaliculated. Protoconch (Fig. 3)

paucispiral (1.4 - 1.5 whorls), height 0.27 - 0.30 mm, nucleus slightly tilted, diameter of nucleus (d) 0.10 - 0.15 mm, diameter of first half whorl (D0) 0.20 - 0.24 mm, diameter maximum of protoconch (D) 0.31 - 0.38 mm. Protoconch microsculpture of one subapical spiral chord formed by dense granules and separating protoconch in two sections: upper one more shouldered, lower one more rounded. Minute granules, from irregularly distributed to regularly arranged into fine chords, also present. Protoconch/teleoconch transition sharp, prosocline.

First teleoconch whorl sculpture of two, rarely three, well-spaced spiral chords with interspaces devoid of sculpture. Chords increasing in number from second whorl, reaching up to 14-17 on body whorl, always irregularly spaced and of different width; 8-10 reaching the aperture only on its subsutural and basal edges. Teleoconch microsculpture of dense growth lines. Aperture large, ovate-rounded, shorter than half of shell height, internally smooth; no labial rib present on outer lip. Umbilical chink often present. Shell colour yellowish-whitish, paler towards base. Colour pattern of reddish rhomboidal spots arranged in two (upper whorls) to four (body whorl) spiral rows. First row opisthocline, below upper suture; second row prosocline, above lower suture (upper whorls) and above aperture (body whorl); third row opisthocline, above aperture; fourth row prosocline, irregular weak, at shell base.

Head-foot (Fig. 7) background colour white, yellow stripes extending from eyes to ciliated cephalic tentacles; head with two yellow spots between tentacles, marked light brown stripe running from snout to a half of head, large yellow spot on opercular suspensor muscle, visible through thin operculum. Three small metapodial tentacles on posterior end of foot.

**REMARKS.** According to the distributional data collected here, *C. galvagni* occupies the West Mediterranean to Ionian Sea, and it is locally abundant on the Eastern shores of Sicily. Some shells collected in Malta (6 dry, DSC) and Lampedusa Island (28 dry, DSC) revealed a considerable degree of distinction from the typical *C. galvagni*, but further studies are required to identify the sources of this differentiation. Among the material of *C. galvagni* here studied, a morph can be isolated from the typical *C. galvagni* based on the following features: smaller on average (L = 1.6 mm, DN-1 = 0.95 mm), less slender, with more compressed base, whorls less

shouldered and more rounded, weak umbilical chink always present. However, the morph shares protoconch features, chromatic pattern and habitat with the typical form. Among Mediterranean rissoids, shells of *C. galvagni* morphologically resemble some smooth morphs of *C. simulans* (Locard 1886). This latter species, however, is slightly smaller, it has a more rounded protoconch, different teleoconch macro- and microsculpture and head-foot colour.

*C. picta* (Jeffreys, 1867) and *C. callosa* (Manzoni, 1868) from the Macaronesian region are very similar to each other and to *C. galvagni*. Aradas & Benoit (1872-76) synonymised *C. galvagni* with the former. Compared to *C. galvagni* both Macaronesian species have thicker shells, more flattened whorls and base, and lack the umbilical chink. These two, almost similar, Macaronesian species are however well distinguished by Verduin (1984), and treated as separated species by Gofas et al. (2001). Shells of *C. galvagni* with weaker sculpture may resemble those of *Rissoa maculata* Monterosato 1869 (now *Setia*) due to their similar size and morphology. Monterosato (1872) synonymised the two taxa but later (1878) treated them as distinct species. In the same paper (1878) another Mediterranean "smooth rissoid", *Rissoa amabilis* (now *Setia*) was introduced for *Rissoa pulcherrima* A.A. (being the taxon preoccupied by *Rissoa pulcherrima* Jeffreys 1848 from the Atlantic region).

Priolo (1952) misinterpreted Monterosato's conclusions and erroneously subsumed all three taxa under *Cingula pulcherrima*, adding further confusion to the matter. Our data agree with Monterosato's (1878) views and support the separation of *C. galvagni*, *S. maculata* and *S. amabilis*.

## DISCUSSION

*Crisilla* was erected by Monterosato (1917) to separate species of *Cingula*, in which he listed the only *C. trifasciata* (J. Adams, 1800), from all the numerous Mediterranean and Macaronesian species morphologically similar to *C. semistriata*. It was treated as sub-genus of *Alvania* Risso, 1826 by Ponder (1985) but it was later given genus rank by Bouchet & Warén (1993) based on the morphological homogeneity of shells of its species. All currently accepted species of *Crisilla* have always been source of taxonomic debate and their identification

Label	Lot number	Verduin's identification	n. es
R. galvagni Ar./...	182032	<i>C. pseudocingulata</i>	3
R. galvagni Ar./...	183211	<i>C. pseudocingulata</i>	“numerous”
		<i>C. maculata</i>	17
		<i>C. turriculata</i>	2

Table 1. Samples of *Rissoa galvagni* of USNM observed and identified by Verduin (1984).

Specimen identifier		TELEOCONCH			PROTOCONCH			
		L	M	DN-1	d	D <sub>0</sub>	D	N
1	Lectotype	1.7	0.8	1.1	0.11	0.21	0.35	4.5
2	Paralectotypes	1.6	0.8	1.0	0.14	0.24	0.35	4.5
3		1.6	0.8	1.2	0.11	0.22	0.35	4.5
4		2.0	0.9	1.2	0.12	0.22	0.34	4.5
5		1.8	0.8	1.1	0.14	0.24	0.35	4.8
6		1.7	0.8	1.0	0.11	0.20	0.35	4.8
7		1.8	0.9	1.1	0.14	0.24	0.32	4.6
8		1.5	0.8	1.0	0.14	0.24	0.32	4.5
9		1.9	0.9	1.1	0.11	0.21	0.35	4.6
10		1.8	0.9	1.1	0.12	0.21	0.32	4.5
11		1.6	0.8	1.0	0.12	0.2	0.32	4.6
12		2.0	1.0	1.1	0.15	0.22	0.32	4.6
13		1.8	0.9	1.2	0.14	0.21	0.35	4.2
14		1.8	0.9	1.2	0.12	0.24	0.35	4.5
15		1.7	0.8	1.0	0.14	0.22	0.38	4.6
16		1.7	0.8	1.1	0.14	0.21	0.35	4.8
17		1.6	0.7	1.0	0.12	0.21	0.37	4.6
18		1.8	0.8	1.1	0.12	0.21	0.35	4.6
19		1.5	0.7	1.0	0.12	0.22	0.34	4.6
20		1.6	0.8	0.9	0.14	0.21	0.34	4.2
21		1.9	0.8	1.1	0.11	0.20	0.32	4.4
Average			1.7	0.8	1.1	0.13	0.22	0.34
Standard deviation		0.1	0.1	0.1	0.01	0.01	0.02	0.16

Table 2. Shell dimensions and whorl count (see text for abbreviations) of the type material of *Crisilla galvagni* (MBAC n° AAC.005.00)



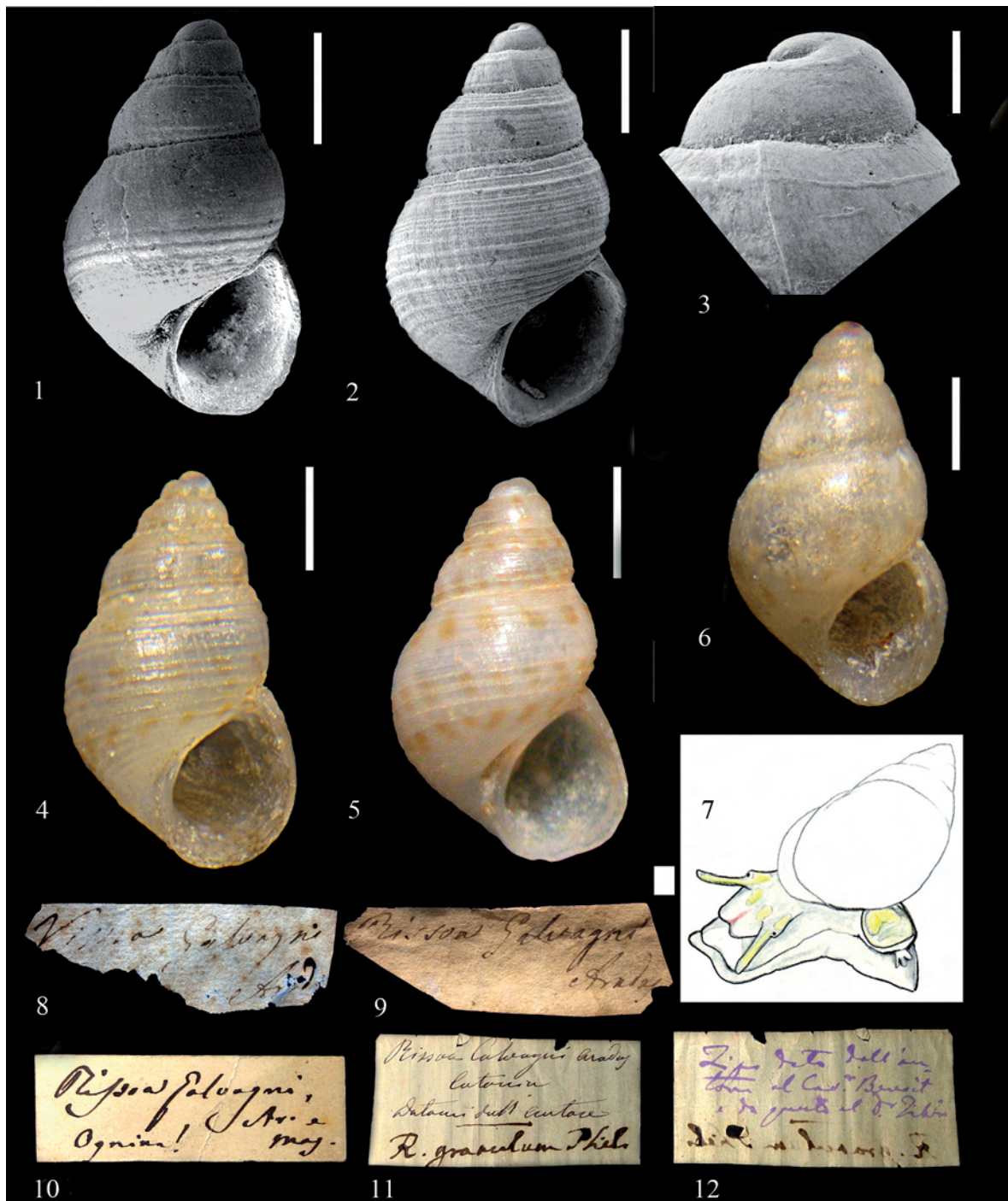
has always been a difficult task. In the XIX century only few species now included in this genus were known and were commonly regarded (along with species of *Setia*) as minute and weakly sculptured members of *Rissoa* (Aradas & Maggiore, 1840-1844; Philippi, 1844; Calcara, 1845; Jeffreys, 1867). Later Monterosato (1872, 1875, 1878, 1884a, 1884b) reported order into the matter by revising the taxonomy of many European Rissoidae,

describing new taxa and updating the distribution (Mediterranean vs. non-Mediterranean) of new and extant species, including those of *Crisilla*.

The taxonomical validity of "*Rissoa*" *galvagni* was debated for almost one and a half centuries (Aradas & Benoit, 1872-76; Granata-Grillo, 1877; Monterosato 1872 and 1878; Priolo, 1952; Verduin, 1984), but due to the loss of its type material and its similarity with other rissoids the issue had remained

Specimen identifier		TELEOCONCH			PROTOCONCH			
		L	M	DN-1	d	D <sub>0</sub>	D	N
1	Acitrezza	1.9	0.9	1.1	0.11	0.21	0.32	4.4
2	Cabo de Palos	1.9	0.9	1.1	0.12	0.21	0.34	4.4
3	S. G. Li Cuti	1.7	0.8	1.1	0.10	0.2	0.31	4.4
4	S. G. Li Cuti	1.7	0.8	1.2	0.11	0.21	0.32	4.6
5		1.5	0.8	0.8	0.12	0.22	0.34	4.5
6		1.6	0.8	1.0	0.12	0.23	0.34	4.6
7		1.5	0.7	1.0	0.12	0.22	0.32	4.5
8		1.8	0.8	1.2	0.13	0.24	0.32	4.6
9		1.8	0.9	1.1	0.10	0.20	0.32	4.6
10		1.9	0.9	1.1	0.11	0.21	0.33	4.4
11		1.8	0.8	1.0	0.14	0.24	0.32	4.5
12	Acitrezza	2.0	1.0	1.1	0.12	0.24	0.32	4.8
13		1.8	0.9	1.2	0.14	0.24	0.32	4.5
14		1.7	0.8	1.0	0.12	0.24	0.32	4.6
15		2.0	0.9	1.2	0.15	0.24	0.32	4.8
16		1.6	0.8	0.9	0.12	0.22	0.34	4.5
17		1.9	0.9	1.2	0.15	0.24	0.34	4.8
18		1.6	0.8	1.1	0.11	0.21	0.32	4.4
19		1.4	0.7	0.8	0.12	0.21	0.32	4.0
20		1.7	0.8	1.1	0.11	0.20	0.32	4.4
Average		1.7	0.8	1.1	0.12	0.22	0.32	4.51
Standard deviation		0.6	0.1	0.1	0.01	0.01	0.01	0.18

Table 3. Shell dimensions and whorl count (see text for abbreviations) for newly collected material of *Crisilla galvagni*; values of specimens illustrated in figs. 2-5 are highlighted.



Figures 1-12. *Crisilla galvagni*. Fig. 1. Lectotype of “*Rissoa galvagni*” (h: 1.7 mm, DN-1: 1.06 mm). Fig. 2. SEM photograph of shell from Acitrezza, h: 1.9 mm, DN-1: 1.1 mm; Fig. 3. Idem, detail of the protoconch. Fig. 4. Cabo de Palos, h: 1.9 mm, DN-1: 1.08 mm. Fig. 5. S. Giovanni Li Cuti, h: 1.7 mm, DN-1: 1.05 mm. Fig. 6. Specimen of *S. maculata* labelled “*Rissoa galvagni*” in the Monterosato’s Collection (MZR), h: 2 mm, DN-1: 1.2 mm. Fig. 7. Drawing of *C. galvagni* from S. Giovanni Li Cuti. Fig. 8. Label in Aradas’ handwriting of the lot n° AAC.005.00 (MBAC) from which the lectotype was selected. Fig. 9. Label of the lot n° AAC.005.01 (MBAC). Figs. 10-12. *R. galvagni*, original labels, Monterosato’s collection (MCZR): Monterosato’s handwriting (Fig. 10); Benoit’s handwriting (with notation “*R. granulum* Phil.” in Monterosato’s handwriting) (Fig. 11); idem, back: notation in Monterosato’s handwriting (“Tipo dato dall’autore al Cav. er Benoit e da questo al Dr. Tiberi”) (Fig. 12). Scale bar: 1, 2, 4, 5, 6 = 0.5 mm; 3 = 0.1 mm.

so far unresolved. The homogeneity of the type material (containing exclusively shells of *R. galvagni*), was not observed for all lots of Aradas collection studied. One of them (MBAC AAC.005.02) contained a mixture of other rissoid species similar to *R. galvagni*. Among the material of Monterosato's collection we found lots labelled "*Rissoa galvagni*" (Figs. 6, 10, 11, 12) instead containing shells of *S. maculata*.

These lots were most probably donated to Monterosato by shells collectors, such as Tiberi and Benoit, who were also Aradas' close friends and collaborators. This is a clue of the extreme difficulty to achieve a correct species identification of *R. galvagni*, even for its descriptor, which explains the confusion emerged in the following studies examining this taxon. Another potential issue affecting the correct interpretation of *R. galvagni* was the poor preservation state of its types, as not uncommon for types of many other European rissoids (Verduin, 1984). The type material of *R. galvagni* contained a large amount of worn shells and it was therefore necessary to select a lectotype whose features agreed at best with the original description. Our operation provides the taxon with the required nomenclatural stability. Two previous misinterpretation of the *R. galvagni* biased Verduin's (1984) conclusions about the validity of this taxon. Priolo (1952) and later Nordsieck (1972) erroneously placed it in synonymy respectively with *Setia pulcherrima* (Jeffreys, 1848) and *Rissoa soluta* Jeffreys, 1867 not Philippi, 1844. Both authors did not study the types of *R. galvagni*.

The material of *R. galvagni* studied by Verduin (1984) was judged by him as not corresponding to the original description because it differed from it by its shell not being smooth and by its different shell height. Our observations on the type material and on further lots of the Aradas collection revealed that their smooth shell surface is a result of these shells being extremely worn. More accurate examination reveals that a sculptured shell is indeed a feature of *C. galvagni*. In addition, the shell sculpture of *Crisilla* species is much weaker than that of other rissoid (such as *Alvania*) and also quite variable, ranging from considerably sculptured to rather devoid of sculpture (Ponder, 1985, Oliver et al., 2012). Verduin's (1984) conclusion was hence based on a very polymorphic character and therefore not satisfactorily supported.

Also his decision (Verduin, 1984) was heavily affected by a misinterpretation of the dimensions of the type material. The shell height of *R. galvagni* was provided by Aradas & Maggiore (1844) in "Sicilian lines", a measurement unit of length adopted in the island, differing from the "line" used in the rest of Italy and in most European countries and which was the one that Verduin (1984) had in mind.

The length in mm of the Sicilian line can be inferred from the description of *Testacella haliotideae* (Benoit, 1857-62: 45-46): "... the higher specimens are not less wide than 18 lines, which correspond to almost 41 mm". This means that a Sicilian line corresponds to almost 2.5 mm. It is also likely that the shell height in the original description of *R. galvagni* (less than half a line) was published with a typographical error. Aradas & Maggiore (1844) reported *R. mandralisci* [= *Pissinna glabrata* (Von Muehlfeldt, 1824), currently member of the Anabathride] as the smallest known rissoid, with a maximum height of half a line. Assuming that no other rissoid was considered to have a smaller size by those authors, the height of *R. galvagni* should have been reported not as "less than" but as "more than half line". This latter value corresponds to about 1.5/1.7 mm, which is the average shell height of the shells of type material as measured here (Table 2).

Being the issues related to shell sculpture and size in *R. galvagni* solved and being all remaining characters included in this taxon's description corresponding to those of *C. pseudocingulata*, we here consider this latter taxon to be a junior synonym of the former one [ICZN, 1985 Article 24 (a)]. This conclusion is strongly supported by the observation of the types and by their similarity with all other material of *C. pseudocingulata* here studied.

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