Taxonomic notes on the *Alvania dictyophora*-complex with the description of *Alvania desabatae* spec. nov. (Gastropoda, Rissoidae) from the Mediterranean Sea

Notas taxonómicas sobre el complejo de *Alvania dictyophora* con la descripción de *Alvania desabatae* spec. nov. (Gastropoda, Rissoidae) del Mar Mediterráneo

Bruno AMATI*,[1] and Carlo SMRIGLIO**

Recibido el 20-IV-2016. Aceptado el 16-VI-2016

ABSTRACT

A new Mediterranean species of the genus *Alvania* (Rissoidae, Rissooidea) is here described: *Alvania desabatae* spec. nov. All known specimens come from the Ventotene Island (type locality), and from the Ponza and Zannone Islands in the Central Tyrrhenian Sea. The new species is compared with the most similar congeners: *Alvania dictyophora* (Philippi, 1844), *Alvania clathrella* L. Seguenza, 1903 ex Monterosato ms., *Alvania bicingulata* (G. Seguenza, 1876) and *Alvania tenuicostata* (G. Seguenza, 1876). A lectotype of *Rissoa tenuicostata* G. Seguenza, 1876 is hereby designated to stabilize its use.

RESUMEN

Se describe una nueva especie mediterránea del género *Alvania* (Rissoidae, Rissooidea): *Alvania desabatae* spec. nov. Todos los ejemplares conocidos provienen de la isla de Ventotene (localidad tipo) y de las islas de Ponza y Zannone en el Mar Tirreno central. La nueva especie se compara con los congéneres más similares: *Alvania dictyophora* (Philippi, 1844), *Alvania clathrella* L. Seguenza, 1903 ex Monterosato ms., *Alvania bicingulata* (G. Seguenza, 1876) y *Alvania tenuicostata* (G. Seguenza, 1876). Se designa un lectótipo de *Rissoa tenuicostata* G. Seguenza de 1876 para estabilizar su uso.

INTRODUCTION

The genus *Alvania* Risso, 1826, is particularly species-rich in the Mediterranean Sea, with over 70 recognized species (Clemam, WoRMS, 2016). The generic characters of *Alvania* have been described by Ponder (1985: 36) and Bouchet and Warén (1993: 623). The genus *Alvania* includes several species groups (e.g. the complexes of *Alvania lineata* Risso, 1826, *Alvania dictyophora* (Philippi, 1844), *Alvania scabra* (Philippi, 1844) and *Alvania subcrenulata* (Bucquoy, Dautzenberg and Dollfus, 1884), some of which clearly defined morphologi-

* Largo Giuseppe Veratti, 37/D, 00146 Rome, Italy; e-mail: bruno_amati@yahoo.it
** Dipartimento di Scienze, Università "Roma Tre", Viale Marconi, 446, 00146 Roma, Italy; e-mail: csmriglio@alice.it
[1] Corresponding author

cally, whereas others could be of mere taxonomic convenience. The group related to *Alvania dictyophora* (Philippi, 1844), is rather homogeneous and is characterized by the ovate-conical profile with clathrate sculpture (axial and spiral) and same apical type (paucispiral protoconch with sculpture consisting of scattered tubercles). In this group we include the following species: *Alvania dictyophora* (Philippi, 1844); *Alvania clathrella* L. Seguenza, 1903 ex Monterosato ms; *Alvania bicingulata* (G. Seguenza, 1876); *Alvania tenuicostata* (G. Seguenza, 1876), and an undescribed species: *Alvania desabatae* spec. nov.

MATERIALS AND METHODS

The samples studied here in are stored in public and private collections, as detailed in the heading of each species (see abbreviations). Specimens of *Alvania desabatae* spec. nov., were sorted out from bioclastic sediment samples collected during SCUBA diving at Ventotene Island (40°47'N, 13°25'E), Central Tyrrhenian Sea, in 70 m depth by Eleonora De Sabata and Aldo Ferrucci and from bioclastic sediment ex fishing by-catch at Ponza Island, 60 m depth, Central Tyrrhenian Sea.

Specimens were examined of *Alvania hallgassi* Amati and Oliverio, 1985: type material (MCZR, AH, BA, MO); Lastovo Island (Croatia) -38/50 m, 62 sh (BA); Maratea (PZ), Sant'Janni Island (Italy) -24 m, 11 sh (BA); Capri Island (NA), "Grotta Azzurra", -14 m, 26 sh (CS-PM); Marina di Camerota (SA), -30 m, 8 sh (CS-PM); Capo Palinuro (SA), Grotta "Cock Pit", -12 m, 26 sh (CS-PM); Capo Asparano (SR) (Italy), 1 sh (BA) and *Alvania dianiensis* Oliverio, 1988: 3 paratypes 'GG48' (BA), Giglio Island (GR) Secca Subbielli (Italy) -38 m, 8 sh (BA); Giannutri Island (GR), -40 m, 19 sh (CS-PM); Marina di Camerota (SA), -30 m, 3 sh (CS-PM); Capo Palinuro (SA), cave, -20 m, 5 sh (CS-PM).

Measurements were taken on a random sample of 16 specimens for each species (*A. dictyophora, A. clathrella* and *A. desabatae* spec. nov.) and on the single available specimen for *A. bicingulata* and *A. tenuicostata,* and are reported in Tables I-X. Statistical analyses were performed only on continuous variables showing Gaussian distribution (*Alvania bicingulata* and *Alvania tenuicostata,* measured on a single specimen each were excluded). Descriptive statistics were computed and then, an Analysis of variance (ANOVA) was employed to test differences in the means. Variables found to be significantly different were employed in multiple pairwise comparisons with a Tukey test (alpha 0.05), are reported in Table XI.

Photographs have been taken with a Sony Cyber-Shot digital camera mounted on a Kyowa KBS stereomicroscope, edited with the Combine-Z software (Alan Hadley). Scanning Electron Microscopy (SEM) photographs were taken at the Interdepartmental Laboratory of Electron Microscopy (LIME, University "Roma Tre", Roma, Italy), by using a Philips XL30. Current systematics is based on the World Register of Marine Species (WoRMS, 2016).

Abbreviations used: AH, Alessandro Hallgass collection, Rome, Italy; BA, Bruno Amati collection, Rome, Italy; CS-PM, Carlo Smriglio-Paolo Mariottini collection, Rome, Italy; EDS, Eleonora De Sabata collection, Rome, Italy; IN, Italo Nofroni collection, Rome, Italy; LIME, Interdepartmental Laboratory of Electron Microscopy; MCZR, Museo Civico di Zoologia di Roma, Rome, Italy; MGPUF, Museo Geologico e Paleontologico dell'Università di Firenze, Florence, Italy; MNH, Museum of Natural History Leibniz Institute for Evolution and Biodiversity at the Humboldt University of Berlin, Germany; MNHN, Museo Nacional de Historia Natural, Santiago del Chile; MNHN, Muséum National d'Histoire Naturelle, Paris, France; MO, Marco Oliverio collection, Rome, Italy; MZB, Museo di Zoologia Bologna, Bologna, Italy; PT, Piergiorgio Trillò, Rome, Italy; SEM, Scanning Electron Microscopy; Sh, shell (s); T.l., Type locality.

SYSTEMATICS

Superorder CAENOGASTROPODA Cox, 1960
Superfamily RISSOOIDEA Gray, 1847
Family RISSOIDAE Gray, 1847

Genus *Alvania* Risso, 1826: 140

Type species: *Alvania europea* Risso, 1826: 142, pl. 9, fig. 116 = *Alvania cimex* (Linnaeus, 1758) (*Turbo*), by subsequent designation Nevill, 1885: 105.

Alvania dictyophora (Philippi, 1844) (Figs. 1A-D; 2A-C, J; 5B and Tables I, II, XI)

Rissoa dictyophora Philippi, 1844: 128, pl. 23, fig. 11
Alvania (Alvinia) circumcincta L. Seguenza, 1903: 52 ex G. Seguenza ms, pl. 11, fig. 11

Other iconographic references:
Ponder, 1985: 149, fig. 100 F-G;
Palazzi and Villari, 2001: 35, pl. 4, figs. 22-30, pl. 5, fig. 31 and figs. 34-36 as *Alvania clathrella*;
Giannuzzi Savelli, Pusateri, Palmeri and Ebreo, 2002: 115, figs. 492, 493e;
Micali, Tisselli and Giunchi, 2005: 72, fig. 1g-l as *Alvania clathrella*;
Scaperrotta, Bartolini and Bogi, 2012: 46, 5 unnumbered figs.;
Scuderi, 2014: 205, figs. 14, 15.

Type material: *A. dictyophora*: not in the Philippi collection at MNHN (Santiago de Chile), probably lost (Oscar Alfredo Gálvez Herrera, MNHN, Santiago de Chile, pers. comm., 2016). Not in the Philippi collection at MNH (Berlin), (Christine Zorn, MNH, Berlin, pers. comm., 2016). A. *circumcincta:* lost (1908, Earthquake of Messina/Reggio Calabria). Not in MCZR and MGPUF.
Material examined: Milazzo (ME), Sicily (Italy) 1 sh as *Alvania tenera* (Philippi, 1844), fossil labelled as "Saharian" [late Pliocene/Early Pleistocene] (MGUF-cabinet 153, Seguenza G. coll.); Maratea, Sant'Janni Is., (Pz) Basilicata (Italy) -24 m 11 sh (BA); Salina Is. (ME), 'grotta dei gamberetti', Sicily (Italy) -35 m 2002, legit Oliverio 52 sh (BA); Scilla (RC), Calabria (Italy) -43/44 m 1 sh vii.2015, legit Oliverio (BA); Scilla (RC), Calabria (Italy) -41 m 5 sh 16.xii.2006, legit Marconcini (IN); Scilla (RC), Calabria (Italy) -42 m 100 sh (CS-PM); Taormina (ME), Sicily (Italy) -30 m 5 sh (MO); Acitrezza (CT), Sicily (Italy) -20/40 m 1 sh (BA); Cannizzaro (CT), Sicily (Italy) -30 m 10 sh (BA); Magnisi (SR), Sicily (Italy) 31 sh (MCZR-L10.22172 Monterosato coll. ex Brugnone; Ognina (SR), Sicily (Italy) 1 sh (BA); Vendicari, (SR) Sicily (Italy) 4 sh (BA); Marzameni (SR), 'Franata di levante', Sicily -33 m 11 sh (BA); Capo Passero (SR) amidst *Posidonia* - 22/27 m viii.1979 1 sh (MO); Correnti of Island (SR), Sicily (Italy) 2 sh (BA); Sicily, unspecified locality and depth, 2 sh (MO).
Type locality: *A. dictyophora*: Recent, Peninsula of Magnisi (Siracusa, Sicily), Italy. *A. circumcincta*: not designated, Fossil (Sicilian stage), Gravitelli and Milazzo (Messina, Sicily), Italy.

Remarks: Types of *Rissoa dictyophora* were not found in the Philippi collections at the MNHN (Santiago de Chile) and in the MNH (Berlin) and they are currently considered to be lost. *Alvania clathrella* has been considered as a valid species, distinct from *A. dictyophora* (e.g. GIANNUZZI SAVELLI *ET AL.*, 2002; SCAPERROTTA *ET AL.*, 2012; SCUDERI, 2014: 202) or as a mere synonym (e.g. OLIVERIO, AMATI AND NOFRONI, 1986; PALAZZI AND VILLARI, 2001). The examination of 117 shells of *A. dictyophora* and 139 of *A. clathrella* collected sympatrically (see 'Material examined') showed two distinct morphologies, with no intermediates. Although some small specimens of *A. dictyophora* (Fig. 1C-D) may be similar to those of *A. clathrella* (e.g. H/W ratio and presence of two spiral cords above the aperture), nevertheless, the general shell features (e.g. differences in protoconch sculpture, robustness of the shell, sculpture strength and the presence of

Table I. Measurements of the teleoconch of *Alvania dictyophora* (Philippi, 1844), in mm.
H: height, W: width; Ha: aperture height; RH/W: height/width ratio; RH/Ha: ratio height/aperture height; Nw: number of teleoconch whorls; Nd: number of denticles; Nar+v: number of axial ribs + varix on the last whorl; Nslw-ab: number of spirals on the last whorl (above the aperture); Nslw-ob: number of spirals on the last whorl (on the base); Sts: starting number of spiral cordlets. Numbers 1-10 from Salina Island (ME), -35 m; 11-13 from Cannizzaro (CT) -30 m; 14 from Ognina (SR); 15 from Isola delle Correnti (SR); 16 from Scilla (RC) –43/44 m. * denotes the last half whorl without axial sculpture.
Tabla I. Mediciones de la teleoconcha de Alvania dictyophora *(Philippi, 1844), en mm.*
*H: altura, W: anchura; Ha: altura de la abertura; RH/W: relación altura/anchura; RH/Ha: relación altura/altura de la abertura; NW: número de vueltas de teleoconcha; Nd: número de dentículos; Nar+v: Número de costillas axiales + variz en la última vuelta; Nslw-ab: número de cordones espirales en la última vuelta (por encima de la abertura); Nslw-ob: número de cordones espirales en la última vuelta (en la base); Sts: número inicial de cordones espirales. Números 1-10 de la isla de Salina (ME), -35 m; 11-13 de Cannizzaro (CT) -30 m; 14 de Ognina (SR); 15 de Isola delle Correnti (SR); 16 de Scilla (RC) -43/44 m. * denota la última media vuelta sin escultura axial.*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
H	2.65	2.45	2.25	2.1	2.75	2.45	2.1	2	2.25	2.55	2.3	2.275	2.05	1.9	2.1	2.6
W	1.6	1.5	1.35	1.4	1.55	1.55	1.375	1.35	1.45	1.5	1.35	1.35	1.25	1.25	1.3	1.525
Ha	1.2	1.1	1.0	0.975	1.15	1.075	0.95	0.9	1.15	1.1	1	1	0.95	0.9	0.925	1.15
RH/W	1.66	1.63	1.67	1.50	1.77	1.58	1.53	1.48	1.55	1.70	1.70	1.68	1.64	1.52	1.61	1.70
RH/Ha	2.21	2.23	2.25	2.15	2.39	2.28	2.21	2.22	1.96	2.32	2.30	2.27	2.16	2.11	2.27	2.26
Nw	3.5	3.1	3	3	3.6	3.1	2.9	2.5	3.2	3.3	3.2	3.2	3	2.7	3.1	3.5
Nd	no	no	no	no	no	6	3	no	no	no	no	no	no	no	no	6
Nar+v	13+v	14+v	17+v	15+v	17+v	16+v	14+v	15+v	19+v	14+v	19+v	17+v	19+v	15+v	12+v*	14+v
Nslw-ab	3	3	3	3	3	3	2	2	3	3	3	3	2	2	4	3
Nslw-ob	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Start III	1.5	anomalous specimen	1.8	2	1.6	1.6	2.8	2.5	1.9	1.8	1.7	1.7	2	no	2	2.2
Start I	3.4	no	no	no	no	3	no	no	no	3.2	3.1	3.2	no	no	2	3.5

Table II. Measurements of the protoconch of *Alvania dictyophora* (Philippi, 1844), in mm.
h: height; d: diameter of nucleus; Do: diameter of first half whorl; DM: maximum diameter; nw: number of whorls. Same origins as in Table I.
Tabla II. Mediciones de la protoconcha de Alvania dictyophora *(Philippi, 1844), en mm.*
h: altura; d: diámetro del núcleo; Do: diámetro de la primera media vuelta; DM: diámetro máximo;nw: número de vueltas. Mismas procedencias que en Tabla I.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
h	0.34	0.375	0.375	0.35	0.35	0.35	0.35	0.325	0.35	0.35	0.30	0.325	0.325	0.35	0.325	0.30
d	0.15	0.14	0.14	0.125	0.15	0.15	0.14	0.125	0.125	0.125	0.125	0.125	0.10	0.125	0.125	0.14
Do	0.275	0.275	0.275	0.275	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
DM	0.40	0.425	0.425	0.40	0.40	0.40	0.40	0.425	0.425	0.475	0.350	0.40	0.40	0.375	0.350	0.375
Nw	1.3	1.4	1.4	1.25	1.4	1.4	1.35	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.35

the third spiral cord on the last whorl) allow to differentiate them at the species level. Particularly, finding of the two species in sympatry at three localities of eastern Sicily and Calabria (see 'Material examined' and Fig. 5B) supported our view. *Alvania dictyophora* was reported as limited to the eastern waters of Sicily (VAN AARTSEN, 1982: 8; GIANNUZZI SAVELLI *ET AL.*, 2002: 114; SCUDERI,

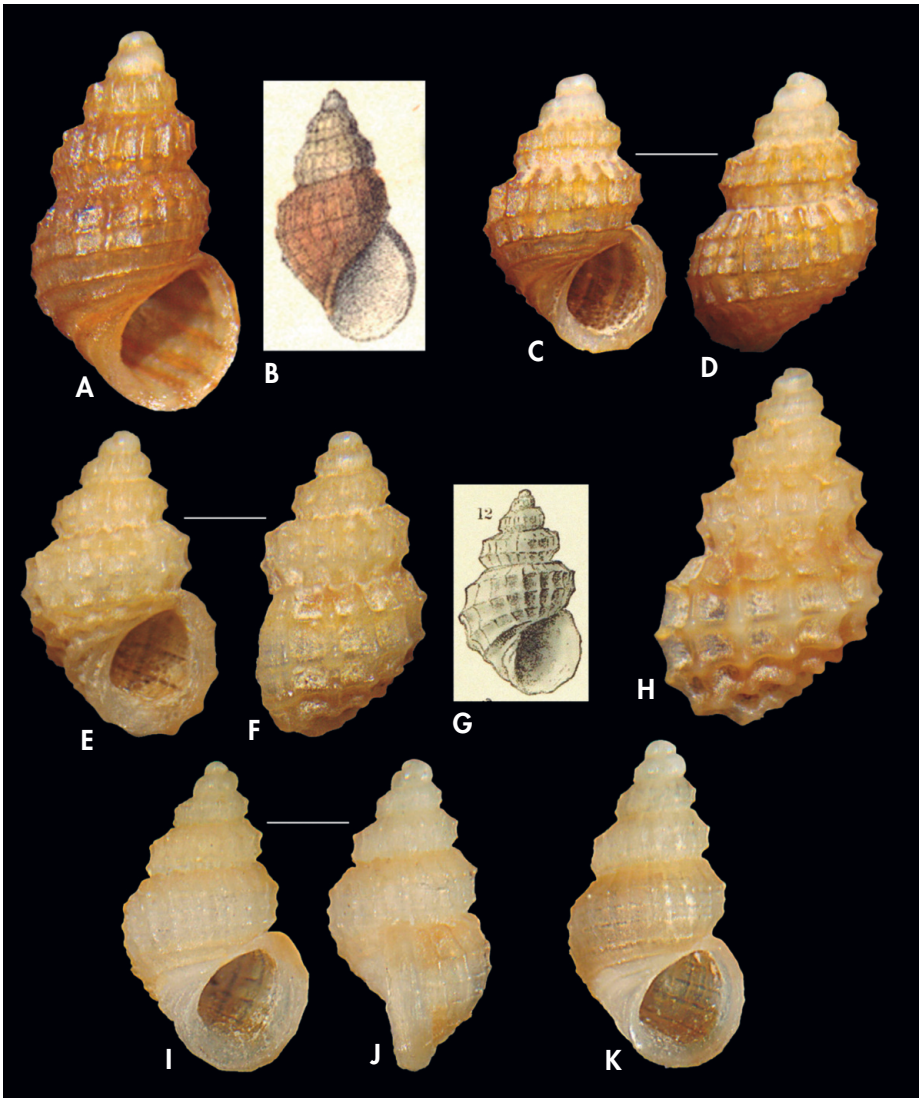


Figure 1. A-D. *Alvania dictyophora* (Philippi, 1844), showing extreme variability. A: shell from Salina Island (ME) -35 m (BA), height 2.7 mm; B: reproduced from PHILIPPI (1844: pl. 23, fig. 11); C, D: Salina Island (ME) -35 m (BA), height 2.0 mm. E-H. *Alvania clathrella* Seguenza L., 1903. E, F: shell from Acitrezza (CT) -20/30 m (BA), height 2.3 mm; G: reproduced from SEGUENZA L. (1903: pl. 11, fig. 12); H: shell from Acitrezza (CT) -40 m (BA), height 2.55 mm. I-K. *Alvania desabatae* spec. nov. I, J: holotype, Ventotene Island (LT) -70 m (MNHN), height 2.25 mm; K: paratype, Ventotene Island (LT) -70 m (CS-PM), height 2.35 mm.

Figura 1. A-D. Alvania dictyophora *(Philippi, 1844), mostrando su variabilidad extrema. A: concha de isla de Salina (ME) -35 m (BA), altura 2,7 mm; B: reproducido de PHILIPPI (1844: lám. 23, fig 11); C, D: concha de isla de Salina (ME) -35 m (BA), altura 2,0 mm. E-H.* Alvania clathrella *Seguenza L., 1903. E, F. concha de Acitrezza (CT) -20/30 m (BA), altura 2,3 mm; G: reproducido de SEGUENZA L. (1903: lám. 11, fig 12); H: concha de Acitrezza (CT) -40 m (BA), altura 2,55 mm. I-K.* Alvania desabatae *spec. nov. I, J: holotipo, isla de Ventotene (LT) -70 m (MNHN), altura 2,25 mm; K: paratipo, isla de Ventotene (LT) -70 m (CS-PM), altura 2,35 mm.*

2014: 202) but its range is wider (see 'Material examined' and Figure 5B). It has also been reported for the Gulf of Naples (Bellini, 1929: 47), but we cannot exclude that this record actually referred to either the new species described here of more probably the similar *Alvania hallgassi* Amati and Oliverio, 1985 and/or *Alvania dianiensis* Oliverio, 1988 both already recorded from Campania (Scaperrotta *et al.*, 2012: 49; Romani, 2014: 510; BA unpublished data; Monterosato (MCZR L10-22266) in schedis as '*Arsenia residuum*' [never published], corresponding to *A. dianiensis*).

Palazzi And Villari (2001: 35, figs. 22-30, and also 36, figs. 31, 34-36 as *A. clathrella*) figured the species with excellent images that highlight the remarkable variability of shell morphology.

The type material of *Alvania geronimoi* Oberling 1970 is lost: "*There is no type material available. According to Oberling (1987, in litt.) probably "lost through... exchanges" [loans]*" (Moolenbeek Hoenselaar and Oliverio, 1991: 112). The latter authors supposed, based on the study of topotypical specimens (ex Oberling) that it belonged to the group of *A. dictyophora*. We agree, but its actual identity cannot be ascertained and it remains a *nomen dubium*.

The iconography and original description (Seguenza L., 1903: 52, pl.11, fig. 11) of *Alvania circumcincta* reproduced sufficiently the morphology characters of *A. dictyophora*.

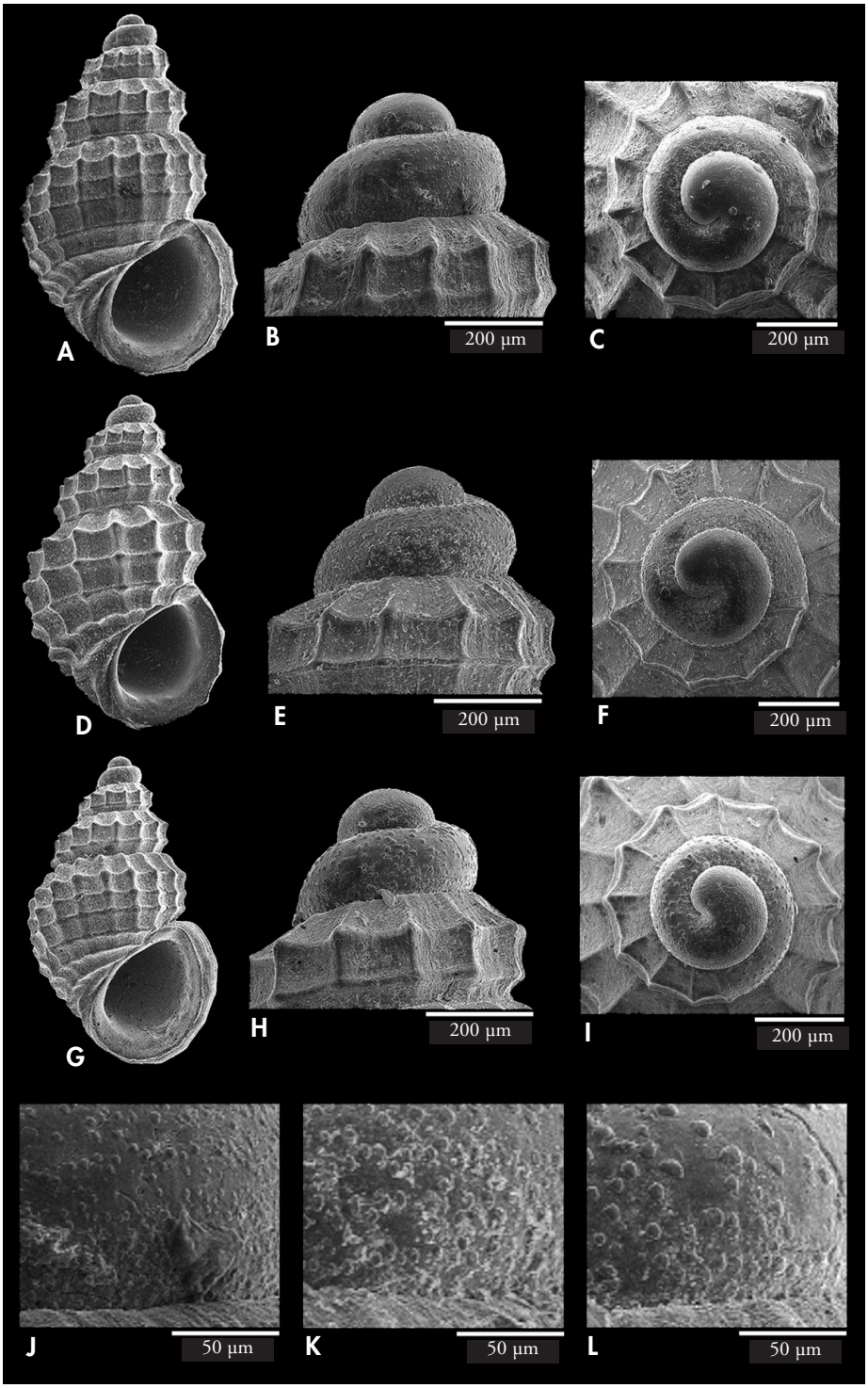
Alvania clathrella L. Seguenza, 1903 ex Monterosato ms. (Figs. 1E-H; 2D-F, K; 5B and Tables III, IV, XI)

Alvania (Alvinia) clathrella L. Seguenza, 1903: 52, pl. 11, fig 12
Alvania bicingulata sensu Palazzi and Villari, 2001: 36, pl. 5, figs. 37-39, not G. Seguenza, 1876

Other iconographic references:
Giannuzzi Savelli *et al*., 2002: 115, figs. 489-491, 493d;
Scaperrotta *et al*., 2012: 44, 5 unnumbered figs.

Type material: Lost (1908, Earthquake of Messina/Reggio Calabria). Not in MCZR and MGPUF.
Material examined: Scilla (RC), Calabria (Italy) -43/44 m 30 sh vii.2015, legit Oliverio (BA); Scilla (RC), Calabria (Italy) -41 m 15 sh 16.xii.2006, legit Marconcini (IN); Scilla (RC), Calabria (Italy) -42 m 58 sh (CS-PM); Acitrezza (CT), Sicily (Italy) -20/40 m 1976 4 sh (BA); Acitrezza (CT), 'Scogli dei Ciclopi', Sicily (Italy) -36 m 29.viii.1979 13 sh (MO); Cannizzaro (CT), Sicily (Italy) -35/43 m 19 sh (BA).
Type locality: Capo Milazzo (ME) (Sicilian stage) and Palermo, Sicily, Recent.

(Right page) Figure 2. A-C, J. *Alvania dictyophora* (Philippi, 1844), Salina Island (ME) -35 m (BA). A: shell, height 2.65 mm; B, C: protoconch; J: detail of the microsculpture of the protoconch, same specimen. D-F, K. *Alvania clathrella* Seguenza L., 1903, Acitrezza (CT) -40 m (BA). A: shell, height 2.45 mm; E, F: protoconch; K: detail of the microsculpture of the protoconch, same specimen. G-I, L. *Alvania desabatae* spec. nov., holotype, Ventotene Island (LT) -70 m (MNHN). G: shell, height 2.25 mm; H, I: protoconch; L: detail of the microsculpture of the protoconch. Scanning electron micrographs.
(Página derecha) Figura 2. A-C, J. Alvania dictyophora *(Philippi, 1844), Isla de Salina (ME) -35 m (BA). A: concha, altura 2.65 mm; B, C: protoconcha; J: detalle de la microescultura de la protoconcha, mismo ejemplar. D-F, K.* Alvania clathrella *Seguenza L., 1903, Acitrezza (CT) -40 m (BA). D: concha, altura 2,45 mm; E, F: protoconcha; K: detalle de la microescultura de la protoconcha, mismo ejemplar. G-I, L.* Alvania desabatae *spec. nov., holotipo, Isla de Ventotene (LT) -70 m (MNHN). G: concha, altura 2,25 mm; H, I: protoconcha; J: detalle de la microescultura de la protoconcha. Micrografías electrónicas de barrido.*


A
B
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E
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F
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I
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Table III. Measurements of the teleoconch of the species *Alvania clathrella* Seguenza L., 1903 ex Monterosato ms., in mm.
H: height, W: width; Ha: aperture height; RH/W: height/width ratio; RH/Ha: ratio height/aperture height; Nw: number of teleoconch whorls; Nd: number of denticles; Nar+v: number of axial ribs+ varix on the last whorl; Nslw-ab: number of spirals on the last whorl (above the aperture); Nslw-ob: number of spirals on the last whorl (on the base); Sts: starting number of spiral cordlets. Numbers 1-10 from Scilla (RC) –43/44 m; 11-13 from Cannizzaro (CT) -45 m; 14-16 from Acitrezza (CT) – 40 m., * (14 photographed by SEM).
Tabla III. Mediciones de la teleoconcha de Alvania clathrella *Seguenza L., 1903, en mm.*
*H: altura, W: anchura; Ha: altura de la abertura; RH/W: relación altura/anchura; RH/Ha: relación altura/altura de la abertura; Nw: número de vueltas de teleoconcha; Nd: número de dentículos; Nar+v: Número de costillas axiales + variz en la última vuelta; Nslw-ab: número de cordones espirales en la última vuelta (por encima de la abertura); Nslw-ob: número de cordones espirales en la última vuelta (en la base); Sts: número inicial de cordones espirales. Números 1-10 de Scilla (RC) -43/44 m; 11-13 de Cannizzaro (CT) -45 m; 14-16 de Acitrezza (CT) – 40 m., * (14 fotografiado al MEB).*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14*	15	16
H	2.3	2.3	2.4	2.15	2.65	2.55	2.25	2.3	2.2	2.25	2.2	2.0	2.2	2.45	2.6	2.35
W	1.4	1.475	1.45	1.35	1.55	1.575	1.45	1.45	1.35	1.425	1.5	1.35	1.425	1.55	1.65	1.55
Ha	0.975	1.0	1.1	0.90	1.15	1.15	1.0	1.0	0.90	1.05	1.1	0.925	1.025	1.1	1.15	1.05
RH/W	1.64	1.56	1.65	1.59	1.71	1.62	1.55	1.59	1.63	1.58	1.47	1.48	1.54	1.58	1.57	1.52
RH/Ha	2.36	2.30	2.18	2.39	2.30	2.22	2.25	2.30	2.44	2.14	2.00	2.16	2.15	2.23	2.26	2.24
Nw	3.2	3.15	3.3	3.2	3.5	3.4	3.15	3.15	3.2	3.1	3.2	2.9	3.2	3.25	3.5	3.25
Nd	no	5	4	4	5	6	no	4	no	4	no	no	no	4	no	no
Nar+v	12+v	11+v	13+v	12+v	12+v	11+v	11+v	13+v	12+v	13+v	12+v	13+v	15+v	12+v	12+v	13+v
Nslw-ab	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Nslw-ob	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Start III	no	no	no	no	no	no	no	no	no	no	no	no	no	3.25	no	no
Start I	no	3.15	no	no	no	no	no	3.0	no	no	no	no	no	no	no	no

Table IV. Measurements of the protoconch of the species *Alvania clathrella* Seguenza L., 1903 ex Monterosato ms., in mm.
h: height; d: diameter of nucleus; Do: diameter of first half whorl; DM: maximum diameter; nw: number of whorls. Same origins as in Table III; * (14 photographed by SEM).
Tabla IV. Mediciones de la protoconcha de Alvania clathrella *Seguenza L., 1903 ex Monterosato ms., en mm.*
*h: altura; d: diámetro del núcleo; Do: diámetro de la primera media vuelta; DM: diámetro máximo; nw: número de vueltas. Mismas procedencias que en Tabla III; * (14 fotografiado al MEB).*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14*	15	16
h	0.30	0.325	0.325	0.35	0.325	0.325	0.325	0.35	0.325	0.325	0.35	0.325	0.35	0.35	0.35	0.325
d	0.125	0.14	0.125	0.15	0.125	0.125	0.14	0.125	0.125	0.125	0.125	0.14	0.125	0.125	0.125	0.125
Do	0.25	0.275	0.25	0.265	0.25	0.25	0.25	0.225	0.25	0.225	0.25	0.265	0.275	0.25	0.225	0.25
DM	0.40	0.375	0.40	0.40	0.38	0.40	0.40	0.40	0.35	0.40	0.40	0.375	0.35	0.40	0.375	0.40
Nw	1.3	1.3	1.3	1.35	1.3	1.3	1.35	1.3	1.25	1.5	1.3	1.3	1.25	1.3	1.3	1.35

Remarks: The original record from Palermo (Sicily) of Recent specimens, is here regarded as rather dubious. We do not know further indications for Palermo. On the basis of records known to us, the species appears restricted to the Ionian waters of eastern Sicily, not crossing the Strait of Messina to the north.

Palazzi and Villari (2001: 35, pl. 4, figs. 22-30, pl. 5, fig. 31 and figs. 34-36) used this name for specimens which we would assign to *A. dictyophora*; they recognized the present species as distint but identified it as *A. bicingulata* which is incorrect if the latter species is understood according to our lectotype.

Alvania desabatae spec. nov. (Figs. 1I-K; 2G-I, L; 5B and Tables V, VI, XI)

Type material: Holotype MNHN IM-2000-31759 and 1 paratype (T.l.) MNHN 2000-31760; 2 paratypes (T.l.) MZB 60204 and MZB 60205; 2 paratypes (T.l.) MCZR 00229A and 00229B; 2 paratypes (T.l.) MO; 2 paratypes (T.l.) EDS; 2 paratypes (T.l.) PT; 1 paratype (T.l.) BA; 1 paratype (T.l.) IN; 83 paratypes (T.l.) CS-PM; 1 paratype Ventotene Island, 65 m depth BA.
Other material examined: 136 sh (including 57 sh juveniles and 14 sh broken), Ponza Island, 60 m depth, Central Tyrrhenian Sea, 2011 (CS-PM); 2 sh Ponza Island, P.ta La Guardia 50 m depth, Central Tyrrhenian Sea (MO); 19 sh Ventotene Island, 'Sconciglie' shoal 33 m depth, Central Tyrrhenian Sea, 1984 (MO); 3 sh Zannone Island 36.5 m depth, Central Tyrrhenian Sea, viii.2013 (IN).
Type locality: Ventotene Island, S. Stefano shoal (40°47'00"N, 13°25'00"E), 70 m depth, Central Tyrrhenian Sea.
Etymology: The species is named after Eleonora De Sabata, marine photo-journalist who provided the bioclastic sediment samples from Ventotene Island that yielded the studied specimens.

Distribution and habitat: We know this species only from the Pontine Archipelago (Central Tyrrhenian Sea) (Fig. 5B). Only empty shells have been so far collected from 33 m to 70 m depth and therefore the habitat not ore precisely known.

Description: (in parentheses the data of the holotype) (see Tables V-VI for ranges of measurements of the characters) Shell small for the genus (Fig. 1I-K; Fig. 2G), height 1.8-2.35 (2.25 mm), width 1.1-1.37 (1.37 mm), moderately strong to strong, conical-oval-shaped, height/ width ratio (RH/W) 1.60-1.84 (1.64), height/aperture height ratio (RH/Ha) 2.20-2.47 (2.25). Protoconch paucispiral (Fig. 2H-I, L), with a moderately twisted nucleus, of 1.3-1.5 (1.35) whorls; height (h) 0.300-0.350 (0.330) mm; diameter of the nucleus (d) 0.100-0.140 (0.130) mm; diameter of the first half whorl (Do) 0.225-0.260 (0.250) mm; maximum diameter (DM) 0.350-0.400 (0.355) mm. Nucleus and first half whorl with some fine undulated spiral cordlets, more evident on the suprasutural area, separated by randomly arranged microtubercles. Sparse, large, roughly triangular tubercles, randomly arranged (Fig. 2H-I, L) on the remaining whorls. Protoconch-teleoconch boundary well marked. Teleoconch of 3-3.6 (3.3) convex whorls, with impressed suture. Axial sculpture of 15-21 (15) thin and orthocline or prosocline ribs on the last whorl, narrower than the interspaces. Axial ribs rarely reaching the base, usually stopping just before the suture line. Spiral sculpture of 6-9 (7) weak and equidistant cords on the last whorl, of which 2-4 (3) above the aperture and 4-5 (4) on the base. Two spirals (II and IV) starting immediately after the protoconch-teleoconch boundary, the subsutural (II) higher; cord III starting after 1.8-2.85 (2.1) whorls; cord I appearing occasionally at 2-3.25 whorls (2.45), absent in 50% of examined specimens; only two specimens with cord I visible above the aperture of the last whorl with the others cords II, III and IV. First two whorls with two spiral cords (II and IV). (Table V). Two or three spiral cords on the last whorl above the aperture, wide subsutural ramp occasionally occupied by a fourth spiral cord (I). Small tubercles formed at the intersection of the two sculptures; subsutural tubercles higher and larger. Umbilical chink absent or barely visible. Aperture large and pear-shaped, 0.75-1.0 (1.0) mm high, ovate rounded, thickened by a modest external varix, internally smooth, only in the holotype with five short teeth. Colour whitish yellow, translucent, often with two soft orange bands (subsutural and basal). Operculum and soft parts unknown.

Table V. Measurements of the teleoconch of *Alvania desabatae* spec. nov., in mm.
H: height, W: width; Ha: aperture height; RH/W: height/width ratio; RH/Ha: ratio height/aperture height; Nw: number of teleoconch whorls; Nd: number of denticles; Nar+v: number of axial ribs + varix on the last whorl; Nslw-ab: number of spirals on the last whorl (above the aperture); Nslw-ob: number of spirals on the last whorl (on the base); Sts: starting number of spiral cordlets. Number 1 is the holotype. Numbers 1-15 from Ventotene Island, Secca S. Stefano (LT), Pontine Islands -70 m; 16 from Ventotene Island (LT), Pontine Islands, -65 m.
Tabla V. Mediciones de la teleoconcha de Alvania desabatae *spec. nov., en mm.*
H: altura, W: anchura; Ha: altura de la abertura; RH/W: relación altura/anchura; RH/Ha: relación altura/altura de la abertura; Nw: número de vueltas de teleoconcha; Nd: número de dentículos; Nar+v: Número de costillas axiales + variz en la última vuelta; Nslw-ab: número de cordones espirales en la última vuelta (por encima de la abertura); Nslw-ob: número de cordones espirales en la última vuelta (en la base); Sts: número inicial de cordones espirales. El número 1 es el holotipo. Números 1-15 de la isla de Ventotene , Secca S. Stefano (LT), Islas Pontinas -70 m; 16 de la isla de Ventotene (LT), Islas Pontinas, -65 m.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
H	2.25	2.35	2.3	1.8	2.3	1.82	1.97	2.0	2.22	2.2	1.85	2.2	2.17	2.35	2.1	2.2
W	1.37	1.3	1.35	1.1	1.25	1.1	1.17	1.25	1.35	1.35	1.12	1.32	1.27	1.35	1.25	1.3
Ha	1	0.95	1.0	0.8	0.95	0.75	0.85	0.85	0.97	0.9	0.80	1.0	0.95	0.97	0.87	0.95
RH/W	1.64	1.81	1.70	1.64	1.84	1.65	1.68	1.60	1.64	1.63	1.65	1.67	1.71	1.74	1.68	1.69
RH/Ha	2.25	2.47	2.30	2.25	2.42	2.43	2.32	2.35	2.29	2.44	2.31	2.20	2.28	2.42	2.41	2.31
Nw	3.3	3.6	3.5	3	3.5	3.1	3.2	3.1	3.3	3.3	3	3.5	3.2	3.5	3.1	3.2
Nd	5	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
Nar+v	15+v	18+v	22+v	19+v	18+v	18+v	17+v	19+v	19+v	18+v	17+v	18+v	17+v	19+v	20+v	21+v
Nslw-ab	3	3	4	2	3	2	3	3	3	3	3	3	2	3	4	3
Nslw-ob	4	5	5	4	4	4	5	4	5	4	4	5	4	4	4	4
Start III	2.1	2.25	2	2	2	2.85	2	2	1.8	2.2	1.9	2	no	2.2	1.5	1.5
Start I	2.45	no	2.5	3	3.25	no	no	no	3	no	no	no	2.8	no	2	no

Table VI. Measurements of the protoconch of *Alvania desabatae* spec. nov., in mm.
h: height; d: diameter of nucleus; Do: diameter of first half whorl; DM: maximum diameter; nw: number of whorls. Number 1 is the holotype. Same origins as in Table V.
Tabla VI. Mediciones de la protoconcha de Alvania desabatae *spec. nov., en mm.*
h: altura; d: diámetro del núcleo; Do: diámetro de la primera media vuelta; DM: diámetro máximo; nw: número de vueltas. El número 1 es el holotipo. Mismas procedencias que en Tabla V.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
h	0.33	0.30	0.32	0.30	0.35	0.35	0.33	0.35	0.35	0.35	0.325	0.34	0.35	0.34	0.35	0.35
d	0.13	0.125	0.125	0.125	0.14	0.125	0.14	0.14	0.125	0.125	0.125	0.14	0.125	0.10	0.14	0.14
Do	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.225	0.25	0.25	0.25	0.25	0.225	0.225	0.25	0.26
DM	0.355	0.36	0.35	0.35	0.35	0.36	0.40	0.37	0.375	0.375	0.37	0.375	0.35	0.38	0.40	0.40
Nw	1.35	1.3	1.35	1.3	1.4	1.4	1.45	1.45	1.45	1.35	1.3	1.35	1.4	1.3	1.5	1.4

Remarks: Variability is shown on Tables V-VI with ranges of measurements of the characters. The specimens from Ponza Island have the same shell morphology as the typical population (Ventotene Island), except for the shell height (ca. 20% larger), which reaches or exceeds 2.5 mm (maximum measurement H. 2.6 mm, W. 1.4 mm) and the lighter coloration: white or whitish yellow, translucent, often with two soft orange bands (subsutural and basal).

Alvania desabatae spec. nov. belongs to the group of species related to *Alvania dictyophora*. The specimens found in Zannone Island (Pontine Archipelago) sub nomine *Alvania dictyophora* (Philippi, 1844) (FUMANTI, 2014: 101) probably belongs to this new species.

Alvania dictyophora differs from *Alvania desabatae* spec. nov. (see also measurements in Tables I-II and V-VI) by the apical sculpture: the nucleus bears some rare and microscopic tubercles, the remaining whorls more numerous tubercles, whereas the nucleus and the first half whorl of *A. desabatae* spec. nov. are sculptured with some fine undulated spiral cords, more evident in the suprasutural area, separated by randomly arranged micro tubercles, and the remaining protoconch whorl with sparse, randomly arranged, roughly triangular tubercles (larger than those of *A. dictyophora*). The colour pattern of the shell is variable in *A. dictyophora*, brown-monochrome; with two brown bands on a lighter background or with brown spiral cordlets on a lighter background *vs.* a lighter background with two weak orange bands, basal and subsutural in *A. desabatae* spec. nov.

Alvania clathrella differs from *Alvania desabatae* spec. nov. (See also measurements in Tables III-IV and V-VI) by the more robust and compact teleoconch, with more prominent and echinate sculpture and fewer axial ribs on the last whorl (11+v-15+v *vs.* 15+v-21+v). It is worth mentioning that in each of the two species a single specimen with 15 axial ribs has been observed. *Alvania clathrella* always has only two spiral cords on the last whorl *vs.* 2-4 in *A. desabatae* spec. nov., and the protoconch is sculptured by smaller and more numerous tubercles.

Differences in the means of the following variables were found to be significant: teleoconch: height (H), width (W), height of aperture (Ha), height/width ratio (H/W), ratio height/height of aperture (H/Ha); maximum diameter of protoconch (DM) and number of protoconch whorls (nw). Multiple comparisons (*Alvania clathrella* and *Alvania dictyophora*) showed that *Alvania desabatae* spec. nov. is the most significantly distinguished among the three species, confirming what we had empirically observed and providing an important support for the distinction of the three species (See Table XI).

Alvania bicingulata differs from *Alvania desabatae* spec. nov. (See also measurements in Tables VII-VIII and V-VI) in being larger: H. 3.35 mm, W. 1.94 mm *vs.* H. 1.80-2.35 mm, W. 1.10-1.37 mm in *A. desabatae* spec. nov., in having fewer axial ribs on the last whorl: 12+v *vs.* 15+v-21+v in *A. desabatae* spec. nov. ; in lacking additional cords I and III; and in the larger apical diameters (d and Do), respectively 0.163 and 0.285 *vs.* 0.100-0.140 and 0.225-0.260.

Alvania tenuicostata differs from *Alvania desabatae* spec. nov. (See also measurements in Tables VII-VIII and V-VI) in having a more slender shell with a larger RH/W: 1.90 *vs.* 1.60-1.84; in the weaker sculpture of the teleoconch, particularly the axial one; in having different apical sizes: h. 0.250 mm *vs.* 0.300-0.350 mm, d. 0.170 mm *vs.* 0.100-0.140 mm, Do 0.323 mm *vs.* 0.225-0.260 mm, DM 0.445 mm *vs.* 0.350-0.400 mm, and in the number of protoconch whorls nw 1.2 *vs.* 1.3-1.5 in *A. desabatae* spec. nov.

Other two Mediterranean species: *Alvania hallgassi* Amati and Oliverio, 1985 and *Alvania dianiensis* Oliverio, 1988, resemble the new species in shell morphology; both however differ mainly because of the different apical sculpture, a character that makes us exclude them from the *Alvania dictyophora*-complex.

A. hallgassi is easily distinguishable by the protoconch sculpture (AMATI AND OLIVERIO, 1985: 34, fig. 2; ROMANI, 2014: 514, fig. 14) consisting of spiral cords *vs.* tubercles arranged randomly in *A. desabatae* spec. nov., by the colour pattern of the shell, by the generally more numerous spiral cords above the aperture (4-7 *vs.* 2-4 in *A. desabatae* spec. nov.) which cross the narrower axial ribs, and by the more thickened labial varix .

Table VII. Measurements of the teleoconch of *Alvania bicingulata* (Seguenza G., 1876) (1) and *Alvania tenuicostata* (Seguenza G., 1876) (2), in mm.
H: height, W: width; Ha: aperture height; RH/W: height/width ratio; RH/Ha: ratio height/aperture height; Nw: number of teleoconch whorls; Nd: number of denticles; Nar+v: number axial ribs + varix on the last whorl; Nslw-ab: number of spirals on the last whorl (above the aperture); Nslw-ob: number of spirals on the last whorl (on the base); Sts: starting number of spiral cordlets. Number 1 and 2 are fossils from Messina.
Tabla VII. Mediciones de la protoconcha de Alvania bicingulata *(Seguenza G., 1876) (1) y* Alvania tenuicostata *(Seguenza G., 1876) (2), en mm.*
H: altura, W: anchura; Ha: altura de la abertura; RH/W: relación altura/anchura; RH/Ha: relación altura/altura de la abertura; Nw: número de vueltas de teleoconcha; Nd: número de dentículos; Nar+v: Número de costillas axiales + variz en la última vuelta; Nslw-ab: número de cordones espirales en la última vuelta (por encima de la abertura); Nslw-ob: número de cordones espirales en la última vuelta (en la base); Sts: número inicial de cordones espirales. Números 1 y 2 son fósiles de Messina.

	1	2
H	3.35	2.85
W	1.94	1.5
Ha	1.45	1.22
RH/W	1.73	1.90
RH/Ha	2.31	2.34
Nw	4.1	4
Nd	8	no
Nar+v	12+v	rare and fine ribs+v
Nslw-ab	2	2
Nslw-ob	4	4
Start III	no	3.5
Start I	no	no

Table VIII. Measurements of the protoconch of *Alvania bicingulata* (Seguenza G., 1876) (1) and *Alvania tenuicostata* (Seguenza G., 1876) (2), in mm.
h: height; d: diameter of nucleus; Do: diameter of first half whorl; DM: maximum diameter; nw: number whorls. Same origin as in Table VII.
Tabla VIII. Mediciones de la protoconcha de Alvania bicingulata *(Seguenza G., 1876) (1) y* Alvania tenuicostata *(Seguenza G., 1876) (2), en mm.*
h: altura; d: diámetro del núcleo; Do: diámetro de la primera media vuelta; DM: diámetro máximo; nw: número de vueltas. Misma procedencia que en Tabla VII.

	1	2
h	0.325	0.25
d	0.163	0.170
Do	0.285	0.323
DM	0.400	0.445
Nw	1.15	1.2

A. dianiensis differs from *Alvania desabatae* spec. nov by its apical sculpture (OLIVERIO, 1988:120, fig. 6,7) of 5-6 spiral riblets interspaced by numerous granules *vs.* tubercles arranged randomly in *A. desabatae* spec. nov. The teleoconch sculpture is more delicate with more prominent and echinate sculpture.

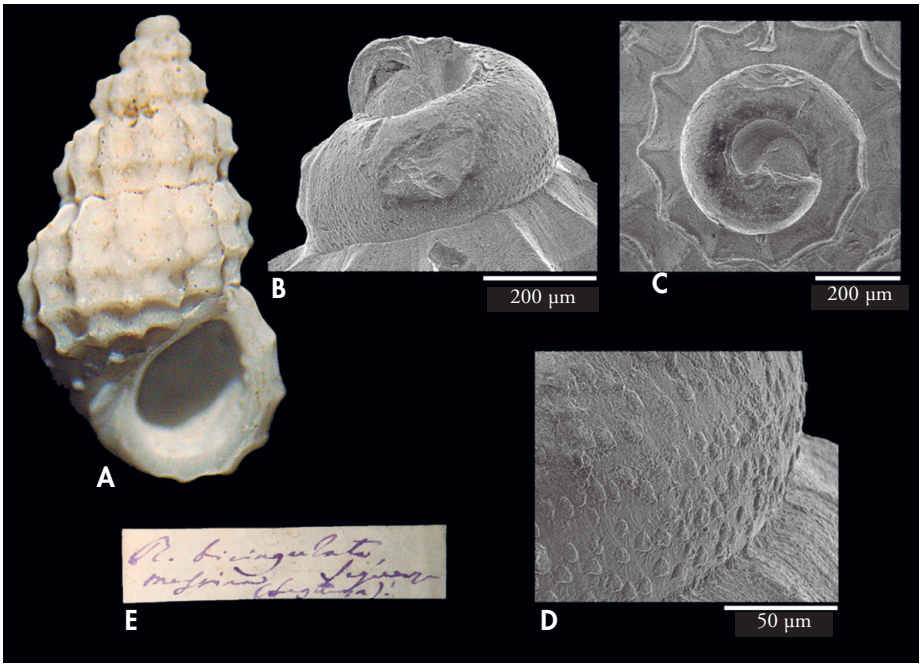

Figure 3. *Alvania bicingulata* (Seguenza G., 1876), lectotype, Messina (MCZR). A: shell, height 3.35 mm; B, C: protoconch; D: detail of the microsculpture of the protoconch; E: original label. B-D, scanning electron micrographs.
Figura 3. Alvania bicingulata *(Seguenza G., 1876), lectotipo, Messina (MCZR). A: concha, altura 3,35 mm; B, C: protoconcha; D: detalle de la microsculpture de la protoconcha; E: etiqueta original. B-D, micrografía electrónica de barrido.*

Alvania bicingulata (G. Seguenza, 1876) (Figs. 3A-E; 5A and Tables VII-VIII)

Rissoa bicingulata G. Seguenza, 1876: 63

Other iconographic references:
Amati, 2014: 94, figs. 5 F, G

Type material: Lectotype (MCZR- L10.22067).
Material examined: Messina, Sicily (Italy) (MCZR-L10.22067, coll. Monterosato ex G. Seguenza) 1 sh fossilized (lectotype).
Type locality: Pliocene of Messina, Sicily.

Remarks: LUIGI SEGUENZA (1903: 46, Pl. 11, fig. 9) has figured under this name, as *Alvania (Acinus) bicingulatus*, a different fossil species, possibly ancestral to the Recent *A. subcrenulata* (Bucquoy, Dautzenberg and Dollfus, 1884).

Alvania tenuicostata (G. Seguenza, 1876) (Figs. 4A-G; 5A and Tables VII-VIII)

Rissoa tenuicostata G. Seguenza, 1876: 63
No iconographic reference.

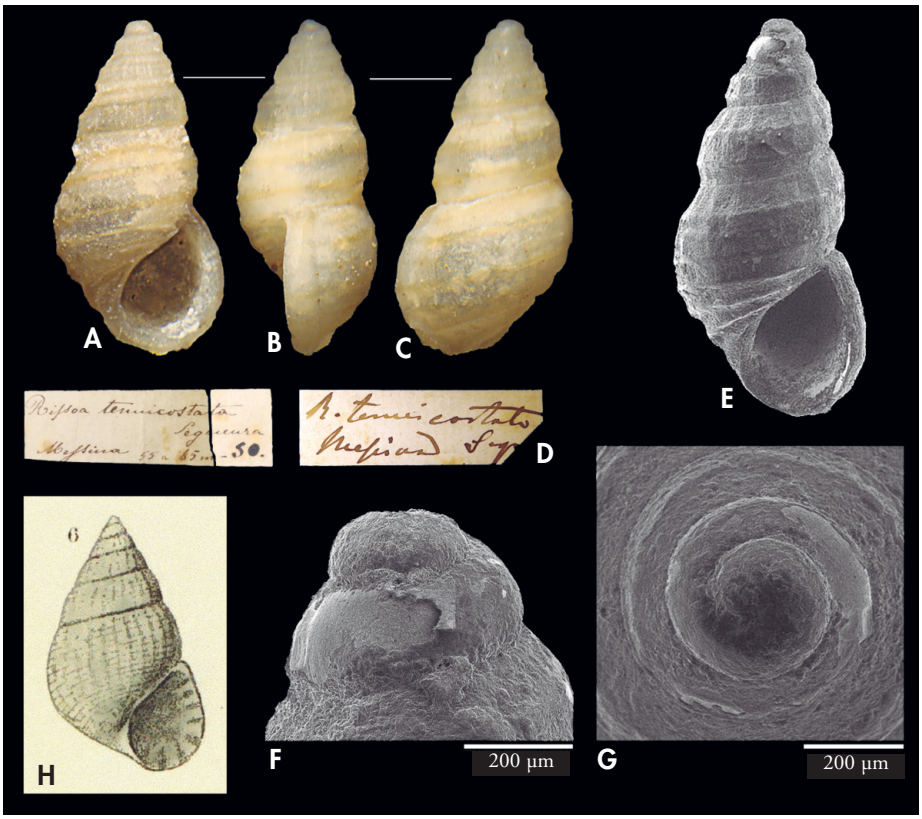

Figure 4. A-G. *Alvania tenuicostata* (Seguenza G., 1876). lectotype, Messina (MCZR). A-C: shell, height 2.85 mm; D: original labels of Giuseppe Seguenza and Monterosato; E: shell, scanning electron micrograph; F, G: protoconch, scanning electron micrographs. H. *Alvania tenuicostata* as figured by SEGUENZA (1903: 47, pl. 11, fig. 6).

Figura 4 A-G. Alvania tenuicostata *(Seguenza G., 1876), lectotipo, Messina (MCZR). A-C: concha, altura 2,85 mm; D: etiquetas originales de Giuseppe Seguenza y Monterosato; E: concha, micrografía electrónica de barrido; F, G: protoconcha, micrografías electrónicas de barrido. H.* Alvania tenuicostata *como figurada por* SEGUENZA *(1903: 47, lám. 11, Fig. 6.).*

Type material: Lectotype (MCZR- L10.22065). Syntypes, conspecific, not examined, preserved in the National Museum of Natural History - Smithsonian Institution, Washington, DC. (U.S.A.) (CESARE BOGI, Livorno, pers. comm., 2015).
Material examined: Messina, Sicily (Italy) (MCZR-L10.22065, coll. Monterosato ex G. Seguenza) 1 sh probable fossil (lectotype here designated).
Type locality: Pliocene of Messina, Sicily.

Remarks: In the Monterosato collection (MCZR, L10.22065) there is a lot containing a (likely fossil) specimen (Fig. 4A-G) of *Rissoa tenuicostata* G. Seguenza, 1876 from Messina (ex G. Seguenza coll.), concordant with the present interpretation and with the original description. This shell is here designated as lectotype, and stabilizes the use of this name. This species is not known from the Recent Mediterranean fauna. LUIGI SEGUENZA (1903: Pl. 9 fig. 6) figured as *Alvania*

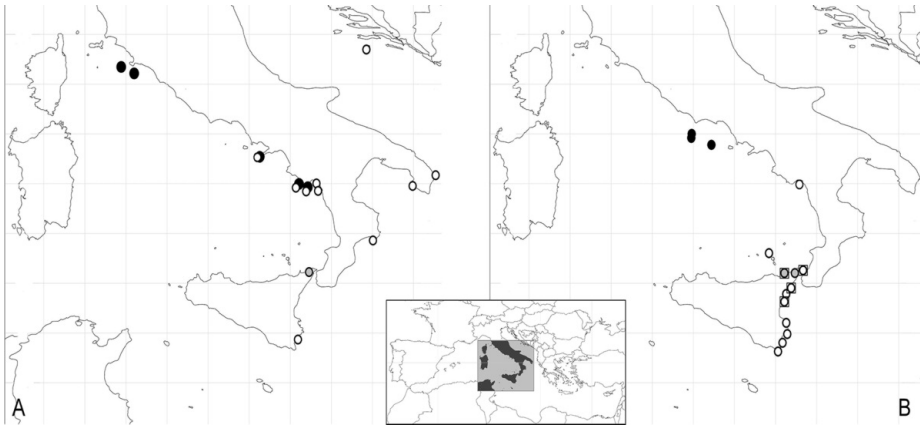

Figure 5. Map of the collecting sites for the examined and type materials. A: Open circles, *A. hallgassi*; closed circles, *A. dianiensis*; grey circle, Messina outcrops (*A. bicingulata* and *A. tenuicostata*). B: Open circles, *A. dictyophora* (grey for fossils); squares, *A. clathrella* (grey for fossils); closed circles, *A. desabatae* spec. nov.

Figura 5. Mapa de los sitios de recolección del material examinado y material tipo. A: círculos abiertos, A. hallgassi*; círculos sólidos,* A. dianiensis*; círculo gris, afloramientos en Messina (*A. bicingulata *y* A. tenuicostata*). B. círculos abiertos,* A. dictyophora *(gris para fósiles); cuadrados,* A. clathrella *(gris para fósiles); círculos sólidos,* A. desabatae *spec. nov.*

Table IX. Summary of quantitative characters in the teleoconch of the species in the *Alvania dictyophora*-complex, in mm.

H: height, W: width; Ha: aperture height; RH/W: height/width ratio; RH/Ha: ratio height/aperture height; Nw: number of teleoconch whorls; Nd: number of denticles; Nar+v: number axial ribs + varix on the last whorl; Nslw-ab: number of spirals on the last whorl (above the aperture); Nslw-ob: number of spirals on the last whorl (on the base); Sts: starting number of spiral cordlets.

Tabla IX. Resumen de los caracteres cuantitativos en la teleoconcha de las especies del complejo de Alvania dictyophora*, en mm.*

H: altura, W: anchura; Ha: altura de la abertura; RH/W: relación altura/anchura; RH/Ha: relación altura/altura de la abertura; Nw: número de vueltas de teleoconcha; Nd: número de dentículos; Nar+v: Número de costillas axiales + variz en la última vuelta; Nslw-ab: número de cordones espirales en la última vuelta (por encima de la abertura); Nslw-ob: número de cordones espirales en la última vuelta (en la base); Sts: número inicial de cordones espirales.

	Alvania desabatae spec. nov.	*Alvania dictyophora*	*Alvania clathrella*	*Alvania bicingulata*	*Alvania tenuicostata*
H	1.80-2.35	1.9-2.75	2.0-2.65	3.35	2.85
W	1.10-1.37	1.25-1.60	1.35-1.65	1.94	1.5
Ha	0.75-1.00	0.90-1.20	0.90-1.15	1.45	1.22
RH/W	1.60-1.84	1.48-1.77	1.47-1.71	1.73	1.90
RH/Ha	2.20-2.47	1.96-2.39	2.00-2.44	2.31	2.34
Nw	3-3.6	2.5-3.6	2.9-3.5	4.1	4
Nd	no- (5 only on holotype)	no- (3-6)	no- (4-6)	8	no
Nar+v	15+v-21+v	12+v-19+v	11+v-15+v	12+v	rare and fine ribs+v
Nslw-ab	2-4	2-4	2	2	2
Nslw-ob	4-5	4	4	4	4
Start of III spiral cord	no/1.8-2.85	no/1.5-2.8	no-3.25	no	3.5
Start of I spiral cord	no/2-3.25	no/2-3.5	no/3.0-3.15	no	no

Table X. Summary of quantitative characters, in mm, and sculpture characters in the protoconch of the species in the *Alvania dictyophora*-complex.
h: height; d: diameter of nucleus; Do: diameter of first half whorl; DM: maximum diameter; nw: number of whorls.
Tabla X. Resumen de los caracteres cuantitativos, en mm, y de escultura en la protoconcha dede las especies del complejo de Alvania dictyophora.
h: altura; d: diámetro del núcleo; Do: diámetro de la primera media vuelta; DM: diámetro máximo; nw: número de vueltas.

Species	h	d	Do	DM	nw	Sculpture
Alvania desabatae spec. nov.	0.300-0.350	0.100-0.140	0.225-0.260	0.350-0.400	1.3-1.5	Fine cords spiral on first half whorl, interspaced micro tubercles. Remaining whorls with large triangular tubercles .
Alvania dictyophora	0.300-0.375	0.100-0.150	0.250-0.275	0.350-0.475	1.25-1.4	Hardly sculptured nucleus. Remaining whorls sculpted by micro tubercles.
Alvania clathrella	0.300-0.350	0.125-0.150	0.225-0.275	0.350-0.400	1.25-1.5	Nucleus initially sculptured by few micro granules, which increase in size over the entire protoconch.
Alvania bicingulata	0.325	0.163	0.285	0.400	1.15	Nucleus unknown because broken. On the remaining whorls appressed granules of triangular shape.
Alvania tenuicostata	0.250	0.170	0.323	0.445	1.2	Unknown because broken

Table XI. Statistical processing with analysis of variance (ANOVA) on the species *A. clathrella*, *A. dictyophora* and *A. desabatae* spec. nov., with number of samples n = 16 for each species
NS= no significant difference; P = probability of a difference due to the case; SD = standard deviation. Teleoconch - H: height, W: width, Ha: aperture height, RH/W: height/width ratio, RH/Ha: ratio height/aperture height, Nw: number of whorls; protoconch - h: height, d: diameter of nucleus, Do: diameter of first half whorl, DM: maximum diameter, nw: number of whorls.
Tabla XI. Procesamiento estadístico con análisis de varianza (ANOVA) de las especies A. clathrella, A. dictyophora *y* A. desabatae *spec. nov., con número de muestras n = 16 para cada especie.*
NS = no hubo diferencias significativas; P = probabilidad de una diferencia en al caso; SD = desviación estándar. Teleoconcha – H: altura, W: anchura; Ha: altura de la abertura; RH/W: relación altura/anchura; RH/Ha: relación altura/altura de la abertura; Nw: número de vueltas; protoconcha - h: altura, d: diámetro del núcleo, Do: diámetro de la primera media vuelta, DM: diámetro máximo, nw: número de vueltas.

Species	*A. clathrella* (1) n=16		*A. dictyophora* (2) n=16		*A. desabatae* (3) n=16		ANOVA	Meaningful
Variables	Average	SD	Average	SD	Average	SD	P	comparisons
H	2.32	0.17	2.30	0.25	2.13	0.19	.023	1 *vs* 3
W	1.47	0.09	1.42	0.11	1.26	0.09	.000	1 *vs* 3 2 *vs* 3
Ha	1.04	0.09	1.03	0.10	0.91	0.08	.000	1 *vs* 3 2 *vs* 3
RH/W	1.58	0.06	1.62	0.09	1.69	0.06	.001	1 *vs* 3 2 *vs* 3
RH/Ha	2.24	0.11	2.22	0.10	2.34	0.08	.003	1 *vs* 3 2 *vs* 3
Nw	3.23	0.15	3.12	0.29	3.28	0.19	NS	-
h	0.33	0.02	0.34	0.02	0.34	0.02	NS	-
d	0.13	0.01	0.13	0.01	0.13	0.01	NS	-
Do	0.25	0.02	0.26	0.01	0.25	0.01	NS	-
DM	0.39	0.02	0.40	0.03	0.37	0.02	.002	2 *vs* 3
nw	1.32	0.06	1.33	0.05	1.38	0.06	.007	2 *vs* 3

(Acinus) tenuicostatus a completely different shell, characterized by a multispiral protoconch, indicating a planktotrophic development *vs.* non-planktotrophic development in *A. tenuicostata* (G. Seguenza, 1876), and pointed out this character "*…con l'apice acuminato, formata di giri di spira tre e levigati…*". This species has a teleoconch very similar to some morphotypes of *Alvania mamillata* Risso, 1826 [like that called *Alvania cingulata* (Philippi, 1836)] with a thinner shell, finer and more numerous axial ribs and spiral cords. To our knowledge there are no Recent relatives of this species, which is likely extinct.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge Eleonora De Sabata (Rome, Italy) and Aldo Ferrucci (Genova, Italy) who collected the marine sediment samples, at Ventotene Island thus making possible the discovery of the new taxon. We would like to express our gratitude to Massimo Appolloni (Museo Civico di Zoologia, Rome, Italy) for the examination of the *Alvania* material kept in the museum collection. Thanks to Paul Mazza (Museum Geological and Paleontological of the University, Florence, Italy) for his assistance during our visits to examine Seguenza's material, and to Oscar Alfredo Galvez Herrera (Museo Nacional de Historia Natural, Santiago de Chile), Christine Zorn (Collection Wizard of Mollusca, Museum of Natural History Leibniz Institute for Evolution and Biodiversity at the Humboldt University of Berlin, Germany), Cesare Bogi (Livorno, Italy), José Mª López (Valencia, Spain), Marco Oliverio (Dipartimento di Biologia e Biotecnologie 'Charles Darwin', Sapienza University of Rome, Italy) and Italo Nofroni (Rome, Italy) who have loaned type material or provided information on or photographs of the type material under their care. A special thank to Andrea Di Giulio and Patrizio Tratzi (Department of Science, "Roma Tre" University, Rome, Italy) for the SEM photographs, carried out at the LIME. To our friend Italo Nofroni (Rome, Italy) for the statistic elaboration of morphometric data. We would like to thank Serge Gofas (Departamento de Biología Animal Facultad de Ciencias, Universidad de Málaga, Spain) and Marco Oliverio (Dipartimento di Biologia e Biotecnologie 'Charles Darwin', Sapienza University of Rome, Italy) for their very helpful comments and the resulting improvements in the paper.

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