



Marine malacological records (Gastropoda: Prosobranchia, Heterobranchia, Opisthobranchia and Pulmonata) from Torres de Alcalá, Mediterranean Morocco, with the description of a new philinid species

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KEY WORDS: Cala Iris, faunistics, Gastropoda, marine, Mediterranean Sea, Morocco, *Philine iris* n. sp., records, Recent.

ABSTRACT The present paper records some noteworthy gastropod species at Cala Iris, a cove on the coast of Torres de Alcalá (= Torres el Kal'a, 35°10' N, 04°19' W), Mediterranean Morocco. These species belong to the families Diastomatidae Cossmann, 1893, Rissoidae J.E. Gray, 1847, Eulimidae H. Adams & A. Adams, 1853, Buccinidae Rafinesque, 1815, Marginellidae Fleming, 1828, Hyalogirinae Warén & Bouchet, 1993, Philinidae J.E. Gray, 1850, and Ellobiidae A. Adams, 1855. The records are commented in brief notes. Some notes contain also remarks on the nomenclature and/or systematics of the species. *Philine iris* n. sp. is here described on the basis of empty shells, and is compared with the most similar Atlantic-Mediterranean species. The present paper includes also the first Mediterranean record of the Eastern Atlantic *Philine condensa* van der Linden, 1995, and the first Eastern Mediterranean record of *Philine intricata* Monterosato, 1884.

RIASSUNTO Sono segnalate alcune specie di gasteropodi (Prosobranchia, Heterobranchia ed Opisthobranchia) di particolare interesse dal fondale infralitorale di Cala Iris, una baia nei pressi di Torres de Alcalá (= Torres el Kal'a, 35°10' lat. nord, 04°19' long. ovest), sulla costa mediterranea del Marocco, a 130 km ca. da Ceuta. Da questa località è qui descritta *Philine iris* n. sp., sulla base della sola morfologia conchiliare. La nuova specie presenta una conchiglia simile a *Philine punctata* (J. Adams, 1800), la cui scultura spirale, però, è composta di file di fossette non collegate tra loro, mentre su *P. iris* le fossette sono collegate a formare strie catenoidi. La protoconca di *P. iris* è meno larga, con nucleo meno prominente, e scolpita in modo più grossolano da granuli di forma irregolare, disposti disordinatamente. *Philine catena* (Montagu, 1803) è anch'essa prossima per dimensioni, forma generale e scultura. *P. iris* ha, tuttavia, profilo più arrotondato, sia frontalmente, che lateralmente, è meno ristretta verso la sommità, ha labbro interno più flessuoso e strie spirali più delicate, che iniziano come strie ondulate semplici per assumere con maggiore gradualità il caratteristico aspetto catenoidale. La protoconca di *P. iris* è di maggiori dimensioni, ma scolpita in modo analogo. Questa specie è probabilmente la «*Philine* sp.» recentemente segnalata da MORENO & TEMPLADO (1998) per la Spagna meridionale e Ceuta e la *Philine* raffigurata vivente da MIFUD (1996) come «*Philine quadrata* (S.V. Wood, 1839)». *Alvania sculptilis* (Monterosato, 1877) è specie comune a Torres de Alcalá, simile a – o, forse, solo una forma di – *Alvania scabra* (Philippi, 1844), che sembra rimpiazzare nell'estremo Mediterraneo occidentale, distinta per la variabile consistenza della scultura assiale, in molti casi pressoché evanescente, i tre cordoni spirali decorrenti sul penultimo giro sopra l'apertura, in luogo dei quattro di *A. scabra*, e la protoconca più arrotondata e con nucleo meno prominente. Gli esemplari con scultura maggiormente marcata sembrerebbero corrispondere ad *Alvania oranica* (Pallary, 1900), la cui identità resta, in ogni caso, incerta. *Alvania sculptilis* è abbondante a Torres de Alcalá, dove vive su alghe brune. *Alvania tessellata* (Weinkauff, 1868, ex Schwartz MS.), piuttosto comune a Torres de Alcalá, non sembra effettivamente distinta da *Alvania spinosa* (Monterosato, 1890), per come quest'ultima è generalmente identificata in letteratura. Il solo presunto carattere distintivo, la seconda fila spirale di noduli, in posizione abapicale, è incostante: su molte conchiglie la seconda fila di noduli è appena accennata dimostrando così l'esistenza di forme intermedie. La simile *Alvania pagodula* (B.D.D., 1884) può mostrare, anch'essa, una forma con una sola fila di noduli e, peraltro, *Alicidia spinosa* Monterosato – descritta su materiale pleistocenico e recente della Sicilia e non dall'areale lusitanico – potrebbe ben corrispondere, di fatto, a quest'ultima forma. Altre specie qui segnalate sono *Cassidula abylensis* Gofas, 1987, *Cingula trifasciata* (J. Adams, 1800), *Setia aartseni* (Verduin, 1984), *Setia sliorum* (Verduin, 1984), *Vitreolina cionella* (Monterosato, 1878), *Chauvetia* cfr. *retifera* (Brugnone, 1880) [= «*Pleurotoma pellispocae* Reeve, 1845» sensu auctores], *Granulina vanhareni* (van Aartsen, Menkhurst & Gittenberger, 1984), *Hyalogira zibrowii* Warén in Warén, Carrozza & Rocchini, 1997, *Brachystomia improbabilis* (Oberling, 1970), n. comb. [= *Odostomia verduini* van Aartsen, 1987], *Philine intricata* Monterosato, 1884, di cui si raffigura anche una piastra gastrica, e *Pseudomelampus kochi* (Pallary, 1900). Quest'ultima non è la specie tipo di *Pseudomelampus* Pallary, 1900, contrariamente a quanto talora indicato in letteratura: la specie tipo di *Pseudomelampus* è *Melampus exiguus* Lowe, 1835, per designazione successiva di MONTEROSATO (1906). Non è da escludere, tuttavia, che *M. exiguus*, descritta originariamente da Madeira, possa essere, effettivamente, un sinonimo seniore di *P. kochi*. Il nome *Chauvetia* cfr. *retifera* (Brugnone, 1880) è qui adottato per la specie comunemente denominata *Chauvetia pellispocae*, giacché il material tipico (NHML) di *Pleurotoma pellispocae* Reeve, 1845, corrisponde ad un turride delle Indie Occidentali. BRUGNONE (1880) ha basato *Lachesis retifera* su una singola conchiglia fossile da Caltanissetta (Sicilia), ma MONTEROSATO (1884; 1889b) sembrerebbe aver impiegato questo nome per la specie qui segnalata. Non avendo potuto ancora rintracciare l'olotipo di *Lachesis retifera*, probabilmente perduto, o altro materiale identificato come tale da Brugnone, questo nome è impiegato con beneficio di inventario, essendo più antico di *Chauvetia elongata* F. NORDSIECK & GARCÍA-TALAVERA, 1979, un nome, quest'ultimo, comunque da verificare. Infine, sono qui presentate anche le prime segnalazioni di *Philine condensa* van der Linden, 1995, per il mar Mediterraneo e di *Philine intricata* Monterosato, 1884, per il bacino orientale del Mediterraneo.

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INTRODUCTION

The present work points out the occurrence of some noteworthy gastropod species in the sublittoral bottoms of Torres de Alcalá (= "Torres el Kal'a", 35°10' N, 04°19' W - Fig. 1). The site lies on the Mediterranean coast of Morocco, about 130 km East of Ceuta, fully inside the Western Mediterranean basin. Other records from the same locality have been already

published in recent years (e.g. PIZZINI & VILLA, 1993; NOFRONI & TRINGALI, 1995; TRINGALI, 1996; DELL'ANGELO & TRINGALI, 2000).

The following notes contain remarks on the species, and are mainly based on malacological material kept in Roman private collection. A large part of the material was obtained from three large samples of marine bioclastic sediment collected in 1991 and 1993. Other specimens were living on brown algae collec-



ted in 1991. All the samples were collected in the waters of Cala Iris, a cove on Torres de Alcalá's coast, with a small isle in the middle. Here are the samples listed in detail, following the chronological order of collecting:

Sample A: mixed medium-fine grained sediment, rocky bottom, 2-4 m (RV legit, May 7th, 1991);

Sample B: mostly fine sediment, from both rocky and sandy-muddy bottoms, 10 m (RV legit, May 7th, 1991);

Sample C: living molluscs found on brown algae, 1-4 m (RV & SF legerunt, May 10th, 1991);

Sample D: mostly fine sediment, West side of the Isle, collected from rocky to sandy-muddy bottom, 6-10 m (MO & RV legerunt, June 18th, 1993).

I was unable to examine all the malacological material sorted from these samples, which is scattered in several Roman private collections and also elsewhere. Therefore some interesting species possibly escaped the present report, and quantitative data are simply indicative.

Several shells of an undescribed species of the genus *Philine* Ascanius, 1772, have been noticed within the sediment. The new species is below described as *Philine iris* n. sp.

The present paper contains also the first Mediterranean record of *Philine condensata* van der Linden, 1995, from Palermo (Sicily), based on a lot deposited in the Monterosato coll. (Museo Civico di Zoologia, Roma), and the first Eastern Mediterranean record of *Philine intricata* Monterosato, from Crete Is. and Astipálaia Is. (= Astypalea Is., Cyclades Islands, Aegean Sea).

Abbreviations and acronyms

AG: Angelina Gaglioli (†), Rome, Italy.

coll./colls.: collection(s);

d.: diameter;

dpt.: depth (size);

frg./frgs.: shell fragment(s);

h.: height;

sh./shs.: specimen(s) collected without soft parts;

spm./spms.: specimen(s) collected with soft parts;

IN: Italo Nofroni, Rome, Italy;

LPT: Lionello Paolo Tringali, Rome, Italy;

MNHN: Museum National d'Histoire Naturelle, Paris, France;

MO: Marco Oliverio, Dipartimento di Biologia Animale e dell'Uomo, "La Sapienza" Roma-I University, Rome, Italy;

MP: Mauro Pizzini, Rome, Italy;

MTRS: Monterosato coll., Museo Civico di Zoologia, Rome, Italy;

NHMB: Naturhistorisches Museum, Bern (or "Musée d'Histoire Naturelle, Berne"), Switzerland.

NHML: Natural History Museum, London, U.K.;

RA: Roberto Ardovalini, Rome, Italy;

RR: Ruggero Ruggeri, Rome, Italy;

RV: Raimondo Villa, Anguillara Sabazia (Rome), Italy;

SF: Sergio Farinelli, Rome, Italy;

SMNH: Swedish Museum of Natural History ("Naturhistoriska

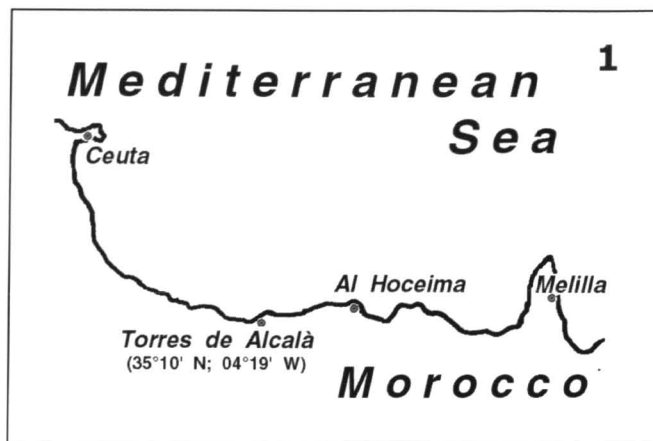


Fig. 1: Torres de Alcalá on the Northern coast of Morocco.

Rijksmuseum"), Stockholm, Sweden;

w.: width;

ZMB: (Laboratory of Malacology,) Zoological Museum, Bologna University ("Museo di Zoologia, Università di Bologna"), Bologna, Italy;

ZMR: (Township) Zoological Museum, Rome, ("Museo Civico di Zoologia, Roma"), Italy;

ZMUC: Zoological Museum, University of Copenhagen, Denmark.

Classis GASTROPODA Cuvier, 1797

Subclassis PROSOBRANCHIA, Milne-Edwards, 1848

Familia DIASTOMATIDAE Cossmann, 1893

Cassiella abylenensis Gofas, 1987

(Figs. 3a-b)

Material examined

Samples A, B, and D, 6 shs. + several frgs. (LPT, MP, RA colls.).

Remarks - The species is known from the area around the Strait of Gibraltar, including both the African and European coasts (GOFAS, 1987; VAN AARTSEN et al., 1984: 75; 128, figs. 393, as «Gen. et sp. unknown»; BELLOCQ & NOFRONI, 1989: 228; 232, fig. 5). It was also recorded from Fuengirola, Malaga (South Spain) (BELLOCQ & NOFRONI, 1989: 228; 232, fig. 6; GIANNUZZI-SAVELLI et al., 1997: 51, figs. 102-103). I examined few shells of this species from Cala Iris, all with weak spiral sculpture. The present record widens eastward the known range of *C. abylenensis* along the coast of Morocco.

Familia RISSOIDAE J.E. Gray, 1847

Alvania sculptilis (Monterosato, 1877)

(Figs. 6a-c, 7, 8a-b)



Material examined

Alvania sculptilis – the type material of *Rissoa sculptilis*: 3 shs. (syntypes) from Algiers (Algeria), unrecorded depth, P. Joly legit (MTRS, box 22162); samples A, B, D, some hundreds of shs. and frgs. (IN, LPT, MP, RA, RR, RV, and SF colls.); sample C, 16 dry spms. (LPT, RV, SF colls.); Alboran Is. (South Spain), *Cystoseira* sediment 17 m, 7 shs. (LPT, & MO colls.); Punta Carnero, Algeçiras (South Spain), beached sediment, 15 shs. (IN, and LPT colls.); Northern beach of Getares, Algeçiras (South Spain), beached sediment, 24 shs. (IN, and RV colls.). *Alvania scabra* ss. – some hundreds of shs./spms. within lots from sediment or brown algae, various localities of the Central Mediterranean, in several colls.

Remarks - Originally described from Algeria (MONTEROSATO, 1877: 35; pl. III, figs. 6), *Alvania sculptilis* is closely similar to *Alvania scabra* ss. (Philippi, 1844) (Figs. 9a-b), perhaps being a Western Mediterranean cline of the latter. It may be distinguished by the absence of the fourth (abapical) spiral cord on the penultimate whorl above the aperture, the more variable axial sculpture, rather faint in some shell, and a more evenly rounded protoconch, with a less protruding nucleus. It shares the protoconch sculpture of *A. scabra*, with small granules arranged as irregular spiral rows. In *A. scabra* these rows of granules are somewhat closer each other, and less irregular, but this character seems variable. There are shells of *A. sculptilis* which bear weak or nearly faint axial ribs, setting off the spiral cords, having weak knobs, or nearly lacking them, especially on the body whorl, thus corresponding to the typical *A. sculptilis*. Other shells, however, display marked axial ribs, which make very prominent knobs by crossing the cords. The intermediates between the extreme sculpture patterns are frequent: therefore it is evident that there is a single variable species of the *A. scabra* group in Cala Iris' waters.

It is likely that the Algerian *Alvania oranica* (Pallary, 1900) is the same as the strongly sculptured form of this species (cf. GOFAS, 1990: 130, fig. 58). The original drawing of *A. oranica* shows four marked cords above the aperture (PALLARY, 1900: pl. VII, fig. 4), instead of the characteristic three cords of *A. sculptilis*. However, that drawing fails to show the actual shell morphology of *A. oranica*: Pallary himself drastically judged this drawing as «fort mauvaise», and considered that it does not allow to identify *A. oranica*, as he wrote on a brief note to Monterosato (Fig. 2), sent together with two syntypes of this species. So far, I have failed to find in the MTRS the syntypes of *A. oranica*, which were drawn from the ZMR for the Malacological Exhibition of Palazzo Braschi, Rome (1976). As other malacological material the syntypes never returned to their original place (on the negative effects of that Exhibition on the MTRS see OLIVERIO & TRINGALI, 2001). In fact, the identity of *A. oranica* is still unclear.

Also the shell figured by VAN AARTSEN et al. (1984: 112-113, figs. 102) as «*Alvania scabra*», from the Bay of Algeçiras, seems to belong to *A. sculptilis*. The original description and drawing (PHILIPPI, 1844: 126-127; pl. XXIII, fig. 8) of *Rissoa scabra* are based on (lost) Western Sicilian type material. They

show that the shell bears four evident cords above the aperture, with sharply protruding knobs. This form is common along both the Sicilian and Italian coasts, usually identified as *A. scabra* (e.g. BOGI et al., 1983: 7, fig. 11; GIANNUZZI-SAVELLI et al., 1997: 109, figs. 448-449). Possibly *A. scabra* ss. could be restricted to this Central Mediterranean form, if it is proved that intermediates with *A. sculptilis* do lack.

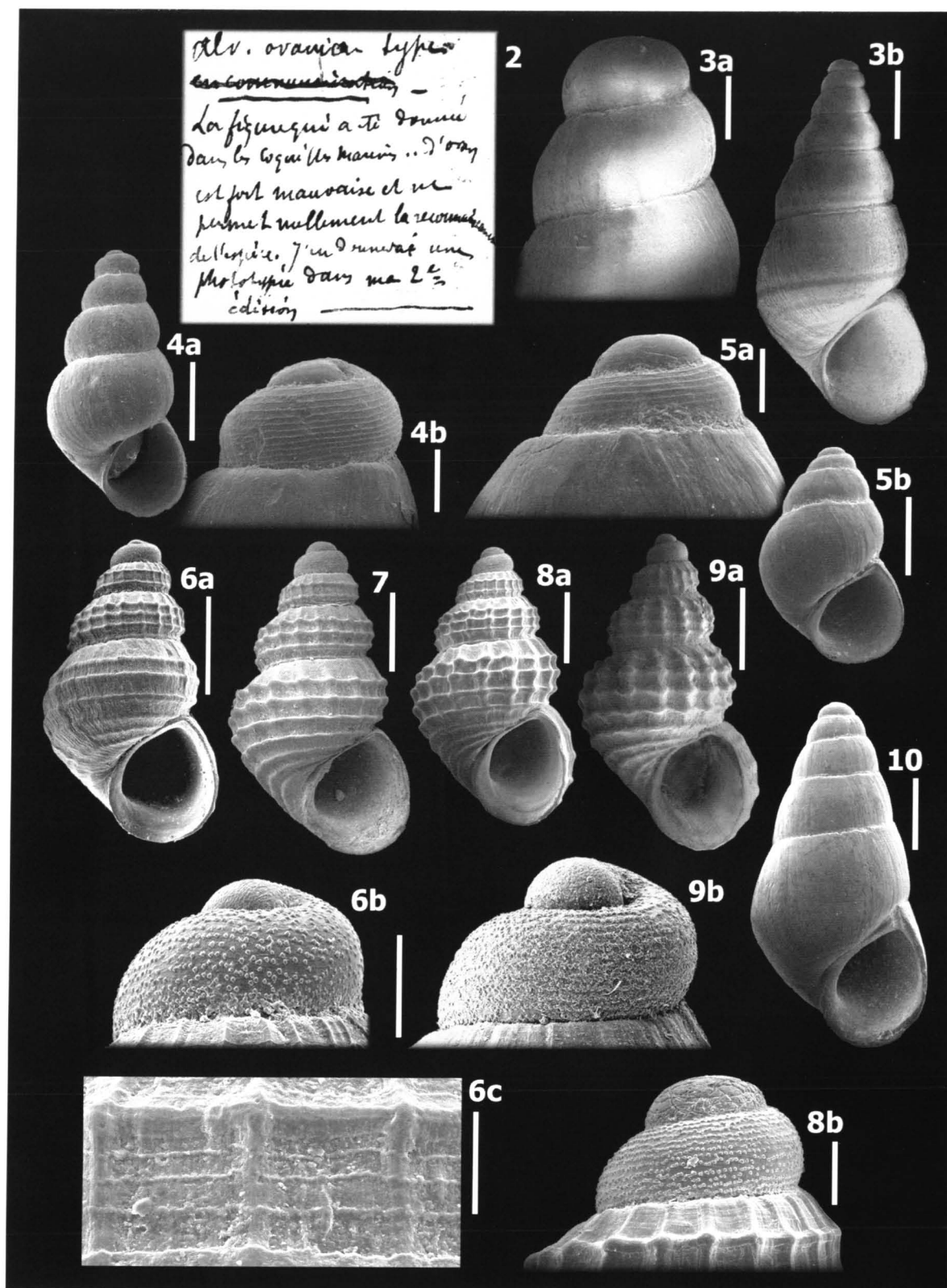
In the Mediterranean Sea, *Alvania sculptilis* seems confined to the Western basin, known with certainty from Southern Spain, Morocco and Algeria. It is common at Torres de Alcalá. GIANNUZZI-SAVELLI et al. (1997: 109, fig. 443) already recorded this species from Torres de Alcalá, but published a light photo of the shell, not accompanied by a SEM photo of the protoconch: that shell is not a typical example of *A. sculptilis* having a very wide aperture and large body whorl, but it seems to fall within the morphological range of this variable species.

Alvania tessellata (Weinkauff, 1868, ex Schwartz MS.)
(Figs. 11, 12, 13, 14)

Material examined

Alvania tessellata - material labelled as «*Aldidia spinosa*» by Monterosato has still not be found in the MTRS (lost ?); samples A, B, and D, more than 2 hundred of shs. (IN, LPT, MO, MP, RA, RR, RV, and SF colls.); sample C, 18 spms. (mostly young) (LPT, RV, and SF coll.); Fuengirola (South Spain), sediment 6 m, 7 shs. (AG, and RV coll.); Northern beach of Getares, Algeçiras (South Spain), beached sediment, 11 shs. (IN, and RR colls.). *Alvania pagodula* – some hundreds of shs./spms. in lots from sediment or brown algae of various localities of the Central Mediterranean Sea, in several colls.

Remarks - Within the lots from Cala Iris, there are both the typical form, with two spiral rows of knobs, and the form identified as *Alvania spinosa* (Monterosato, 1890) by some authors (e.g. PALLARY, 1902: 19; pl. I, figs. 12-13; 1920: 51; VAN AARTSEN, 1976; 1983; VAN AARTSEN, 1983: 8; 9, figs. I; VAN AARTSEN et al., 1984: 25; 113, fig. 110; GIANNUZZI-SAVELLI et al., 1997: 110, figs. 459-460). In fact, protoconch and teleoconch morphology of these forms are identical at all but one feature, i.e. the single row of knobs in *A. spinosa* vs. the couple of rows in *A. tessellata*. This difference seems at first glance to justify a specific separation. However, noticing shells with intermediate characters within the material from Cala Iris, it seems that there is a single variable species. The intermediates show a variable upper row, from moderately marked up to very weak. The upper row may also disappears at all on the body whorl just after a scarce rising. An intraspecific variation of the number of spiral cords (or rows of knobs) is displayed by other species of the genus *Alvania* Risso, 1826, being a not surprising phenomenon. VAN AARTSEN (1983: 8; unnumbered fig.) noticed also shells of *A. tessellata* with a weak third row of knobs, apparently on the body whorl, a feature not observed on the material from Cala Iris. Remarkably, the



Figs. 2: manuscript note by Pallary on his own *Alvania oranica*, sent to Monterosato (MTRS, box with no number). Figs. 3a-b: *Cassiella abylenis*, Gofas, sample D. Figs. 4a-b: *Setia sliorum* (Verduin), sample C. Figs. 5a-b: *Setia aartseni* (Verduin), sample D. Fig. 6a-c: *Alvania sculptilis* (Monterosato), form with weak sculpture, sample D (Fig. 6c: detail of teleoconch microsculpture); Fig. 7: idem, form with intermediate sculpture, sample D; Figs. 8a-b: idem, form with marked sculpture, sample D. Figs. 9a-b: *Alvania scabra* (Philippi), "Cock-Pit" submarine cave, Capo Palinuro (Southwest Italy), sediment 4-6 m. Fig. 10: *Cingula trifasciata* (J. Adams), sample D. Scale bars: 40 μ m (Fig 6c); 100 μ m (Figs. 3a, 4b, 5a, 6b, 8b, 9b); 500 μ m (Figs. 3b, 4a, 5b, 6a, 7, 8a, 9a, 10).



closely related *Alvania pagodula* (B.D.D., 1884), which replaces *A. tessellata* in the Central Mediterranean waters, may show a form with a single row of knobs alongside the typical form with two rows (cf. Figs. 15, 16). In fact *Alcidia spinosa* Monterosato could be this less frequent form of *A. pagodula* with a single row of knobs. So far, I have still failed to trace any material labelled as «*Alcidia spinosa*» in the MTRS. However the above conclusion may be reasonably argued taking into account that *Alcidia spinosa* was originally referred to Pleistocene and Recent material from Sicily (MONTEROSATO, 1890: 147), instead of Lusitanic material.

Anyway, «*Alvania spinosa* (Monterosato)» sensu auctores seems to fall within the morphological range of *A. tessellata*, and it is confined to the Lusitanic area, as the typical form of *A. tessellata*, with a Mediterranean range restricted to Southern Spain, Morocco and Algeria. Therefore, the record from Ancona, Eastern Italy, in VAN AARTSEN (1983: 9, figs. I, the last two shells) seems actually problematic.

Cingula trifasciata (J. Adams, 1800)
(Fig. 10)

Material examined

Samples A, B, and D, 52 shs. + several frgs. (IN, LPT, MP, RA, RR, RV, SF, colls.); Punta Carnero, Algeçiras (South Spain), beached sediment, 8 shs. (IN coll.); Northern beach of Getares, Algeçiras (South Spain), beached sediment, 7 shs. (IN coll.). Torres de la Peña, Tarifa, (South Spain), beached sediment, 5 shs. (IN coll.); Cabo de Gata, Almería (South Spain), beached sediment, 2 shs. (RR coll.); Essaouira (Atlantic Morocco), beached sediment, 4 shs. (RR coll.); Vigo (Northwest Spain), beached sediment, 1 sh. (RR coll.); unspecified locality of East Eire, beached sediment, 7 shs. (RR coll.).

Remarks - The Mediterranean occurrence of the Atlantic gastropod *C. trifasciata* (J. Adams, 1800) [= *Cingula cingillus* (Montagu, 1803)] has been frequently regarded as doubtful (e.g. VAN AARTSEN et al., 1984: 19). In fact, some records from Mediterranean waters are debatable, as e.g. the record from Golfo di Napoli (Southwest Italy) by IDATO et al. (1983: tab. 1), or that from Tropea (Southwest Italy) by GIANNUZZI-SAVELLI et al. (1997: 95, fig. 344). On the other hand the species is known to inhabit the area around the Strait of Gibraltar (MONTEROSATO, 1889a: 34; D'ANGELO & GARGIULLO, 1978: 94; VAN AARTSEN et al., 1984: 19; 109, fig. 69; GIANNUZZI-SAVELLI et al., 1997: 95, fig. 345). Moreover, it has been recorded from Southern Spain, i.e. from Marbella and Fuengirola (BELLOCQ & NOFRONI, 1989: 227; 232, fig. 4), Malaga and Granada (LUQUE, 1986: 83). The occurrence of *C. trifasciata* in the Western Mediterranean basin is here confirmed. Despite I have not examined living specimens of *C. trifasciata* from Cala Iris, shells and fragments are not rare in the sediment. Cabo de Gata, lying on the Southern Spanish coast at about 300 km from the Strait of Gibraltar, is the easternmost locality of the Mediterranean Sea from where I have examined material of *C. trifasciata*.

Setia aartseni (Verduin, 1984)
(Figs. 5a-b)

Material examined

Samples A, B, D, 27 shs. + several frgs. (IN, LPT, RA, RV and SF colls.); sample C, 3 spms. (RV, and SF colls.); Northern beach of Getares, Algeçiras (South Spain), beached sediment, 9 shs. (IN, MP, and RR colls.).

Remarks - VERDUIN (1984: 45) did not list true Mediterranean material of this species. The closest locality he quoted is in the area of the Strait of Gibraltar, viz. Getares (South Spain). Also NICOLAY & ANGIOY (1994: 25; unnumbered fig.), and GIANNUZZI-SAVELLI et al. (1997: 89, figs. 302-303) pointed out the occurrence of *S. aartseni* in the Strait waters. Although *S. aartseni* is not common at Cala Iris, it seems to inhabit also the Western Mediterranean Sea.

Setia sliorum (Verduin, 1984)
(Figs. 4a-b)

Material examined

Samples A, B, C, some hundreds of shs. and frgs. (IN, LPT, MP, RA, RR, RV, and SF colls.); sample C, more than 2 thousand of spms. (LPT, RV, and SF colls.). Northern beach of Getares, Algeçiras (South Spain), beached sediment, 14 shs. (IN, and MP colls.).

Remarks - As the previously mentioned species, VERDUIN (1984: 47, as «*Cingula sliki* sp. n.») did not record *S. sliorum* from any locality properly inside the Mediterranean waters (see also GIANNUZZI-SAVELLI et al., 1997: 91, figs. 320-321; NICOLAY & ANGIOY, 1994: 25; unnumbered fig.). At Cala Iris *S. sliorum* is syntopic with *Setia amabilis* (Locard, 1886) on brown algae. They are abundant, the most frequent rissoid species in the samples: I have examined a myriad of dry specimens and shells of both species.

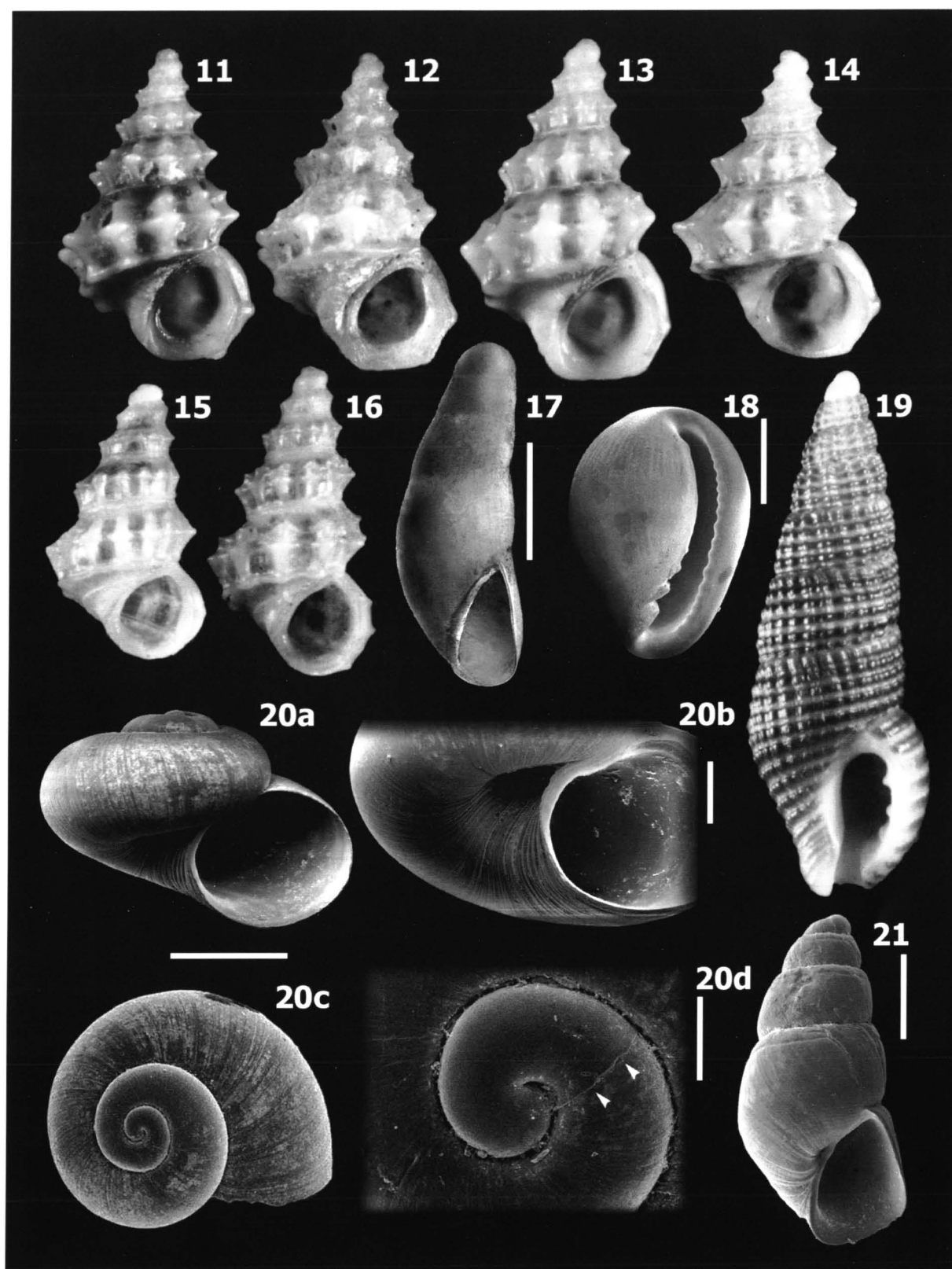
Familia EULIMIDAE H. Adams & A. Adams, 1853

Vitreolina cionella (Monterosato, 1878)
(Fig. 17)

Material examined

Sample A, 1 sh. (LPT coll.); Chafarinas Is. (Mediterranean Morocco), sediment 120 m, 1 sh. (IN coll.); "Cock Pit" submarine cave, Capo Palinuro (Southwest Italy), sediment 4-6 m, 1 sh. (lost); "Spiaggia della Speranza" beach, Alghero (Northwest Sardinia), sediment 4-6 m, 1 sh. (LPT coll.); Cannitello, Villa San Giovanni (Southwest Italy), sediment 30 m, 1 sh. (LPT coll.).

Remarks - In a previous paper (TRINGALI, 1996) I have already recorded a single shell from Cala Iris. The same shell is here



Figs. 11-14: *Alvania tessellata* (Weinkauff), from the form with evident upper row of knobs, to the form without upper row, respectively from samples B, A, A, and A, (h.: 3.6; 3.6; 3.8; and 3.5 mm). Figs. 15-16: *Alvania pagodula* (B.D.D.), with either one or two rows of knobs, Gaeta, Latina (West Italy), on brown algae 2 m (h.: 2.7, and 3.0 mm). Fig. 17: *Vitreolina cionella* (Monterosato), sample B (SEM photo on uncoated sample). Fig. 18: *Granulina vanharenii* (van Aartsen, Menkhurst & Gittenberger), sample D. Fig. 19: *Chauvetia* cf. *retifera* (Brugnone), sample B (h.: 10.7 mm). Figs. 20a-d: *Hyalogyra zibrowii* Warén, sample D (arrows point to the protoconch/teleoconch scar). Fig. 21: *Brachystomia improbabilis* (Oberling), sample D. Scale bars: 100 μ m (Fig. 20d); 200 μ m (Fig. 20b); 400 μ m (Fig. 17); 500 μ m (Figs. 18, 20a, 20c, 21).



SEM figured (uncoated shell). Note that the shell figured by GIANNUZZI-SAVELLI et al. (1997: 105, fig. 297) as collected at «Al Hoceoma» (sic: = «Al Hoceima») is actually a second shell found at Cala Iris, sample A (CS coll.; Carlo Smriglio, personal communication). This minute species is uncommon, but it is known for the whole Mediterranean Sea (GAGLINI, 1992; TRINGALI, 1996).

Familia BUCCINIDAE Rafinesque, 1815

Chauvetia cf. *retifera* (Brugnone, 1880)
(Fig. 19)

Material examined

Chauvetia cf. *retifera* – the holotype of *Lachesis retifera* has still not be found in the MTRS (lost ?); sample B, 1 sh. (RV coll.); Fuengirola, Malaga (South Spain), sediment 2 m, 2 shs. (IN coll.). *Chauvetia lefebvrei* – sample A, and D, 3 shs. (LPT, and RA coll.); «Isola delle Correnti» beach, Capo Passero (Southeast Sicily), sediments 18 m and 25 m, 5 shs. (RR coll.); Capo Passero, Siracusa (Southeast Sicily), sediments 15 and 25 m, 3 shs. (RR coll.); Favignana Is. (Egadi Islands), sediment 2 m, 2 shs. (RV coll.); Levanzo Is. (Egadi Islands), sediment 21 m, 1 sh. (RR coll.); «Cattedrale II» and «Cock Pit» submarine caves, Capo Palinuro (Southwest Italy), sediments 17 m and 4-6 m, 41 shs. (LPT, RA and MP colls.); Sant'Antioco, Cagliari (South Sardinia), beached sediment, 3 shs. (RR coll.).

Remarks - Here Brugnone's name is tentatively adopted for the species usually named *Chauvetia pellisphocae* (Reeve, 1845). *Pleurotoma pellisphocae* cannot actually apply to the present species, being a West Indian turrid (Referee communication, basing on the type material in the NHML). BRUGNONE (1880: 111; pl. I, fig. 6) described and figured *Lachesis retifera* on a fossil shell (holotype) from Giannettello, near Caltanissetta (Sicily). Although he considered *L. retifera* as coming from a Pliocene deposit, this is arguably a Pleistocene fossil. MONTEROSATO (1884: 793; 1889b: 117) adopted the name for a Recent *Chauvetia* species from the Atlantic coasts of Morocco and Spain, which could match «*Chauvetia pellisphocae*» sensu auctores. On the other hand, PALLARY (1902: 13) doubted of the synonymy of *Chauvetia retifera* and the so-called *Chauvetia pellisphocae*.

The MTRS includes the Brugnone coll., but I have so far failed to find there the holotype or further material hand labelled as «*Lachesis retifera*» by Brugnone or Monterosato. An evident disorder affects all the drawers which should contain the material of *Chauvetia* together with the turrids, like many other drawers in the MTRS. MICALI (1999: 59-60) listed *Lachesis retifera* among the synonyms of *Chauvetia pellisphocae*, but this conclusion seems simply based on the original description of *L. retifera*, and on Monterosato's opinion, rather than on original material of Brugnone. In fact, he did not mention the holotype or other material of *L. retifera* from the MTRS in the note on *Chauvetia pellisphocae* (MICALI, 1999: 59-60). It is thus possible that the holotype of *L. retifera* is lost. Noteworthy, *Folineaea*

dolioliformis MONTEROSATO, 1884 (: 793), is an unavailable name, being originally published as a synonym of *Lachesis retifera* (ICZN, 1999: Art. 11.6), and the infrasubspecific names of varieties by MONTEROSATO (1889b: 117), as such are unavailable too (ICZN, 1999: Art. 45). *Chauvetia elongata* F. Nordsieck & García-Talavera, 1979 (NORDSIECK & GARCÍA-TALAVERA, 1979: 141; pl. XXXIII, fig. 4), based on Canarian material, is possibly at disposal for this species, and should be checked, but the name by Brugnone is older, and was introduced by an original description and a figure which fit the present species. Therefore I prefer provisionally to adopt this latter name.

SABELLI et al. (1990-1992: 399) regarded as doubtful the occurrence of this gastropod in the Mediterranean Sea. Quoted as either *retifera* or *pellisphocae*, it is recorded from several localities of the Atlantic coast of Morocco: Tanger, Casablanca, Magazan, Mogador (= Essaouira), and Agadir (MONTEROSATO, 1884: 793; 1889b: 117; DAUTZENBERG, 1917: 66; PALLARY, 1920: 42; unnumbered pl., fig. 9; PASTEUR-HUMBERT, 1962: 87; NORDSIECK, 1976: 4). Also, the record of *C. pellisphocae* from the Bay of Algeçiras, Spain, by VAN AARTSEN et al. (1984: 36; 118, fig. 173) is not properly Mediterranean. As noticed by VAN AARTSEN et al. (1984: 36) the shell figured by ROLÁN (1983: 242, fig. 219) as *Chauvetia lefebvrei* (Maravigna, 1840) from Vigo (Northwest Spain), actually belongs to «*Chauvetia pellisphocae*» sensu auctores, and this is a further Atlantic record. Also MONTEROSATO (1884: 793; 1889b: 117) had quoted this species for Vigo, as well as from Gibraltar and the Asturias. Recently MICALI (1999: 59, as «*Chauvetia pellisphocae*») recorded it from Ceuta, Algeçiras and Fuengirola (Malaga), the latter being a fully Mediterranean locality.

The finding from Cala Iris is a further record of this species inside the Western Mediterranean waters. The examination of the samples of sediment showed also the occurrence of *C. lefebvrei*, which is a similar, but clearly distinct species (see, e.g., MICALI, 1999: 59; 54, figs. 7, 12).

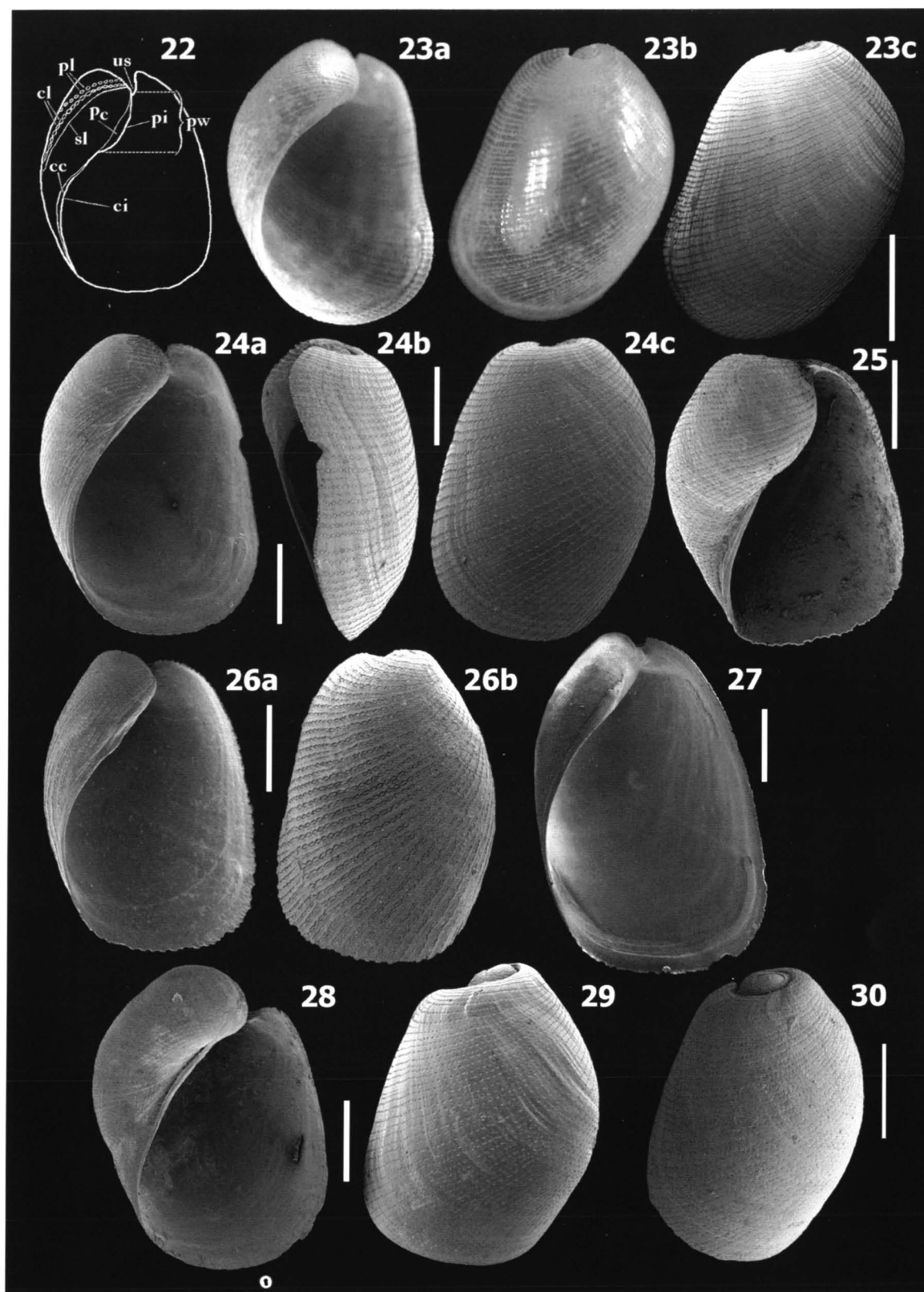
Familia MARGINELLIDAE Fleming, 1828

Granulina vanhareni (van Aartsen, Menkhorst & Gittenberger, 1984)
(Fig. 18)

Material examined

Samples A, B, and D, 2 spms. (partially preserved) + 13 shs. (IN, LPT, MP, RA, RR, and SF colls.); Punta Canero, Algeçiras (South Spain), beached sediment, 1 sh. (LPT coll.). Northern beach of Getares, Algeçiras (South Spain), beached sediment, 18 shs. (IN, LPT, RR, and RV colls.).

Remarks - Described from the Bay of Algeçiras (VAN AARTSEN et al., 1984: 40-41; 121, fig. 200), this species has been discussed in the review of the Mediterranean and Northeast Atlantic species of the genus *Granulina* Jousseuame, 1888, by GOFAS (1992: 21-23), considering its range confined strictly around the Strait of Gibraltar.



Figs. 22-30: *Philine* shells - Fig. 22: *Philine* schematic shell, in order to define some terms: cc: columellar (portion of the) callus; ci: columellar (portion of the) inner lip; cl: catenoid line (= chain-like row of pits); pc: parietal (portion of the) callus; pi: parietal (portion of the) inner lip; pl: pitted line (= row of loose pits); pw: penultimate whorl; sl: simple line (= line not made by pits); us: upper sinus. Figs. 23a-c: *P. iris* n. sp., holotype (ZMR), sample D (h.: 2.8 mm) (Figs. 23a-23b: light photos; Fig. 23c: SEM photo on uncoated sample). Fig. 24a-c: idem, paratype (ZMR), sample D. Fig. 25: *P. condensa* van der Linden, Palermo (Sicily), unrecorded depth (MTRS, box 16129). Figs. 26a-b: *P. catena* (Montagu), sample D. Fig. 27: idem, Siracusa (East Sicily), unrecorded depth. Fig. 28: *P. punctata* (J. Adams), Golfo di Napoli (Southwest Italy), unrecorded depth. Fig. 29: idem, same data of Fig. 28. Fig. 30: idem, Nettuno, Roma (West Italy), beached sediment. Scale bars: 500 μ m (Figs. 23a-b, 24a-c, 25, 26a-b, 28, 29, 30); 1.0 mm (Figs. 23c, 27).



Although *G. vanhareni* is not common within the material of Cala Iris, it is present in all the samples of sediment, and 2 badly preserved specimens were found.

Subclassis HETEROBRANCHIA J.E. Gray, 1840

Familia HYALOGIRINIDAE Warén & Bouchet, 1993

Hyalogyra zibrowii Warén in Warén, Carrozza & Rocchini, 1997

(Figs. 20a-d)

Material examined

Sample A, 1 sh. + 1 frg.; sample D, 5 shs. (LPT, MP colls.).

Remarks - The original description of this heterobranch gastropod was based on empty shells from a submarine cave of the Hyères Islands, South France (WARÉN et al., 1997: 60-61; 66, figs. 17-20). The shells from Cala Iris are white opaque, their teleoconchs showing a somewhat silky shine, whereas the protoconchs are still translucent, with a nearly vitreous appearance. The shell of *H. zibrowii* was described as transparent, but the material from Cala Iris could possibly lose its original shine by lying in the sediment. The other shell features fit completely the morphology of *H. zibrowii*.

Familia PYRAMIDELLIDAE J.E. Gray, 1840

Brachystomia improbabilis (Oberling, 1970) [n. comb.]

(Fig. 21)

Material examined

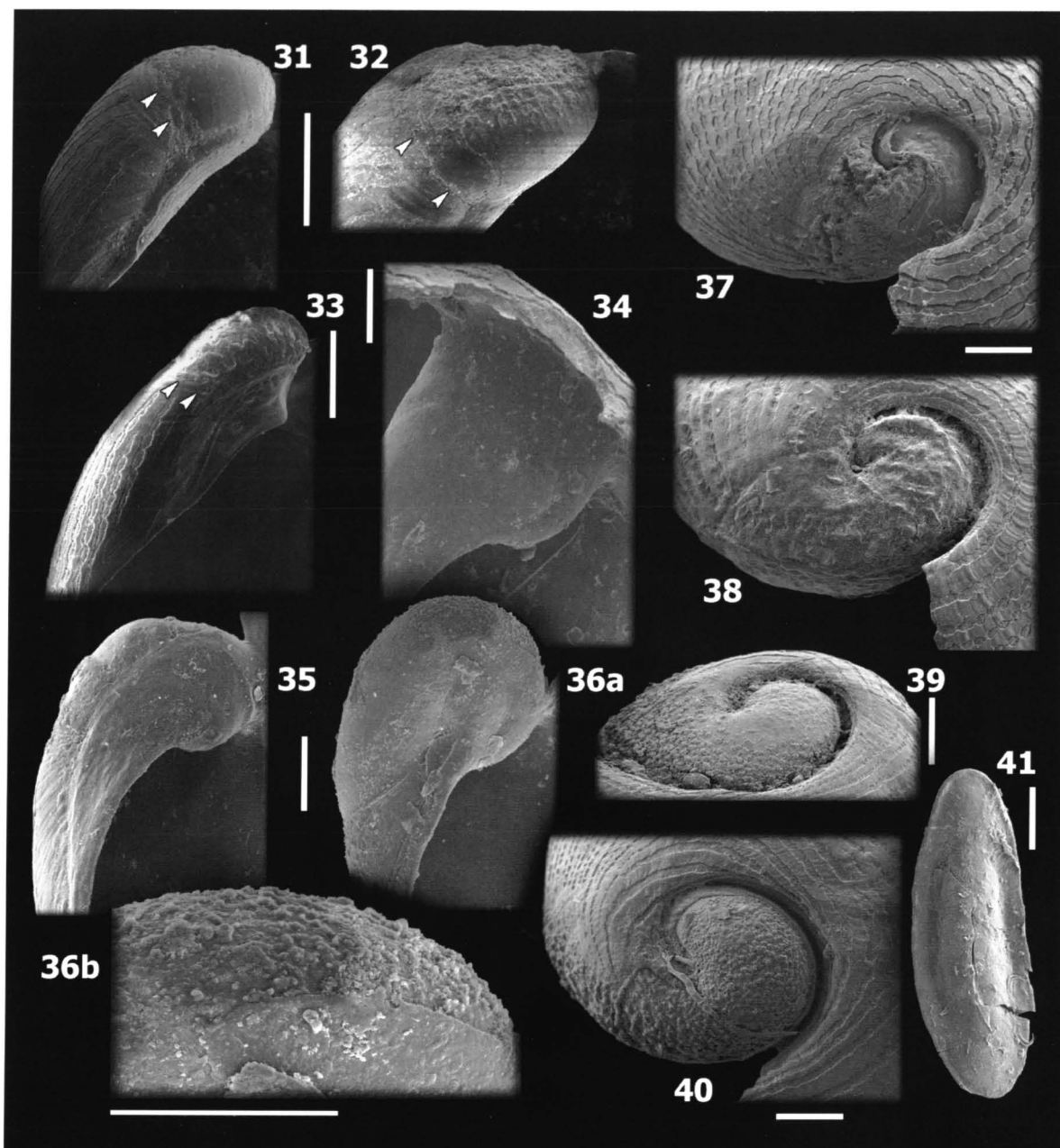
Brachystomia improbabilis - the type material of *Odostomia improbabilis* was not found in the NHMB, and it is apparently lost; "Plage de La Franqui" beach, Aude Department (South France), rest of the sample of beached sediment originally containing the type material (Oberling & Gerber legerunt, March 18th, 1966), 2 shs. (NHMB); sample D, 1 sh. (LPT coll.); Campomarino, Taranto (Southeast Italy), sediment 6 m, 3 shs. (LPT, and SF coll.); Torre Astura, Roma (West Italy), beached sediment, 1 sh. (LPT coll.); "Secche di Tor Paterno" shoal, Roma (West Italy), sediment 15, and 20-25 m, 9 shs. (IN and RR colls.); Santa Marinella, Roma (West Italy), *Posidonia oceanica* residuals from fishing nets, 1 spm. (LPT coll.); Santa Marinella, Roma (West Italy), sediment 16-22 m, 4 shs. (IN, and RR colls.); Capo Lina-ro, Roma (West Italy), sediment 14-17 m, 1 sh. (RR coll.); Bagni di Sant'Agostino, Civitavecchia (West Italy), beached sediment, 3 shs. (IN, and RR colls.); Procida Is., Napoli (Southwest Italy), sediment 4 m, 1 sh. (RR coll.). *Brachystomia striolata* - samples A, B and D, 5 shs. (LPT, RR and SF colls.); Soguksu, Aydinçik (South Turkey), sediment 10 m, 2 shs. (LPT coll.); Palaioikhóra (Crete Is.), sediment 10 m, 5 shs. (LPT, and SF colls.); Lampedusa Is. (Sicily Canal), sediments 18 m and 30 m, 6 shs. (IN, LPT, and RR coll.); Ponza Is. (Pontine Islands, West Italy), sediment 35 m, 2 shs. (RR coll.); "Secche di Tor

Paterno" shoal, Roma (West Italy), sediments 22-30 m, and 31 m, 5 shs. (RR coll.); Civitavecchia (West Italy), sediment 100 m, 2 shs. (RR coll.); Argentarola Is. (Tuscan Islands), sediment 55 m, 4 shs. (LPT coll.); Giannutri Is. (Tuscan Islands), sediments 48 and 54 m, 9 shs. (LPT, and RR colls.); Giglio Is. (Tuscan Islands), sediment 32 m, 4 shs. (RR coll.); L'Île Rousse (Northwest Corse), sediment 7 m, 1 sh. (RV coll.).

Remarks - AMATI (1987) noticed that *Odostomia improbabilis* Oberling, 1970, is the same as *Odostomia verduini* van Aartsen, 1987. Although neglected in literature, the name by Oberling is the oldest available for this species (ICZN, 1999: Art. 23). On the other hand, PEÑAS & ROLÁN (1999: 88) rejected the synonymy of *O. verduini* and *O. improbabilis*, regarding the latter name as proposed in a conditional way by OBERLING (1970), and therefore invalid (ICZN, 1999: Art. 15.1). Arguably, they refer to this sentence in the original description: «Il est probable qu'il s'agit là d'une nouvelle espèce». However, as remarked by AMATI (1987), this sentence seems an evident expression of sincere modesty by the Swiss author, rather than a doubt on the validity of the new species. Thus, I prefer to share Amati's opinion and regard *Brachystomia improbabilis* (Oberling, 1970), as a valid, available new combination. The names of new species introduced by J.-J. Oberling have been overlooked by most malacologists in these thirty years, although some of them are to adopt on account of the law of priority. Marco Oliverio ("La Sapienza" Roma University) and the writer are working on a revision of the species described by Oberling, based on the types (NHMB), considering that Oberling's systematic work, although episodic, ought to be restored in its own merits.

The shell of this species is mainly characterised by a marked subsutural furrow (OBERLING, 1970: 5), deeper than on the similar *Odostomia striolata* Forbes & Hanley, 1850. Evident spiral lines usually run the whole teleoconch surface of the latter, whereas the spiral lines are faint on *O. improbabilis*. The prosocline, very oblique and flexuous growth lines of *O. improbabilis* are quite characteristic. I consider that the close resemblance with *Brachystomia eulimoides* (Hanley, 1844), and the other species of *Brachystomia* Monterosato, 1884 - type species: *Odostomia rissoides* Hanley, 1844 (= *O. scalaris* McGillivray, 1843), subsequent designation by CROSSE (1885: 141) - make both *Odostomia improbabilis* and *Odostomia striolata* as members of this genus, even basing on the shell morphology alone. Thus, I propose as new combinations both *Brachystomia improbabilis* (Oberling, 1970) and *Brachystomia striolata* (Forbes & Hanley, 1850).

Brachystomia improbabilis inhabits the whole Mediterranean Sea. It is known from southern Spain (VAN AARTSEN, 1987: 5; PEÑAS et al., 1996: 54; 49, figs. 125-126), and the neighbouring Atlantic waters (VAN AARTSEN et al., 1998; PEÑAS & ROLÁN, 1999: 87-88; fig. 233), thus, it is not surprising to find it also along the Mediterranean coast of Morocco. This species, however, seems rare at Cala Iris: I examined a single shell from the sediment.



Figs. 31-40: *Philine* protoconchs - Fig. 31: *P. catena* (Montagu), sample D, lateral view; Fig. 32: *P. iris* n. sp., paratype (ZMR), sample A, lateral view; Fig. 33: *P. intricata* Monterosato, sample D, lateral view; Fig. 34: *P. iris* n. sp., sample D, lower view of a broken shell; Fig. 35: *P. catena* (Montagu), sample D, lower view; Fig. 36a: *P. punctata* (J. Adams), Palmaiola Is., near Elba Is. (Tuscan Islands), sediment 24 m, lower view; Fig. 36b: idem, detail of the apical sculpture; Fig. 37: *P. catena* (Montagu), sample D, upper view; Fig. 38: *P. iris* n. sp., paratype (ZMR), sample D, upper view; Fig. 39: *P. punctata* (J. Adams), Nettuno, Roma (West Italy), beached sediment, upper view; Fig. 40: idem, Palmaiola Is. (Tuscan Islands), sediment 24 m, upper view. Fig. 41: *P. intricata* Monterosato, sample A, (paired ?) gizzard plate. Arrows point to the protoconch/teleoconch scar. Scale bars: 100 µm (Figs. 34, 35, 36a-b, 37, 38, 39, 40); 200 µm (Figs. 31, 32, 33, 41).

Subclassis OPISTHOBRANCHIA Milne-Edwards, 1848
Familia PHILINIDAE J.E. Gray, 1850

Philine intricata Monterosato, 1884
(Figs. 33, 41, 48, 49a-b)

Material examined

Type material: Palermo (Northwest Sicily), 28 shs. + several

frgs. (syntypes) (MTRS, box 16301); sample A, 1 partially preserved spm. (MP coll.); samples B, and D, 4 shs. (LPT coll.); Northern coast of Astipálaia Is. (Cyclades Islands), brown algae 4-5 m, 1 sh. (RV coll.); Palaioikhóra (Crete Is.), sediment 10 m, 1 sh. (LPT coll.); "Isola dei Conigli" beach, Lampedusa Is. (Sicily Canal), beached sediment, 1 sh.; Sorrento, Napoli (Southwest Italy), 50-60 m, 2 shs. (IN coll.); Napoli (Southwest Italy), unrecorded depth, 1 sh. (MTRS, box 16301); Santa Mari-



nella, Roma (West Italy), sediment 25 m, 3 shs. (IN coll.); Capo Vita, Elba Is. (Tuscan Islands), sediment 40 m, 1 sh. (LPT coll.); Palmaiola Is., (Tuscan Islands), sediment 24 m, 2 shs. (LPT coll.); "Spiaggia della Speranza" beach, Alghero (Northwest Sardinia), sediment 4-6 m, 1 sh. (LPT coll.); Punta Carnero, Algeciras (South Spain), beached sediment, 1 sh. (IN coll.); Northern beach of Getares, Algeciras (Southern Spain), beached sediment, 4 shs. (IN coll.); Torres de la Peña, Tarifa, (South Spain), beached sediment, 3 shs. (IN coll.); 30 km South of Rabat (Atlantic Morocco), beached sediment, 4 shs. (IN coll.); El Aaiún (West Sahara), unrecorded depth, stomach contents of flatfishes, 2 shs. (IN coll.); El Poris, Tenerife Is. (Canary Islands), sediment 20 m, 1 sh. (LPT coll.); Lueva de Las, Corvinas (Tenerife Is.) 27 m, 1 sh. (LPT coll.); Punta Blanca, Puerto Santiago (Tenerife Is.), sediment 30 m, 7 shs. (LPT coll.); St. Raphael Is. (Azores Islands), 50 m, 2 shs. (MTRS, box 16301).

Remarks - The malacological literature has overlooked this small philinid gastropod until the recent works by GAGLINI (1991: 12-13; 20, unnumbered figs.), and VAN DER LINDEN (1994: 41-42; figs. 1-2; 44, figs. 3-6), which carefully described and figured the shell, GAGLINI (1991) publishing also the photo of a syntype. More recently, the type material of *P. intricata* in the MTRS (box 16301) has been documented by OLIVERIO & TRINGALI (2001). The records in the literature show the occurrence of *P. intricata* in the Western and Central Mediterranean Sea, as well as in the Northeast Atlantic (MONTEROSATO, 1875: 47; 1878: 111; 1917: 27; SYKES, 1905: 324; LOCARD, 1905: 35; GAGLINI, 1991; VAN DER LINDEN, 1994; 1995: 73-74; MORENO & TEMPLADO, 1998: 44). Here the species is recorded also for the Eastern Mediterranean basin, namely from Crete Is., and Astipálaia Is. (Cyclades) (Figs. 49a-b) (see above the Material examined).

The smallest shells found in the samples B and D are more square-shaped than the largest ones, as e.g. the syntype figured by GAGLINI (1991), the latter being broader toward the base. This is, however, characteristic of philinid shells: large, full-grown shells show a less even outline, are larger toward the base than the smallest ones (probably young or subadults), shrinking toward the top, frequently with a weak recess just above a half of the height. The other features of the Moroccan shells fit *P. intricata* morphology at all.

Coarse knobs, randomly arranged, sculpture the protoconch of *P. intricata*, whose shape is difficult to define: the general look of the protoconch is hammered-like, suggesting an unfinished sculpture. This kind of sculpture is not characteristic of *P. intricata* alone: it may be noticed also on some congeneric species, although usually less coarse (cf. the following note). Further species of *Philine*, e.g. *Philine aperta* (Linné, 1767), *Philine quadrata* (S.V. Wood, 1839), *Philine monterosati* Monterosato, 1874, ex Jeffreys MS., display smooth protoconchs with more whorls.

Nothing is reported about the external morphology of the animal, its anatomy and/or ecology. However it is remarkable that the shell figured as «*Philine catena* (Montagu, 1803)» by VAYSSIÉRE (1885: pl. 1, fig. 26) is actually *P. intricata*, as shown

by the characteristic fold on the columella. Therefore, the few anatomical characters noticed on his material should be ascribed to the latter, rather than to *P. catena*. Anyway, the gizzard plate figured by VAYSSIÉRE (1885: pl. 1, fig. 30) seems to match that figured herein (Fig. 40), obtained from the specimen of the sample A (shell height = 2 mm ca.). Such a specimen was nearly destroyed within the sediment, reduced to few dry remains, aggregated with debris. Thus, I succeeded in recovering the figured plate only. It is evenly straight and slender in shape, with a protuberance on the middle of the inner surface, whitish coloured, with a light brown conchiolin layer more evident on the edges. It seems composed by calcareous substance, but it has not been submitted to any chemical test.

Along with *P. intricata*, very few shells and/or fragments of the following philinid species were found within the samples of sediment: *P. angulata* Jeffreys, 1867, *P. aperta* (Linné, 1767), *P. catena* (Montagu, 1803), *P. denticulata* (J. Adams, 1800) including also 2 dry, badly preserved specimens (sample D), *P. punctata* (J. Adams, 1800), and an undescribed species. This latter is the commonest *Philine* in the samples, and although similar to both *P. punctata* and *P. catena*, it is clearly distinct. It is herein described as new.

Systematic position

Ordo Cephalaspidea P. Fischer, 1883 :

Superfamilia Philinoidea J.E. Gray, 1850 :

Familia Philinidae J.E. Gray, 1850 :

Genus *Philine* Ascanius, 1772 :

Philine iris n. sp.

(Figs. 23a-c, 24a-c, 32, 34, 38, 42, 43)

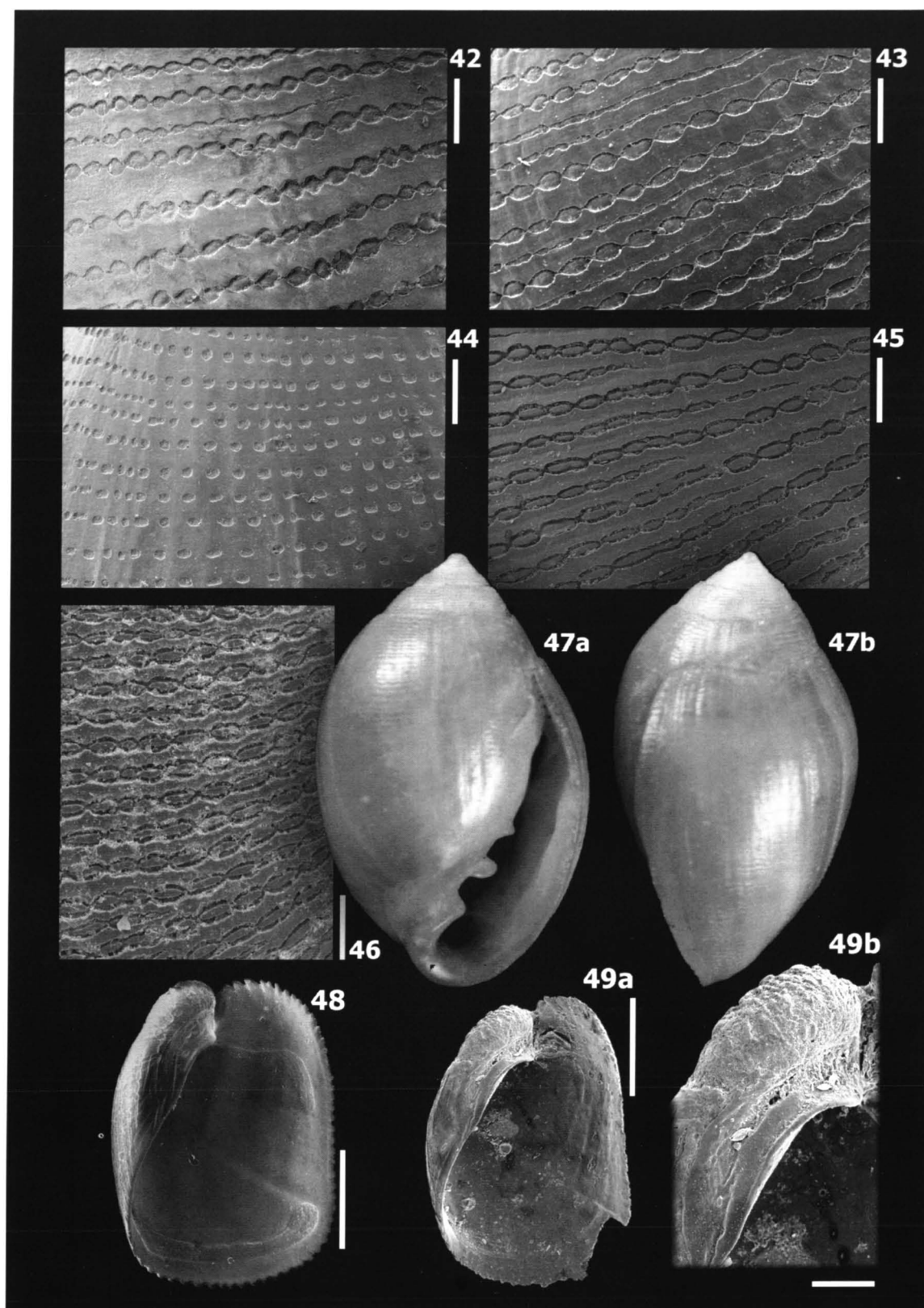
Type material - The holotype and 28 paratypes (complete shells or damaged ones, yet easy to identify) from Cala Iris (type locality), Torres de Alcalá (Mediterranean Morocco), 2-10 m, deposited as follow:

public collections - holotype + 3 paratypes: ZMR; 2 paratypes: MNHN; 2 paratypes: NHML; 2 paratypes: SMNH; 2 paratypes: ZMB; 2 paratypes: ZMUC; private collections - 1 paratype: IN; 2 paratypes: LPT; 1 paratype: MP.

Furthermore there are 10 paratypes provisionally recovered in the LPT coll., at disposal of Public Scientific Institutions, which will ask for them.

Material examined

Philine iris - the type material + 12 damaged shs. from the samples A, B, and D; 1 sh. labelled as «*Philine Nizza* ?» by Monterosato, thus possibly from Nice, South France (MTRS). *Philine catena* - more than 1 hundred of shs. within lots coming from the whole Mediterranean range of the species, in several colls.; "Simius" beach, Villasimius (Southeast Sardinia), brown algae 2-3 m, 2 spms. (LPT coll.); unspecified locality, England (U.K.), 2 shs. (MTRS). *Philine punctata* - sample D, 2 shs. (LPT



Figs. 42-46: *Philine* details of sculpture from about a half of the body whorl – Fig. 42: *P. iris* n. sp., paratype (ZMR), sample D; Fig. 43: idem, holotype (ZMR), sample D; Fig. 44: *P. punctata* (J. Adams), Golfo di Napoli (Southwest Italy), unrecorded depth; Fig. 45: *P. catena* (Montagu), sample D; Fig. 46: idem, Soguksu, Aydinlik (South Turkey), *Posidonia oceanica* sediment 9 m. Figs. 47a-b: *Pseudomelampus kochi* (Pallary), sample A (h.: 4.8 mm). Fig. 48: *P. intricata* Monterosato, sample D. Figs. 49a-b: idem, Southern coast of Astipália Is. (Cyclades Islands), empty shell within brown algae 2-3 m. Scale bars: 100 μ m (Figs. 42, 43, 44, 45, 46; 49b); 400 μ m (Fig. 48, 49a).



coll.); Capo San Vito (Northwest Sicily), unrecorded depth, 2 shs. (MTRS, box 16302); Golfo di Napoli (Southwest Italy), unrecorded depth, 11 shs. + some frgs. (MTRS, box 16322); Nettuno, Roma (West Italy), beached sediment, 2 shs. (IN coll.); Palmaiola Is. (Tuscan Islands), sediment 24 m, 2 shs. (LPT coll.); Capo Vita, Elba Is. (Tuscan Islands), sediment 40 m, 1 sh. (LPT coll.); (Pleistocene ?) fossil deposits of Ficarazzi, Palermo (Northwest Sicily), 1 sh. (MTRS, box 16304); Shetland Islands (U.K), unrecorded depth, 2 shs. (MTRS, box 16302); unspecified locality, England (U.K), unrecorded depth, 2 shs. (MTRS, box 16302). *Philine condensa* - Palermo (Northwest Sicily), unrecorded depth (probably circalittoral muddy bottom), 4 shs. + 2 frgs. (MTRS, box 16129, labelled «Pal. 1880» by Monterosato). *Philine arenosa* - El Aaiún (West Sahara), 50-60 m, stomach contents of a flatfish, 1 sh. (IN coll.).

Type locality - Cala Iris, Torres de Alcalá (= "Torres el Kal'a", 35°10' N, 04°19' W - Fig. 1).

Description - (Fig. 22 shows some terms hereby employed). Typical philinid shell, thin, translucent, very small, usually with height = 1.7-2.0 mm, and width = 1.2-1.5 mm (the holotype attains the largest size: h. = 2.8 mm, w. = 2.3 mm), moderately slender (h./w. = 1.17-1.35). The outline of young and subadult shells is more evenly egg-shaped than that of adult ones. The largest shells are more oblique, and broader toward the base, slightly shrinking just above a half of the shell height. Protoconch diameter 300 µm ca.; the protoconch is partially concealed by the body whorl, and it cannot be observed from a lateral side on adult shells; in early post-metamorphic shells the scar between protoconch and teleoconch is evident. As previously noticed for *P. intricata*, the appearance of the protoconch upper surface is reminiscent of an unfinished sculpture: the apical sculpture consists of coarse granules, randomly arranged, close set on the upper part of the protoconch, whereas the lower part is quite smooth. The large aperture, characteristic of *Philine*, is somewhat oblique, very wide and quite rounded below, restraining toward the top. The body whorl is very large, somewhat slender, with moderately straight sides toward the top. Laterally observed it is evenly rounded, but not very swollen, having its maximum dpt. slightly below a half of the height. The height of the penultimate whorl is about 1/4-1/5 of the shell height. The columellar callus is thin. The contour of the internal lip is rather flexuous, both its columella and parietal parts being remarkably and evenly arched. The peristome is weakly serrate, and the notches are more evident on the upper edge of the peristome. The peristome is more or less protruding above the shell top on most shells. Joining the penultimate whorl, the peristome makes a narrow upper sinus. Laterally observed it is prosocline and flexuous, with an evident recess in the middle. The growth lines, similar in shape to the peristome, are barely marked, and prosocline. The surface is also sculptured by small pits, well marked, moderately oblong in shape, with a major diameter of 29-47 µm, and a minor diameter of 17-29 µm ca. They are linked into chain-like rows, or "catenoid lines", which run on the whole teleoconch surface. On the body whorl

of the holotype there are 65 catenoid lines, whereas on average-sized shells (2 mm of height ca.) they are about 50-55. Each spiral line starts as a flexuous simple line, gradually attaining a chain-like look; therefore some simple lines are scattered among the catenoid lines. The external morphology of the living animal, as well as anatomical and/or ecological features are unknown (but see below, the Remarks).

Distribution - *Philine iris* is so far known with certainty only from the type locality, with some doubts about its possible presence in the waters of Nice (South France). Nevertheless, Ceuta and the localities of the South Spain quoted by MORENO & TEMPLADO (1998: 45) for «*Philine* sp.» possibly belong to the range of the new species, as perhaps the Maltese Islands (see Remarks below). Probably it inhabits muddy and sandy bottoms in continental shelf waters.

Etymology - The name of the type locality (Cala Iris, viz. "Iris Cove") inspired the name of the new species.

Remarks - As previously noticed, the holotype is the largest shell of *P. iris* in the lot of Cala Iris. As typical of full-grown philinid shells it is broader toward the base, with a weak, but evident recess at about a half of the height, and shows a more oblique outline than the smaller shells.

The small-average size paratypes seem to match with the «*Philine* sp.» recorded by MORENO & TEMPLADO (1998: 45; 42, fig. 3; 47 figs. 15-20) for South Spain and Ceuta. If this is right, as I am inclined to think, the external morphology of the animal, and radular characters noticed in the work by the Spanish authors should be ascribed to *P. iris*. They figured the living animal, which is reddish-orange, a peculiar colour pattern for a Northeast Atlantic-Mediterranean philinid species. The radula has the formula 2.1.0.1.2, and its lateral teeth are serrated, as usual on philinid gastropods. Note also that it would lack the gizzard. A reddish-orange *Philine* was also figured by MIFSUD (1996: 31, fig. 30). It was identified as *Philine quadrata* (S.V. Wood, 1839), the latter species, however, has a whitish body (cf. JEFFREYS, 1867: 452). Therefore the Maltese *Philine* could be the same species figured by MORENO & TEMPLADO (1998). The single shell in the MTRS is possibly from Nice (see above the Material examined), but its provenance is doubtful, according to the original label. It is in poor condition, but it seems conspecific with *P. iris*'s material.

Among the Northeast Atlantic-Mediterranean species, *Philine catena* and *Philine punctata* superficially resemble *P. iris*. *Philine catena* was also found at Cala Iris, samples A, B, and D. Its shell (Figs. 26a-b, 27, 31, 35, 37, 45, 46) may attain a much larger size than *P. iris*, even double. Despite its outline may vary, it is more abruptly restrained above a half of the height, with more straight sides. The lower part of its aperture is less evenly rounded than *P. iris*, being somewhat squared. In lateral view *P. catena* is not rounded: having its maximum dpt. much higher placed than *P. iris*, close to the top, it has a nearly triangular outline, and it is less swollen. The upper edge of the peristome of *P. catena* is less protruding above the top, and makes



with the penultimate whorl a less narrow upper sinus. Its internal lip is less flexuous - i.e. it is less marked the transition from its parietal part to the columellar one. The height of the penultimate whorl of *P. catena* does not attain 1/5 of the shell height being proportionally less high than that of *P. iris*. The chain-like sculpture of *P. catena* does not match with *P. iris*: the pits of *P. catena* (observed on the body whorl at about a half of its height) are slightly larger, and more slender; and on *P. catena* each spiral line develops more abruptly as chain-like. The protoconch of *P. catena* is smaller than *P. iris*, with a diameter of 1.8-2.0 μm ca., but they share the coarse sculpture on the upper surface.

Philine punctata (Figs. 28, 29, 30, 36a-b, 39, 40, 44) displays a somewhat variable shell, run by rows of loose pits, small, rounded, and dot-like, which do not match with the chain-like rows of *P. iris*. Moreover the protoconch of *P. punctata* has a slightly larger and more protruding nucleus, and a less coarse sculpture than *P. iris*. The general shape of the shell is similar, but *P. punctata* is more swollen in lateral view. Moreover its growth lines are less flexuous. The Atlantic *Philine condensa* VAN DER LINDEN, 1995 (: 71-73; figs. 8-9; 76, fig. 16), described on material of the Azores and Canary Islands, is here recorded for the first time from the Mediterranean, on account of few empty shells from Palermo in the MTRS (see above the Material examined). The shell of *P. condensa* (Fig. 25) shares with *P. iris* the small size, a not protruding spire, and a catenoid sculpture. However *P. condensa* is a more stumpy and swollen species, and it has a flatter top. Its aperture is less slender and less oblique. The upper margin of the peristome does not protrude above the shell top. The height of the penultimate whorl is slightly less than 1/2 of the shell height, being proportionally higher than that of *P. iris*. The chain-like sculpture is more close set and fine on the surface of *P. condensa*. Moreover *P. condensa* is known from circalittoral-bathyal waters only. *Philine arenosa* VAN DER LINDEN, 1995 (: 67-69; figs. 3-5; 76, fig. 14), was described from Cape Verde Islands, and it is also known from West Sahara (see above the Material examined). It is vaguely similar to *P. iris*, but its shape is more rounded and swollen, with a flatter top, and it displays a characteristic spiral sculpture of flexuous simple lines.

A careful examination of philinid material in Mediterranean and Northeast Atlantic collections will possibly show a wider geographic range for the new species.

Subclass PULMONATA Cuvier, 1817
Familia ELLOBIIDAE A. Adams, 1855

Pseudomelampus kochi (Pallary, 1900)
(Figs. 47a-b)

Material examined

Pseudomelampus kochi - sample A, 1 sh. (RV coll.). *Pseudomelampus exiguus* - a mixed lot of 12 shs., from Madeira Is. and Selvages Islands, labelled by R.B. Watson (MTRS, box 6918).

Remarks - PALLARY (1900: 241-242; pl. VI, fig. 9) described

Alexia (Pseudomelampus) kochi on material from Krichtel Beach, near Oran (Algeria), together with *Alexia (Pseudomelampus) jolyi*, this latter collected at Algiers. It is likely that they are not specifically distinct, probably *P. jolyi* being a slightly larger and more swollen form of *P. kochi*. The name *P. kochi* is here adopted, being the former introduced by PALLARY (1900), and that quoted by the subsequent malacological literature, whereas *A. (P.) jolyi* is in fact an overlooked name. PALLARY (1900: 240-241) introduced the subgenus *Pseudomelampus*, describing *P. kochi* and *P. jolyi*, and including also *Melampus exiguus* Lowe, 1835, of Madeira, and *M. biscayensis* H. Fischer, 1900, from the Bay of Biscay. THIELE (1931: 464) quoted *P. kochi* alone within the genus *Pseudomelampus*, arguably considering it the type and unique species of the genus. This view matches with a note by SABELLI et al. (1990-1992: 454) which pointed out *P. kochi* as the type species of *Pseudomelampus* by monotypy. However this does not fit PALLARY's (1900) text, where four *Pseudomelampus* species are quoted without any designation of a type species. In fact the type species of *Pseudomelampus* is *Melampus exiguus*, subsequently designated by MONTEROSATO (1906: 128).

However, the taxonomic distinction of the above mentioned species is not actually clear. I have examined some shells labelled by R.B. Watson as «*Melampus exiguus*», in a mixed lot of shells from both Madeira Is. and the Selvages Islands. These shells are variable in shape, but they look closely similar to the single shell found at Cala Iris. The latter is light-caramel brown coloured, with a paler colour on the apex, the columellar callus and the thickening inside the peristome. The most part of the examined shells of *P. exiguus* are smaller (average height: 3 mm ca.), with a more marked spiral sculpture. However, the largest one attains about the same size (h.: 4.6 mm) of the shell from Cala Iris, and displays a less evident spiral sculpture than the other shells in the lot, especially on the middle of the body whorl, being in fact difficult to distinguish from the shell of Cala Iris. GOFAS (1990: 119) noticed that *Pseudomelampus* specimens from the Azores Islands and the European mainland do not show clear morphological differences. In fact it cannot be excluded that *P. exiguus* and *P. kochi* - and possibly also *P. biscayensis* - are one and the same species, but to answer this question is far beyond the limits of the present work, where the name *P. kochi* is provisionally employed. Also the status of *Pseudomelampus* raises some problems: for instance, GERMAINE (1931: 564) regarded *Pseudomelampus* as a junior synonym of *Melampus* de Montfort, 1810. Anyway, basing on the record from Cala Iris, the known range of Pallary's species would also include the Mediterranean coast of Morocco.

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