

Article

“*Draculamyia*” *uraniae*: A New Small-Sized Bivalve from the Mediterranean Sea (Galeommatida, Lasaeidae)

Luigi Romani ¹, Stefano Bartolini ², P. Graham Oliver ³ and Marco Taviani ^{4,5,*}¹ Via delle Ville 79, I-55012 Capannori, Italy; luigiromani78@gmail.com² Via E. Zaccani 16, I-55012 Firenze, Italy; stefmaria.bartolini@alice.it³ National Museum of Wales, Cathays Park, Cardiff, Wales CF10 3NP, UK; graham.oliver@museumwales.ac.uk⁴ Istituto di Scienze Marine (ISMAR-CNR), Via Gobetti 101, 40129 Bologna, Italy⁵ Stazione Zoologica Anton Dohrn, Villa Comunale, 80121 Napoli, Italy

* Correspondence: marco.taviani@bo.ismar.cnr.it

Abstract: A new Galeommatid bivalve is described for the Mediterranean Sea, tentatively assigned to the elusive genus *Draculamyia* Oliver and Lützen, 2011. “*Draculamyia*” *uraniae* n. sp is described upon a number of dead but fresh and articulated specimens, plus many loose valves. Its distribution is almost basin-wide in the Mediterranean, and it possibly occurs in the adjacent Gulf of Cadiz. As for many members in Galeommatida, we hypothesize that “*Draculamyia*” *uraniae* lives as commensal upon a still-unknown host. The possible co-identity of the extant genus *Draculamyia* with the morphologically similar Pliocene *Glibertia* Van der Meulen, 1951, is discussed, although the lack of anatomical and genetic support leaves the problem open.

Keywords: mollusca; Mediterranean Sea; new species; *Draculamyia*; *Glibertia*; Galeommatida



Citation: Romani, L.; Bartolini, S.; Oliver, P.G.; Taviani, M. “*Draculamyia*” *uraniae*: A New Small-Sized Bivalve from the Mediterranean Sea (Galeommatida, Lasaeidae). *Taxonomy* **2021**, *1*, 142–151. <https://doi.org/10.3390/taxonomy1020011>

Academic Editor: Oleg Mandic

Received: 30 April 2021

Accepted: 2 June 2021

Published: 4 June 2021

Publisher’s Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The order Galeommatida constitutes a species-rich group of small bivalves, most of them commensal with other invertebrates [1]. The phylogeny and systematics within the Galeommatida have been the subject of a variety of taxonomic classifications, e.g., [2–7]. Recent work has clarified that Galeommatida are monophyletic, although the placement of the genera is yet far from being adequately assessed [1,8–10]. The Galeommatida are cosmopolitan in distribution, with many species inhabiting European waters [11,12], but our overall knowledge of them remains fragmentary. The first modern revisions were made by van Aartsen [13,14], followed by additional taxonomic descriptions and anatomical remarks [15–24]. In this context, Oliver and Lützen [25] described the new genus *Draculamyia*, from deep waters in the north-western Atlantic Ocean, characterized by peculiar anatomical features. Here, we describe a new species of Galeommatida from the Mediterranean Sea (Figure 1). Our finding is a further addition to the rich biodiversity of the Mediterranean mollusk fauna [26]. We tentatively place the new species in the genus *Draculamyia*, since it morphologically resembles the type species *Draculamyia porobranchiata* Oliver and Lützen, 2011. This attribution is provisional since the whole premise of the genus *Draculamyia* is mostly based on anatomical traits, rather than on shell characters. Updated taxonomy and nomenclature followed MolluscaBase [27], except where stated otherwise.

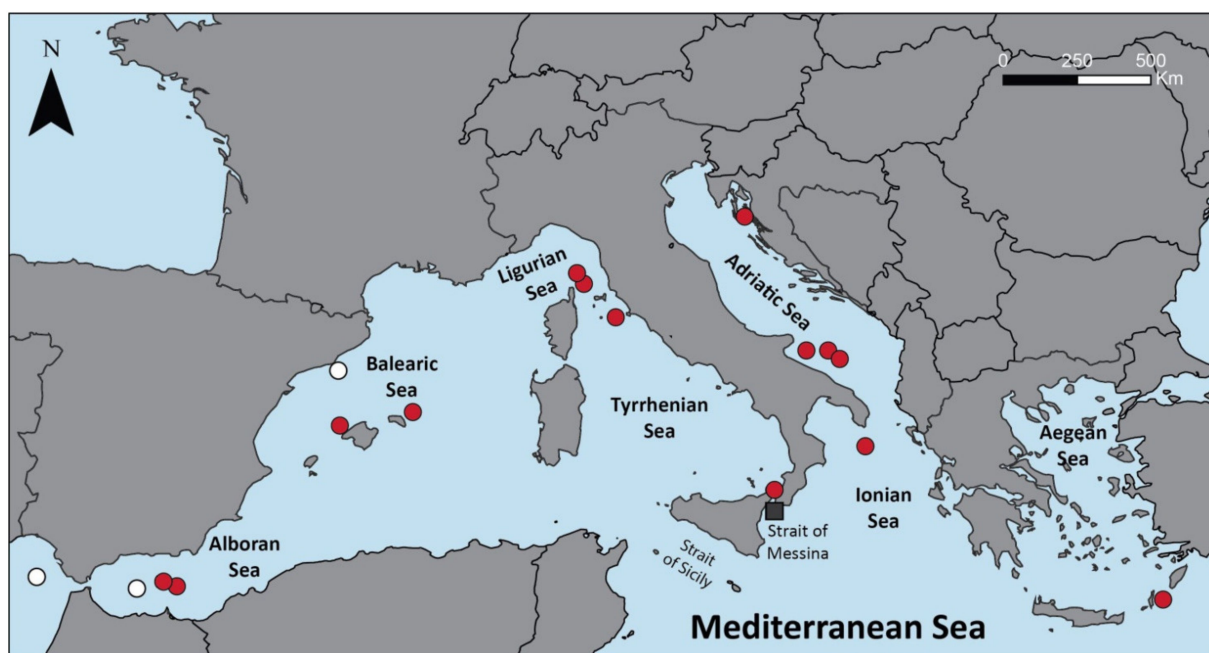


Figure 1. Distribution of *Draculamya uraniae* n. sp. Square: type locality; red circles: this study; white circles: literature records.

2. Results

2.1. Systematics

Class Bivalvia Linnaeus, 1758
 Subclass Autobranchia Grobden 1894
 Order Galeommatida Lemer, Bieler and Giribet, 2019
 Superfamily Galeommatoidea Gray, 1840
 Family Lasaeidae Gray, 1842
 Genus *Draculamya* Oliver and Lützen, 2011
 “*Draculamya*” *uraniae* new species (Figure 2)

2.2. Material Examined

2.2.1. “*Draculamya*” *uraniae* n. sp.

Holotype (MNHN-IM-2000-36654) and type locality: 1 sh, off Lazzàro (Motta San Giovanni, Reggio Calabria, Italy, 37°58′00.0″ N 15°39′00.0″ E), 70 m, L: 1.14 mm, in MNHN (Figure 2A,B). Paratype 1: 1 sh, off NW Gorgona Island (Livorno, Italy, 43°29′23.3″ N 9°49′27.3″ E), 180 m, in AP (Figure 2C–E). Paratype 2: 1 sh (immature), lo Scalone, Capo Peloro (Messina, Italy, 38°16′03.9″ N 15°39′26.1″ E), 48 m, L: 0.86 mm, in AR (Figure 2F,G). Paratype 3 (MZUB 60403): 1 sh (immature), off NE Capraia Island (Livorno, Italy, 43°16′08.5″ N 10°07′11.0″ E), 150 m, in MZB. Paratypes 4–5 (MZUB 60404, MZUB 60405): 1 LV and 1 RV, respectively, off Almeria (Spain) (COBAS station 08), 98–109 m, in MZB (Figure 2J–M). Paratypes 6–7 (MZUB 60406, MZUB 60407): 1 LV and 1 RV, respectively, off Mallorca Island (Spain) (COBAS station 86), 105 m (Figure 2H). Paratypes 8–9 (MZUB 60408, MZUB 60409): 1 LV and 1 RV, respectively, off Menorca Island (Spain) (COBAS station 89), 103 m, in MZB. Paratypes 10–11 (MZUB 60410, MZUB 60411): 1 LV and 1 RV, respectively, off Bari (Italy) (SE13), 286 m, in MZB. Paratypes 12–13 (MZUB 60412, MZUB 60413): 1 LV and 1 RV, respectively, off Karpathos Island (Greece) (GECO station 18), 453 m, in MZB. Paratype 14 (MZUB 60414): 1 LV, off NW Capraia Island (Livorno, Italy, 43°08′33.7″ N 9°34′58.1″ E), 384 m, in MZB (Figure 2I). Paratypes 15–16: (MNHN-IM-2000-36655, MNHN-IM-2000-36656): 1 LV and 1 RV, respectively, off Menorca Island (Spain) (COBAS station 103), 285 m, in MNHN. Paratypes 17–18: 1 LV and 1 RV, respectively, off Menorca Island (Spain) (COBAS station 103), 285 m, in NMW. Paratypes 19–20: 1 LV

(RMNH.MOL.342681) and 1 RV (RMNH.MOL.342682), respectively, off Menorca Island (Spain) (COBAS station 109), 341–367 m, in NBC. Paratypes 21–22: 1 LV (SMF358964) and 1 RV (SMF358965), respectively, off Menorca Island (Spain) (COBAS station 109), 341–367 m, in SMF. Paratype 23 (MLK 44815): 1 RV, off Menorca Island (Spain) (COBAS station 109), 341–367 m, in MLK.

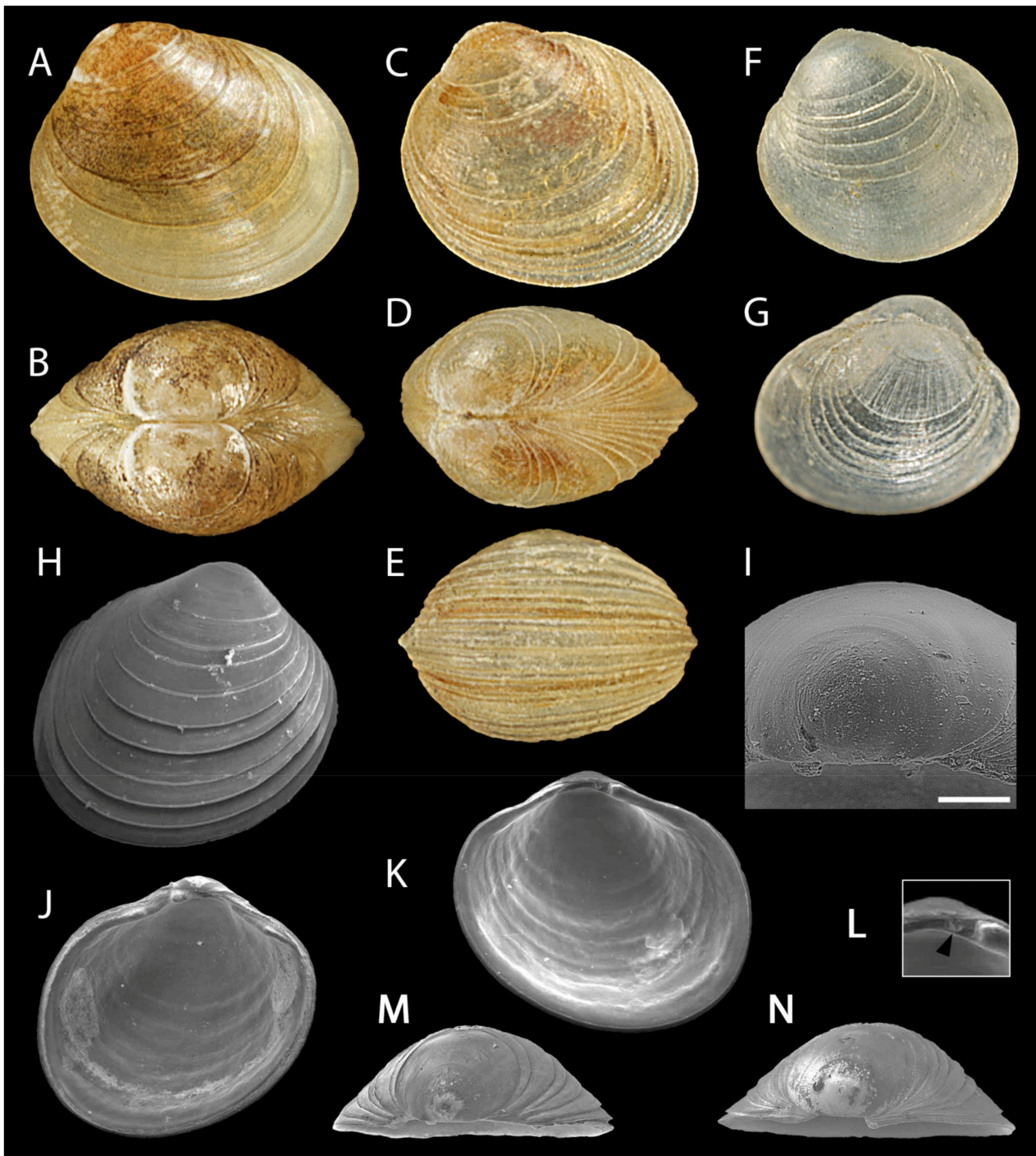


Figure 2. “*Draculamya*” *uraniae* n. sp. (A,B): holotype, off Lazzaro (Italy), L 1.14 mm; (C–E): paratype 1, off Gorgona Island (Italy), L 1.08 mm; (F–H): paratype 2, Capo Peloro (Italy), L 0.86 mm, (G): tilted dorsal view showing prodissoconch pattern; (H): paratype 6, off Mallorca Island (Spain), L 1.10 mm, external view of LV; (I): paratype 14, off Capraia Island (Italy), RV, detail of the prodissoconch (scale bar 100 µm); (J,M): paratype 5, off Almeria (Spain), L 1.00 mm, RV; (K,L,N): paratype 4, off Almeria (Spain), L 1.05 mm, LV, (L): detail of the hinge (black arrow points out small protuberance).

2.2.2. “*Draculamya uraniae*” n. sp. Additional Material

Two valves off Almeria (Spain) (COBAS station 08), 98–109 m; 3 v, off Almeria (Spain) (COBAS station 07), 408–475 m; 1 v, off Almeria (Spain) (COBAS station 09), 330 m; 2 v, off Menorca Island (Spain) (COBAS station 89), 103 m; 4 v, off Menorca Island (Spain) (COBAS station 102), 342 m; 23 v, off Menorca Island (Spain) (COBAS station 103), 285 m; 3 v, off Menorca Island (Spain) (COBAS station 106), 380 m; 14 v, off Menorca Island (Spain) (COBAS station 108), 309–461 m; 51 v, off Menorca Island (Spain) (COBAS station 109), 341–367 m; 28 v, off Menorca Island (Spain) (COBAS station 110), 217–468 m; 1 v, off Capraia Island (Italy), 180 m, in CB; 2 v, off Capraia Island (Italy), 315 m, in SB; 1 v, off Capraia Island (Italy), 350 m, in LR; 4 v, off Capraia Island (Italy), 400 m, in AR; 2 v, off NW Capraia Island (Italy), 384 m, in SB; 1 v, Giglio Island (Italy), 95 m, in AR; 1sh (immature), Scilla (Italy), 54 m, in AR; 2 v, off SW Malta (MARCOS station 46), 530 m; 1 v, off Santa Maria di Leuca (Italy) (CORSARO station 55), 497 m; 3 v, off Bari (Italy) (SI08–57), 154 m; 8 v, off Bari (Italy) (SI08–75), 795 m; 2 v, off Bari (Italy) (SE06–09), 314 m; 2 v, off Bari (Italy) (SE13), 286 m; 1 v, off Rab Island (Croatia), 45 m, in LR; 2 v, off Karpathos Island (Greece) (GECO station 18), 453 m, in MZB.

2.2.3. Other Material

Draculamya pumila (J. de C. Sowerby, 1844): see [25]. *Draculamya porobranchiata* Oliver and Lützen, 2011: see [25]. *Mancikellia parrussetensis* (Giribet and Peñas, 1999): 3 v, Tarifa (Spain), 50 m, in SB. 2 shs and 9 v, Capo Peloro (Italy), 40 m, in SB. 2 shs and 12 v, Scilla (Italy), 50 m, in SB. *Arculus sykesii* (Chaster, 1895): 2 shs, Antignano (Livorno, Italy), 40 m, in SB. *Glibertia prosperi* Van der Meulen, 1951: more than 30 v, Ritthem (Zeeland, The Netherlands, type locality of the species), washed ashore on the beach, legit ME Vreede, in NBC (RGM 939154). 8 v coated in gold and imaged with SEM (RGM 939154a–h).

2.3. Etymology

The species is named to honor the CNR Italian Research Vessel *Urania*, her captains and crew for their outstanding contribution to the exploration of the Mediterranean Sea. From 1992 until its final decommissioning in 2019, this vessel surveyed many of the sites that provided a substantial part of the material here discussed.

2.4. Description (Holotype Measurements in Parentheses)

Shell minute, with L between 0.81 mm and 1.16 mm, seldom exceeding 1.1 mm (1.14 mm). Equivalve, tumid, thin. Slightly inequilateral with beaks behind the midline. Outline subcircular-ovoid, slightly oblique, and expanded anteroventrally. Larger specimens more oblique, possibly suggesting a greater antero-ventral growth. Margins generally rounded, rather subangular in few shells which have a vaguely truncated anterior margin (Figure 2C,H). Anterior dorsal margin slightly longer than the posterior one. Umbos not prominent, slightly prosogyrate. Sculpture consisting of commarginal lines and growth stops of varying intensity but generally well-marked and step-like (Figure 2D,E). Periostracum very tenuous, lost in dead shells, consisting of close-set, concentric microscopic ridges, transparent to yellowish in color. Hinge area rather weak. RV (Figure 2J) with one peg-like C, single AL and PL, AL more close to the hinge area than PL. LV (Figure 2K) lacking C, with single AL and PL. Lateral teeth conformed as extensions of the shell dorsal edge, the AL suddenly stops near the hinge area. A very small protuberance is often present between the medial end of the AL and the resilifer (Figure 2L). Ligament internal. Resilifer sunken, posteriorly directed, obliquely set between the cardinal area and the PL. Prodissoconch (Figure 2I) cap-like, large, 400–430 µm in diameter (415 µm). Prodissoconch I D-shaped, with a weak and irregular microsculpture. Prodissoconch II ovoid and smooth except very fine concentric growth lines. In some shells, it is visible in transparency a radial pattern (Figure 2G). Muscle scars weak. Adductor scars oval, similar in size; the anterior is slightly larger and situated more closely to the posterior ventral margin than the posterior

one. Pallial line hardly visible. Colour whitish to yellowish in color, semitransparent to opaque. Soft parts not studied.

2.5. Comparative Remarks

Externally, the shells of "*D*". *uraniae* n. sp. bear a superficial resemblance to the immature stages of several bivalves, but the distinctive hinge structure suggests a placement within the Galeommatida. Only a few species can be properly compared with it. *Arculus sykesii* (Chaster, 1895) has a more depressed shell, with a finer concentric sculpture, different hinge structure, and outline, moreover it possesses a smaller prodissoconch (DP ca. 360 µm). ([14] figs. 32L–R). *Mancikellia divae* van Aartsen and Carrozza, 1997 ([15] figs. 5 and 6) and *Mancikellia parrussetensis* (Giribet and Peñas, 1999) ([28] figs. 1–4) have a distinctive rimmed protoconch and hinge sockets situated medially of the lateral teeth ([25] figs. 1C–E). *Kelliopsis jozinae* van Aartsen and Carrozza, 1997 ([15] figs. 8–11) and *Kelliopsis* sp. Peñas et al., 2006 ([29] figs. 367–382) have more prominent umbos and smaller prodissoconchs (DP rarely exceeding 250 µm).

"*Draculamyia*" *uraniae* is mostly similar to the species currently assigned to the genus *Draculamyia*. *D. porobranchiata* attains a larger size (1.4–2.1 mm), generally has a more rounded outline, a larger prodissoconch (DP 470–500 µm vs. 400–430 µm), and a weaker external sculpture ([25] figs. 1A and 2). *Draculamyia pumila* (Sowerby, 1844), a fossil species, is more obliquely oval in outline and more robust, the size is greater (L about 1.5 mm), the prodissoconch is on average smaller (DP 380–410 µm vs. 400–430 µm), and the sculpture is weaker ([15] figs. 1–4), ([25] figs. 1B and 3).

3. Distribution and Habitat

3.1. Geographical Distribution

"*Draculamyia*" *uraniae* n. sp. is recorded thus far from the Alboran Sea, Balearic Islands, Tuscan Archipelago, Strait of Messina, north-eastern and south-western Adriatic Sea, northern Ionian Sea, and Dodecanese islands. Additionally, "*D*". *uraniae* records have been published under other names: *Arculus* sp., off Vallcarca, Spain (p. 86, fig. 107, only the shell on the right [28]); *Arculus* sp., off Alboran Island, Spain (fig. 362 [29]); *D. porobranchiata* from Gazul mud volcano, Gulf of Cádiz, Spain (p. 289, figs. 5C–F [30]). Moreover, Utrilla et al. [30] consider *Kelliopsis* sp. [29] as conspecific with the material assigned by them to *D. porobranchiata*. However, *Kelliopsis* sp. is a different species currently under description [31], possibly belonging to *Draculamyia* as well. The record of *D. porobranchiata* from Israel [32] does not belong to this species nor to "*D*". *uraniae*, and should be assigned to *Kelliopsis* sp. "*D*". *uraniae* has an almost pan-Mediterranean distribution as well as in the adjacent sector of the Atlantic Ocean (Figure 1). Hoffman and Freiwald [33] report empty shells of *D. porobranchiata* from cold-water corals habitats from off northern Norway, off western Ireland, off north-western Spain, and off Mauritania, at a depth of between 250 m and 1090 m. Based upon a preliminary examination, it seems that two different morphotypes are involved. One of these is more similar to "*D*". *uraniae*. This species, therefore, could have a wider distribution in the north-eastern Atlantic Ocean, although further studies are needed to clarify the status of such material [34].

3.2. Ecology

The type material of "*D*". *uraniae* n. sp. consists of dead but fresh articulated shells, with the periostracum still intact. We hypothesize that they were substantially in situ, suggesting that this new species occurs in circalittoral to upper bathyal habitats between 48–180 m. The Messina material originates from the bottom of semi-dark caves/ravines rich in cnidarians, while the Tuscan material came from bioclastic substrates with an abundance of cnidarian and siliceous sponges in the mesophotic/rariphotic zone [35,36]. The other material consists of loose valves deprived of periostracum, from a depth range of 45–795 m. We cannot conclude whether "*D*". *uraniae* is actually a eurybathic species, extending its range down to ca. 800 m., as the deeper records refer to long-dead valves only.

Reworked and/or subfossil dead molluscan assemblages have been frequently reported for the Mediterranean [37–39]. In general, we hypothesize that “*D.* *uraniae*” lives at depths shallower than *D. porobranchiata* (1100 m to 1350 m). Regarding its trophic habit, the host relationships of “*D.* *uraniae*” cannot be established at present as it has not been collected alive.

4. Discussion

4.1. Generic Placement

The genus *Draculamya* is chiefly diagnosed on the peculiar anatomical features of the type species, *D. porobranchiata*. In particular, the septibranch-like ctenidium, the suctorial oesophagus and the unique puncturing organ, suggesting an ectoparasitic feeding mode [25]. The fossil *D. pumila* as well as “*D.* *uraniae*” n. sp. are assigned to the genus based upon shell morphology (but see below). Anatomical and molecular information are needed to confirm the generic placement of “*D.* *uraniae*”.

4.2. *Draculamya* vs. *Glibertia*

Van der Meulen [40] described a minute bivalve as *Glibertia prosperi* gen. et sp. nov. from Pliocene deposits in The Netherlands. He gave a detailed description and depicted the shell by drawings, and assigned it to the Condyllocardiidae Bernard, 1896, although its hinge structure differs from the condyllocardiid-type [41–43]. Since its description, *G. prosperi* has been seldom mentioned in the literature [44–48]. Recently, Wesselingh and Moerdijk [49] redescribed this species and synonymized it with *Kellia pumila* J. de C. Sowerby, 1844, relying on the comparison of the only good SEM photos of *Kellia pumila* at that time [15], with SEM photos of topotypical *G. prosperi* shells [50]. These authors recognized *Glibertia* as distinct from *Kellia* Turton, 1822 or *Lasaea* Brown, 1827, hence the new combination *Glibertia pumila* (Sowerby, 1844). Shortly after, Oliver and Lützen [25] included *K. pumila* in their new genus *Draculamya*. MolluscaBase [27] accepts the combination “*Draculamya pumila*”, but the binomen *Glibertia pumila* is widely used in the paleontological context. Although the settlement of this taxonomic issue is beyond the scope of this contribution, we provide some information in order to offer a better understanding of these taxa. A preliminary examination of topotypical *G. prosperi* shells through SEM images shows strong similarities with *K. pumila*; however, the shell morphology of this species appears quite variable, with some specimens approaching the “*Draculamya*” hinge pattern while others to *Mancikellia divae* van Aartsen and Carrozza, 1997 [25], pers. obs. Therefore, *G. prosperi* is provisionally retained as a distinct species, pending the examination of further material of both taxa. *Glibertia* and *Draculamya* could be reasonably assumed to be congeneric if based on conchological grounds only, as minor differences of the hinge pattern are present. In such a case, *Glibertia* has priority over *Draculamya*. On the other hand, an “identical” shell morphology does not imply identical anatomy, as observed in other galeommatid bivalves. In the lack of anatomical and molecular data for the fossil *Glibertia*, the two genera are therefore kept distinct.

5. Material and Methods

The largest part of the study material derived from dredge and trawl bottom sampling during cruises SETE06, SASSI08, MARCOS, CORSARO, COBAS, GECO of R/V *Urania*. The study of sediment residues hosted at the Ismar-CNR Bologna facility was entrusted by one of the Authors (MT) to the ‘Gruppo malacologico livornese’ (GML, Leghorn’s malacological group–Livorno). The material considered comprised shells sorted by GML members: Attilio Pagli (Empoli); Alessandro Raveggi (Firenze); Cesare Bogi (Livorno); Carlo Sbrana (Livorno); Luigi Romani (Capannori); Stefano and Maria Bartolini (Firenze). In addition, articulated shells and several loose valves of the new species were collected from sediment samples obtained by SCUBA diving or through the analysis of commercial trawling by-catch. The materials examined are listed in Table 1 and the localities in Figure 1.

Table 1. Stations providing the material considered in this study.

Latitude	Longitude	Depth (m)	Location	Cruise	Station	Gear	Remarks
36°31.2747' N Start	02°55.5708' W Start	475–408	Seco de los Olivos	COBAS	07	Rock dredge	
36°31.2883' N' End	02°54.5393' W' End						
36°31.5124' N Start	02°50.8713' W Start	108–98	Seco de los Olivos	COBAS	08	Rock dredge	paratyp. 4–5
36°31.5017' N' End	02°50.4744' W' End						
36°30.9787' N Start	2°49.7966' W Start	336–330	Seco de los Olivos	COBAS	09	Rock dredge	
36°30.9659' N' End	02°49.3631' W' End						
39°52.4709 N Start	02°37.6097 E Start	175–105	NW Mallorca	COBAS	86	Rapido dredge	paratyp. 6–7
39°51.6871' N' End	02°38.3251 E' End						
39°51.8380' N	02°38.1814' E	103	NW Mallorca	COBAS	89	Grab	paratyp. 8–9
40°00.6453' N	04°23.3727' E	342	NE Menorca	COBAS	102	Grab	
40°01.3378' N	04°22.4614	285	NE Menorca	COBAS	103	Grab	paratyp. 15–18
40°02.9378' N	04°22.4172' E	380	NE Menorca	COBAS	106	Grab	
40°03.0347' N Start	04°21.8537' E Start	461–309	NE Menorca	COBAS	108	Rock dredge	
40°02.0694' N' End	04°22.5835' E' End						
40°01.1474' N Start	04°23.3716' E Start	367–340	NE Menorca	COBAS	109	Rock dredge	paratyp. 19–23
40°01.5598' N' End	04°23.1062' E' End						
39°57.7525' N Start	04°25.8497' E Start	468–217	NE Menorca	COBAS	110	Rock dredge	
39°57.3255' N' End	04°25.1147' E' End						
39° 34.9250' N	18° 23.3616' E	501	Off S. Maria di Leuca	CORSARO	CR55	Dredge	
41° 17.6884' N	17° 8.3017' E	314	Off Bari	SETE06	SE06-9	Grab	
41° 22.6999' N	17° 6.7500' E	286	Off Bari	SETE06	SE13	Rock dredge	paratyp. 10–11
41°39.836' N	16°53.342' E	154	Off Bari	SASSI08	SI08-57	Grab	
41°18.015' N	17°16.653' E	795	Off Bari	SASSI08	SI08-75	Box corer	
35°24.9100' N	27°13.4300' E	453	S Karpathos	GECO	Geco18	Rock dredge	paratyp. 12–13
35° 30.8230' N Start	14° 6.0020' E Start	530–467	SW Malta	MARCOS	Marcos 46	Trawl	
33° 31.2320' N' End	14° 5.7100' E' End						
37° 58.0000' N	15° 39.0000' E	70	Off Lazzaro, Reggio Calabria			Scuba	holotype
43° 29.3884' N	9° 49.4550' E	180	Off NW Gorgona Island			Trawl	paratyp. 1
38° 16.0650' N	15° 39.4350' E	48	Capo Peloro, Messina			Scuba	paratyp. 2
43° 16.1417' N	10° 7.18332' E	150	Off NE Capraia Island			Trawl	paratyp. 3
43° 8.5616' N	9° 34.9684' E	384	Off NW Capraia Island			Trawl	paratyp.14
43° 10.2600' N	9° 50.9683' E	180	Off Capraia Island			Trawl	
42° 55.4033' N	9° 50.9816' E	315	Off Capraia Island			Trawl	
42° 58.6800' N	9° 36.7350' E	350	Off Capraia Island			Trawl	
43° 8.0134' N	9° 37.71498' E	400	Off Capraia Island			Trawl	
42° 20.4817' N	10° 51.0784' E	95	Giglio Island			Trawl	
38° 15.4650' N	15° 42.6750' E	54	Scilla (Italy)			Scuba	
44° 46.8533' N	14° 39.3517' E	45	Off Rab Island (Croatia)			Scuba	

Shells were examined through Lomo MBC-10 and Konus Crystal-45 stereomicroscopes, photographed with Canon EOS 400D and Nikon Coolpix 990 cameras, while measurements were carried out by means of an eyepiece micrometer. Selected shells and details were examined with: Quanta200 SEM in the Centro de Apoyo Científico y Tecnológico a la Investigación (CACTI)–University of Vigo; JEOL JCM 5000 Neoscope SEM in the Department of Natural Sciences, NMW Cardiff; Jeol, JSM-5400 SEM at Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Bologna University, after air drying and mounting on SEM stubs. Comparisons were conducted with material figured in the literature. The study material was preserved in institutional (MNHN, MZB, NBC, NMW, SMF, MLK) and private (AR, CB, LR, SB) collections. This published work and the nomenclatural acts it contains have been registered in ZooBank. The ZooBank LSID ((Life Science Identifiers) for this publication is: urn:lsid:zoobank.org:pub:892D49EC-B26B-40A8-B218-42200939992A. The associated information can be viewed at <http://zoobank.org/References/892D49EC-B26B-40A8-B218-42200939992A> (accessed on 1 Jun 2021).

Author Contributions: Conceptualization, L.R., P.G.O. and M.T.; investigation, L.R. and S.B.; writing original draft preparation, L.R. and M.T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: We are very grateful to captains (Emanuele Gentile, Nicolangelo Lembo and Vittorio Lubrano), crew and shipboard staff of RV *Urania* during cruises COBAS, GECCO, CORSARO, SETE06, SASSI08. Ship time was funded over the years by many national and European projects. Cesare Bogi (Livorno, Italy), Fabio Crocetta (Napoli, Italy), Joachim Langeneck (Pisa, Italy), Pasquale Micali (Fano, Italy), Peter W. Moerdijk (Middelburg, The Netherlands), Attilio Pagli (Empoli, Italy), Ronald Pouwer (NBC, The Netherlands), Alessandro Raveggi (Firenze, Italy), Maria Scaperrotta (Firenze, Italy), Carlo Sbrana (Livorno, Italy), Angelo Vazzana (Reggio Calabria, Italy), Frank P. Wesselingh (NBC, The Netherlands) are thanked for the loan of material and literature, and for useful discussions. Leon Hoffman (Senckenberg am Meer, Wilhelmshaven, Germany), Emilio Rolán (Vigo, Spain) and Daniele Scarponi (University of Bologna, Italy) provided SEM photographs. Lorenzo Angeletti (Ismar-CNR, Bologna) helped with on-board and on-shore sample preparation and Giorgio Castellan (Ismar-CNR, Bologna) produced the distribution map and helped with text editing. This is Ismar-CNR Bologna scientific contribution n. 2049.

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations and Acronyms

Institutions—Ismar-CNR: Institute of Marine Sciences–National Research Council (Bologna, Italy); MNHN: Muséum national d’Histoire naturelle, Paris (France); MZB: Museo dell’Evoluzione (formerly Zoologia), University of Bologna (Italy); NBC: Naturalis Biodiversity Center, Leiden (The Netherlands); MLK: Museo Malacologico Malakos, Città di Castello (Italy); NMW: National Museum of Wales (Cardiff); SMF: Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt (Germany). Personal collections—AR: Alessandro Raveggi collection (Firenze); CB: Cesare Bogi collection (Livorno); LR: Luigi Romani collection (Capannori); SB: Stefano and Maria Bartolini collection (Firenze). Morphometrics—AL: anterior lateral tooth; C: cardinal tooth; DP: maximum diameter of the prodissoconch (in μm); L: maximum length (in mm); LV: left valve; PL: posterior lateral tooth; RV: right valve. Other—SEM: scanning electron microscope; sh(s): articulated shells; v: loose valves.

References

- Li, J.; O’ Foighil, D.; Middelfart, P. The evolutionary ecology of biotic association in a megadiverse bivalve superfamily: Sponsorship required for permanent residency in sediment. *PLoS ONE* **2012**, *7*, e42121. [[CrossRef](#)]
- Chavan, A. Superfamily Leptonacea Gray, 1847. In *Treatise on Invertebrate Zoology. Part N., Mollusca 6, Bivalvia 2*; Moore, R.C., Ed.; University of Kansas and Geological Society of America: Lawrence, KS, USA, 1969; pp. 518–537.
- Boss, K.J. Mollusca. In *Synopsis and Classification of Living Organisms*; Parker, S.P., Ed.; McGraw Hill Book Company: New York City, NY, USA, 1982; Volume 1, pp. 945–1166.
- Purchon, R.D. Classification and evolution of the Bivalvia: An analytical study. *Philos. Trans. R. Soc. B* **1987**, *316*, 277–302. [[CrossRef](#)]
- Bieler, R.; Mikkelsen, P.M. Bivalvia—A look at the Branches. *Zool. J. Linn. Soc.* **2006**, *148*, 223–235. [[CrossRef](#)]
- Bieler, R.; Carter, J.G.; Coan, E.V.; Bouchet, P.; Rocroi, J.-P. Nomenclator of Bivalve Families with a Classification of Bivalve families. *Malacologia* **2010**, *52*, 1–184. [[CrossRef](#)]
- Carter, J.G.; Altaba, C.R.; Anderson, L.C.; Araujo, R.; Biakov, A.S.; Bogan, A.E.; Campbell, D.C.; Campbell, M.; Chen, J.-H.; Cope, J.C.W.; et al. A synoptical classification of the Bivalvia (Mollusca). *Paleontol. Contrib.* **2011**, *4*, 1–47.
- Goto, R.; Kawakita, A.; Ishikawa, H.; Hamamura, Y.; Kato, M. Molecular phylogeny of the bivalve superfamily Galeommatoida (Heterodonta, Veneroida) reveals dynamic evolution of symbiotic lifestyle and interphylum host switching. *BMC Evol. Biol.* **2012**, *12*, 172. [[CrossRef](#)] [[PubMed](#)]
- Bieler, R.; Mikkelsen, P.M.; Collins, T.M.; Glover, E.A.; González, V.L.; Graf, D.L.; Harper, E.M.; Healy, J.; Kawachi, G.Y.; Sharma, P.P.; et al. Investigating the Bivalve Tree of Life—An exemplar-based approach combining molecular and novel morphological characters. *Invertebr. Syst.* **2014**, *28*, 32–115. [[CrossRef](#)]
- Lemer, S.; Bieler, R.; Giribet, G. Resolving the relationships of clams and cockles: Dense transcriptome sampling drastically improves the bivalve tree of life. *Proc. R. Soc. B.* **2019**, *286*, 20182684. [[CrossRef](#)] [[PubMed](#)]
- Gofas, S.; Le Renard, J.; Bouchet, P. Mollusca. In *European Register of Marine Species: A Check-List of the Marine Species in Europe and a Bibliography of Guides to Their Identification*; Collection Patrimoines Naturels, 50; Costello, M.J., Emblow, C., White, R.J., Eds.; Muséum National d’Histoire Naturelle: Paris, France, 2001; pp. 180–213.
- Galeommatida. European Register of Marine Species. Available online: <http://www.marbef.org/data/aphia.php?p=taxdetails&id=1326015> (accessed on 15 April 2021).
- Van Aartsen, J.J. Galeommatacea and Cyamiacea. *La Conchiglia* **1997**, *279*, 31–36, 61.

14. Van Aartsen, J.J. Galeommatacea and Cyamiacea Part II. *La Conchiglia* **1997**, *281*, 27–53.
15. Van Aartsen, J.J.; Carrozza, F. On “*Lasea*” *pumila* (S.V. Wood, 1851) and two new bivalves from European waters: *Mancikellia divae* n. sp. and *Kelliopsis jozinae* n. sp. (Bivalvia: Condylcardiidae and Montacutidae). *La Conchiglia* **1997**, *285*, 28–34.
16. Giribet, G.; Peñas, A. A new *Epilepton* species from the Western Mediterranean. *Iberus* **1999**, *16*, 117–121.
17. Gofas, S. Systematics of *Planktomya*, a bivalve genus with teleplanic larval dispersal. *Bull. Mar. Sci.* **2000**, *67*, 1013–1023.
18. Holmes, A.M.; Gallichan, J.; Wood, H. *Coracuta obliquata* n. gen. (Chaster, 1897) (Bivalvia: Montacutidae)—First British record for 100 years. *J. Conchol.* **2006**, *39*, 151–158.
19. Bogi, C.; van Aartsen, J.J. Posizione sistematica e distribuzione in Mar Mediterraneo di *Montacuta semirubra* Gaglini, 1992 e *Montacuta cuneata* Gaglini, 1992 (Bivalvia: Galeommatoidea). *Boll. Malacol.* **2007**, *42*, 112–114.
20. Jespersen, Å.; Lützen, J.; Oliver, P.G. Morphology, biology and systematic position of *Epilepton clarkiae* (Clark, 1852) (Galeommatoidea: Montacutidae) a bivalve commensal with sipunculans. *J. Conchol.* **2007**, *39*, 391–402.
21. Gofas, S.; Salas, C. A review of European “*Mysella*” species (Bivalvia: Montacutidae) with description of *Kurtiella* new genus. *J. Molluscan Stud.* **2008**, *74*, 119–135. [CrossRef]
22. Hoeksema, D.F.; Simons, G.F. *Bornia canariensis*, a new marine species from the Canary Islands (Bivalvia, Heterodonta, Veneroida, Kelliidae). *Basteria* **2011**, *75*, 31–34.
23. Gofas, S. A new species of *Bornia* (Bivalvia: Galeommatoidea) from southern Spain. *Iberus* **2012**, *30*, 41–48.
24. Oliver, P.G. Taxonomy of some Galeommatoidea (Mollusca, Bivalvia) associated with deep-sea echinoids: A reassessment of the bivalve genera *Axinodon* Verrill & Bush, 1898 and *Kelliola* Dall, 1899 with descriptions of new genera *Syssitomya* gen. nov. and *Philymyax* gen. nov. *Eur. J. Taxon.* **2012**, *12*, 1–24. [CrossRef]
25. Oliver, P.G.; Lützen, J. An anatomically bizarre, fluid-feeding, galeommatoidean bivalve: *Draculamya porobranchiata* gen. et sp. nov. (Mollusca: Bivalvia). *J. Conchol.* **2011**, *40*, 365–392.
26. Sabelli, B.; Taviani, M. The making of the Mediterranean molluscan biodiversity. In *The Mediterranean Sea*; Goffredo, S., Dubinsky, Z., Eds.; Springer: Dordrecht, The Netherlands, 2014; pp. 285–306. [CrossRef]
27. MolluscaBase. Available online: <http://www.molluscabase.org> (accessed on 15 April 2021).
28. Giribet, G.; Peñas, A. Fauna malacologica del litoral del Garraf. *Iberus* **1997**, *15*, 41–93.
29. Peñas, A.; Rolán, E.; Luque, Á.A.; Templado, J.; Moreno, D.; Rubio, F.; Salas, C.; Sierra, A.; Gofas, S. Moluscos marinos de la isla de Alborán. *Iberus* **2006**, *24*, 25–151.
30. Utrilla, O.; Gofas, S.; Urra, J.; Marina, P.; Mateo-Ramírez, A.; López-González, N.; González-García, E.; Salas, C.; Rueda, J.L. Molluscs from benthic habitats of Gazul mud volcano (Gulf of Cádiz). *Sci. Mar.* **2020**, *84*, 273–295. [CrossRef]
31. Micali, P.; (Fano, Italy). Personal communication, 2021.
32. Albano, P.G.; Azzarone, M.; Amati, B.; Bogi, C.; Sabelli, B.; Rilov, G. Low diversity or poorly explored? Mesophotic molluscs highlight undersampling in the Eastern Mediterranean. *Biodivers. Conserv.* **2020**, *29*, 4059–4072. [CrossRef] [PubMed]
33. Hoffman, L.; Freiwald, A. A unique and diverse amalgamated mollusk assemblage from the Coral Patch Seamount, eastern Atlantic. *Misc. Malacolog.* **2017**, *7*, 61–79.
34. Hoffman, L.; (Senckenberg am Meer, Wilhelmshaven, Germany). Personal communication, 2021.
35. Baldwin, C.; Tornabene, L.; Robertson, D.R. Below the mesophotic. *Sci. Rep.* **2018**, *8*, 4920. [CrossRef] [PubMed]
36. Cerrano, C.; Bastari, A.; Calcinai, B.; Di Camillo, C.; Pica, D.; Puce, S.; Valisano, L.; Torsani, F. Temperate mesophotic ecosystems: Gaps and perspectives of an emerging conservation challenge for the Mediterranean Sea. *Eur. Zool. J.* **2019**, *86*, 370–388. [CrossRef]
37. Taviani, M. Associazioni a Molluschi pleistoceniche-attuali dragate nell’Adriatico meridionale. *Boll. Zool.* **1978**, *45*, 297–306. [CrossRef]
38. Bonfitto, A.; Oliverio, M.; Sabelli, B.; Taviani, M.A. Quaternary deep-sea marine molluscan assemblage from East Sardinia (Western Tyrrhenian Sea). *Boll. Malacol.* **1994**, *11*, 305–309.
39. Di Geronimo, I.; Bellagamba, M. Malacofaune dei dragaggi BS 77–1 e BS 77–2 (Sardegna nord orientale). *Boll. Soc. Paleontol. Ital.* **1985**, *24*, 111–129.
40. Van der Meulen, J. *Glibertia prosperi* n. gen., n. sp. (Fam. Condylcardiidae), from Pliocene deposits. *Basteria* **1951**, *15*, 49–53.
41. Bernard, F. Etudes comparatives sur la coquille des lamellibranches *Condylcardia*. *J. Conchyliol.* **1897**, *44*, 169–207.
42. Middelfart, P. A revision of the Australian Condylcardiinae. *Molluscan Res.* **2002**, *22*, 23–85. [CrossRef]
43. Middelfart, P. Revision of the Australian Cuninae sensu lato (Bivalvia: Carditoidea: Condylcardiidae). *Zootaxa* **2002**, *112*, 1–124. [CrossRef]
44. Janssen, A.W.; van der Slik, L. De fossiele schelpen van de Nederlandse stranden en zeegeten, tweede serie, 5. *Basteria* **1972**, *36*, 171–180.
45. Janssen, A.W. Systematische lijst van Nederlandse recente en fossiele mollusken. *Meded. Werkgr. Tert. Kwart. Geol.* **1975**, *12*, 115–170.
46. Marquet, R. The molluscan fauna of the Kruisschans Member (Lilli Formation, Late Pliocene) in the Antwerp area (Belgium). *Meded. Werkgr. Tert. Kwart. Geol.* **1993**, *30*, 83–103.
47. Marquet, R. Ecology and evolution of Pliocene bivalves from the Antwerp Basin. *Bull. Inst. R. Sci. Nat. Belg. Sci. Terre* **2004**, *74*, 205–212.
48. Marquet, R. The Neogene Bivalvia (Heterodonta and Anomalodesmata) and Scaphopoda from Kallo and Doel (Oost Vlaanderen, Belgium). *Palaeontos* **2005**, *6*, 1–142.

49. Wesselingh, F.P.; Moerdijk, P.W. (Eds.) *Fossiele Schelpen van de Nederlandse Kust*; NCB Naturalis: Leiden, The Netherlands, 2010; pp. 1–332.
50. Moerdijk, P.W.; (Middelburg, The Netherlands). Personal communication, 2018.