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Amazonia versus Pontocaspis: a key to understanding the mineral composition of mysid statoliths (Crustacea: Mysida)

KARL J. WITTMANN[1,*], ANTONIO P. ARIANI[2]

[1] *Abteilung für Umwelthygiene, Medizinische Universität Wien, Kinderspitalgasse 15, A-1090 Vienna, (Austria), email: karl.wittmann@meduniwien.ac.at*

[2] *Dipartimento di Biologia, Università di Napoli Federico II, Via Cinthia, Complesso Monte S. Angelo, 80126 Napoli, (Italia), email: antonio.ariani@gmail.com*

* *corresponding author*

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SUMMARY

We have determined the mineral composition of statoliths in 169 species or subspecies (256 populations) of the family Mysidae on a worldwide scale. Including previously published data, the crystallographic characteristics are now known for 296 extant species or subspecies: fluorite (CaF_2) in 79%, vaterite (a metastable form of crystalline $CaCO_3$) in 16%, and non-crystalline (organic) components in 5%, the latter exclusively and throughout in the subfamilies Boreomysinae and Rhopalophthalminae. Within the subfamily Mysinae vaterite or fluorite were found in three tribes, whereas other three tribes have fluorite only. The exclusive presence of fluorite was confirmed for the remaining seven subfamilies. Hotspots of vaterite were found in Amazonia and the Pontocaspis, in each case with reduced frequencies in main and tributary basins of the Atlantic and N-Indian Ocean. Vaterite is completely absent in the remaining aquatic regions of the world. In accordance with previous findings, fluorite occurred mainly in seawater, vaterite mostly in brackish to freshwater. Only vaterite was found in electrolyte-poor Black Water of Amazonia, which clearly cannot support the high fluorine demand for renewal of otherwise large fluorite statoliths upon each moult. Vaterite prevails in Diamysini, distributed over most of the area once occupied by the Tethyan Sea. It also prevails in Paramysini with main occurrence in the Pontocaspis, where fossil calcareous statoliths in the stable form of calcite are known from Miocene sediments of the brackish Paratethys. Four Recent genera from three tribes are heterogeneous in that they comprise both vaterite- and fluorite-precipitating species. Previous hypotheses are expanded to cover greater geographic and time scales, proposing that fluorite-bearing marine ancestors penetrated freshwaters in Tethyan and Paratethyan basins, where they developed precipitation of vaterite. This gave their successors predispositions for shifting into separate evolutionary lines from fluorite to vaterite precipitation and *vice versa*.

INTRODUCTION

Mysid shrimps of the family Mysidae are exceptional among invertebrates by having endogenous static bodies (statoliths), analogous to otoliths of most vertebrates. Mysid statoliths are renewed upon each molt and are again exceptional due to their large relative size. Biology textbooks long held that the Mysidae are unique in the animal kingdom due to endogenous static bodies mineralized with fluorite (CaF_2). The first identification of vaterite (a metastable crystal phase of $CaCO_3$) statoliths in a mysid species was made by Ariani et al. (1981) for *Diamysis bahirensis* (G.O. Sars 1877), later partly transferred to *D. mesohalobia* Ariani & Wittmann 2000, from certain brackish water populations in the Mediterranean. The peculiar crystal habit of vaterite is also recognizable in scanning electron micrographs of statoliths published by Almeida Prado-Por (1981), who, however, did not identify the mineral upon first descriptions of *D. bahirensis hebraica* Almeida Prado-Por 1981, and *D. bahirensis sirbonica* Almeida Prado-Por 1981 - now acknowledged (Ariani and Wittmann 2000) at species level as *D. hebraica* and *D. sirbonica*. Finally, Franco et al. (1989) reported that certain mysid species have non-crystalline (organic) statoliths.

Ariani et al. (1993) showed that fluorite is present in a great majority of extant mysid species on a worldwide scale. Nonetheless, a small number precipitate vaterite, and an even smaller number have non-crystalline (organic) static bodies. Within a given species, the mineral composition of statoliths does not differ between populations or subspecies. In regions where both mineral types are found, vaterite is more likely to occur in fresh- or brackish water, fluorite in seawater. According to Voicu (1981), the function of the static organ of mysids in seawater may demand precipitation of a mineral with greater specific gravity compared to the less dense media in fresh- and brackish waters, namely 3.2 in fluorite versus 2.7 in calcite (the latter value based on fossil statoliths). For living specimens of two species of *Schistomysis* Norman 1892, densities of 2.89 for fluorite and 2.21 for vaterite were estimated by Wittmann and Ariani (1996). These values take into account that statoliths also contain organic matrix, water, impurities, and trace elements. The authors estimated that an enormous metabolic effort is required to precipitate fluorite in seawater: the concentration factors with respect to the seawater mass in average statocysts of *Schistomysis spiritus* (Norman 1860) are 610 for calcium and 183,000 for fluoride. The extent to which fluorine is acquired by feeding, such as ingestion of the freshly shed exuvia (containing both statoliths) upon moulting as sometimes observed by Astthorsson (1980) in laboratory-kept *Neomysis integer* (Leach 1814), is unknown. A rough estimate by Wittmann and Ariani (1996) suggests that mysid fluorite statoliths contribute to a turnover of at most 570 Ky for overall fluoride in the oceanic system. Despite this considerable metabolic effort, several freshwater species precipitate fluorite: the Black Sea endemic *Diamysis pengoi* (Czerniavsky 1882) and the cave-dwelling *Troglomysis vjetrenicensis* Stammer 1933, from the Adriatic coast are important examples. Non-crystalline statoliths occur exclusively and throughout the subfamilies Boreomysinae and Rhopalophthalminae. These subfamilies are split basally from the remaining subfamilies within the Mysidae, based on morphological traits (Hansen 1910) and genetic data (Meland and Willassen 2007, Meland et al. 2015). Boreomysinae is also the subfamily with the oldest known (Triassic) fossils of Mysidae (San Vicente and Cartanyà 2017). This is paralleled by ontogenetic findings that an organic matrix appears prior to mineralization of vaterite statoliths upon each moult (Ariani et al. 1982). Statocysts are completely lacking in the morphologically and genetically equally remote family Petalophthalmidae within the order Mysida.

Biogeographical discussions by Ariani et al. (1993) and by Wittmann and Ariani (2011) pointed to a largely Paratethyan origin of those species of *Paramysis* Czerniavsky 1882, and *Diamysis* Czerniavsky 1882, that precipitate vaterite. These species are (at least partly) distributed in the Ponto-Caspian area, wherefrom calcareous fossil statoliths are also known (Voicu 1981). Until just recently, the cave-dwelling *Antromysis cenotensis* Creaser 1936, was the only known vaterite-precipitating species (Ariani et al. 1993) in the W-Atlantic (Gulf of Mexico). The scenario of the Ponto-Caspian as the supposedly only global hotspot of vaterite precipitation was changed by findings of Wittmann (2017, 2018), who demonstrated that vaterite occurs in seven species of the tribe Diamysini from freshwater tributaries of the Amazonas and one additional species from brackish waters along the coast of Brazil. The wealth of new data on the global scale presented here updates which biogeographical regions and which taxonomic entities (from subspecies to subfamily) are involved precipitating specific minerals. This contribution also addresses the related adaptive implications in the family Mysidae.

MATERIALS AND METHODS

Based on material collected during four decades, the mineral composition of statoliths was determined in 256 populations belonging to 169 species or subspecies, including supplements to previously published data on 64 populations of 43 taxa. For details including new and already published data on a total of 487 populations of 296 taxa see Supplementary Table. Most materials were collected from 1974-2015 by K.J. Wittmann during sampling campaigns in marine and continental waters of the Antarctic, W- and E-Atlantic, Mediterranean, Marmora, Black Sea, and Red Sea basins; and by A.P. Ariani during research trips to Mediterranean and NE-Atlantic waters from 1965-2011, and to Madagascar in 1999. Extensive materials were gained by exchange of collection materials with Torleiv Brattegard (Bergen), Gwen Fenton (Hobart), and Masaaki Murano (Tokyo); and with the meanwhile deceased Mihai Băcescu (1908-1999) (Bucharest), Thomas E. Bowman (1934-2013) (Washington), and John Mauchline (1933-2013) (Oban). Additional important contributions were made by academic and citizen scientists listed in the acknowledgements below. Further materials were studied in situ or based on loans from museum collections from Bergen, Berlin, Bucharest, Frankfurt am Main, Hamburg, Helsinki, Jerusalem, Leiden, London, Munich, Oslo, St. Petersburg, Rio de Janeiro, Tenerife, Turin, Vienna, and Washington; and from collections of the fisheries institute (INPA) of Manaus, Brazil, and the Southeast Regional Taxonomic Center (SERTC), Charleston, SC.

Body size was measured from the tip of the rostrum to the end of the telson, without spines. Statolith diameter was calculated as the geometric mean of apparent length and width in ventral view. The mineral composition of statoliths, previously largely analyzed by X-ray diffraction (Ariani et al. 1981, 1983, 1993) was determined generally on five (range 1-25, depending on availability) statoliths per population with a combination of optical and chemical examinations according to Wittmann et al. (1993). This powerful method distinguishes all types of composition (fluorite, vaterite, calcite, non-crystalline) previously found in statoliths of 210 living (listed in Supplementary Table) and two fossil species (Ariani et al. 1993, Wittmann et al. 1993), but cannot guarantee the detection of mineral types so far unknown for statoliths. To date, this method has yielded identical results to X-ray diffraction techniques (Franco et al. 1989, Ariani et al. 1993).

Scanning electron micrographs were obtained with a JEOL JSM-5310 on statoliths coated with gold, using 1-3 statoliths of *Boreomysis microps* G.O. Sars 1883, *Euchaetomera tenuis* G.O. Sars 1883, *Mysidium antillarum* Wittmann in Wittmann & Wirtz 2019, *M. triangulare* Wittmann in Wittmann & Wirtz 2019, *M. gracile* (Dana 1852), *Parvimysis* sp. B, and *Surinamysis* *aestuaria* Wittmann 2017. Microanalysis was performed in EDS (Energy Dispersion Spectrum) on statoliths of *B. microps* and *Parvimysis* sp. B.

Taxonomic notes including entries in the Supplement: *Prionomysis* sp. 1 was described by Fenton (1985) without establishing a taxon. The description of *Longithorax* sp. A is in press (Wittmann 2019). *Heteromysis* sp. B, *Mysidella* sp. A, *Mysidetes* sp. A, and *Parvimysis* sp. B remain to be described. All these entities are here treated at species level.

Using the package SPSS Statistics 20.0, binary logistic regression analysis was performed on the data matrix in the Supplement, excluding entries from non-indigenous populations. The dependent variable was mineral composition with vaterite and fluorite as nominal factors. Only three tribes showed both minerals, whereby only two tribes had sufficient sample numbers to perform the analysis. The numerical codes given in Table 2 for tributary (sea) basins, and modal values of depth, salinity, and body size were arranged as initial covariates. Non-significant ($P > 0.05$) covariates were backward eliminated.

RESULTS

Fluorite (CaF_2) was found in 115 taxa (species and subspecies), vaterite (a metastable form of crystalline $CaCO_3$) in 46, and non-crystalline (organic) components in eight taxa. The remaining entries in Tables 1, 2 and Supplementary Table are derived from previously published data. In accordance with the results of Ariani et al. (1993), Wittmann et al. (1993), and Wittmann and Ariani (2011, 2012), there were no differences among subspecies, populations, and/or individuals belonging to the same species. However, one museum specimen (not included in present figures and tables) of *Diamysis lagunaris* Ariani & Wittmann 2000, from a pooled sample taken in Mediterranean brackish waters before 1877 yielded a combination of vaterite and calcite.

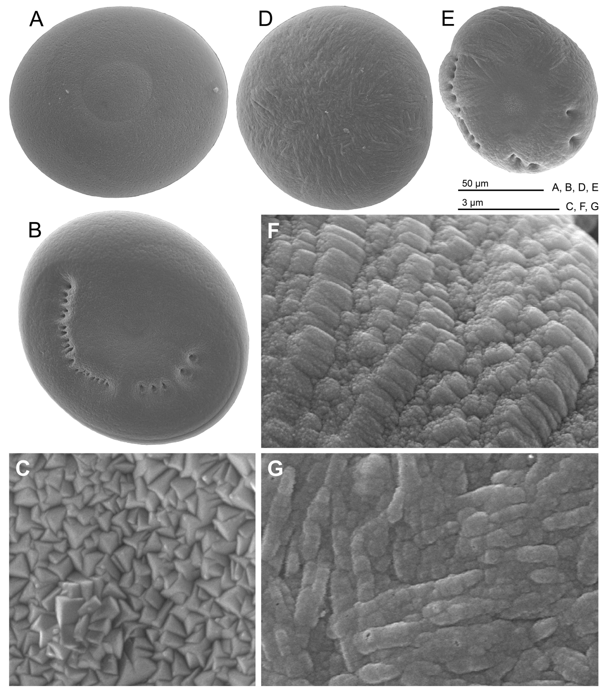

Figure 1. Statoliths mineralized with fluorite (A-C) versus vaterite (D-G) in species of Mysidae. Dorsal (A, D) and ventral (B, E) face of statoliths are given in toto. Mineral habits of fluorite (C) versus vaterite (F, G) are visible on the statolith surface. The fluorite statoliths belong to *Mysidium gracile* (A), *Mysidium triangulare* (B), and *Mysidium antillarum* (C), the vaterite statoliths to *Surinamysis aestuaria* (D, G) and *Parvimysis* sp. B (E, F). Photos by A.P. Ariani and R. de Gennaro.

Scanning electron microscopy revealed the cubic habit (Fig. 1C) of fluorite at the statolith surface in *Euchaetomera tenuis*, *Mysidium antillarum*, *M. triangulare* and *M. gracile*. In contrast, sheet-like vaterite aggregates (see also discussion) consisting of stacked smaller sheets in perpendicular orientation (Fig. 1F) were found in statoliths of *Parvimysis* sp. B, less distinct sheet-like structures in *Surinamysis aestuaria* (Fig. 1G). Qualitative microanalysis confirmed that the statoliths of *Parvimysis* sp. B contain $CaCO_3$.

Table 1. Composition of statoliths in subfamilies and tribes of the family Mysidae.

Taxonomic rank		Number of taxa (species plus subspecies)[1]		
Subfamily	Tribus	non-crystalline	fluorite	vaterite
Boreomysinae		10	0	0
Rhopalophthalminae		4	0	0
Siriellinae		0	23	0
Gastrosaccinae		0	19	0
	Anchialinini	0	3	0
	Gastrosaccini	0	16	0
Erythropinae		0	42	0
	Amblyopsini	0	7	0
	Arachnomysini	0	1	0
	Erythropini	0	28	0
	Pseudommini	0	6	0
Leptomysinae		0	45	0
	Afromysini	0	6	0
	Leptomysini	0	20	0
	Mysidopsini	0	19	0
Mysinae		0	71	48
	Anisomysini	0	13	0
	Diamysini	0	7	26
	Hemimysini	0	7	2
	Mysini	0	22	0
	Neomysini	0	15	0
	Paramysini	0	7	20
Palaumysinae		0	1	0
Heteromysinae		0	28	0
	Heteromysini	0	22	0
	Harmelinellini	0	1	0
	Mysidetini	0	5	0
Mysidellinae		0	3	0
	Total	14	232	48

[1)] for data sources and references see Supplement.

The mineral composition of statoliths was strongly related to the taxonomic framework (including previously published data in Table 1; details in Supplementary Table): the subfamilies Boreomysinae (n = 14 populations of 10 species) and Rhopalophthalminae (4, 4) exhibited only non-crystalline (organic) statoliths. Microanalysis yielded a strong peak of calcium, although no minerals were recognizable, in statoliths of *Boreomysis microps*. Vaterite was found only in three tribes of the subfamily Mysinae: the Diamysini showed vaterite (Vtr) in 26 taxa (species and subspecies) versus fluorite (Fl) in seven taxa; this relation was 20 Vtr + 7 Fl in Paramysini and 2 Vtr + 7 Fl in Hemimysini. Each of these three tribes contained heterogeneous genera with respect to mineral precipitation: *Hemimysis* G.O. Sars 1869, as the only genus of the tribe Hemimysini, showed vaterite in two taxa, fluorite in seven taxa; within the Paramysini this relation was 19 Vtr + 1 Fl in *Paramysis* and 1 Vtr + 3 Fl in *Schistomysis*; within Diamysini it was 13 Vtr + 3 Fl in *Diamysis*. The remaining Paramysini showed vaterite in the monotypic genus *Katamysis* G.O. Sars 1893, versus only fluorite in three species of *Praunus* Leach 1814. The Diamysini showed only vaterite in *Antromysis* Creaser 1936, *Indomysis* W.M. Tattersall 1914, *Limnomysis*

Czerniavsky 1882, *Parvimysis* Brattegard 1969, and *Surinamysis* Bowman 1977; only fluorite in *Gangemysis* Derjavin 1924, and *Taphromysis* Banner 1953. Only fluorite was present in the remaining three tribes (Anisomysini, Mysini, Neomysini) of the subfamily Mysinae and in the remaining seven subfamilies with mineralized statoliths in the family Mysidae (Table 1).

The geographical distribution of mineralized statoliths is here considered excluding data from non-indigenous populations (Table 2; Supplementary Table): the incidence of vaterite statoliths is mainly related to specimens from Ponto-Caspian and Amazonian populations. All seven species examined from Amazonia showed vaterite. The corresponding values in fresh and brackish waters of the Caspian basin are ten species with vaterite versus four species with fluorite. Statoliths from the Black Sea showed vaterite in 16 versus fluorite in seven species, together representing all species known from this basin. Among the twelve Black Sea species at least occasionally occurring in freshwater, only *Diamysis pengoi* and *Mesopodopsis slabberi* (Van Beneden 1861) showed fluorite statoliths, all remaining species vaterite. Among 15 meso- to euhalobious species, six showed fluorite, the remaining nine vaterite. Vaterite was detected in eight, and fluorite in other eight species from anhaline to polyhaline waters of the Marmora basin. This relationship is 18 versus 47 species or subspecies in anhaline to metahaline waters of the Mediterranean, three versus 68 in the E-Atlantic including the Baltic, four versus 34 in the W-Atlantic including Caribbean and Gulf of Mexico, and one versus 19 in the Indian Ocean (excl. Red Sea). Only fluorite was found in ten species from the Red Sea, 49 from the Pacific, three from the Arctic Ocean, and 14 from the Circum-Antarctic Sea (Table 2).

Table 2. Sea basin and tributary distribution of statolith composition in Mysidae.

Item[4]	Main regions	Subdivisions and tributaries	Number of taxa (species plus subspecies)[1,2,3] non-crystalline	fluorite	vaterite
1	Arctic		0	3	0
2-5	W-Atlantic		0	34	11
2		Gulf of Mexico	0	5	1
3		Caribbean	0	13	2
4		Amazonia	0	0	7
5		main basin	0	19	1
6	E-Atlantic	main basin	10	68	3
7-9	Ponto-Mediterranean	(incl. Black Sea)	1	50	31
7		Mediterranean	1	47	18
8		Marmora Sea	0	8	8
9-10	Ponto-Caspian		0	11	19
9		Black Sea	0	7	16
10		Caspian	0	4	10
11-12	Indian Ocean		2	28	1
11		Red Sea	1	10	0
12		all excl. Red Sea	1	19	1
13	Pacific		2	49	0
14	Antarctic		1	14	0
		Total	14	232	48

1) for data sources and references see Supplement
2) includes multiple assignments of species to different regions
3) non-indigenous populations excluded
4) item numbers used as arbitrary code for binary logistic regression analysis

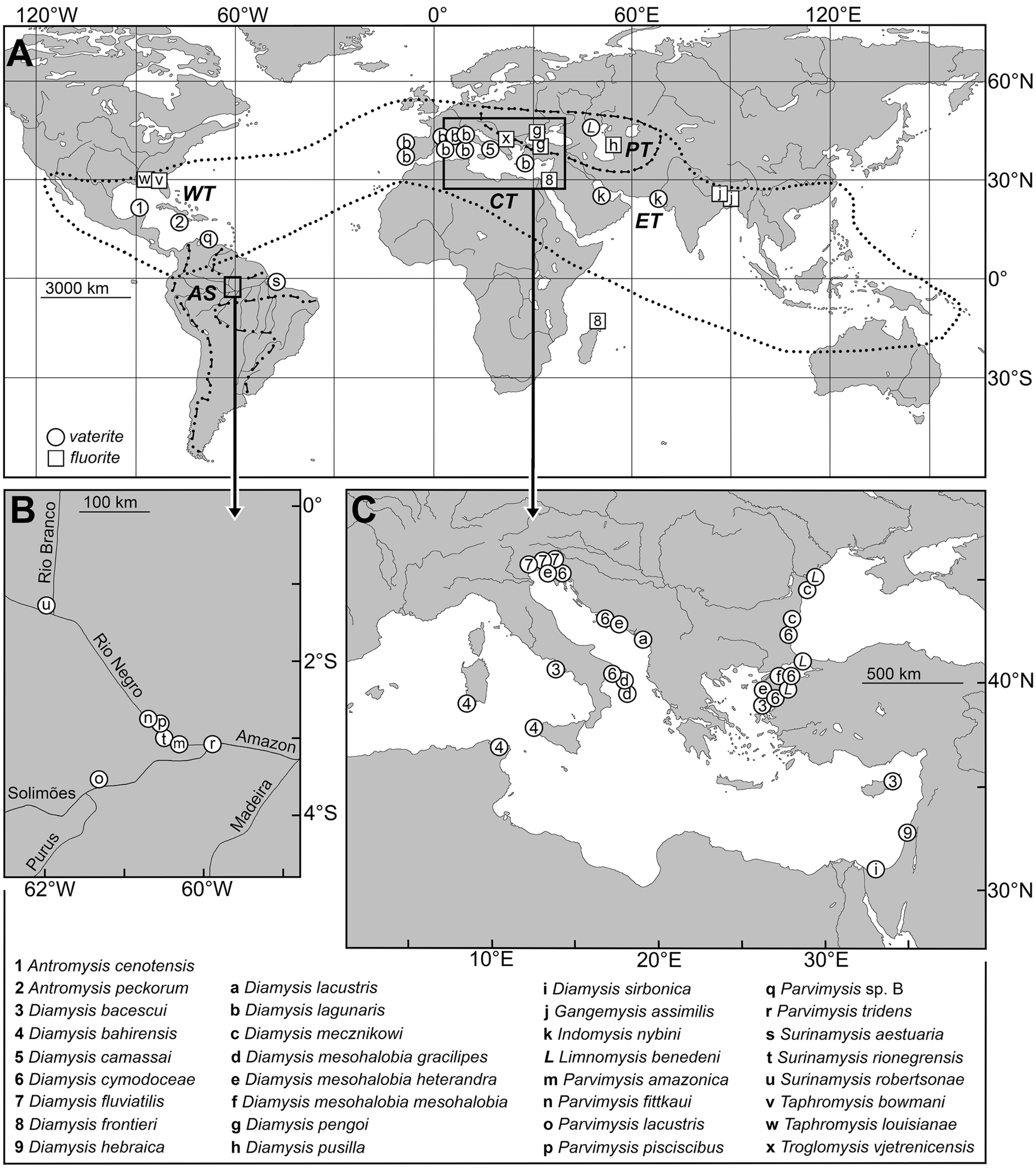

Figure 2. Geographic and taxonomic distribution of vaterite (squares) versus fluorite (circles) in mineralized statoliths within the tribe Diamysini. Maximum extensions of the Paleocene Tethys (dotted line) and the Oligocene Paratethys (dashed line, PT) are semi-schematically projected over the extant distribution of continents according to Hou and Li (2017). WT, CT, and ET indicate western, central and eastern parts of the Tethys. Dash-dotted lines indicate the marine transgression over vast parts of South America, according to Ramos and Alemán (2000), leading to the formation of the Amazon Sea (AS) during the Mid-Miocene (12 Ma b.p.). Overlapping symbols are slightly shifted or omitted; non-indigenous populations not shown (original data set in Supplementary Table). Scale bars indicate distances along the equator (maps A, B) and along the latitude 40°N (map C).

The prerequisites for binary logistic regression analysis were met by only two tribes: salinity and distribution among tributary (sea) basins proved to be significant predictors of mineral composition in the Paramysini ($P \leq 0.044$ and $P \leq 0.007$, respectively; n = 77 populations) and in the Diamysini ($P \leq 0.005$ and $P \leq 0.019$; n = 81). Depth and body size were not significant. The probability of vaterite precipitation increased with decreasing salinity and with increasing basin code (Table 2) in both tribes. The regression coefficients were -0.207 ± s.e. 0.103 and 3.286 ± 1.227, respectively, for Paramysini versus -0.063 ± 0.026 and 0.504 ± 0.180 for Diamysini. The resulting regression equations correctly predicted the minerals in 92% of the actual samples in Paramysini, 85% in Diamysini.

DISCUSSION

Structure of mineralized statoliths

The structure and mineral composition of the here examined statoliths (Fig. 1; Supplementary Table) fit well with data on 61 species given by Wittmann et al. (1993). Fluorite always shows a cubic habit (Fig. 1C), whereas vaterite forms scale-, needle-, rod-, and lens-like aggregates (Ariani et al. 1993, Wittmann et al. 1993). As shown above for *Parvimysis* sp. B, also sheet-like structures (Fig. 1F) occur in certain vaterite statoliths. Among the great variety of vaterite morphs, astoundingly similar mineral aggregates, in part forming roughly statolith-shaped particles, were obtained by Hou and Feng (2006) in glycine-containing aqueous solutions by subtle variations of experimental conditions.

We were unable to confirm previous determinations by Voicu (1974, 1981) of calcite in *Paramysis kessleri* Grimm [in Sars 1895] and *P. kroyeri* (Czerniavsky 1882) based only on stoichometrical methods. Freshly fixed specimens of both species yielded vaterite in our samples, as already shown by Ariani et al. (1993) using X-ray diffraction and supported by the present methodology.

Relative frequencies of statolith minerals

Ariani et al. (1993) determined the statolith composition for 179 populations of 154 extant species belonging to 55 genera of Mysidae on a worldwide scale. All subfamilies recognized at that time were represented in their study. Later, the taxon Mancomysini Băcescu & Iliffe 1986, was established at subfamily level by Meland and Willassen (2007), subsequently acknowledged as a nomen nudum and renamed to Palaumysinae by Wittmann (2013). The data presented here regard 285 extant species and eleven non-nominotypical subspecies (Supplementary Table). Not counting six informal species entries, this represents 25% of the currently known 1139 species plus 21 subspecies within the Mysidae (excerpt from own database). Fluorite (CaF2) was found in 234 taxa (79%), vaterite in 48 (16%), and non-crystalline (organic) components in 14 (5%) (European taxa over-represented). There was no intraspecific variation of mineral composition in fresh material with normal statolith morphology. As stated above, mineral phase conversion may occur in aged collection material; we consider this to be an effect of spontaneous conversion of metastable vaterite into the most stable $CaCO_3$ polymorph, calcite. Moreover, Ariani et al. (1999) experimentally induced in *Diamysis mesohalobia* (as *Diamysis* sp.) the formation of calcite particles besides or instead of normal vaterite statoliths inside statocysts. In that case the calcite particles did not show normal statolith morphology. Specimens with similar abnormalities are rarely found in nature and are not relevant in the present context.

Table 2 shows the highest frequencies of vaterite among mineralized statoliths in mysids from Amazonian (100%), Caspian (71%), and Pontic (70%) basins. Excluding data from recent range expansions, vaterite is represented by 50% in the Marmora Sea, 28% in the

Mediterranean, 4% in the E-Atlantic (excl. Medit.), 11% in the W-Atlantic including Caribbean and Gulf of Mexico, 5% in the Indian Ocean (excl. Red Sea), and none in the remaining sea basins and oceans of the world (Red Sea, Pacific, Arctic, and Circum-Antarctic oceans). There is a strong gradient of decreasing vaterite frequency with increasing distance from Ponto-Caspian and Amazonian regions, respectively. This fits with the peculiar environmental conditions in both regions favouring vaterite rather than fluorite precipitation. Waters with electrolyte-poor (thus also fluoride-poor) conditions are common across Amazonia (Küchler et al. 2000). The Ponto-Caspian is characterized by generally lower salinity with respect to the adjacent marine areas, i.e. the Marmora plus Mediterranean basins. In addition, the water levels in the Ponto-Caspian basins changed drastically during the Pleistocene, correlated with alternations between freshwater and high-salinity phases (Hsü 1978; Mudie et al. 2002; Ryan et al. 2003).

Biogeography of statolith mineralization

As shown in Figs. 2-4, vaterite statoliths were exclusively found along a longitudinal stripe of tropical to temperate, coastal to continental waters from the Gulf of Mexico, over the Caribbean, Amazonia and 'nearby' Atlantic coasts, E-Atlantic, Mediterranean, Pontocaspis, and Indian Ocean. This traces the course (Fig. 2) of the Mesogeic or Tethyan Sea, which extended up until the Miocene from the Caribbean to Australia. According to Ramos and Alemán (2000), the Amazonian Sea was flooded and connected with the Tethyan arm during the Miocene marine transgression about 12 Ma b.p. (Fig. 2). A Tethyan origin has already been hypothesized based on distributional data for *Diamysis* and related genera by Băcescu (1940, 1981), Ariani (1981), Porter et al. (2008), and Wittmann et al. (2016). Molecular clocks are currently not available to shed additional light on a potential Tethyan origin.

The present data also confirm the prevalence of statoliths mineralized with vaterite in extant Mysidae of the Pontocaspis, as observed by Ariani et al. (1993). Those authors concluded that this mineral type may have its roots in the brackish Paratethys, a Tertiary, northern derivate of the central Tethys. Their hypothesis is mainly based on evidence of fossil calcareous (calcite) statoliths in Miocene (mostly Upper Volhynian - Lower Bessarabian) deposits extending from the Caspian to the Vienna and the Pannonian basins (Voicu 1974, 1981; Fuchs 1979; Maissuradze and Popescu 1987). These fossils, assigned to the living genus *Paramysis* by Voicu (1974), were later transferred to the fossil genus *Sarmysis* Maissuradze & Popescu 1987 - with reference to the Tertiary Sarmatian Sea - by Maissuradze and Popescu (1987). A Tertiary origin of *Paramysis* is also suggested by rough estimates of Audzijonyte et al. (2008: Fig. 5) that genetic divergence of 14 *Paramysis* species, 12 of which we demonstrate to exhibit vaterite (listed in Supplementary Table), could altogether be rooted 12 Ma b.p., subgenera 6-10 Ma, and pairs of sister species 2 Ma.

The ecological and statolith characteristics observed in *Paramysis* species of the Mediterranean are explained (Wittmann and Ariani 2011) in the light of the Paratethyan drainage during the Messinian (Upper Miocene) salinity crisis. A Paratethyan origin can also be attributed to the Mediterranean species and subspecies of the genus *Diamysis* based on morphological, ecological, paleogeographical and paleoecological data (Ariani 1981, Ariani and Wittmann 2000). By contrast, all E-Atlantic and Mediterranean populations of *Hemimysis* taxa examined show fluorite statoliths (Fig. 4) and share a deeply incised telson, thus supporting the hypothesis of Ledoyer (1989) that the Mediterranean taxa plus the (fluorite-bearing) Pontic subspecies *H. lamornae pontica* Czerniavsky 1882, could originate from the E-Atlantic. The Ponto-Caspian endemics *H.*

anomala G.O. Sars 1907, and *H. serrata* Băcesco 1938, share vaterite statoliths and differ from the remaining congeners by a terminally truncate or only weakly notched telson; they therefore probably represent a separate phylogeographic branch.

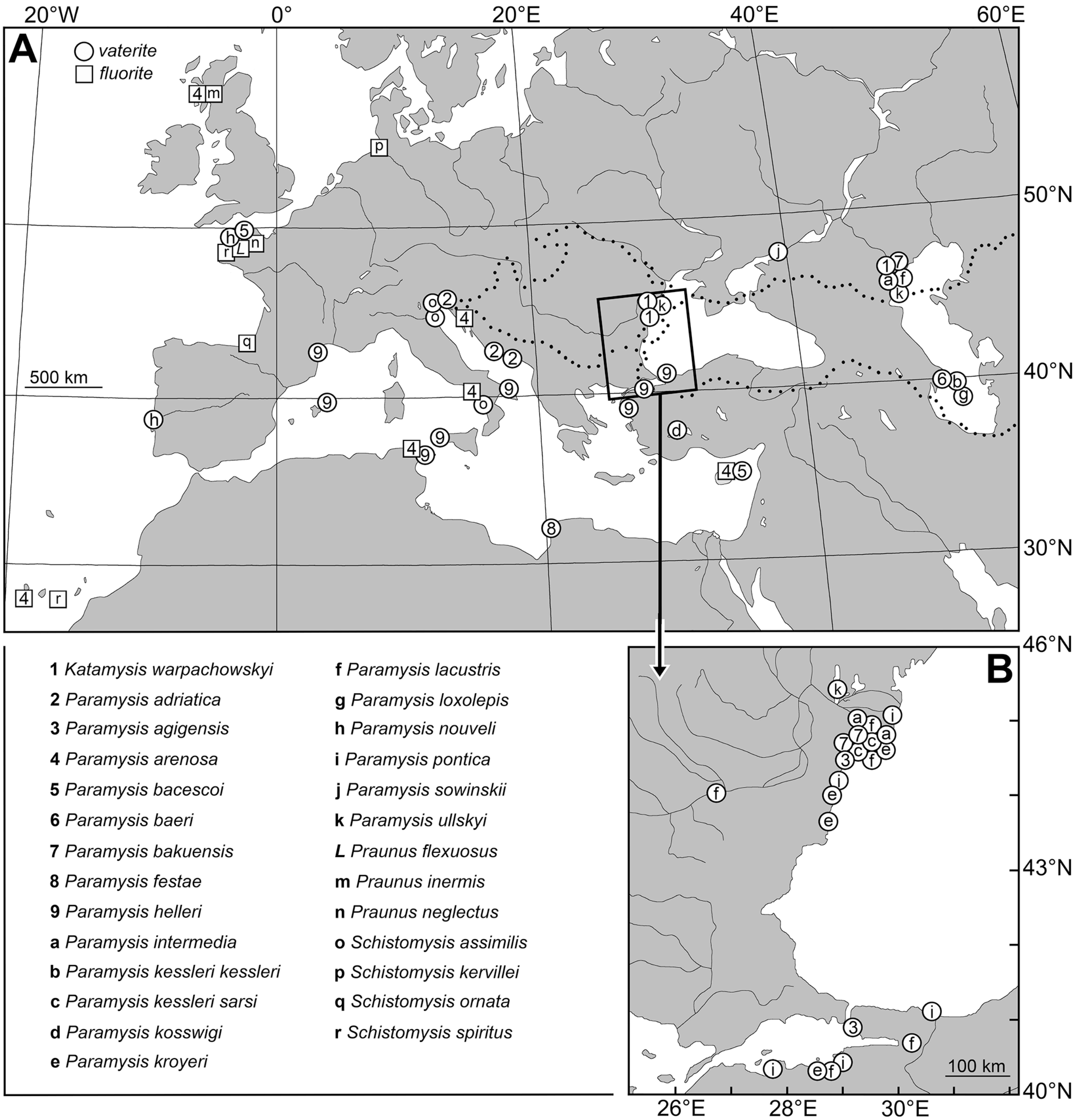

Figure 3. Geographic and taxonomic distribution of vaterite (squares) versus fluorite (circles) in mineralized statoliths within the tribe Paramysini. Dotted line in map A denotes the Mid-Miocene extension of the Paratethys (simplified following Palcu et al. 2017). Overlapping symbols are slightly shifted or omitted; non-indigenous populations not shown (original data set in Supplementary Table). Scale bars indicate distances along the latitude 40°N.

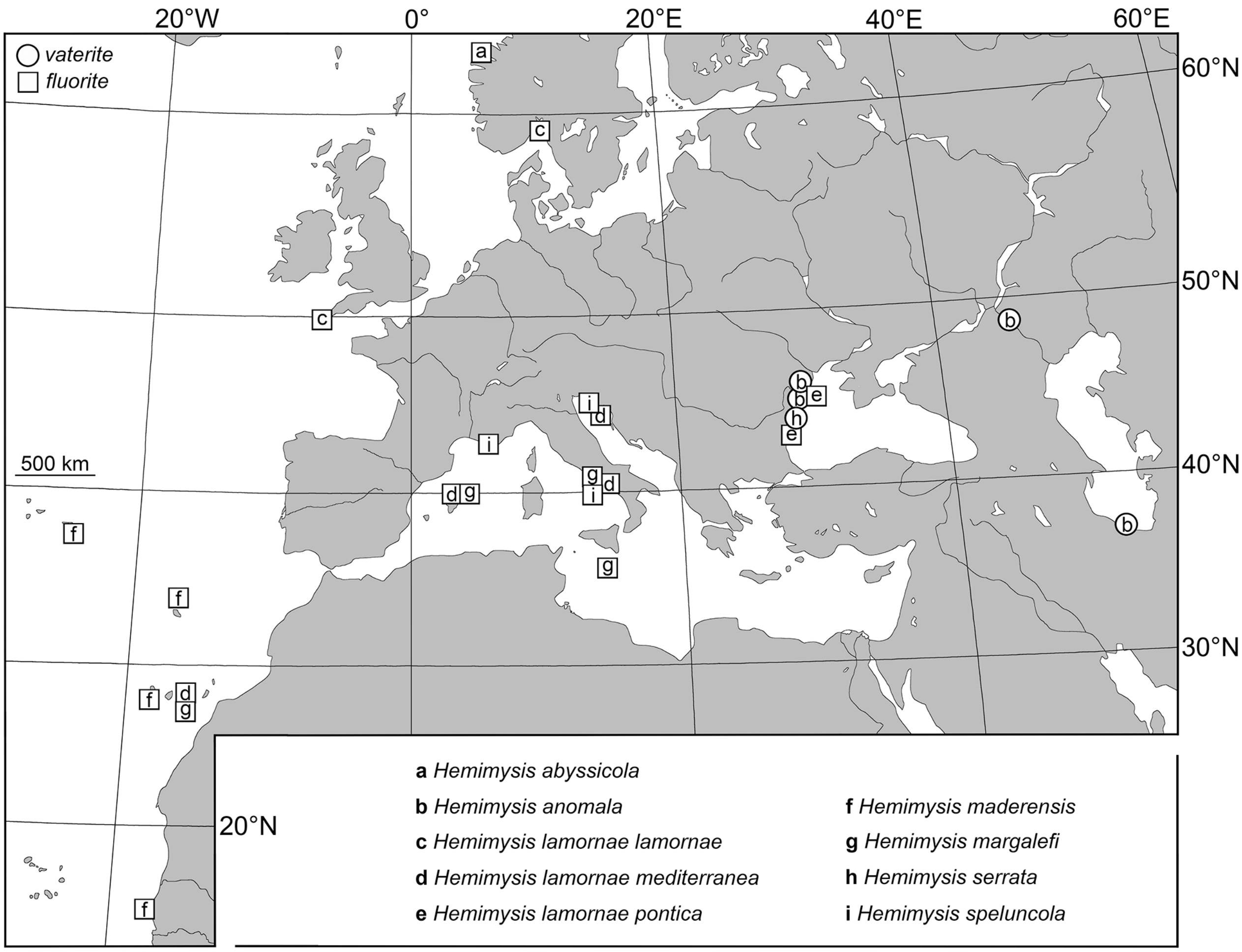

Figure 4. Geographic and taxonomic distribution of vaterite (squares) versus fluorite (circles) in mineralized statoliths within the tribe Hemimysini (only genus *Hemimysis*). Overlapping symbols are slightly shifted or omitted; non-indigenous populations not shown (original data set in Supplementary Table). Scale bar indicates distance along the latitude 40°N.

The Recent distribution of calcareous (vaterite) statoliths (Figs. 2-4) shows a strong taxonomic component insofar as the tribe Diamysini almost exclusively inhabits the Tethyan realm from the Gulf of Mexico plus Amazonia to the Strait of Malacca (E-Indian Ocean); the tribes Paramysini and Hemimysini exclusively inhabit the E-Atlantic to the Caspian, not considering non-indigenous populations of recently expansive species.

We show here that each of the three vaterite-bearing tribes are heterogeneous by comprising vaterite- as well as fluorite-precipitating genera; this heterogeneity is also evident within the genera *Hemimysis*, *Paramysis*, *Schistomysis*, and *Diamysis*, which are all representatives of the three tribes. In extension of the hypothesis by Ariani et al. (1993), this heterogeneity is explained using the classical concept of homoiology developed by Plate (1902), Riedl (1975), and others: fluorite-bearing marine ancestors likely penetrated freshwaters in the Tethyan (including the Miocene Amazon Sea) and Paratethyan basins, where they developed the precipitation of vaterite. This gave their successors the predispositions for shifting into separate evolutionary lines from fluorite to vaterite and *vice versa*. Accordingly, the vaterite-bearing species in marine waters are interpreted as offspring of ancestors that returned from freshwater to the sea.

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AUTHOR CONTRIBUTIONS

All authors wrote and contributed equally to the paper.

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Table in Supplement. Taxonomy, sampling data, and measurements related to the mineral composition of statoliths in the family Mysidae (Mysida).

Taxon	**Locality**	**Depth** (m)	**Salinity** (psu)	**N** (ind.)	**Body length** (mm)		**Diameter** (µm)		**Mineral**	**Reference**
					range	median	range	median		
Subfamily Boreomysinae										
Boreomysis arctica (Krøyer)	NE-Atlantic, Korsfjorden, 70.235°N 23.320°E	200	35	5	19-24	21	130-190	170	none	Schlacher et al. 1992, Ariani et al. 1993
idem	NE-Atlantic, Canary Islands, La Palma, off Taxacorte, 28.5833°N 18.0667°W	≤1000	35	1	13	13	60-67	65	none	Wittmann et al. 2004
Boreomysis atlantica H. Nouvel	SSE-Atlantic, N of Bouvet Island, 51.0117°S 6.1283°E	1000-3000	35	1	38	38	130	130	none	orig. (present authors)
Boreomysis bispinosa O.S. Tattersall	NE-Atlantic, NW of Cape Verde Islands, 16.7258°N 25.0844°W	≤1000	35	2	23-25	24	88-120	100	none	Wittmann et al. 2004
Boreomysis brucei W.M. Tattersall	SSE-Atlantic, N of Bouvet Island, 51.0117°S 6.1283°E	1000-3000	35	2	28-30	29	90-100	95	none	orig.
idem	Antarctic, Weddell Sea, 73.689°S 23.182°W	980-990	35	5	25-38	35	90-130	110	none	Ariani et al. 1993
Boreomysis californica Ortmann	SSE-Atlantic, N of Bouvet Island, 51.0117°S 6.1283°E	1000-3000	35	1	13	13	110	110	none	orig.
Boreomysis megalops G.O. Sars	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	3	11-13	13	120-170	150	none	Schlacher et al. 1992, Ariani et al. 1993
idem	Mediterranean, Tyrrhenian Sea, off Sardinia, 39.07°N 9.25°E	330-400	36	5	9-13	11	110-180	160	none	Franco et al. 1989, Ariani et al. 1993
Boreomysis microps G.O. Sars	NE-Atlantic, Biscay Depth, 44°N 13°W	500-1000	35	10	10-17	14	100-130	120	none	Franco et al. 1989, Schlacher et al. 1992, Ariani et al. 1993
idem	SE-Atlantic, pelagial NW of Cape Town, 31.3517°S 9.7650°E	≤3000	35	1	14	14	108	108	none	Wittmann (in press for 2019)
Boreomysis sibogae Hansen	SSE-Atlantic, N of Bouvet Island, 51.0117°S 6.1283°E	1000-3000	35	6	15-21	18	100-150	130	none	orig.
Boreomysis sphaerops Ii	NW-Pacific, pelagial above Suruga Canyon, 34.467°N 138.583°E	≤850	35	7	19-26	22	180-210	200	none	Ariani et al. 1993
Boreomysis tridens G.O. Sars	NE-Atlantic, Norway, continental shelf, 64.250°N 8.683°E	520	35	7	23-33	26	90-160	130	none	Ariani et al. 1993
Subfamily Rhopalophthalminae										
Rhopalophthalmus	SW-Pacific, E-Australia, Coral Sea,	20	35	3	5-9	6	90-120	110	none	orig.

brisbanensis Hodge	23.8581°S 152.4289°E									
Rhopalophthalmus longicauda O.S. Tattersall	E-Atlantic, Gulf of Guinea, Sao Tomé, Pedra do Braga, 0.0123°S 6.5112°E	20-24	35	8	5-8	6	100-140	120	none	orig.
Rhopalophthalmus macropsis Pillai	S-Red Sea, Bab-al-Mandab Strait, 12.6025°N 43.2842°E	140-150	36	1	10	10	130	130	none	orig.
Rhopalophthalmus terranatalis O.S. Tattersall	SW-Indian Ocean, South Africa, Algoa Bay, Sundays River estuary, 33.7167°S 25.8514°E	0-6	10-34	20	9-14	14	140-240	200	none	Franco et al. 1989, Schlacher et al. 1992, Ariani et al. 1993, Wittmann et al. 2014
Subfamily Siriellinae										
Siriella aequiremis Hansen	E-Indian Ocean, off Christmas Island, 10.917°S 104.983°E	0	35	15	6-11	8	140-350	310	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Siriella anomala Hansen	W-Pacific, Sulu Sea, Philippines, Batbatan, off Panay, 11.28°N 121.70°E	10	35	10	9-12	10	250-300	290	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Siriella armata (H. Milne-Edwards)	NE-Atlantic, Canary Islands, Gran Canaria, off Mogán, 27.75°N 15.87°W	≤1500	35	1	14	14	227-233	230	fluorite	Wittmann et al. 2004
idem	Mediterranean, N-Adriatic, Gulf of Trieste, 45.533°N 13.600°E	0-1	32-36	10	11-18	15	90-320	240	fluorite	Schlacher et al. 1992, Ariani et al. 1993
idem	Marmora Sea, beach of Erdek, 40.3976°N 27.8290°E	1-4	23	10	8-15	10	100-150	130	fluorite	orig.
idem	SW-Black Sea, beach east of Sile, 41.168°N 29.659°E	3-5	16	10	8-10	9	110-130	120	fluorite	orig.
Siriella brevicaudata Paulson	Red Sea, Gulf of Aqaba, 28.500°N 34.522°E	1-2	42	5	4-6	5	60-100	90	fluorite	Ariani et al. 1993
Siriella castellabatensis Ariani & Spagnuolo	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.33°N 14.93°E	<30	38	10	5-8	7	90-150	130	fluorite	Ariani et al. 1983, 1993
Siriella chierchiae Coifmann	Caribbean, Belize, Carrie Bow Cay, 16.80°N 88.08°W	1	36	3	7-10	8	90-140	100	fluorite	orig.
idem	Caribbean, Lesser Antilles, Curaçao, 12.2076°N 69.0549°W to 12.1392°N 68.9981°W	0.1-30	36-53	15	7-11	9	100-130	110	fluorite	orig.
idem	Caribbean, Lesser Antilles, Bonaire, 12.146°N 68.277°W	9	36	1	5	5	80	80	fluorite	orig.
Siriella clausii G.O. Sars	NE-Atlantic, Canary Islands, Gran Canaria, off Mogán, 27.75°N 15.87°W	≤1500	35	1	5	5	93-107	100	fluorite	Wittmann et al. 2004
idem	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.283°N 14.933°E	<30	38	10	6	6	120-180	150	fluorite	Ariani et al. 1983, 1993, Schlacher et al. 1992
idem	Mediterranean, Siciliy, Lake Faro,	<5	33	10	4-8	5	100-160	120	fluorite	Ariani et al. 1983, 1993

	38.2671°N 15.6353°E									
Siriella crassipes G.O. Sars	NE-Atlantic, Azores, Faial, Monte da Guia, 38.5167°N 28.6167°W	35	35	10	8-10	9	100-140	130	fluorite	orig.
Siriella gracilipes H. Nouvel	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.28°N 14.93°E	1-60	38	10	7-9	9	110-220	190	fluorite	Ariani et al. 1983 (as *S. jaltensis gracilipes*), Schlacher et al. 1992, Ariani et al. 1993
Siriella gracilis Dana	NW-Indian Ocean, Gulf of Aden, 12.07°N 46.00°E	0	36	5	4-7	5	90-160	130	fluorite	Ariani et al. 1993
idem	Mid W-Pacific, 3000 km E of Philippines, 14.12°N 155.00°E	0	34-35	10	4-6	5	90-150	130	fluorite	Ariani et al. 1993
Siriella inornata Hansen	W-Pacific, Sulu Sea, Philippines, Batbatan, Panay, 11.28°N 122.01°E	coastal	33-34	10	9-14	11	140-220	190	fluorite	Ariani et al. 1993
Siriella jaltensis (Czerniavsky)	Mediterranean, N-Adriatic, Lagoon of Venice, 45.470°N 12.445°E	0-3	30	4	5-7	6	80-130	110	fluorite	orig.
idem	Marmora Sea, Büyükada Island, 40.8597°N 29.1111°E	1-3	17	2	6-7	7	80-130	100	fluorite	orig.
idem	NW-Black Sea, coast at Agigea, 44.09°N 28.68°E	2-6	14	10	8-10	9	100-160	130	fluorite	orig.
Siriella longipes Nakazawa	NW-Pacific, Japan, Kominato, 35.142°N 140.308°E	20	33-35	10	11-16	14	200-280	250	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Siriella macrophthalma Murano	Caribbean, Lesser Antilles, Curaçao, 12.1392°N 68.9981°W	7-21	36	3	7-9	8	120-180	150	fluorite	orig.
Siriella norvegica G.O. Sars	Mediterranean, N-Adriatic, Istria, 45.100°N 13.617°E	1	36	5	6-9	8	120-190	160	fluorite	Ariani et al. 1993
Siriella pacifica Holmes	E-Pacific, Gulf of California, Aqua Verde Bay, 25.525°N 111.062°W	10	35	10	8-12	10	180-260	230	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Siriella paulsoni Coifmann	Red Sea, Dahlak Archipelago, Enteraria Island, 15.8942°N 40.1231°E	-	42	3	5-6	6	110-150	140	fluorite	orig.
Siriella roosevelti W.M. Tattersall	E-Pacific, Galapagos Islands, Charles I. = Isla Floreana, 1.2317°S 90.4567°W	10	35	10	6-10	7	150-200	170	fluorite	Ariani et al. 1993
Siriella sarsi (Czerniavsky)	Mediterranean, E-Adriatic, Dalmatia, Morinje, 43.68°N 15.95°E	0.5	36	10	8-12	9	140-210	160	fluorite	orig.
idem	SW-Mediterranean, Baie de Tunis, Sidi Rais, 36.768°N 10.545°E	1-1.3	37	3	9-13	10	150-180	160	fluorite	orig.
Siriella thompsonii (H. Milne Edwards)	SW-Atlantic, Argentinian Basin, 47.617°S 60.017°W	0	35	5	8-11	10	150-210	190	fluorite	Ariani et al. 1993
idem	NE-Atlantic, off Selvagens Islands,	≤1000	35	4	4-5	5	108-145	125	fluorite	Wittmann et al. 2004

	30.0908°N 15.8686°W								
idem	NW-Indian Ocean, Gulf of Aden, 12.07°N 46.00°E	0	36	5	7-12	9	180-290	260	fluorite	Ariani et al. 1993
idem	W-Pacific, Philippine Sea, 22.02°N 132.30°E	0	34-35	10	6-9	7	150-270	190	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Siriella trispina Ii	NW-Pacific, East China Sea, 29.2°N 124.5°E	0	33-35	5	8-12	10	170-210	190	fluorite	Ariani et al. 1993
Siriella vulgaris rostrata W.M. Tattersall	W-Pacific, Sulu Sea, Philippines, Batbatan, Panay, off 11.28°N 121.70°E	0	33-34	10	5-9	7	150-230	170	fluorite	Ariani et al. 1993
Siriella vulgaris vulgaris Hansen	NW-Indian Ocean, Southern Arabian Gulf, Abu Dhabi, 24.8305°N 53.7265°E	22	37	3	4-6	5	70-110	100	fluorite	orig.
Subfamily Gastrosaccinae										
Tribus Anchialinini										
Anchialina agilis (G.O. Sars)	NE-Atlantic, Tenerife, off Los Cristianos, 28.03°N 16.73°W	≤500	35	2	4-6	5	52-66	59	fluorite	Wittmann et al. 2004
idem	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.552°N 14.893°E	5-20	38	25	4-7	6	50-90	70	fluorite	Ariani et al. 1983, 1993, Schlacher et al. 1992, orig.
Anchialina oculata Hoenigman	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.65°N 14.75°E	<60	38	5	4-6	5	50-70	60	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Anchialina typica typica (Krøyer)	NW-Atlantic, Bermuda, 1 km S of "Crescent", 32.3885°N 64.8163°W	5	36	1	3	3	40	40	fluorite	orig.
idem	NE-Atlantic, Canary Islands, off Gran Canaria, 27.6819°N 15.6667°W	100-0	35	3	2-3	3	30-40	40	fluorite	orig.
Tribus Gastrosaccini										
Chlamydopleon aculeatum Ortmann	W-Atlantic, Brazil, mouth of Rio Tocantino, 0.7°S 48.2°W	28	11.4	2	6	6	110-120	110	fluorite	orig.
Chlamydopleon dissimile (Coifmann)	SW-Atlantic, Brazil, off Santos, 24.25°S 46.17°W	epi-benthic	35	5	7-10	8	80-110	90	fluorite	orig.
Coifmanniella mexicana (W.M. Tattersall)	SW-Atlantic, Brazil, off Santos, 24.25°S 46.17°W	epi-benthic	35	3	6-9	7	90-110	100	fluorite	orig.
Gastrosaccus gordonae O.S. Tattersall	W-Indian Ocean, South Africa, Kosi Bay, 27.010°S 32.867°E	epi-benthic	brackish	6	6-8	7	100-110	105	fluorite	orig.
Gastrosaccus kempi W.M. Tattersall	NW-Indian Ocean, Southern Arabian Gulf, Abu Dhabi, 24.8123°N 53.7093°E	22	37	1	7	7	80	80	fluorite	orig.
Gastrosaccus mediterraneus Băcescu	Mediterranean, SW-Adriatic, 46 km NW of Brindisi, Torre Canne, 40.833°N 17.483°E	0	38	15	6-8	7	50-100	80	fluorite	Ariani et al. 1983, 1993, Schlacher et al. 1992, orig.

Gastrosaccus roscoffensis Băcescu	NE-Atlantic, English Channel, near Roscoff, 48.701°N 4.072°W	<20	35	10	6-9	8	70-100	80	fluorite	Ariani et al. 1983, 1993
Gastrosaccus sanctus (Van Beneden)	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.5517°N 14.8983°E	2-16	32-38	15	5-9	8	50-80	70	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Gastrosaccus spinifer (Goës)	NE-Atlantic, North Sea, German Bight, 56.67°N 5.50°E	50-60	34-35	6	9-15	14	60-110	90	fluorite	Ariani et al. 1993
Gastrosaccus widhalmi (Czerniavsky)	NW-Black Sea, coast at Costineşti, 43.9435°N 28.6389°E	2	13	5	10-11	10	90-110	100	fluorite	orig.
idem	W-Black Sea, Vama Veche, 43.765°N 28.579°E	1-3	17	10	9-14	10	70-110	90	fluorite	Ariani et al. 1993 (as *G. sanctus widhalmi*)
idem	SW-Black Sea, beach of Karasu, 41.1069°N 30.7126°E	1-2	16	25	5-9	7	50-80	70	fluorite	orig.
idem	Marmora Sea, beach of Yeniköy, 40.40°N 28.38°E	0-1	18	25	6-8	7	50-90	70	fluorite	orig.
Haplostylus bacescui Hatzakis	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.57°N 14.85°E	12-28	38	12	6-9	8	90-140	130	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Haplostylus erythraeus Kossmann	NW-Indian Ocean, Southern Arabian Gulf, Abu Dhabi, 24.8226°N 53.5994°E	22	-	4	5-6	6	80-110	100	fluorite	orig.
Haplostylus lobatus (H. Nouvel)	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.57°N 14.85°E	28-40	38	5	7-9	8	100-130	120	fluorite	Ariani et al. 1983, 1993, orig.
Haplostylus magnilobatus (Băcescu & Schiecke)	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.75°N 13.95°E	35-40	36	5	7-8	8	70-120	100	fluorite	Schlacher et al. 1992, Ariani et al. 1993, Wittmann et al. 2014
Haplostylus normani (G.O. Sars)	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.57°N 14.85°E	12-20	38	10	6-9	7	90-150	130	fluorite	Ariani et al. 1993
idem	Marmora Sea, off beach of Erdek, 40.3952°N 27.8269°E	15	23	2	5-6	5	70-100	85	fluorite	orig.
Haplostylus pusillus (Coifmann)	N-Red Sea, pelagic sample, 25.80°N 35.25°E	-	42	10	5-6	5	60-100	80	fluorite	orig.
Subfamily Erythropinae										
Tribus Arachnomysini										
Caesaromysis hispida Ortmann	NW-Pacific, off Japan, 35.20°N 139.38°E	≤1060	34	5	8-11	9	90-130	110	fluorite	Ariani et al. 1993
Tribus Erythropini										
Amathimysis cherados Brattegard	Caribbean, Curaçao, Boca Sint Michiel, Sun Reef, 12.1392°N 68.9981°W	5-21	36	10	2-3	2	50-90	70	fluorite	orig.
Erythrops elegans	Mediterranean, Tyrrhenian Sea, Gulf of	16	38	8	2-5	3	70-130	120	fluorite	Schlacher et al. 1992, Ariani et

(G.O. Sars)	Salerno, 40.467°N 14.917°E									al. 1993
Erythrops erythrophthalmus (Goës)	NE-Atlantic, Norway, W of Tromsö, 69.70°N 18.03°E	-	35	4	9-11	10	160-200	180	fluorite	orig.
Erythrops glacialis G.O. Sars	NNE-Atlantic, Greenland Sea, slope at shelf margin, 75.0045°N 12.6378°W	760	35	5	9-12	10	180-220	190	fluorite	orig.
Erythrops microps (G.O. Sars)	NE-Atlantic, Rockall Trough area, 56.45°N 9.13°W	700	35	10	6-10	7	150-200	170	fluorite	Ariani et al. 1993
Erythrops neapolitanus Colosi	Mediterranean, E-Adriatic, Dalmatia, 43.5847°N 15.6333°E	200	38	5	4-6	5	100-150	130	fluorite	Ariani et al. 1993
Erythrops peterdohrni Băcescu & Schiecke	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.75°N 13.95°E	35-40	37	5	3-5	3	70-100	90	fluorite	orig.
Erythrops serratus (G.O. Sars)	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	5	7-10	9	140-200	180	fluorite	Ariani et al. 1993
Euchaetomera glyphidophthalmica Illig	NW-Pacific, off Japan, 36.12°N 142.35°E	≤1050	35	5	4-8	5	150-240	210	fluorite	Ariani et al. 1993
Euchaetomera intermedia H. Nouvel	NE-Atlantic, off Selvagens Islands, 29.9867°N 16.0222°W	≤1000	35	1	3	3	90	90	fluorite	orig.
Euchaetomera tenuis G.O. Sars	NW-Pacific, off Japan, 41.0°N 165.1°E	≤1250	35	6	7-12	9	180-290	240	fluorite	Ariani et al. 1993
idem	NE-Indian Ocean, E of Ceylon, 7.02°N 85.94°E	≤2500	35	1	6	6	160-169	164.5	fluorite	orig.
Euchaetomera typica G.O. Sars	NW-Pacific, off Japan, 43.97°N 154.90°E	≤950	35	9	6-8	7	140-250	180	fluorite	Ariani et al. 1993
idem	NE-Atlantic, NW of Cape Verde Islands, 16.6483°N 24.8228°W	≤1000	35	1	7	7	170-173	170	fluorite	Wittmann et al. 2004
Euchaetomera zurstrasseni (Illig)	Antarctic, Weddell Sea, 67.955°S 27.207°W	140-300	35	5	6-9	8	100-230	210	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Holmesiella affinis Ii	NW-Pacific, Honshu, Japan, 34.90°N 138.45°E	72	34-35	8	9-12	11	150-320	300	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Illigiella brevisquamosa (Illig)	NW-Pacific, Honshu, Japan, 35.10°N 138.67°E	280	33-34	10	6-10	8	110-190	160	fluorite	Ariani et al. 1993
Katerythrops oceanae Holt & Tattersall	NW-Pacific, off Japan, 34.917°N 139.5°E	≤680	34-35	7	6-9	8	70-110	90	fluorite	Franco et al. 1989, Ariani et al. 1993
Katerythrops resimorus O.S. Tattersall	NE-Atlantic, Canary Islands, Fuerteventura, off Morrojable, 27.97°N 14.40°W	≤1000	35	2	5-7	6	58-91	74	fluorite	Wittmann et al. 2004
Longithorax alicei	NE-Atlantic, Canary Islands, off Tenerife (28.03°N 16.73°W) and Gran	≤500	35	2	5-7	6	140-147	143.5	fluorite	Wittmann et al. 2004

H. Nouvel	Canaria (27.75°N 15.87°W)									
Longithorax capensis Zimmer	SE-Atlantic, off Cape of Good Hope, 34°S 18°E	≤155	35	10	6-10	8	190-260	220	fluorite	orig.
Longithorax nouveli O.S. Tattersall	NE-Atlantic, Canary Islands, Fuerteventura, off Morrojable, 27.97°N 14.40°W	≤1000	35	1	5	5	120-123	121.5	fluorite	Wittmann et al. 2004
idem	SE-Atlantic, 175 km NW of South Georgia, 53.0°S 40.0°W	222-200	35	1	5	5	120	120	fluorite	orig.
Longithorax sp. A	Mid S-Indian Ocean, 34.227°S 80.515°E	≤2000	35	1	8	8	180-190	185	fluorite	Wittmann (in press for 2019)
Meterythrops microphthalmus W.M. Tattersall	NW-Pacific, Sea of Japan, 42.467°N 135.983°E	570-730	34	10	15-26	18	200-390	340	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
Meterythrops pictus Holt & Tattersall	NE-Atlantic, Rockall Trough Area, 54.90°N 12.33°W	1500-2000	35	8	10-14	12	120-170	150	fluorite	Ariani et al. 1993
idem	NW-Pacific, Japan, Sagami Bay, 35.15°N 139.28°E	<1000	35	5	10-15	13	100-180	140	fluorite	Ariani et al. 1993
Parerythrops bispinosus Nouvel & Lagardère	NE-Atlantic, Canary Islands, Fuerteventura, off Morrojable, 27.97°N 14.40°W	≤1000	35	1	3	3	57-60	60	fluorite	Wittmann et al. 2004
Parerythrops spectabilis G.O. Sars	NNE-Atlantic, Greenland Sea, slope at shelf margin, 75.0045°N 12.6378°W	760	35	1	6	6	170	170	fluorite	orig.
Pleurerythrops secundus Murano	NW-Pacific, Japan, off Shizuoka, 34.90°N 138.43°E	32-44	35	3	4-5	5	90-120	110	fluorite	orig.
Pseudamblyops conicops Ii	NW-Pacific, off Japan, 34.88°N 138.63°E	≤1300	34	10	9-13	11	100-140	110	fluorite	Ariani et al. 1993
Teraterythrops robustus (Birstein & Tchindonova)	NW-Pacific, off Japan, 34.067°N 139.317°E	≤1440	35	10	4-7	5	80-130	100	fluorite	Ariani et al. 1993
Tribus Amblyopsini										
Amblyops abbreviatus (G.O. Sars)	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	5	10-14	11	180-270	230	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Amblyops antarcticus O.S. Tattersall	Antarctic, Weddell Sea, 74.848°S 27.612°W	470	35	10	10-17	14	170-240	200	fluorite	Ariani et al. 1993
Amblyops tattersalli Zimmer	Antarctic, Weddell Sea, 74.45°S 25.80°W	520	35	5	22-29	25	290-410	360	fluorite	Ariani et al. 1993
Dactylamblyops hodgsoni Holt & Tattersall	Antarctic, Weddell Sea, 75.20°S 27.84°W	400-600	35	10	17-26	21	240-360	300	fluorite	Schlacher et al. 1992, Ariani et al. 1993

Dactylamblyops iii Nouvel & Lagardère	NW-Pacific, off Japan, 34.93°N 138.65°E	≤1300	34	7	8-11	9	180-300	230	fluorite	Ariani et al. 1993
Dactylamblyops murrayi W.M. Tattersall	NW-Pacific, off Japan, 34.75°N 138.65°E	≤480	34	5	9-16	12	190-330	230	fluorite	Ariani et al. 1993
Paramblyops brevirostris O.S. Tattersall	Antarctic, Weddell Sea, 70.97°S 11.17°W	350-380	35	5	11-18	15	210-350	280	fluorite	Ariani et al. 1993
Tribus Pseudommini										
Pseudomma affine (G.O. Sars)	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	10	7-10	8	100-250	130	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Pseudomma armatum Hansen	Antarctic, Weddell Sea, 74.45°S 25.80°W	250	35	10	13-24	21	220-350	290	fluorite	Ariani et al. 1993
Pseudomma belgicae Hansen [in Holt & Tattersall]	Antarctic, Weddell Sea, 75.47°S 27.02°W	240	35	10	7-11	9	160-270	220	fluorite	Ariani et al. 1993
Pseudomma japonicum Murano	NW-Pacific, Honshu, Japan, 34.90°N 138.45°E	72	33-35	6	3-6	4	80-110	90	fluorite	Ariani et al. 1993
Pseudomma latiphthalmum Murano	NW-Pacific, Honshu, Japan, 35.10°N 138.67°E	280	33-35	9	5-8	6	80-120	90	fluorite	Franco et al. 1989, Ariani et al. 1993
Pseudomma roseum G.O. Sars	NE-Atlantic, Norway, Fensfjord, 60.85°N 4.92°E	460	35	10	11-16	14	150-240	190	fluorite	Ariani et al. 1993
Subfamily Leptomysinae										
Tribus Afromysini										
Mysideis insignis (G.O. Sars)	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	5	14-19	16	250-320	270	fluorite	Ariani et al. 1993
Mysideis parva Zimmer	Mediterranean, Adriatic, E of Ancona, 43.52°N 14.15°E	225	37	5	8-11	9	200-240	230	fluorite	Ariani et al. 1993
Prionomysis aspera Ii	NW-Pacific, Central Japan, Surugu Bay, 34.92°N 138.47°E	20	35	3	7-10	9	180-230	210	fluorite	orig.
Prionomysis sp. 1 in Fenton 1985	SW-Pacific, Tasman Sea, Storm Bay, Hope Beach, 43.05°S 147.40°E	10	35	10	8-10	9	210-340	310	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
Pseudomysis dactylops W.M. Tattersall	NW-Pacific, Honshu, Japan, 35.0°N 139.8°E	220-330	33-35	10	9-13	13	140-280	200	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
Tenagomysis tasmaniae Fenton	SW-Pacific, Tasman Sea, Derwent River, Taroona Beach, 42.9536°S 147.3514°E	coastal	35	10	8-11	9	190-250	230	fluorite	Ariani et al. 1993
Tribus Leptomysini										
Antichthomysis notidana	SW-Pacific, Tasman Sea, Storm Bay,	coastal	35	5	7-10	9	180-280	240	fluorite	Ariani et al. 1993

Fenton	Hope Beach, 43.05°S 147.40°E									
Leptomysis buergii Băcescu	Mediterranean, Ionian Sea, Gulf of Taranto, 40.297°N 17.732°E	2-5	38	10	6-11	8	140-300	230	fluorite	Ariani et al. 1983 (as *L. burgii*), Schlacher et al. 1992, Ariani et al. 1993
Leptomysis capensis Illig	NE-Atlantic, Canary Islands, off Gran Canaria, 27.6819°N 15.6667°W	≤100	35	1	4	4	130	130	fluorite	Wittmann et al. 2009
idem	SW-Indian Ocean, SW of Port Elizabeth, 34°S 26°E	≤49	35	10	7-10	9	190-260	225	fluorite	Wittmann et al. 2009
Leptomysis gracilis (G.O. Sars)	NE-Atlantic, Gulf of Biscay, off Arcachon, 44.52°N 1.57°W	90	35	10	7-11	9	160-230	190	fluorite	Ariani et al. 1993
Leptomysis heterophila Wittmann	Mediterranean, N-Adriatic, Istria, Banjole Island, 45.0740°N 13.6105°E	17	34-37	10	5-10	8	150-220	190	fluorite	Ariani et al. 1993
Leptomysis lingvura adriatica Wittmann	Mediterranean, Ionian Sea, Gulf of Taranto, 40.297°N 17.732°E	2	38	10	4-8	6	150-210	180	fluorite	Ariani et al. 1983 (as *L. lingvura*), Ariani et al. 1993
Leptomysis lingvura marioni (Gourret)	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.70°N 13.95°E	8-12	35-37	10	4-9	7	140-240	190	fluorite	Ariani et al. 1993
Leptomysis mediterranea atlantica Wittmann	NE-Atlantic, Gulf of Biscay, Bassin d'Arcachon, 44.70°N 1.15°W	<10	35	5	9-12	11	210-280	240	fluorite	Ariani et al. 1993
Leptomysis mediterranea mediterranea G.O. Sars	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.47°N 14.93°E	2-4	28-36	10	7-11	9	150-300	270	fluorite	Ariani et al. 1993
Leptomysis megalops Zimmer	NE-Atlantic, Gulf of Biscay, 44.52°N 2.07°W	180	35	7	8-11	9	190-250	220	fluorite	Ariani et al. 1993
Leptomysis posidoniae Wittmann	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.70°N 13.95°E	12	35-37	10	6-9	7	140-250	180	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Leptomysis truncata pontica Czerniavsky	NW-Black Sea, coast near Sf. Gheorghe, 44.908°N 29.637°E	1-2	8-10	2	5	5	100-120	110	fluorite	orig.
idem	NW-Black Sea coast, Lake Mangalia, 43.7997°N 28.5588°E	1-3	15	4	5-6	6	100-130	110	fluorite	orig.
idem	Marmora Sea, beach near Mudanya, 40.36°N 28.96°E	2	19	25	5-7	6	120-170	140	fluorite	orig.
idem	E-Mediterranean, E-Aegean Sea, beach of Didim, 37.3452°N 27.2701°E	2-3	39	5	4-9	7	120-220	150	fluorite	orig.
Leptomysis truncata sardica G.O. Sars	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.747°N 13.945°E	1-2	35-37	10	7-10	9	150-280	230	fluorite	Ariani et al. 1993
Leptomysis truncata truncata (Heller)	Mediterranean, N-Adriatic, Gulf of Trieste, 45.533°N 13.600°E	0-1	32-36	10	6-10	8	110-260	230	fluorite	Ariani et al. 1993
Notomysis australiensis	E-Indian Ocean, South Australia, Gulf	9-11	35	5	8-13	10	200-360	310	fluorite	Ariani et al. 1993

(W.M. Tattersall)	of St. Vincent, 34.4°S 138.1°E									
Paraleptomysis apiops (G.O. Sars)	Mediterranean, Tyrrhenian Sea, Gulf of Gaeta, 40.867°N 14.037°E	12	37	1	8	8	160	160	fluorite	orig.
Paraleptomysis banyulensis (Băcescu)	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.47°N 14.92°E	16	38	6	5-9	7	140-250	230	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Paraleptomysis dimorpha Wittmann	E-Atlantic, Gabon, Cape Lopez area, 0.57°S 8.71°E	60-70	34	10	5-8	7	110-190	160	fluorite	Ariani et al. 1993
Pyroleptomysis peresi (Băcescu)	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.75°N 13.98°E	10-16	37	1	6	6	150	150	fluorite	orig.
Pyroleptomysis rubra Wittmann	Mediterranean, N-Adriatic, Gulf of Trieste, 45.53°N 13.58°E	6	34-37	10	4-8	7	90-230	200	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
idem	Red Sea, Gulf of Eilat, 29.52°N 34.95°E	sub-littoral	42	5	4-7	5	100-180	150	fluorite	Ariani et al. 1993
Tribus Mysidopsini										
Americamysis almyra (Bowman)	Gulf of Mexico, Florida, Everglades, 25.1838°N 80.9121°W	1	10	8	4-8	7	140-190	160	fluorite	Ariani et al. 1993 (as *Mysidopsis almyra*)
Americamysis bahia (Molenok)	NW-Atlantic, Clambank Creek, North Inlet, 33.3347°N 79.1888°W	10	35	1	4	4	100	100	fluorite	orig.
idem	Lab tank, origin from Gulf of Mexico	coastal	30	25	3-8	7	90-190	110	fluorite	Schlacher et al. 1992, Ariani et al. 1993 (as *Mysidopsis bahia*), orig.
Americamysis bigelowi (W.M. Tattersall)	NW-Atlantic, off North Carolina, 35.03°N 75.77°W	23	32	6	5-9	6	160-250	190	fluorite	Ariani et al. 1993 (as *Mysidopsis bigelowi*)
Brasilomysis castroi Băcescu	W-Atlantic, Brazil, shelf 36 km off Santos, 24.25°S 46.17°W	epi-benthic	35	1	7	7	200	200	fluorite	orig.
Metamysidopsis swifti Băcescu	Gulf of Mexico, Florida, Tampa Bay, 27.6245°N 82.6933°W	20	35	5	5-6	6	80-130	110	fluorite	Ariani et al. 1993
Metamysidopsis insularis Brattegard	Caribbean, Curaçao, Boca Sint Michiel, Sun Reef, 12.1392°N 68.9981°W	5	36	1	3	3	80	80	fluorite	orig.
Mysidopsis abbreviata Wittmann & Griffiths	SE-Atlantic, Cape Peninsula, False Bay, 34.2295°S 18.4745°E	4	35	5	7-10	8	110-190	150	fluorite	Wittmann and Griffiths 2018
Mysidopsis acuta Hansen	SW-Atlantic, off Falkland Islands = Malvinas, 54.75°S 57.00°W	≤150	34	5	8-12	10	220-310	260	fluorite	Ariani et al. 1993
Mysidopsis angusta G.O. Sars	Marmora Sea, 400 m off beach of Erdek, 40.3952°N 27.8269°E	15	23	4	4-5	5	110-160	140	fluorite	orig.
Mysidopsis brattstroemi Brattegard	Caribbean, Bonaire, 12.1260°N 68.2877°W	3-26	35	1	3	3	100	100	fluorite	orig.

Mysidopsis didelphis (Norman)	Mediterranean, Cyprus, Famagusta Bay, 35.14°N 33.95°E	13-18	38	1	4	4	90	90	fluorite	orig.
Mysidopsis gibbosa G.O. Sars	Mediterranean, N-Adriatic, Gulf of Trieste, 45.55°N 13.58°E	22	36	5	3-4	3	90-150	120	fluorite	Ariani et al. 1983, 1993
idem	Marmora Sea, Bay of Altintas, 40.3659°N 28.9573°E	22	19	5	3-4	3	80-90	80	fluorite	orig.
Mysidopsis major (Zimmer)	SE-Atlantic, Namibia, Radford Bay, 26.661°S 15.151°E	-	35	3	12-14	12	170-200	180	fluorite	orig.
Mysidopsis robustispina Brattegard	Caribbean, Colombia, Bahia Granate, 11.2931°N 74.1917°W	7-8	35-37	1	1.6	1.6	53	53	fluorite	orig.
Mysidopsis schultzei (Zimmer)	SE-Atlantic, Namibia, Radford Bay, 26.661°S 15.151°E	-	35	2	9	9	180-200	190	fluorite	orig.
Mysidopsis similis (Zimmer)	SE-Atlantic, Cape Peninsula, Oatlands Point, 34.2084°S 18.4630°E	6	35	2	8-11	9	100-150	130	fluorite	Wittmann and Griffiths 2018
Mysidopsis surugae Murano	NW-Pacific, Japan, Suruga Bay, 34.90°N 138.43°E	32-44	35	4	5-6	6	180-300	250	fluorite	orig.
Mysidopsis velifera Brattegard	Caribbean, Curaçao, Boca Sint Michiel, Sun Reef, 12.1392°N 68.9981°W	5-9	36	25	3-4	3	160-320	210	fluorite	orig.
Mysidopsis zsilaveczi Wittmann & Griffiths	SE-Atlantic, Cape Peninsula, False Bay, 34.2295°S 18.4745°E	4-6	35	10	11-14	12	200-230	222	fluorite	Wittmann and Griffiths 2014
Subfamily Mysinae										
Tribus Mysini										
Antarctomysis maxima (Hansen) [in Holt & Tattersall]	Antarctic, Weddell Sea, 77.44°S 41.52°W	300-490	35	5	45-89	60	480-720	690	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Antarctomysis ohlinii Hansen	Antarctic, Weddell Sea, 77.57°S 38.52°W	≤850	35	5	51-74	64	500-690	560	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Kainommatomysis schieckei Băcescu	N-Red Sea, Gulf of Suez, El Bilaiyim, 28.5503°N 33.2686°E	-	-	2	3-4	3	100-120	110	fluorite	orig.
idem	N-Red Sea, near Sharm el Sheikh, 27.914°N 34.352°E	1-2	42	8	3-4	3	100-150	120	fluorite	Ariani et al. 1993
Mesopodopsis aegyptia Wittmann	SE-Mediterranean, Nile delta, Manzala Lake, 31.2961°N 32.0198°E	coastal	brackish.	25	7-10	8	120-230	150	fluorite	Wittmann 1992, orig.
idem	SE-Mediterranean, Egypt, Port Said, 31.2704°N 32.3179°E	coastal	brackish	5	8-10	9	100-160	120	fluorite	Wittmann 1992, orig.
idem	E-Mediterranean, Aegean Sea, Island of Lesbos, 39.34°N 26.17°E	3	39	10	6-9	6	130-200	170	fluorite	Ariani et al. 1993, orig.

idem	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, Lido Lago, 40.5526°N 14.8966°E	4-6	39	25	6-10	9	110-210	160	fluorite	orig.
idem	Mediterranean, N-Adriatic Sea, Po di Tolle, 44.960°N 12.393°E	1	brackish.	1	8	8	140	140	fluorite	orig.
Mesopodopsis africana O.S. Tattersall	SW-Indian Ocean, South Africa, St. Lucia, 28.3772°S 32.4069°E	coastal	brackish.	10	4-5	5	90-100	100	fluorite	orig.
Mesopodopsis orientalis (W.M. Tattersall)	NE-Indian Ocean drainage, Bangladesh, Lower Gangetic Plain, River Khiru, 24.3149°N 90.4954°E	0.5	0	3	7	7	160-190	180	fluorite	orig.
idem	W-Pacific, Sibuyan Sea, Banica, 11.5839°N 122.7053°E	0	7	10	6-9	7	150-220	180	fluorite	Ariani et al. 1993
Mesopodopsis slabberi (Van Beneden)	NE-Atlantic, English Channel, Penzé Estuary, 48.6109°N 3.9431°W	<1	4-17	10	8-15	11	160-280	190	fluorite	Wittmann 1992, Ariani et al. 1993
idem	NW-Mediterranean coast, Rhône Delta, 43.4514°N 4.3976°E	1	2	25	7-9	7	80-130	100	fluorite	Wittmann et al. 2016
idem	S-Mediterranean, Lake of Tunis, 36.805°N 10.220°E	1	38-40	10	8-10	9	90-190	160	fluorite	Ariani et al. 1983, 1993
idem	Mediterranean, Ionian Sea, Gulf of Taranto, 40.471°N 17.30°E	1-2	35-38	25	4-10	9	80-140	120	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
idem	E-Mediteranean, Aegean Sea, Island of Lesbos, summer-dry creek, 39.1148°N 26.4511°E	0-1	43	25	5-8	7	130-180	140	fluorite	orig.
idem	Marmora Sea coast, Küçükçekmece Gölü, 41.0105°N 28.7700°E	0.5	6	25	5-10	8	80-200	150	fluorite	orig.
idem	NW-Black Sea, coast at Costineşti, 43.9439°N 28.6389°E	2	13	25	8-13	11	150-250	190	fluorite	Ariani et al. 1993, orig.
idem	NW-Black Sea, perimarine Lake Sinoe, 44.5483°N 28.7767°E	0-1	2	25	8-10	10	120-170	170	fluorite	Ariani et al. 1993, orig.
idem	NW-Black Sea, shore near Sfintu Gheorghe branch of River Danube, 44.8839°N 29.6244°E	1	7	25	8-14	10	100-270	180	fluorite	orig.
idem	NW-Black Sea, Danube Delta, Canal Tătaru, 45.0765°N 29.6342°E	<5	0	1	10	10	120	120	fluorite	orig.
Mesopodopsis tropicalis Wittmann	E-Atlantic, Sierra Leone, Banana Island, 8.1349°N 13.1985°W	5	35	10	6-9	7	110-180	140	fluorite	orig.
idem	E-Atlantic, Cameroon River estuary, 3.913°N 9.553°E	0	brackish	5	7-8	7	130-170	160	fluorite	Wittmann 1992, orig.

Mesopodopsis wooldridgei Wittmann	SW-Indian Ocean, South Africa, Algoa Bay, 33.7167°S 25.8514°E	3	10-34	25	8-11	10	90-210	170	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
Mysis amblyops G.O. Sars	S-Caspian, about 100 km SE of Baku, 39.68°N 50.70°E	≤300	-	8	6-9	8	110-140	130	fluorite	orig.
Mysis caspia G.O. Sars	S-Caspian, about 50 km SE of Baku, 40.05°N 50.30°E	100	-	5	13-19	15	160-190	180	fluorite	orig.
Mysis diluviana Audzijonyte & Väinölä	NW-Atlantic drainage, State of Wisconsin, Green Lake, 43.826°N 88.967°W	55-120	0	6	16-20	18	200-250	220	fluorite	Ariani et al. 1993 (as *M. relicta*)
idem	NW-Atlantic drainage, New York State, Cayuga Lake, 42.68°N 76.70°W	-	0	3	14-19	16	190-240	200	fluorite	orig.
Mysis litoralis (Banner)	Arctic Ocean, Barents Sea, Spitsbergen, 77.83°N 19.83°E	-	35	4	9	9	180-230	190	fluorite	orig.
idem	Arctic Ocean, Alaska, off P. Barrow, 71.45°N 156.49°W	20	35	5	9-15	12	140-210	170	fluorite	Ariani et al. 1993
Mysis microphthalma G.O. Sars	S-Caspian, about 100 km SE of Baku, 39.68°N 50.70°E	≤300	-	1	20	20	210	210	fluorite	orig.
Mysis mixta Lilljeborg	NE-Atlantic, Baltic Sea, Askö area, 58.8°N 17.6°E	30	7	10	10-14	11	220-270	250	fluorite	orig.
idem	NW-Atlantic, Massachusetts Bay, 42.3036°N 70.8739°W	1	10	5	12-16	13	250-300	280	fluorite	Ariani et al. 1993
Mysis oculata (Fabricius)	NNE-Atlantic, Jan Mayen, 71.1°N 9.0°W	-	35	5	21-25	23	240-320	300	fluorite	orig.
Mysis relicta Lovèn	NE-Atlantic, Baltic drainage, Lake Långtarmen, 59.383°N 17.617°E	20	0	13	12-14	12	120-200	180	fluorite	Ariani et al. 1993, orig.
Mysis salemaai Audzijonyte & Väinöla	NE-Atlantic, Baltic, Bothnian Sea, 61.97°N 18.67°E	135	-	4	15-21	17	200-220	210	fluorite	orig.
Mysis segerstralei Audzijonyte & Väinölä	Arctic Ocean, Beaufort Sea, Pingok Island, 70.5608°N 149.5033°W	-	34	2	16-21	19	200-280	240	fluorite	orig.
idem	Arctic Ocean, Barents Sea drainage, Lake Pulmankijärvi, 70°N 28°E	30	0	15	14-16	15	160-190	170	fluorite	orig.
Mysis stenolepis S.I. Smith	NW-Atlantic, Vineyard Sound, 41.4089°N 70.7883°W	-	35	5	19-20	19	200-260	220	fluorite	orig.
Stilomysis grandis (Goës)	Arctic Ocean, Barents Sea, Spitsbergen, 77.83°N 19.83°E	-	-	1	20	20	240	240	fluorite	orig.
Tasmanomysis oculata Fenton	SW-Pacific drainage, SE-Tasmania, Catamaran River, 43.533°S 146.900°E	coastal	35	10	11-15	11	180-210	200	fluorite	Ariani et al. 1993

Tribus Hemimysini										
Hemimysis abyssicola G.O. Sars	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	5	9-17	11	140-190	170	fluorite	Ariani et al. 1993
Hemimysis anomala G.O. Sars	N-Caspian drainage, Lower Volga, 48.313°N 45.880°E	2	0	5	5-7	6	100-140	120	vaterite	orig.
idem	S-Caspian, off Mahmudabad, 36.689°N 52.257°E	4	13	5	5-6	6	90-130	110	vaterite	orig.
idem	NW-Black Sea, Danube Delta, Dunarea Veche, 45.17794°N 29.35128°E	0-1	0	10	4-5	4	60-100	70	vaterite	orig.
idem	NW-Black Sea, Danube Delta, Sulina Canal, 45.15653°N 29.65766°E	1-3	0	5	4-6	5	70-120	80	vaterite	orig.
idem	NW-Mediterranean coast, Rhône Delta, 43.3823°N 4.8079°E, non-indigenous	2-3	1.7	10	5-9	7	110-170	140	vaterite	Wittmann et al. 2016, orig.
idem	NE-Atlantic, N-Baltic Sea, 59.8469°N 23.2261°E, non-indigenous	lower littoral	<7	5	6-8	7	130-180	160	vaterite	Ariani et al. 1993
Hemimysis lamornae lamornae (Couch)	NE-Atlantic, Norway, Kristineberg, 59.01°N 10.63°E	15	35	5	5-6	5	90-140	110	fluorite	Ariani et al. 1993
idem	NE-Atlantic, Isles of Scilly, St. Marys, 49.9200°N 6.3148W	4	35	2	6-7	6	90-100	95	fluorite	orig.
Hemimysis lamornae mediterranea Băcesco	W-Mediterranean , Balearic Islands, Minorca, coast of Pont d'En Gil, superficial marine cave, 40.0103°N 3.7944°E	2-5	35	5	3-5	4	80-120	90	fluorite	orig.
idem	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.747°N 13.945°E	1-3	37	19	3-6	5	70-150	100	fluorite	Ariani et al. 1983, 1993, orig.
idem	Mediterranean, N-Adriatic, Banjole Island, 45.0740°N 13.6103°E	6	37	1	5	5	90	90	fluorite	orig.
idem	NE-Atlantic, Canary Islands, Gran Canaria, Las Palmas, 28.1569°N 15.4389°W	2	35	5	4-6	5	90-140	100	fluorite	orig.
Hemimysis lamornae pontica Czerniavsky	NW-Black Sea, coast near Sulina, 45.134°N 29.677°E	1.5	6	1	6	6	90	90	fluorite	orig.
idem	NW-Black Sea, coast at Agigea, 44.09°N 28.68°E	coastal	brackish	10	4-7	5	80-160	120	fluorite	orig.
Hemimysis maderensis Ledoyer	NE-Atlantic, Azores, Santa Maria, N of Maia, Leander Cave, 36.9712°N	4-10	35	1	3	3	89-98	94	fluorite	orig.

	25.0297°W									
idem	NE-Atlantic, Madeira, Porto Moniz, 32.8642°N 17.1631°W	14	35	25	5-7	6	100-140	120	fluorite	orig.
idem	NE-Atlantic, Canary Islands, El Hierro, 27.660°N 18.026°W	8	35	8	4-5	5	70-90	80	fluorite	orig.
idem	NE-Atlantic, W-Africa, peninsula Cape Verde, 14.7555°N 17.5319°W	20	35	11	3-4	3	70-100	90	fluorite	orig.
idem	NE-Atlantic, W-Africa, S of peninsula Cape Verde, Ile de Gorée, 14.6646°N 17.3989°W	14	35	4	4-6	5	80-100	90	fluorite	orig.
Hemimysis margalefi Alcaraz, Riera & Gili	W-Mediterranean, Balearic Islands, Minorca, coast of Pont d'En Gil, superficial marine cave, 40.0103°N 3.7944°E	2-5	35	25	4-6	5	80-120	100	fluorite	orig.
idem	Mediterranean, Tyrrhenian Sea, Gulf of Naples, Grotta del Mago, 40.71173°N 13.96406°E	1-3	37	25	4-6	5	100-130	120	fluorite	orig.
idem	Mediterranean, Malta, Ta'Cenc caves, 36.01325°N 14.25767°E	5-10	38	2	4-5	5	90-110	100	fluorite	orig.
idem	NE-Atlantic, Canary Islands, Gran Canaria, "El Cabron", 27.855°N 15.395°W	17-22	35	6	3-5	4	80-110	90	fluorite	orig.
Hemimysis serrata (Băcesco)	NW-Black Sea, coast at Agigea, 44.09°N 28.68°E	5	12	3	7-9	8	150-180	160	vaterite	orig.
Hemimysis speluncola Ledoyer	NW-Mediterranean, Gulf of Marseille, Grotte de l'île de Jarre, 43.1976°N 5.3615°E	16	38	25	4-7	5	90-170	120	fluorite	orig.
idem	Mediterranean, Tyrrhenian Sea, Gulf of Naples, Grotta del Mago, 40.71173°N 13.96406°E	1-3	38	25	5-6	5	100-150	120	fluorite	orig.
idem	Mediterranean, N-Adriatic, Banjole Island, 45.0740°N 13.6105°E, intertidal cave	2	37	10	4-8	7	100-160	130	fluorite	Ariani et al. 1993
Tribus Paramysini										
Katamysis warpachowskyi G.O. Sars	N-Caspian, Volga River delta, 46.73°N 47.85°E	<2	0.3	3	5-7	6	80-110	100	vaterite	orig.
idem	NW-Black Sea, perimarine Lake Razim, 44.757°N 28.943°E	<2	0	3	4-5	5	70-100	80	vaterite	orig.

	NW-Black Sea, Danube Delta, Lake Furţuna, 45.2162°N 29.1401°E	3	0	10	6-10	8	80-130	100	vaterite	Ariani et al. 1993
idem	NW-Black Sea drainage, 2240 km upstream mouth of River Danube, 48.5739°N 13.4275°E, non-indigenous	<2	0	10	4-7	6	80-100	90	vaterite	orig.
Paramysis (*Longidentia*) *adriatica* Wittmann, Ariani & Daneliya	Mediterranean, N-Adriatic basin, canal at Staranzano, 45.7804°N 13.5129°E	<2	0	2	8-10	9	170-190	180	vaterite	orig.
idem	Mediterranean, Dalmatia, small creek near Split, 43.515°N 16.541°E	<1	0	5	7-10	9	100-190	150	vaterite	Ariani et al. 1993 (as *P. helleri*), Wittmann et al. 2016
idem	Mediterranean, E-Adriatic coast, Lake Deran, 43.04°N 17.75°E	0.5-1	0.2	10	8-11	9	110-180	150	vaterite	Wittmann et al. 2016
Paramysis (*Longidentia*) *agigensis* Băcescu	NW-Black Sea, perimarine Lake Sinoe, 44.60°N 28.91°E	0.5	1	8	9-15	11	130-180	160	vaterite	Wittmann and Ariani 2011, orig.
idem	Marmora Sea, Büyükada Island, 40.8594°N 29.1126°E	1-3	17	10	6-9	8	100-140	120	vaterite	Wittmann and Ariani 2011, orig.
Paramysis (*Longidentia*) *helleri* (G.O. Sars)	NW-Mediterranean coast of France, Etang de Leucate, 42.87°N 3.03°E	1	34	12	4-6	5	90-150	110	vaterite	orig.
idem	W-Mediterranean, Baleares, Menorca, Cala Santandria, 39.9791°N 3.8344°E	4-8	35	25	4-7	6	80-170	120	vaterite	orig.
idem	S-Mediterranean, Bay of Tunis, Sidi Rais, 36.7678°N 10.5467°E	3	35	5	4-7	6	90-180	130	vaterite	orig.
idem	Mediterranean, Sicily, Lo Stagnone di Marsala, 37.8738°N 12.4858°E	0.1-0.3	40	25	3-5	4	80-110	90	vaterite	Wittmann and Ariani 2011, orig.
idem	Mediterranean, S-Adriatic, beach near Brindisi, 40.688°N 17.867°E	1	38	10	7	7	110-180	140	vaterite	Ariani et al. 1983, 1993, Schlacher et al. 1992
idem	E-Mediterranean, Gulf of Edremit, mouth of River Havran, 39.5377°N 26.9391°E	1	29	2	4	4	90-110	100	vaterite	Wittmann and Ariani 2011
idem	Marmora Sea, beach of Erdek, 40.3976°N 27.8290°E	1	23	10	5-6	5	130-160	140	vaterite	Wittmann and Ariani 2011
idem	S-Black Sea, beach E of Sile, 41.168°N 29.659°E	1-4	16	5	4-5	5	90-140	120	vaterite	Wittmann and Ariani 2011
Paramysis (*Longidentia*) *kroyeri* (Czerniavsky)	NW-Black Sea, Danube Delta, Island Sachalin, 44.8475°N 29.6103°E	1-2	0.1-1.6	25	7-11	9	90-180	150	vaterite	Wittmann and Ariani 2011, orig.
idem	NW-Black Sea, perimarine Lake Sinoe, 44.584°N 28.902°E	1	1	25	6-9	8	110-160	130	vaterite	orig.
idem	NW-Black Sea, beach of Eforie Nord,	1.5-3	12.5	4	7-9	8	90-150	120	vaterite	orig.

	44.075°N 28.649°E									
idem	NW-Black Sea, coast at Mangalia, 43.8145°N 28.5886°E	1-2	14	3	8-9	9	120-180	140	vaterite	orig.
idem	Marmora Sea drainage, Lake Uluabat, 40.194°N 28.615°E	0-1	0	12	7-10	9	100-190	140	vaterite	Ariani et al. 1993, orig.
Paramysis (*Longidentia*) *nouveli* Labat	NE-Atlantic, English Channel, small river near Roscoff, 48.6722°N 4.0564°W	0	5-33	25	6-11	9	150-220	180	vaterite	Ariani et al. 1993
idem	NE-Atlantic, Portugal, Lagoa de Albufeira, 38.5106°N 9.1735°W	0.5-1.5	13	25	7-11	9	130-230	170	vaterite	orig.
Paramysis (*Mesomysis*) *intermedia* (Czerniavsky)	N-Caspian, Volga River delta, 45.45°N 48.06°E	0-2	1	3	8-10	9	170-250	200	vaterite	orig.
idem	NW-Black Sea drainage, River Danube at km 70, Sf. Gheorghe Branch, 45.0438°N 29.1909°E	1-3	0	3	8-10	9	100-230	150	vaterite	orig.
idem	NW-Black Sea, Danube Delta, mouth of Sf. Gheorghe Branch, 44.8814°N 29.6195°E	0-1	0	10	7-13	11	100-210	140	vaterite	Ariani et al. 1993
idem	NW-Black Sea, Lake Babadag, 44.9400°N 28.7383°E	0.3-1	0.6	25	5-9	8	100-250	160	vaterite	Wittmann and Ariani 2011, orig.
idem	NW-Black Sea, coast at Sachalin, 44.8469°N 29.6106°E	2-3	6	3	9	9	120-190	140	vaterite	orig.
Paramysis (*Metamysis*) *ullskyi* Czerniavsky	N-Caspian, Volga River delta, 45.7297°N 47.6039°E	0-2	1	4	15-21	18	180-290	230	vaterite	orig.
idem	NW-Black Sea drainage, Liman Ialpug, 45.40°N 28.62°E	-	-	5	11-17	14	130-200	170	vaterite	orig.
idem	NW-Black Sea, Danube Delta, Gulf of Musura, 45.168°N 29.679°E	<1	0	4	12-20	16	160-280	220	vaterite	Wittmann and Ariani 2011, orig.
Paramysis (*Nanoparamysis*) *loxolepis* (G.O. Sars)	S-Caspian, about 100 km SE of Baku, 39.68°N 50.70°E	≤300	-	5	6-8	7	140-180	160	vaterite	orig.
Paramysis (*Paramysis*) *baeri* Czerniavsky	S-Caspian, about 50 km SE of Baku, 40.05°N 50.30°E	100	-	1	25	25	290	290	vaterite	orig.
Paramysis (*Paramysis*) *bakuensis* G.O. Sars	N-Caspian, Volga River delta, 46.73°N 47.85°E	<2	0.3	4	15-19	17	230-310	280	vaterite	orig.
idem	NW-Black Sea, delta of River Danube, Lake Razim, 44.94°N 29.01°E	3	0.1	25	12-13	13	200-300	240	vaterite	Wittmann and Ariani 2011, orig.
idem	NW-Black Sea, Lake Babadag, 44.9400°N 28.7383°E	0.3-1	0.6	25	10-18	15	190-280	250	vaterite	orig.

idem	NW-Black Sea, coast at Sachalin, 44.8469°N 29.6106°E	2-3	6	1	17	17	270	270	vaterite	Wittmann and Ariani 2011, orig.
idem	NW-Black Sea, perimarine Lake Sinoe, 44.5479°N 28.7776°E	0.3-1.5	0.4-1.1	25	14-16	15	230-290	260	vaterite	orig.
Paramysis (*Paramysis*) *kessleri kessleri* Grimm [in Sars, 1895]	S-Caspian, about 50 km SE of Baku, 40.05°N 50.30°E	100	-	5	24-33	29	310-390	340	vaterite	orig.
Paramysis (*Paramysis*) *kessleri sarsi* Derzhavin	NW-Black Sea drainage, Danube-km 28, Sf. Gheorghe branch, 44.946°N 29.379°E	<2	0	1	9	9	180	180	vaterite	orig.
idem	NW-Black Sea, Danube Delta, Lake Babadag, 44.9400°N 28.7383°E	0-1	0	5	5-7	5	110-180	140	vaterite	Ariani et al. 1993
idem	NW-Black Sea, Danube Delta, Lake Dranov, 44.87°N 29.21°E	2	0	4	9-11	10	130-280	190	vaterite	orig.
idem	NW-Black Sea, perimarine Lake Razim, 44.757°N 28.943°E	3	0.1	25	6-15	11	120-240	190	vaterite	Wittmann and Ariani 2011, orig.
idem	NW-Black Sea, perimarine Lake Sinoe, 44.5483°N 28.7767°E	1	2	4	8-12	10	160-260	210	vaterite	orig.
Paramysis (*Pseudoparamysis*) *bacescoi* Labat	NE-Atlantic, Channel Islands, Guernsey, 49.47°N 2.53°W	10	35	5	7	7	180	180	vaterite	Ariani et al. 1993
idem	E-Mediterranean, Cyprus, Famagusta Bay, 35.14°N 33.95°E	13-18	37-38	9	4-6	5	90-120	100	vaterite	Wittmann and Ariani 2011, orig.
Paramysis (*Pseudoparamysis*) *pontica* Băcescu	NW-Black Sea, beach near Sulina, 45.1339°N 29.6769°E	1.5	6	2	8-9	9	120-160	140	vaterite	orig.
idem	NW-Black Sea, coast of Agigea, 44.09°N 28.68°E	21	10	3	6-8	7	100-140	120	vaterite	Wittmann and Ariani 2011, orig.
idem	SW-Black Sea, coast at Karasu, 41.133°N 30.674°E	13	16	10	6-7	7	90-140	110	vaterite	Wittmann and Ariani 2011
idem	Marmora Sea, beach of Erdek, 40.3964°N 27.8284°E	4-5	23	10	7-9	8	110-180	150	vaterite	Wittmann and Ariani 2011
idem	Marmora Sea, Altintas Bay, 40.37°N 28.96°E	35	19	10	7-10	9	130-250	180	vaterite	Ariani et al. 1993, Wittmann and Ariani 2011
Paramysis (Serrapalpisis) *kosswigi* Băcescu	E-Mediterranean, Aegean Sea drainage, Anatolia, Lake Işıklı, 38.2667°N 29.9254°E	0.5-1	0	25	6-9	7	150-170	160	vaterite	Wittmann and Ariani 2011, Wittmann et al. 2016
Paramysis (*Serrapalpisis*)	N-Caspian, Volga River delta, 45.45°N	0-2	1	3	9-12	11	170-240	200	vaterite	orig.

lacustris (Czerniavsky)	48.06°E									
idem	NW-Black Sea, delta of River Danube, Lake Isac, 45.118°N 29.293°E	2	0	20	6-13	9	100-140	120	vaterite	Wittmann and Ariani 2011, orig.
idem	NW-Black Sea, delta of River Danube, Lake Rosu, 45.062°N 29.561°E	3	0	15	13-17	14	100-300	160	vaterite	Franco et al. 1989, Schlacher et al. 1992, Ariani et al. 1993 (as *P. lacustris tanaitica*), Wittmann et al. 2014
idem	NW-Black Sea drainage, River Danube at km 70, Sf. Gheorghe Branch, 45.0438°N 29.1909°E	1-3	0	5	7-11	10	150-200	170	vaterite	orig.
idem	NW-Black Sea drainage, River Danube, downstream Zagrajden, 625 km from the mouth, 43.7515°N 24.5706°E	2-4	0	4	8-12	10	160-210	180	vaterite	orig.
idem	SW-Black Sea drainage, Lake Sapanca, 40.73°N 30.25°E	16	0	25	9-12	11	130-270	220	vaterite	Wittmann and Ariani 2011
idem	Marmora Sea drainage, Lake Uluabat, 40.194°N 28.615°E	0.5	0	4	10-12	11	140-250	210	vaterite	orig.
Paramysis (*Serrapalpisis*) *sowinskii* Daneliya	NE-Black Sea, Sea of Azov, Miusskii Liman, 47.25°N 38.67°E	-	-	3	8-10	9	210-230	220	vaterite	Wittmann and Ariani 2011, orig.
Paramysis arenosa (G.O. Sars)	NE-Atlantic, Scottish Sea, Firth of Lorne, 56.4362°N 5.4754°W	0-1	32-35	15	5-7	7	90-160	130	fluorite	Franco et al. 1989, Ariani et al. 1993, orig.
idem	NE-Atlantic, Canary Islands, El Hierro, harbor of La Restinga, 27.6394°N 17.9810°W	8-10	35	7	4-6	5	80-140	110	fluorite	orig.
idem	S-Mediterranean, Tunisia, Bay of Bizerte, 37.2828°N 9.8831°E	coastal	34	2	5-6	6	80-100	90	fluorite	orig.
idem	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.5°N 14.9°E	4-16	38	5	4-7	6	110-170	140	fluorite	Ariani et al. 1993
idem	Mediterranean, E-Adriatic, Dalmatia, Island of Krk, 44.9539°N 14.6882°E	10-14	36	2	7-10	8	110-190	150	fluorite	orig.
idem	E-Mediterranean, Cyprus, Famagusta Bay, 35.14°N 33.95°E	13-18	37-38	1	5	5	90	90	fluorite	orig.
Paramysis festae Colosi	S-Mediterranean, Libya, coastal lagoon, 32.2152°N 20.1566°E	1	meta-haline	4	4-6	5	100-120	110	vaterite	Wittmann and Ariani 2011
Praunus flexuosus (O.F. Müller)	NE-Atlantic, English Channel, Roscoff, 48.717°N 3.993°W	0-2	26-35	25	14-25	18	140-270	180	fluorite	Schlacher et al. 1992, Ariani et al. 1993, orig.
Praunus inermis (Rathke)	NE-Atlantic, Scottish Sea, Firth of Lorne, 56.4363°N 5.4754°W	0.5-1	32-35	10	8-13	11	120-240	180	fluorite	Ariani et al. 1993

Praunus neglectus (G.O. Sars)	NE-Atlantic, English Channel, harbour of Roscoff, 48.7261°N 3.9754°W	1	26-35	10	13-26	19	220-380	320	fluorite	Ariani et al. 1993
Schistomysis assimilis (G.O Sars)	Mediterranean, N-Adriatic, Gulf of Venice, estuary near Caorle, 45.620°N 12.915°E	0	11	6	8-11	9	200-260	230	vaterite	Ariani et al. 1993
idem	Mediterranean, N-Adriatic, Litorale del Cavallino, 45.4493°N 12.4844°E	0.1	30	60	7-9	8	190-270	210	vaterite	Wittmann and Ariani 1996
idem	Mediterranean, Tyrrhenian Sea, Gulf of Salerno, 40.483°N 14.933°E	2-6	24-37	25	8-12	9	140-320	290	vaterite	Franco et al. 1989, Schlacher et al. 1992, Ariani et al. 1993, Wittmann et al. 2014, orig.
Schistomysis kervillei (G.O. Sars)	NE-Atlantic, North Sea, German coast, 54.08°N 8.78°E	<50	35	6	10-16	13	200-300	240	fluorite	Ariani et al. 1993
Schistomysis ornata (G.O. Sars)	NE-Atlantic, Gulf of Biscay, 43.6°N 1.8°W	<100	35	10	9-16	12	240-310	280	fluorite	Ariani et al. 1993
Schistomysis spiritus (Norman)	NE-Atlantic, English Channel, near Roscoff, 48.701°N 4.072°W	10	35	50	9-15	12	150-250	210	fluorite	Ariani et al. 1983, 1993, Wittmann and Ariani 1996
idem	NE-Atlantic, Canary Islands, Gran Canaria, El Cabron, "Mulle de Arinaga", 27.855°N 15.395°W	7	35	25	6-11	8	100-180	140	fluorite	orig.
Tribus Diamysini										
Antromysis cenotensis Creaser	Gulf of Mexico drainage, Yucatán, Cave of Tzab-Nah, 20.7311°N 89.4737°W	1	0	9	3	3	50-70	60	vaterite	Ariani et al. 1993
Antromysis peckorum Bowman	Caribbean, S-Jamaica, Jackson Bay Cave, 17.740°N 77.215°W	-	4	3	2-3	3	44-53	48	vaterite	orig.
Diamysis bacescui Wittmann & Ariani	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.7594°N 13.8908°E	12-15	37	10	5-6	5	100-130	120	vaterite	Ariani et al. 1983 (as *D. bahirensis*), Wittmann and Ariani 1998
idem	E-Mediterranean, Island of Lesbos, 39.34°N 26.17°E	20	39	17	4-7	5	107-164	133	vaterite	Wittmann and Ariani 1998
idem	E-Mediterranean, E-Aegean Sea, Urla, 38.5861°N 26.6778°E	-	38	1	3	3	90	90	vaterite	orig.
idem	E-Mediterranean, Cyprus, Famagusta Bay, 35.14°N 33.96°E	18-55	38	5	5-6	6	101-147	129	vaterite	Wittmann and Ariani 2012a, orig.
Diamysis bahirensis (G.O. Sars)	S-Mediterranean, Lake of Tunis, 36.802°N 10.233°E	<1	38	20	3-6	5	107-136	126	vaterite	Ariani et al. 1983, 1993, Ariani and Wittmann 2000
idem	Mediterranean, Sardinia, Stagno di Maestrale, 38.97°N 8.60°E	0-0.3	25	10	4-6	5	93-136	115	vaterite	Ariani and Wittmann 2000

idem	Mediterranean, Sicily, Lo Stagnone di Marsala, 37.8738°N 12.4858°E	0.1-0.3	40	25	3-6	5	92-134	104	vaterite	Ariani and Wittmann 2000
Diamysis camassai Ariani & Wittmann	Mediterranean, Ionian Sea, dolinas of Torre Castiglione, 40.29141°N 17.82153°E	0-1	5-10	80	4-8	6	70-150	110	vaterite	Ariani and Wittmann 2002
Diamysis cymodoceae Wittmann & Ariani	Mediterranean, N-Adriatic, Gulf of Trieste, 45.533°N 13.600°E	6	32-36	25	3-5	4	82-125	109	vaterite	Wittmann and Ariani 2012a, orig.
idem	Mediterranean, E-Adriatic, Marinkovac Island, Zdrilica Bay, 43.1577°N 16.4119°E	4-6	37	25	3-6	4	117-180	159	vaterite	Wittmann and Ariani 2012a, orig.
idem	Mediterranean, E-Adriatic, Neretva Delta, River Crna, 43.0482°N 17.4786°E	0.2-0.5	10	12	4-5	5	113-163	138	vaterite	Wittmann and Ariani 2012a, orig.
idem	Mediterranean, Ionian Sea, Gulf of Taranto, drainage canal of Sette Nani Basin, 40.2919°N 17.8095°E	0.3	25	25	4-5	4	131-166	150	vaterite	Wittmann and Ariani 2012a, orig.
idem	E-Mediterranean, Aegean Sea, Gulf of Edremit, beach at Ören, 39.5299°N 26.9391°E	4-6	37	15	4-5	4	72-121	99	vaterite	Wittmann and Ariani 2012a, orig.
idem	E-Mediterranean, S-Aegean Sea, Crete, Salines of Elounda, 35.2584°N 25.7301°E	0.1-0.2	54	5	4-5	5	100-135	124	vaterite	Wittmann and Ariani 2012a, orig.
idem	Marmora Sea, beach of Erdek, 40.3964°N 27.8284°E	4-5	23	13	3-6	5	91-146	127	vaterite	Wittmann and Ariani 2012a, orig.
idem	W-Black Sea, coast at Sozopol, 42.436°N 27.696°E	3-5	17-18	25	3-5	4	109-159	131	vaterite	Wittmann and Ariani 2012a, orig.
Diamysis fluviatilis Wittmann & Ariani	Mediterranean, N-Adriatic, Gulf of Trieste, Timavo, upper reach, 45.7861°N 13.5903°E	1-2.5	2-13	25	5-7	6	103-154	122	vaterite	Wittmann et al. 2016, orig.
idem	Mediterranean, N-Adriatic basin, canal at Staranzano, 45.7804°N 13.5129°E	<2	0	15	5-7	6	150-180	130	vaterite	orig.
idem	Mediterranean, N-Adriatic drainage, River Sile, 45.6583°N 12.2326°E	0-1	0.2	25	6-10	7	116-195	140	vaterite	Wittmann and Ariani 2012b
Diamysis frontieri H. Nouvel	W-Indian Ocean, Madagascar, Nosy Bé, surface tow off Madirokely, 13.3967°S 48.2017°E	0	36	1	4	4	100	100	fluorite	Wittmann et al. 2016
idem	Red Sea, Gulf of Aqaba, 29.4000°N 34.9667°E	17-25	42	10	3-4	4	70-90	80	fluorite	orig.

Diamysis hebraica Almeida Prado-Por	E-Mediterranean, Levantine coast, stream Nahal Taninim, 32.5491°N 34.9146°E	0.1-0.4	0.7-5	10	4-6	5	100-120	110	vaterite	Wittmann et al. 2016
Diamysis lacustris Băcescu	Mediterranean, SE-Adriatic basin, Montenegro, Lake Scutari, 42.226°N 19.163°E	0-18	0	6	5-8	7	120-200	147	vaterite	Wittmann and Ariani 2012b
Diamysis lagunaris Ariani & Wittmann	NE-Atlantic, western coast of Portugal, Ria de Aveiro, Canal de Ovar, 40.8471°N 8.6582°W	1	14	6	4-6	6	89-163	126	vaterite	Wittmann and Ariani 2012a, orig.
idem	NE-Atlantic, Algarve, estuary of Ria Alvor, 37.1225°N 8.6353°W	0.5	33	25	4-7	6	112-175	144	vaterite	Wittmann and Ariani 2012a, orig.
idem	NW-Mediterranean coast, Ètang de Thau, 43.4017°N 3.6467°E	0-1	37	10	5-6	6	91-148	133	vaterite	Ariani and Wittmann 2000
idem	NW-Mediterranean, estuary of the Petit Rhône at Tiki, 43.4514°N 4.3976°E	0.2-1.2	2	3	5-7	6	90-170	130	vaterite	Wittmann et al. 2016
idem	NW-Mediterranean, Rhône-Delta, Nouveau Canal at Port St. Louis, 43.381°N 4.811°E	0.5-2	39	25	5-8	6	107-167	126	vaterite	Ariani and Wittmann 2000
idem	NW-Mediterranean, Island of Menorca, 40.0703°N 4.0889°E	<0.2	36	25	4-6	5	114-179	142	vaterite	Wittmann and Ariani 2012a, orig.
idem	Mediterranean, Sardinian Sea, Gulf of Oristano, Stagno di Mistras, 39.90°N 8.46°E	0.3	26	2	5-7	6	100-190	130	vaterite	orig.
idem	Mediterranean, Ligurian Sea, La Spezia, 44.08°N 9.85°E	1-5	37	15	6-8	7	110-200	150	vaterite	orig.
idem	Mediterranean, Tyrrhenian Sea, Lago di Fogliano, 41.395°N 12.917°E	0.5	44	25	4-7	6	90-180	140	vaterite	orig.
idem	Mediterranean, Tyrrhenian Sea, Lago di Caprolace, 41.362°N 12.962°E	0.3-1	32-48	25	4-7	5	111-167	138	vaterite	Ariani and Wittmann 2000
idem	E-Mediterranean, Aegean Sea, Crete, coast of Spinalonga, 35.2514°N 25.7583°E	15-25	38	3	4-5	5	104-160	122	vaterite	Wittmann and Ariani 2012a, orig.
Diamysis mecznikowi (Czerniavsky)	NW-Black Sea, Danube Delta, Zatonu Mare, 44.813°N 29.324°E	0.5	2.5	3	6-7	7	118-182	162	vaterite	Wittmann and Ariani 2012a, orig.
idem	W-Black Sea coast, Varna Estuary, 43.1855°N 27.8387°E	0.5-1.5	11	1	5	5	134	134	vaterite	Wittmann and Ariani 2012a, orig.
Diamysis mesohalobia gracilipes	Mediterranean, N-Adriatic, Gulf of Trieste, 45.533°N 13.583°E	15-20	32	25	4-7	6	103-168	138	vaterite	orig.

Ariani & Wittmann									
idem	Mediterranean, Ionian Sea, Gulf of Taranto, Mar Piccolo, 40.47°N 17.30°E	0.2-2	35-38	25	4-9	6	133-174	149	vaterite	Ariani and Wittmann 2000
idem	Mediterranean, Ionian coast of Apulia, San Pietro River = River Chidro, 40.3083°N 17.6824°E	0.5-1	3-5	25	4-9	7	120-150	140	vaterite	Ariani et al. 1993 (as *D. bahirensis*), Ariani and Wittmann 2000
idem	Mediterranean, Ionian Sea, Lakes of Sibari, 39.7233°N 16.5190°E	0.5-1.5	36	25	4-6	5	98-144	121	vaterite	orig.
Diamysis mesohalobia heterandra Ariani & Wittmann	Mediterranean, N-Adriatic, Gulf of Trieste, Stunjan lagoons, 45.5286°N 13.6066°E	0.5-2	32-36	25	4-8	6	101-157	136	vaterite	orig.
idem	Mediterranean, E-Adriatic, lakes of Bacin, 43.0705°N 17.4205°E	0-1	0	6	5-8	8	127-173	148	vaterite	Wittmann and Ariani 2012b
idem	Mediterranean, E-Adriatic drainage, Lake Deran, 43.0369°N 17.8334°E	0.2-0.8	0.3	25	6-9	7	100-160	160	vaterite	Ariani et al. 1983 (as *D. bahirensis*), Wittmann et al. 2016, orig.
idem	Mediterranean, E-Adriatic, Ombla estuary, 42.6738°N 18.1362°E	0.1-0.5	3.7	15	5-8	6	102-163	144	vaterite	Wittmann and Ariani 2000
idem	Mediterranean, SW-Adriatic, Varano Lake, 41.858°N 15.702°E	0.1-0.5	22	25	4-9	6	107-180	145	vaterite	Wittmann and Ariani 2000
idem	Mediterranean, Ionian Sea, Corfu, Limni Antinioti, 39.8099°N 19.8463°E	0.15-0.3	4-6	25	4-8	6	93-172	142	vaterite	Ariani and Wittmann 2000
idem	Marmora Sea, beach of Erdek, 40.3952°N 27.8269°E	4-5	15-23	3	3-5	4	84-126	98	vaterite	Wittmann and Ariani 2012a, orig.
Diamysis mesohalobia mesohalobia Ariani & Wittmann	Mediterranean, N-Adriatic, Gulf of Trieste, Timavo, lower reach, 45.7872°N 13.5814°E	0.5-1.5	18-19	10	4-6	5	90-140	120	vaterite	Wittmann et al. 2016
idem	Mediterranean, Ionian coast of Apulia, Piccolo River, 40.8281°N 17.4783°E	0.3	12	25	4-9	6	104-165	137	vaterite	Ariani et al. 1982, 1983 (as *D. bahirensis*), Schlacher et al. 1992, Ariani and Wittmann 2000, Wittmann et al. 2014
idem	Mediterranean, Ionian coast of Apulia, River Morello, 40.8103°N 17.5214°E	0-1	11-16	25	4-8	6	105-153	133	vaterite	Ariani and Wittmann 2000
idem	E-Mediterranean, Aegean Sea, Gulf of Edremit, River Havran estuary, 39.5352°N 26.9425°E	1	20	10	4-6	5	96-135	122	vaterite	Ariani and Wittmann 2000
Diamysis pengoi (Czerniavsky)	NW-Black Sea, Danube Delta, Lake Iacub, 45.1587°N 29.4071°E	1-2	0	3	4-5	5	100-110	110	fluorite	orig.

idem	NW-Black Sea, Danube Delta, Lake Rosu, 45.062°N 29.561°E	3	0	5	8-9	9	160-190	180	fluorite	Ariani et al. 1993
idem	SW-Black Sea coast, Sakarya estuary, 41.1223°N 30.6475°E	1	0	10	5-7	6	110-150	130	fluorite	orig.
idem	SW-Black Sea, Lake Akgöl, 41.0327°N 30.5609°E	3	0.1	25	5-9	7	90-180	140	fluorite	orig.
idem	SW-Black Sea drainage, Lake Sapanca, 40.7346°N 30.2500°E	3-5	0.1	25	5-10	7	110-190	150	fluorite	orig.
Diamysis pusilla (G.O. Sars)	E-Caspian, off promontory Kara Singir, 40.713°N 52.833°E	-	-	3	4-5	5	90-110	100	fluorite	Wittmann et al. 2016
Diamysis sirbonica Almeida Prado-Por	Mediterranean coast of Sinai, Bardawil Lagoon, 31.13°N 33.34°E	-	41-70	2	3	3	80-90	80	vaterite	orig.
Gangemysis assimilis (W.M. Tattersall)	NE-Indian Ocean drainage, Bangladesh, River Lohojang, 24.01217°N 90.13117°E	< 1	0	25	4-5	5	70-110	100	fluorite	orig.
idem	NE-Indian Ocean drainage, Nepal, River Bagmati, 26.79676°N 85.31976°E	0.2	0	2	5	5	100	100	fluorite	orig.
Indomysis nybini Biju & Panampunnayil	NW-Indian Ocean, Arabian Gulf = Persian Gulf, Bahrain, Tubli Bay, 26.17194°N 50.58861°E	-	43-44	18	3-5	4	90-150	100	vaterite	orig.
idem	NE-Indian Ocean, backwaters of Karachi, Sandspit, 24.83°N 66.93°E	<10	eu- to meta-haline	7	5-7	6	110-140	130	vaterite	orig.
Limnomysis benedeni Czerniavsky	NW-Caspian drainage, Volga Delta, near Verkhnelebyazh'e, 46.730°N 47.845°E	0.5-1.5	0.3	15	6-9	7	100-160	130	vaterite	orig.
idem	NW-Black Sea, perimarine Lake Razim, 44.757°N 28.943°E	<2	0	5	5-6	5	110-140	120	vaterite	orig.
idem	NW-Black Sea, perimarine Lake Sinoe, 44.553°N 28.776°E	0-1	2	10	7-11	10	120-200	160	vaterite	Ariani et al. 1993
idem	NW-Black Sea drainage, Danube km-1937, Kuchelau Harbour, 48.2886°N 16.3456°E, non-indigenous	0-1	0	25	6-11	9	100-210	150	vaterite	Franco et al. 1989, Ariani et al. 1983, 1993, Schlacher et al. 1992
idem	NW-Black Sea drainage, Danube km-2229, harbour of Passau, 48.5739°N 13.4278°E, non-indigenous	0-2	0	25	6-7	7	120-150	130	vaterite	orig.
idem	NW-Mediterranean coast, Rhône Delta,	1	2	2	7-8	8	130-140	140	vaterite	Wittmann et al. 2016

	43.4514°N 4.3976°E, non-indigenous									
idem	Marmora Sea coast, Küçükçekmece Gölü, 41.01°N 28.77°E	0.5	6	25	6-9	7	130-170	140	vaterite	orig.
idem	Marmora Sea coast, small stream Koca Dere, 40.2884°N 28.4332°E	0-1	0.1	2	7-8	7	120-140	130	vaterite	orig.
Parvimysis amazonica Wittmann	Amazonia, Tupé Lake, 3.0432°S 60.2549°W	-	0	2	2-4	3	80-90	85	vaterite	Wittmann 2018
Parvimysis fittkaui Wittmann	Amazonia, Rio Arara, 2.785°S 60.602°W	-	0	11	2-4	3	62-100	79	vaterite	Wittmann 2018
Parvimysis lacustris Wittmann	Amazonia, Lake Arara, 3.4445°S 61.3449°W	-	0	2	3-4	4	40-70	55	vaterite	Wittmann 2018
Parvimysis sp. B	Caribbean, Curaçao, Playa Lagun, 12.3183°N 69.1519°W	5-6	35	10	2-3	3	80-90	80	vaterite	orig.
Parvimysis pisciscibus Henderson & Bamber	Amazonia, Rio Arara, 2.785°S 60.602°W	-	0	5	3-4	3	50-90	73	vaterite	Wittmann 2018
Parvimysis tridens Wittmann	Amazonia, lower Rio Negro, 3.1326°S 60.0006°W	-	0	2	3-4	4	51-72	62	vaterite	Wittmann 2018
Surinamysis aestuaria Wittmann	W-Atlantic, river mouth N of Bragança, 0.8962°S 47.0010°W	-	brackish	5	4-6	5	110-165	150	vaterite	Wittmann 2017, orig.
Surinamysis rionegrensis Wittmann	Amazonia, Rio Arara, 2.785°S 60.602°W	-	0	2	4-5	4	130-140	135	vaterite	Wittmann 2017
Surinamysis robertsonae Bamber & Henderson	Amazonia, Rio Negro, 1.0450°S 62.1064°W	-	0	4	4-6	5	140-155	148	vaterite	Wittmann 2017
Taphromysis bowmani Băcescu	Gulf of Mexico drainage, Florida, Walkulla Springs, 30.236°N 84.302°W	1	10	9	8-9	8	100-160	120	fluorite	Ariani et al. 1993
Taphromysis louisianae Banner	Gulf of Mexico drainage, Florida, Blackwater River, 30.634°N 87.018°W	<2	1	8	8-9	9	100-150	120	fluorite	Ariani et al. 1993
Troglomysis vjetrenicensis Stammer	Mediterranean, E-Adriatic drainage, Zavala, Cave of Vjetrenica, 42.85°N 17.98°E	0-1	0	10	10-13	13	100-160	150	fluorite	Ariani et al. 1993, Wittmann et al. 2016
Tribus Anisomysini										
Anisomysis bifurcata W.M. Tattersall	N-Red Sea, near Sharm-el-Sheikh, 27.915°N 34.352°E	1-2	42	10	3	3	50-70	60	fluorite	Ariani et al. 1993 (as *Anisomysis* sp.)
Anisomysis extranea Murano	Mid-Pacific, Hawaii, Waikiki, 21.264°N 157.825°W	sublittoral	35	2	2-3	3	75-87	81	fluorite	orig.
Anisomysis gutzui Băcescu	E-Indian Ocean, Java Sea, NE of Jakarta, Palau Pari, 5.856°S 106.585°E	1	35	3	3	3	70-100	90	fluorite	orig.

Anisomysis ijimai Nakazawa	NW-Pacific, Suruga Bay, Heda, 34.972°N 138.775°E	0	35	10	5-8	7	90-140	120	fluorite	Ariani et al. 1993
Anisomysis marisrubri Băcescu	N-Red Sea, Gulf of Aqaba, Dahab, 28.500°N 34.522°E	0-3	42	10	4-6	5	80-130	100	fluorite	Ariani et al. 1993
Idiomysis diadema Wittmann	N-Red Sea, Gulf of Aqaba, Dahab, Bannerfish Bay, 28.496°N 34.521°E	1-8	38	4	2-3	3	125-150	134	fluorite	Wittmann 2016
Idiomysis tsurnamali Băcescu	N-Red Sea, Gulf of Eilat, 29.52°N 34.95°E	30	38	5	3-4	3	90-130	110	fluorite	Franco et al. 1989, Ariani et al. 1993
Mysidium (*Orientomysis*) *antillarum* Wittmann in Wittmann & Wirtz	Caribbean, Curaçao, Piscadera Baai, 12.2122°N 69.0850°W	0.5-2	35	10	5-8	7	126-188	155	fluorite	Wittmann and Wirtz 2019
Mysidium (*Orientomysis*) *columbiae* (Zimmer)	Caribbean, Belize, Stann Creek District, 16.7827°N 88.2927°W	1	35	10	6-7	6	100-150	130	fluorite	Ariani et al. 1993
idem	Caribbean, Curaçao, W of Piscadera Baai, 12.1285°N 68.9792°W	4-12	35	10	3-7	6	54-118	88	fluorite	Wittmann and Wirtz 2019
idem	Caribbean, Bonaire, Bachelor's Beach, 12.1260°N 68.2877°W	3-26	35	25	5-8	6	60-176	95	fluorite	orig.
Mysidium (*Mysidium*) *gracile* (Dana)	Caribbean, Bonaire, Bachelor's Beach, 12.1260°N 68.2877°W	3-26	35	15	3-5	5	89-122	98	fluorite	orig.
idem	SW-Atlantic, Rio de Janeiro, Cabo Frio, 22.8974°S 41.9834°W	4-12	36	15	5-7	6	93-130	110	fluorite	Wittmann and Wirtz 2019, orig.
Mysidium (Mysidium) integrum W.M. Tattersall	NW-Atlantic, Bermuda, Walsingham Pond, 32.3463°N 64.7090°W	0-0.5	37	25	4-7	6	110-130	120	fluorite	orig.
idem	Caribbean, Antigua, English Harbour, 17.0090°N 61.7661°W	2	35	25	5-7	6	80-250	130	fluorite	Schlacher et al. 1992, Ariani et al. 1993, Wittmann et al. 2014, orig.
idem	SW-Atlantic, Rio de Janeiro, Cabo Frio, 22.8974°S 41.9834°W	4-12	36	10	4-6	5	96-131	113	fluorite	Wittmann and Wirtz 2019
Mysidium (*Mysidium*) *triangulare* Wittmann in Wittmann & Wirtz	Caribbean, Curaçao, Playa Lagun, 12.3181°N 69.1511°W	4-6	35	15	4-6	5	89-135	100	fluorite	Wittmann and Wirtz 2019, orig.
Paramesopodopsis rufa Fenton	SW-Pacific, SE-Tasmania, Derwent River, 42.954°S 147.350°E	coastal	35	10	7-11	10	140-280	210	fluorite	Ariani et al. 1993
Tribus Neomysini										
Acanthomysis longicornis (H. Milne Edwards)	NE-Atlantic, Canary Islands, Lanzarote, Playa Quemada, 28.9032°N 13.7332°W	16	21	7	4-5	5	120-160	130	fluorite	orig.
idem	Mediterranean, Tyrrhenian Sea, Gulf of	6-16	30	11	3-4	4	80-120	100	fluorite	orig.

	Salerno, 40.483°N 14.917°E									
idem	Mediterranean, N-Adriatic, Gulf of Trieste, 45.55°N 13.58°E	10-28	36	10	4-6	5	90-140	120	fluorite	Ariani et al. 1983, 1993
Acanthomysis quadrispinosa H. Nouvel	W-Indian Ocean, Madagascar, Nosy Bé, 13.3967°S 48.2017°E	surface	36	1	4	4	110	110	fluorite	orig.
Alienacanthomysis macropsis (W.M. Tattersall)	NE-Pacific, San Francisco Bay, 37.7°N 122.3°W	9	34	6	9-12	11	150-260	200	fluorite	Ariani et al. 1993 (as *Acanthomysis macropsis*)
Disacanthomysis dybowskii (Derzhavin)	N-Pacific, Bering Sea, off Hooper Bay (Alaska), 61.05°N 167.92°W	37	33	10	20-25	22	400-530	450	fluorite	Ariani et al. 1993 (as *Acanthomysis dybowskii*)
Holmesimysis costata (Holmes)	E-Pacific, California, Monterey Bay, 36.63°N 121.91°W	20	35	9	8-13	10	140-220	170	fluorite	Ariani et al. 1993
Neomysis americana (S.I. Smith)	NW-Atlantic, North Carolina, Oregon Inlet, 35.78°N 75.52°W	coastal	32-34	5	8-11	8	180-230	200	fluorite	Ariani et al. 1993
Neomysis integer (Leach)	NE-Atlantic, Baltic Sea, Askö Island, 58.8228°N 17.6366°E	0-1	7	25	9-17	11	150-330	220	fluorite	Ariani et al. 1993, orig.
idem	NE-Atlantic, Portugal, Estuario do Sado, 38.463°N 8.859°W	1-2	32	3	7-11	9	100-210	160	fluorite	orig.
idem	NE-Atlantic, Gulf of Biscay, Bassin d'Arcachon, chenal de La Hume, 44.5921°N 1.1237°W	1-3	1.2	25	7-12	9	130-250	190	fluorite	Wittmann et al. 2016
idem	W-Mediterranean, Canal d'Arles à Fos, 43.4664°N 4.8334°E	0.5-1.5	12	4	9-12	10	120-240	180	fluorite	Wittmann et al. 2016
Neomysis japonica Nakazawa	NW-Pacific, Tokyo Bay, 35.417°N 139.897°E	1	<15	10	10-15	13	160-280	190	fluorite	Ariani et al. 1993
Neomysis mercedis Holmes	NE-Pacific, San Francisco Bay, 37.64°N 122.35°W	10-14	35	7	9-13	11	150-270	200	fluorite	Ariani et al. 1993
Neomysis rayii (Murdoch)	NE-Pacific, San Francisco Bay, 37.7°N 122.3°W	9	34	6	24-31	28	310-440	380	fluorite	Ariani et al. 1993
Nipponomysis perminuta (Ii)	NW-Pacific, Japan, Tateyama Bay, 34.99°N 139.81°E	coastal	33-35	10	6-9	7	180-230	210	fluorite	Ariani et al. 1993 (as *Proneomysis perminuta*)
Nipponomysis toriumii (Murano)	NW-Pacific, Japan, Tateyama Bay, 34.99°N 139.81°E	coastal	33-35	10	8-10	9	140-220	180	fluorite	Ariani et al. 1993 (as *Proneomysis toriumii*)
Orientomysis japonica Marukawa	NW-Pacific, Japan, Kominato, 35.142°N 140.308°E	coastal	30-34	7	9-12	11	260-330	290	fluorite	Ariani et al. 1993 (as *Acanthomysis japonica*)
idem	NW-Pacific, Japan, Tateyama Bay, 34.99°N 139.81°E	20	30-34	10	11-15	14	200-270	240	fluorite	Ariani et al. 1993 (as *Acanthomysis nakazatoi*)
Orientomysis mitsukurii	NW-Pacific, Japan, Tateyama Bay,	20	30-34	10	8-11	9	130-200	180	fluorite	Ariani et al. 1993 (as

(Nakazawa)	34.99°N 139.81°E								*Acanthomysis mitsukurii*)
Orientomysis tamurai (Ii)	NW-Pacific, Japan, Tateyama Bay, 34.99°N 139.81°E	coastal	30-34	10	9-13	11	230-340	270	fluorite	Ariani et al. 1993 (as *Acanthomysis tamurai*)
Subfamily Palaumysinae										
Palaumysis simonae Băcescu & Iliffe	W-Pacific, Micronesia, Ishura Cave, 7.2435°N 134.3678°E	2-7.5	36	15	1.3-1.8	1.6	25-28	26	fluorite	orig.
Subfamily Heteromysinae										
Tribus Heteromysini										
Heteromysis arianii Wittmann	Mediterranean, Tyrhenian Sea, Gulf of Naples, 40.6827°N 14.4327°E	11-22	37	5	3-4	3	67-82	73	fluorite	Wittmann 2000
Heteromysis atlantidea O.S. Tattersall	NE-Atlantic, S of Santiago, Pta Gde da Cidade, 14.90°N 23.65°W	325-500	35	1	5	5	100	100	fluorite	orig.
Heteromysis bermudensis bermudensis G.O. Sars	NW-Atlantic, Bermuda, Walsingham Pond, 32.3463°N 64.7090°W	2-3	37	3	4-5	4	70-110	90	fluorite	orig.
Heteromysis cancelli Wittmann & Griffiths	SE-Atlantic, Cape Peninsula, False Bay, 34.1825°S 18.4583°E	20	35	4	5-7	6	130-143	138	fluorite	Wittmann and Griffiths 2017
Heteromysis dardani Wittmann	NE-Atlantic, Madeira, Bay of Machico, 32.7144°N 16.7607°W	10-20	35	8	3-5	3	69-98	81	fluorite	Wittmann 2008
Heteromysis digitata W.M. Tattersall	Gulf of Suez 'drainage', Suez Canal, Great Bitter Lake, 30.3397°N 32.3828°E	4.5	-	1	3	3	60	60	fluorite	orig.
Heteromysis dispar Brattegard	Caribbean coast of Florida, off Looe Key, 24.546°N 81.407°W	6	36	6	3-5	5	90-120	100	fluorite	orig.
Heteromysis ekamako Wittmann & Chevaldonné	Mid-Pacific Ocean, Marquesas, Nuku Hiva Island, Ekamako Cave, 8.9369°S 140.0908°W	8-10	35	5	4-5	4	60	60	fluorite	Wittmann and Chevaldonné 2016
Heteromysis formosa S.I. Smith	NW-Atlantic, Rhode Island, Narragansett Bay, 41.617°N 71.367°W	coastal	32	13	5-8	6	80-140	130	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Heteromysis fosteri Wittmann & Griffiths	SE-Atlantic, Cape Peninsula, False Bay, 34.2297°S 18.4745°E	5	35	4	6-8	7	145-181	162	fluorite	Wittmann and Griffiths 2017
Heteromysis gymnura W.M. Tattersall	NW-Indian Ocean, S-Arabian Gulf, Abu Dhabi, 24.8242°N 53.6526°E	22	37	1	4	4	60	60	fluorite	orig.
idem	W-Indian Ocean, Zanzibar, Fawaku Reef Region, 6.0667°S 39.1267°E	36	35	2	3-5	4	60-80	70	fluorite	orig.
Heteromysis mayana Brattegard	stock from Caribbean, in Smith. Inst., coral reef aquarium	coastal	35	8	4	4	80-100	90	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Heteromysis microps	Mediterranean, N-Adriatic, Bay of	0.5-2	37-42	2	6	6	100-120	110	fluorite	orig.

(G.O. Sars)	Strunjan, Pretocna Laguna, 45.5286°N 13.6066°E									
idem	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.7594°N 13.8908°E	3	35-37	5	5-6	6	90-120	110	fluorite	Ariani et al. 1993
idem	Mediterranean, Malta, White Tower, 35.995°N 14.359°E	16	37	1	6	6	100	100	fluorite	orig.
Heteromysis norvegica G.O. Sars	NE-Atlantic, Ireland, Lough Hyne, 51.503°N 9.300°W	10	35	1	6	6	120	120	fluorite	orig.
idem	NE-Atlantic, Roscoff, 48.73°N 4.03°W	coastal	35	1	6	6	120	120	fluorite	orig.
idem	NE-Atlantic, Madeira, off Funchal, 32.64°N 16.90°W	120-180	35	2	4-5	4	80-120	100	fluorite	orig.
Heteromysis octopodis Wittmann & Griffiths	SE-Atlantic, Cape Peninsula, False Bay, 34.2298°S 18.4739°E	0-3	35	12	6-11	8	120–196	155	fluorite	Wittmann and Griffiths 2017
Heteromysis riedli Wittmann	Mediterranean, Tyrrhenian Sea, Gulf of Naples, 40.7594°N 13.8908°E	10-25	37	6	3-4	3	50-90	70	fluorite	Wittmann 2001
Heteromysis sabelliphila Wittmann & Wirtz	NE-Atlantic, Cape Verde Islands, Sal, Santa Maria, 16.5844°N 22.9180°W	7-18	35	3	3-5	4	73-126	99	fluorite	Wittmann and Wirtz 2017
idem	NE-Atlantic, Cape Verde Islands, Santiago, Tarrafal, 15.2781°N 23.7606°W	6-15	35	4	4-5	4	69-113	90	fluorite	orig.
Heteromysis sp. B	Antarctic, Weddell Sea, 71.258°S 12.035°W	210-250	35	5	14-19	17	110-150	140	fluorite	Ariani et al. 1993
Heteromysis wirtzi Wittmann	NE-Atlantic, Madeira, Caniço de Baixo, 32.6415°N 16.8295°W	28	35	3	5	5	98-120	108	fluorite	Wittmann 2008
Ischiomysis peterwirtzi Wittmann	NE-Atlantic, Cape Verde Islands, Sâo Vicente, 16.8427°N 25.0827°W	8	35	48	4-6	5	67-116	98	fluorite	Wittmann 2013
Ischiomysis telmatactiphila Wittmann	NE-Atlantic, Gulf of Guinea, island São Tomé, 0.3149°N 6.4893°E	46	35	10	2-4	4	71-107	93	fluorite	Wittmann 2013
Retromysis nura Wittmann	W-Mediterranean Sea, Balearic Islands, Minorca, 40.0103°N 3.7944°E, superficial marine cave	2-5	35	8	3-5	4	73-120	88	fluorite	Wittmann 2004
Tribus Harmelinellini										
Harmelinella mariannae Ledoyer	NE-Atlantic, Cape Verde Islands, Santiago, Tarrafal, diving station 'Tuna Point', marine cave, 15.27813°N, 23.76055°W	15	35	1	2.6	2.6	62	62	fluorite	orig.
Tribus Mysidetini										

Bermudamysis speluncola Băcescu & Iliffe	NW-Atlantic, Bermuda, Green Bay Cave, Hamilton Parish, 32.3273°N 64.7377°W	15-18	35	4	3-5	4	40-60	50	fluorite	orig.
Mysidetes posthon Holt & Tattersall	Antarctic, Weddell Sea, 76.73°S 50.67°W	400-500	35	5	25-30	28	300-390	340	fluorite	Ariani et al. 1993
Mysidetes sp. A	Antarctic, Weddell Sea, 76.944°S 49.809°W	220-520	35	12	22-29	27	200-240	220	fluorite	Schlacher et al. 1992, orig.
Mysifaun erigens Wittmann	Antarctic, Weddell Sea, 74.8483°S 27.6117°W	470	35	5	9-12	11	164-180	172	fluorite	Wittmann 1996, orig.
Platyops sterreri Băcescu & Iliffe	NW-Atlantic, Bermuda, Castle Harbour Sound, 32.34187°N 64.69942°W	11-14	35-36	1	1.9	1.9	36	36	fluorite	orig.
Subfamily Mysidellinae										
Mysidella biscayensis Lagardère & Nouvel	NE-Atlantic, Gulf of Biscay, off Santander, 43.75°N 3.80°W	400	35	3	6	6	80-110	100	fluorite	orig.
Mysidella typica G.O. Sars	NE-Atlantic, Norway, Hjeltefjord, 61.583°N 4.917°E	260	35	5	5-7	6	70-110	100	fluorite	Schlacher et al. 1992, Ariani et al. 1993
Mysidella sp. A	Antarctic, Weddell Sea, 71.258°S 12.035°W	210-280	35	5	7	7	60-90	70	fluorite	Ariani et al. 1993, orig.

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