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Marine biogeography of the Mediterranean Sea: patterns and dynamics of biodiversity

Faunistics and zoogeographical overview of the Mediterranean and Black Sea marine Gastrotricha

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SUMMARY

The paper provides an updated overview of the knowledge regarding the marine gastrotrich fauna of 10 Mediterranean and 2 Black Sea countries. Taxonomic account and species distribution come from published records, including electronically disseminated information, as well as original data from 18 localities (16 western and 2 levantine), investigated by the authors between 1990 and 2002. Since the description of the first marine Mediterranean gastrotrich, *Hemydasys agaso* Claparède, 1867, discovered in the Gulf of Naples (Italy), 273 additional species, from 417 locations have been recorded in the basin so far. Of the gastrotrichs found, 143 species, in 24 genera and 6 families, belong to the order Macrodasyida and 131 species, in 11 genera and 3 families, belong to the order Chaetonotida; these statistics include several species as yet not described. The number of species per location is variable, ranging from 1-37, with a global mean of 8.04±6.69 spp/location. Egypt and Israel show mean values well above the average, with 12.8 and 10.8 spp/loc. respectively, whereas mean values for Algeria, Tunisia, Bulgaria, Croatia, and France are below average (1- 5.43 spp /location); data for Cyprus, Greece, Romania and Italy are within the average value. *Acanthodasys aculeatus*, recorded in 28% of the investigated locations is the most frequently found macrodasyidan; *Halichaetonotus aculifer*, also recorded in 28% of the investigated localities, is the most common chaetonotidan. Data analysis indicated substantial differences among countries, regarding sampling effort and, consequently, faunistic knowledge. In comparison with the generally good information concerning the Italian fauna (177 species from 246 localities), gastrotrichs from other Mediterranean nations are much less known; along with Italy, only few other Nations have been investigated to a sufficient extent (i.e., Greece: 44 sampled localities, 77 recorded species; France: 37 L, 70 spp; Egypt: 28 L, 81 spp; Israel: 15 L, 55 spp; Cyprus: 9 L, 41 spp), whereas investigation carried out in several other countries can be considered, to a variable degree, incomplete (i.e., Algeria: 16 investigated localities and 11 species found; Romania: 7 L, 30 spp; Tunisia: 5 L, 2 spp; Bulgaria: 3 L, 11 spp; Croatia: 1 L, 12 spp, Spain: 1 L, 3 sp, Malta; 2L, 2 spp.), or nil (e.g., Morocco, Libya, Turkey, Albania). All marine gastrotrich families and most marine genera have representatives in the Mediterranean fauna, notable absences regard the genera *Desmodasys*, *Dinodasys*, *Planodasys*, *Prostobuccantia* and perhaps *Pseudoturbanella*; on the other hand representatives of two genera, *Emydasys* and *Dendropodola*, are unknown elsewhere in the world except the western Mediterranean. At species level, about 140 taxa have so far been found only in the Mediterranean area, whereas the

remainder have some north-Atlantic connections, including several considered as regional cosmopolitans (i.e., reported from at least two Oceans). Within the Mediterranean, the species geographic distribution does not appear to be homogeneous, with several taxa restricted to either the western or to the Levantine basin; yet, Italy, Egypt and Israel show the highest numbers of endemic species, 70, 24 and 14 respectively, whereas only one species seems restricted to the Black Sea. A cluster analysis using the Bray-Curtis presence-absence similarity value to examine the relationship between 11 geographic areas, shows a clear separation between the Black Sea and the Mediterranean regions and within this, the Algerian-Tunisian region is separated from and the remaining 9 areas. The latter appear arranged in two main clusters, one including the southern Levantine regions (i.e., Egypt, Israel and Cyprus), the other containing regions of the north-western basin, the Adriatic Sea and the two Greek sub-regions. In this cluster, the region comprising coastal France and Formentera (Spain) appears separated from the one containing, arranged into two distinct subsets, the Italian and the Greek areas. However, due to the paucity of information, data from key-areas is urged to confirm or disprove our current perception about numbers and distribution of gastrotrich taxa within the Mediterranean and the Black Sea.

INTRODUCTION

Gastrotricha are a phylum of aquatic, free-living metazoans adding up to about 690 microscopic species, ranging from 80 µm to 3 mm in total length. Taxonomically, gastrotrich species are split into two orders, the marine Macrodasyida (6 families, 23 genera), and the marine and freshwater Chaetonotida (7 families, 28 genera) showing great differences from morphological to reproductive points of view. Macrodasyidans are characterised by a worm-like shape and the presence of numerous anterior, lateral and posterior (caudal) adhesive tubes; they are hermaphrodites, mainly simultaneous or sequential. In contrast, chaetonotidans are smaller and characterised by a tenpin body shape having a furcate posterior end, called the furca, which terminates with the only two adhesive tubes exhibited by these animals (except *Neodasys*). Chaetonotidans are mainly parthenogenetic, with hermaphroditic species restricted to selected taxa (e.g., *Musellifer*, *Neodasys*, Xenotrichulidae).

In marine settings, Gastrotricha represent an ever present component of the meiobentic community of the sandy substrata, often ranking third in abundance following Nematoda and Harpacticoida Copepoda (e.g., Coull, 1985). They colonize a variety of habitats, from fine to coarse sand in both littoral and sublittoral areas and also caves; however, abundance and biodiversity peak in medium, clean sand of the shallow subtidal areas (Todaro and Rocha, 2003). Representative of both orders move between sand grains by means of ventral locomotory cilia, occasionally attaching to the substratum by means of adhesive tubes; like other meiobenthic animals, gastrotrichs have no planktonic dispersal stages so juveniles undergo direct development in the same habitat as their parents. Based of bio-physiological traits such as short life span, small number of offspring, absence of dispersal stages, limited swimming ability of the adults, gastrotrich species would be expected to have restricted geographic range; however, in contrast with this prospect, many species are reported having a wide geographic range, with several being amphi-atlantic or even cosmopolitan. Research addressing this apparent paradox has undergone a recent revival due to both theoretical and technical advances (Todaro et al., 1996; Todaro and Rocha, 2003). In this framework, the aim of the present study is to provide a

handy, yet exhaustive overview, of the gastrotrich fauna of one of the best known basins in the world, as contribution to debate on the biogeography of these acoelomate worms. The complimentary pictorial keys of the gastrotrich genera found in the Mediterranean basin will hopefully prove useful not only to gastrotrich specialists but also to marine ecologists who find these abundant metazoans in the course of research on interstitial meiobenthos.

MATERIAL AND METHODS

Taxonomic account and species distribution come from published records, including electronically disseminated information (cf. Hummon 2001a), as well as original data from 18 new localities (16 in the western and 2 in the eastern basin), investigated by the authors between 1990 and 2002 time frame. Below is a list of the consulted papers, arranged by nation, containing taxonomic and/or faunistic data; in brackets is the number of papers per nation:

ALGERIA (1): d'Hondt (1974); TUNISIA (1): Westheide (1972); MALTA (1): Boaden (1965a); BULGARIA (1): Valkanov (1957); ROMANIA (3): Rodewald (1938); Rudescu (1966, 1967); GREECE (1) Hummon and Roidou (1994); CROATIA (1): Schrom (1972); ITALY (51): Balsamo and Todaro (1987); Balsamo et al. (1992, 1994, 1995, 1996, 1997); Boaden (1965a,b); Claparède (1867); Clausen (1965); De Zio and Grimaldi (1964); De Zio (1965); Evans et al. (1993); Faienza et al. (1999, 2000); Fregni (1998a); Fregni et al. (1998, 1999); Gerlach (1953); Grünspan (1908); Hummon et al. (1990a, 1992, 1993, 1996, 1998); Luporini et al. (1971, 1972; 1973a,b); Papi (1957); Remane (1927a,b, 1951, 1952); Renaud-Mornant (1968); Schrom (1966a,b, 1972); Todaro (1992, 1997, 1998a,b); Todaro and Balsamo (1994); Todaro et al. (1988, 1992, 2001, 2003); Tongiorgi (1975); Tongiorgi and Balsamo (1984); Tongiorgi et al. (1999); Wilke (1954); FRANCE, including Corsica: (9) Delamare-Deboutteville (1953, 1954); Fize (1957, 1963); Hummon et al., (1992); Remane (1961); Swedmark (1956); Todaro et al. (2002); Vivier (1974).

Information about Egypt, Israel and Cyprus, are from Hummon's (2001a) CD-rom "Global database for marine Gastrotricha", which is available from the author: "hummon@ohio.edu" or in second place from us: "todaro.antonio@unimo.it"; Hummon's CD-rom also supplied additional information from Greece and Mediterranean France and was also used to cross-check data gathered from literature. For general information about the CD-rom and the source of data it contains see Hummon (2001b,c) and the section "Results and Discussion" below.

Original records come from 18 locations (13 Italian, 2 Greek, 1 French, 1 Spanish, Table I); samples were collected and processed according to our standardised methods (e.g., Todaro et al., 2002). Global data (old + new records) were arranged in a species by nation *check-list* (see appendix I and II).

Since Hummon (2001a) also includes in his CD-rom a conspicuous number of putative new species, as yet undescribed, we have incorporated these taxa in the list. We trust, in doing so, to hopefully give a more realistic (better) picture about the biodiversity and zoogeography of Mediterranean gastrotrich-fauna. Likewise, most of the unnamed species, putatively new to science, reported in Todaro et al. (2001a) appear also in the present check-list, with the exception of those for which information granting them a clear distinctness, is not considered sufficient anymore.

The Cluster analysis performed on a species by location matrix was carried out using the software Primer 5.2.0. Prior analysis, data were pooled in the following 11 main areas: 1, Algeria + Tunisia; 2, Egypt; 3, Israel; 4, Cyprus; 5, Black Sea (= Romania + Bulgaria); 6, Greece-Aegean (= Attica + Cyclades + Macedonia + Peloponnesis + Sporades + Thessaly); 7, Greece-Mediterranean (= Crete + Dodecannese); 8, It-Adriatic Sea (= Adriatic coast of Italy, from Trieste to Santa Maria di Leuca + Rovjni in Croatia); 9, It-Ionian Sea (= Italian Ionian coast of Apulia, Lucania, Calabria and Sicily); 10, It-Tyrrhenian Sea (= western coast of Italy, including Sardinia and the northern coast of Sicily + Corsica); 11, France-Spain (Continental coast of France + a single site on the island of Formentera, Spain).

RESULTS AND DISCUSSION

Literature data

First record of a marine gastrotrich species from the Mediterranea Sea dates back to the XIX century and comes from Claparède (1867) who, investigating the minute benthic organisms of the Gulf of Naples, finds and describes *Hemidasys agaso*, a species affiliated later on with the Thaumastodermatidae. During the first half of the XX century only three other papers dealing with Mediterranean gastrotrichs were published: Grünspan (1908) describes two species of *Ichthydium* from the Gulf of Trieste, whereas Remane (1927a,b) reports five new species (*Dactylopodola typhle*, *Lepidodasys platyurus*, *Macrodasys caudatus*, *Tetranchyroderma megastomum* and *Thaumastoderma mediterraneus*), and four new genera and species (*Paraturbanela dohrni*, *Platydasys maximum*, *Ptychostomella mediterranea*, *Diplodasys platydasyoides*) from the Gulf of Naples. At about the same time Rodevald (1938) reports the first species from the Romanian coast of the Black Sea. A formidable impulse to the study of the Mediterranean gastrotrich fauna was given by German researchers during 1950s: Remane (1951, 1952) describing two new species from Cuma (Italy), and Sete (France) respectively, Gerlach (1953) who worked along the coast of

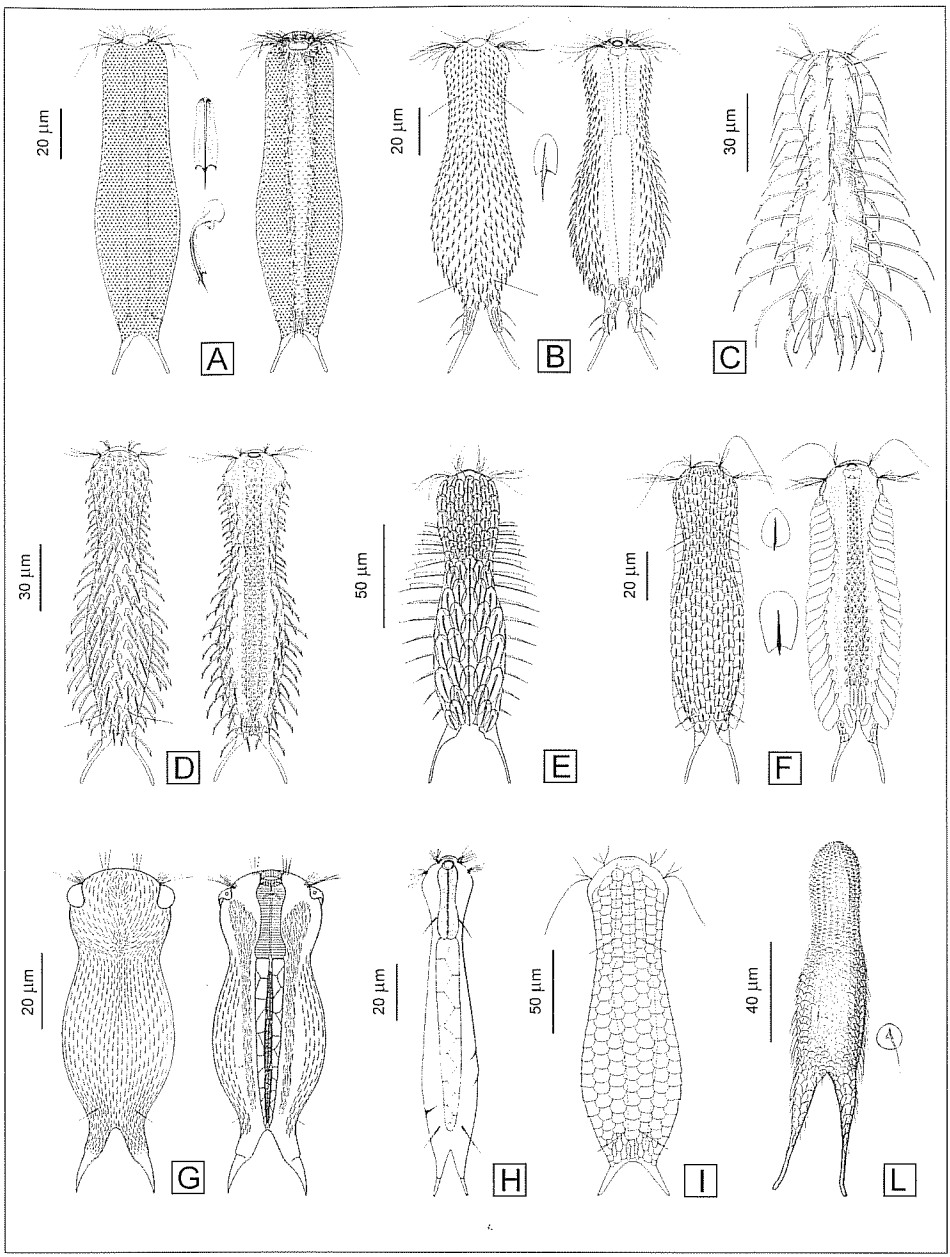

Fig. 1 - Representative species belonging to families and genera found in the Mediterranean basin. A-L: Chaetonotidae, A: *Aspidiophorus polystictos*; B: *Chaetonotus apechochaetus*; C: *C. dispar*; D: *C. lacunosus*; E: *Halichaetonotus aculifer*; F: *Halichaetonotus margaretae*; G: *Heterolepidoderma istrianum*; H: *Ichthydium tergestinum*; I: *Lepidodermella squamata*; L: *Musellifer delamarei*.

Tuscany, and especially Wilke (1954) whose doctoral work on the fauna from the Gulf of Naples doubled the number of species known for the Mediterranean, which raised to 43. During the same decade important contributions were made by Swedmark (1956) and Fize (1957) investigating the gastrotrich fauna of the southern coast of France, by Papi (1957) who described three new species from the surroundings of Naples, and by Valkanov (1957) who, working along the Bulgarian coast, published the second out of the only three papers on gastrotrichs of the Black Sea, the third being that of Rudescu (1966) devoted again to the gastrotrichs of Romania. Between the 60s and 70s of the past century, key information came from the taxonomic work of Fize (1963) in France, Boaden (1965a,b) in Italy and Malta, Clausen (1965), Schrom (1966a,b) and Renaud-Mornant (1968) in Italy, Schrom (1968) in Croatia, and by the ecological work of de Zio and Grimaldi (1964) and de Zio (1965) carried out at some Apulian beaches of Italy. A flourishing of papers characterised the two decades between 1970-1990, some of the more extensive work focused on regional faunas, e.g., Italy: coast of Tuscany (Luporini et al., 1971, 1973a,b; Tongiorgi, 1975), northern Adriatic Sea (Schrom, 1972); Algeria: (d'Hondt, 1974); others dealt with the description of single species (Vivier, 1974; Tongiorgi and Balsamo, 1984; Balsamo and Todaro 1987, Todaro et al., 1988). During the same time-frame records of nominal species also appeared in papers not specifically focused on Gastrotricha, this data is important mostly because it was gathered from areas never sampled again (e.g., Tunisia, Westheide, 1972). Consequently, by the end of the 80s of the last century the gastrotrich fauna of the Mediterranean Sea was already one of the best known world wide (with more than 90 known species). New and more intensive research was carried out between 1990 and 2002 headed by a team of American-Italian investigators whose goal was two fold: a) to verify previous data (mainly resampling locations already investigated), and b) to add information from poor known areas. The standardization of the methodology, implemented by new and better equipment (i.e., light microscopes equipped with DIC optics, scanning electron microscopy, videomicroscopy, videorecording etc.) would have made possible the building-up of a coherent data-set, useful for several purposes, from specimen comparisons to biogeographic analysis. Research performed along the Italian coasts spawned a number of papers which focused on taxonomy and ecology (Hummon et al., 1990a, 1992, 1993, 1996, 1998; Balsamo et al., 1992, 1994, 1995, 1996, 1997; Todaro, 1992, 1997, 1998a,b; Evans et al., 1993; Todaro et al., 1992; Todaro and Balsamo, 1994; Fregni, 1998a; Fregni et al., 1998, 1999; Faienza et al., 1999, 2000; Tongiorgi et al., 1999), and provided live material to perform studies aimed at sheding light on general topics such as reproductive biology (e.g., Balsamo and Todaro, 1987; Ferraguti and Balsamo, 1994, 1995; Ferraguti

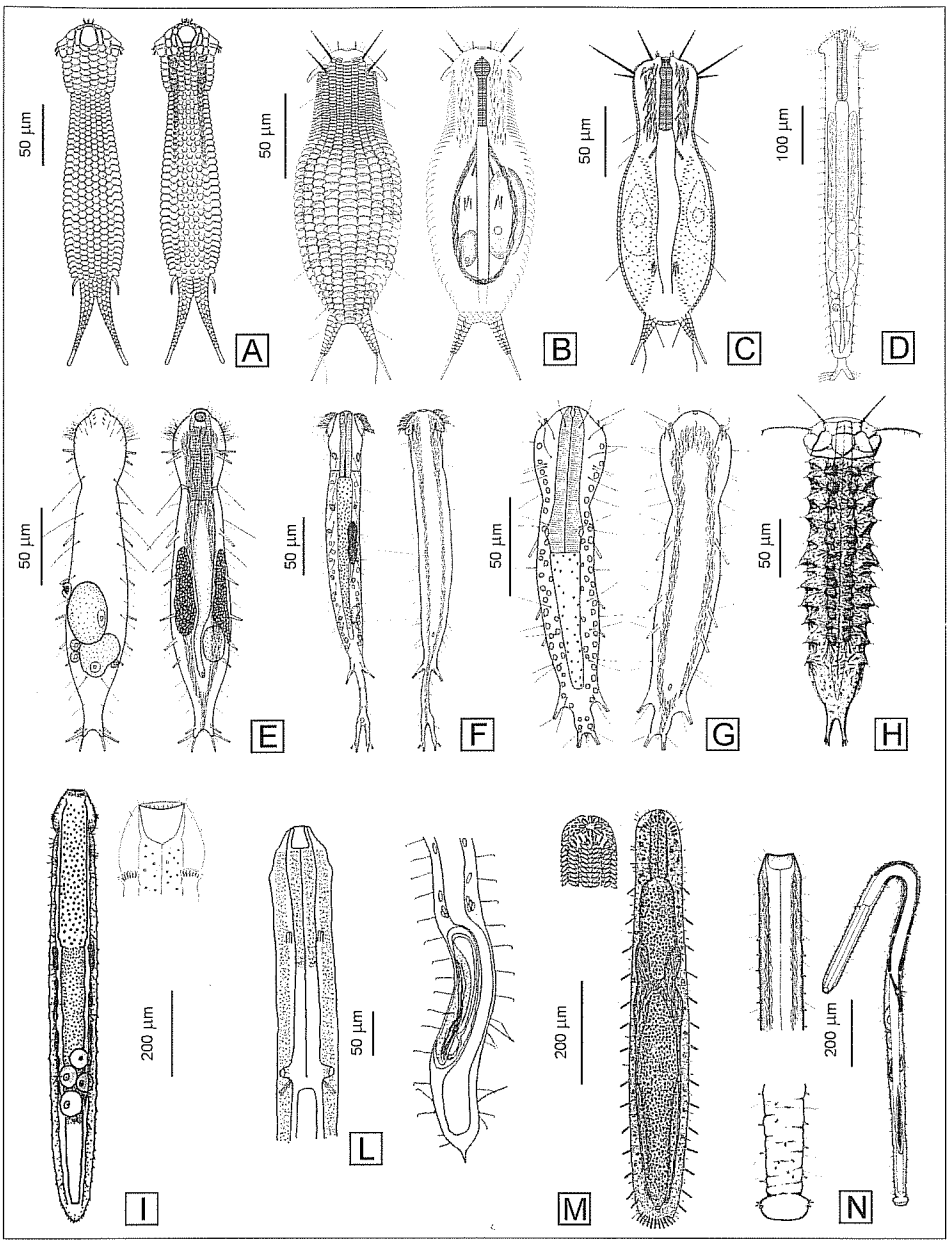

Fig. 2 - Representative specie belonging to families and genera found in the Mediterranean basin. A-C: Xenotrichulidae, A: *Draculiciteria tesselata*; B: *Heteroxenotrichula squamosa*; C: *Xenotrichula intermedia*. D: Neodasyidae, D: *Neodasys uchidai*. E-H: Dactylopodolidae, E: *Dactylopodola mesotyphle*; F: *Dendrodasys affinis*; G: *Dendropodola transitionalis*; H: *Xenodasys sancti-goulveni*, a species from the Atlantic coast of France (Roscoff), morphologically close to *Xenodasys* sp. found along the Ionian coast of Italy. I-N: Lepidodasyidae, I: *Cephalodasys turbanelloides*; L: *Dolichodasys elongatus*; M: *Lepidodasys martini*; N: *Megadasys minor*.

et al., 1995; Fregni, 1998b; Balsamo et al., 2002) life history (Balsamo and Todaro, 1988), and even on phylogeny (Todaro et al., 1996; Wirz et al., 1999; Todaro et al., 2003). A checklist of the Italian gastrotrich-fauna including both marine and freshwater forms was published by Balsamo and Tongiorgi (1995) and has been updated in the *Inventory of Italian marine gastrotrichs: an annoted check list* by Todaro et al. (2001a) for the marine species.

Written accounts of studies carried out outside of Italy, dealing with marine gastrotricha from Greece and Corsica are reported in Hummon and Roidu (1994) and Todaro et al. (2002) respectively. In the outside-Italy scenarios a particular relevance bear the extensive research carried out by W. D. Hummon in the Levantine countries (i.e., Greece, Israel, Egypt, Cyprus) in collaboration with several local researchers, and in the Roussignol coast of France (together with M. A. Todaro) between 1990-2000. Information on this research has been published in several abstracts (Hummon et al., 1990b; Hummon and Hummon, 1992, 1995a,b; Hummon et al., 1994) and reported in a more extended layout in the *Global database for marine Gastrotricha* (Hummon, 2001a). It is a useful tool that the author generously makes available, on request, to the scientific community (see Materials and Methods above). In a larger framework the "The Global database" by Hummon (2001a) furnishes an ample and authoritative source of information regarding the world geographical distribution of all marine gastrotrichs species known until 2001.

New data

Of the 18 new investigated sites, 14 are along the Italian coasts, two are located in Crete (Greece), and one in each of Spain (Formentera, Baleari Islands) and France. Geographical and ecological information about localities are given in Tables I and II whereas reported in Tables III and IV are the taxonomic account and the distribution of the recorded species. Of the 48 species found, *Tetranchyroderma inaequitubulatum* is new to the Italian fauna and its record is the second ever for the species; *Mesodasys adenotubulatus*, *T. esarabdophorum* and *T. thysanophorum* are new to Greece; *Mesodasys adenotubulatus*, *Paraturbanella teissieri* and *Heteroxenotrichula squamosa* represent the first records of marine gastrotrich species from Mediterranean Spain.

Global data

All together 274 species (3046 records, i.e., species × sites) have been reported from 416 locations in 13 countries. Of these, 143 species, in 24 genera and 6 families, belong to the order Macrodasyida (Appendix I, Figs. 2-4), and 131 species, in 11 genera and 3 families, belong to the order

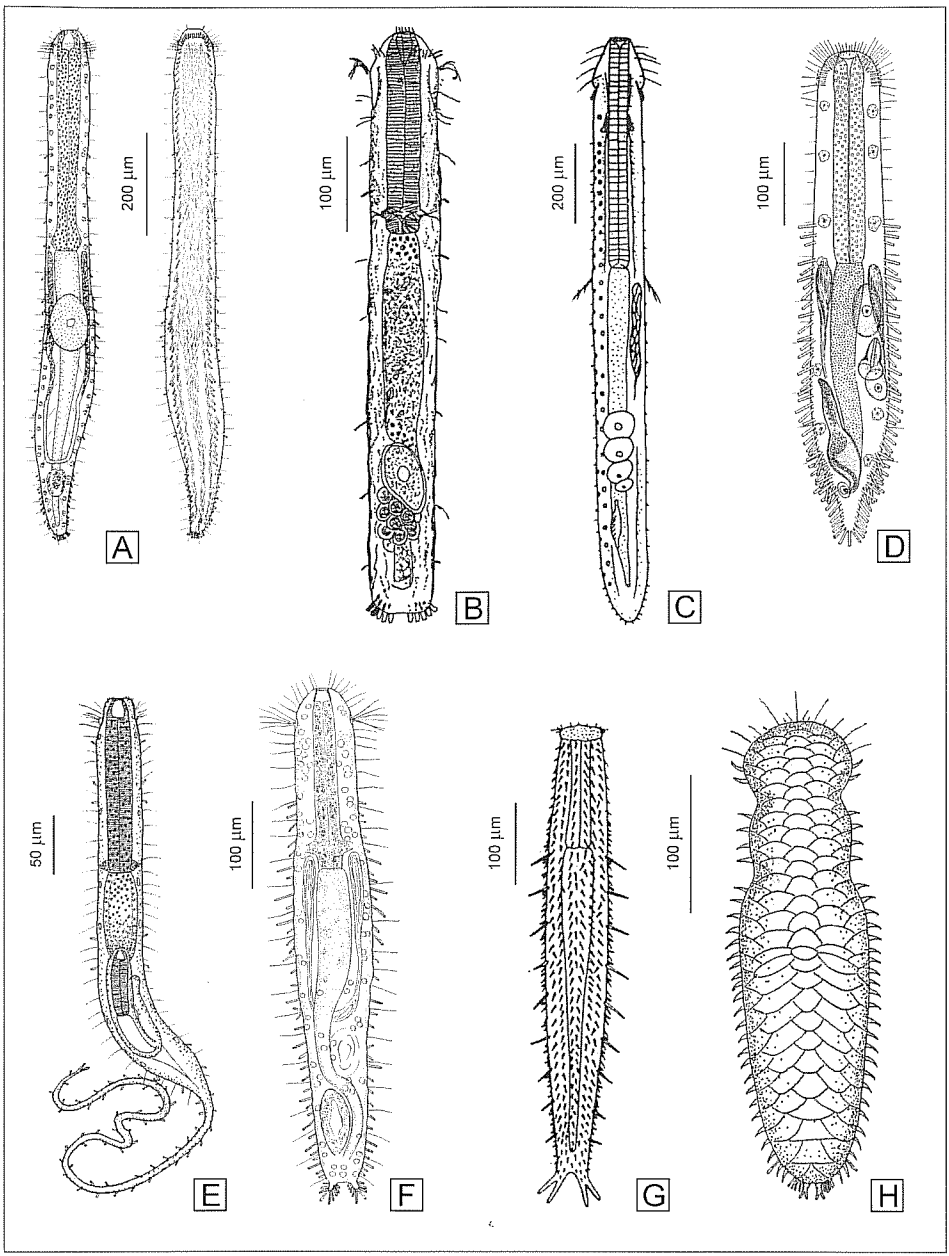

Fig. 3 - Representative specie belonging to families and genera found in the Mediterranean basin. A-C: Lepidodasyidae, A: *Mesodasys adenotubulatum*; B: *Paradasys subterraneus*; C: *Pleurodasys helgolandicus*. D,E: Macrodasyidae, D: *Macrodasys thuscus*; E: *Urodasys viviparus*. G: Planodasyidae, F: *Crasiella diplura* a species from the North Sea, morphologically close to *Crasiella* sp. found along the Italian shores. G,H: Thaumastodermatidae, G: *Acanthodasys aculeatus*; H: *Diplodasys ankeli*.

Tab. I - Eighteen new, or newly investigated Mediterranean locations; geographic coordinates, date of collection, water depth, salinity and temperature of the water at the sublittoral sites.

Location	Lat. (North)	Long. (East)	Date	Salinity (‰)	Temp. (°C)	Depth (m)
Italy						
1. Cala Nave (Island of Ventotene)	40° 47'	13° 26'	29/05/01	37.5	22	3.5
2. Porto S. Felice a Circeo (Latium)	41° 13'	13° 05'	29/05/01	36.5	22	2.0
3. Fiumicino* (Latium)	41° 47'	12° 13'	12/12/03	37	15	Na
4. Marina di Alberese	42° 39'	11° 04	30/05/01	38	22	2.0
5. Pomonte (Elba Island)	42° 47'	10° 06'	3/11/01	38	20	12.0
6. San Teodoro (Sardinia)	40° 47'	09° 41'	20/06/01	35	21	1.5
		11/06/02	36	20	2.5	
7. Baia di Anzachena (Sardinia)	41° 08	09° 28'	11/06/02	36	21	3.0
8. Portu la Rena, Castelsardo (Sardinia)	40° 55'	08° 43'	08/06/02	38	20	13.0
9. Palau (Sardinia)	41° 12'	09° 20'	09/06/02	37	21	3.0
10. Spiaggia della Mormorata (Sardinia)	41° 13'	09° 17'	07/06/02	36	20	2.0-3.0
11. San Isidoro (Apulia)	40° 09'	17° 57'	03/07/02	36	25	3.0
12. Baia Verde (Apulia)	40° 00'	18° 01'	03/07/02	38	25.7	-
13. Brindisi (Apulia)	40° 31'	18° 05'	21/09/02	37	24	2.0
14. Ravenna Lido (Emilia Romagna)	44° 28'	12° 18'	20/5/01	30	22	1.5
Greece						
15. Matala (Crete, south side)	34° 59'	24° 45'	10/09/00	38	25	2.0-4.0
16. Amnissos (Crete, north side)	35° 20'	25° 16'	11/09/00	37	26	2.0-3.0
Spain						
17. Formentera (Baleari islands)	38° 41'	01° 28'	28/07/01	35.4	24	2.0
France						
18. Cannes	43° 33'	06° 59'	10/08/01	37	25	2.0

*, data refers to littoral site; Na, not applicable.

Chaetonotida (Appendix II, Figs. 1, 2). The highest species richness is in Italy, with a total of 176 different species, followed by Egypt, 81 species; Greece, 80 species; France, 70 species and Israel, 55 species. The remainder of the countries showed a range between 2-42 species (Table V). *Acanthodasys aculeatus*, recorded in 28% of the investigated locations is the most frequently found macrodasyidan whereas *Halichaetonotus aculifer*, also recorded in 28% of the investigated localities, is the most common chaetonotidan (Fig. 5A,B).

The number of species per location is variable, ranging from 1-37, with a global mean of 8.04 ± 6.69 spp/location. Egypt and Israel show mean values well above the average, with 12.8 and 10.8 spp/loc. respectively, whereas mean values for Algeria, Tunisia, Bulgaria, Croatia, and France are below average (1- 5.43 spp /location); data for Cyprus, Greece, Romania and Italy are within the average value (Table VI).

Tab. II - Granulometric characteristics of the sublittoral sediment of the 18 new investigated Mediterranean locations.

Location	Mean grain size (phi), and size class	Sorting (phi), and sorting class	Skewness	Kurtosis
1.	1.95, medium sand	0.7, moderately sorted	-0.18	3.16
2.	2.03, very fine sand	0.75, very well sorted	-0.87	3.33
3.	1.01, medium sand	0.90, moderately sorted	-1.04	4.58
4.	NA	NA	NA	NA
5.	1.03, medium sand	0.97, moderately sorted	0.82	3.58
6.	2.30, fien sand	0.58, moderately well sorted	-1.67	6.38
7.	1.05, medium sand	1.02 poorly sorted	0.149	2.13
8.	1.53, medium sand	0.42, well sorted	0.29	5.53
9.	0.88, coarse sand	0.81, moderately sorted	-0.161	2.59
10.	2.23, fine sand	0.6, moderately well sorted	-0.64	3.77
11.	2.11, fine sand	0.73, moderately sorted	-1.19	4.84
12.	NA	NA	NA	NA
13.	2.46, very fine sand	0.77, moderately sorted	-0.99	5.16
14.	2.85, very fine sand	0.82, moderately sorted	1.38	4.82
15.	2,09, fine sand	0.67, moderately sorted	-0.68	3.69
16.	2.29, fine sand	0.59, moderately sorted	-0.65	4.15
17.	1.79, medium sand	0.63, moderately well sorted	-0.5	2.59
18.	NA	NA	NA	NA

Na, not available.

Data analysis indicate substantial differences among countries, regarding sampling effort and, consequently, faunistic knowledge. In comparison with the generally good information concerning the Italian fauna (177 species from 246 localities), gastrotrichs from other Mediterranean nations are much less known. Taking into account the extent of the coastline, beside Italy, only few other countries have in fact been investigated to a sufficient extent (i.e., Greece: 44 sampled localities, 77 recorded species; France: 37 L, 70 spp.; Egypt: 28 L, 81 spp.; Israel: 15 L, 55 spp.; Cyprus: 9 L, 41 spp.). Investigations carried out in the other countries are, to a variable degree, incomplete (i.e., Algeria: 16 investigated localities and 11 species recorded; Romania: 7 L, 30 spp; Tunisia: 5 L, 2 spp.; Bulgaria: 3 L, 11 spp.; Croatia: 1 L, 12 spp.; Spain: 1 L, 3 sp.; Malta; 2 L, 2 spp.), or nil (e.g., Morocco, Libya, Turkey, Albania).

All marine gastrotrich families and most marine genera have representatives in the Mediterranean fauna, notable absences regard the genera *Desmodasys*, *Dinodasys*, *Planodasys*, *Prostobuccantia* and *Pseudoturbanella*; on the other hand representatives of two genera, *Hemydasys* and *Dendropodola*, are unknown elsewhere in the world except the western Mediterranean (Figs. 1-4); it is worth noting however that both excluded and endemic genera includes only 1 or 2 (*Desmodasys*) rare species, having a limited geographic distribution.

Tab. III - Gastrotricha Macrodasyida species list and distribution in 18 new investigated Mediterranean locations. Data refers to sublittoral sites, except location # 4 Fiumicino, where only the littoral site was sampled.

Taxon	Location																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DACTYLOPODOLIDAE																		
Dactylopodola mesotiphle	+	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
Dendrodasys affinis	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
MACRODASYIDAE																		
Macrodasys caudatus	+	-	-	-	+	+	-	-	+	+	-	-	-	-	-	-	-	-
Urodasys acanthostylis	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urodasys viviparous	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPIDODASYIDAE																		
Dolichodasys elongatus	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-
Lepidodasys martini	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
Lepidodasys unicarenatus	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
Mesodasys adenotubulatus	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	+	-
Mesodasys laticaudatus	-	-	-	-	+	-	-	+	+	-	+	-	-	-	-	-	-	-
PLANODASYIDAE																		
Crasiella sp. a	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-
THAUMASTODERMATIDAE																		
Acanthodasys aculeatus	+	-	-	-	+	+	-	-	-	+	-	-	-	-	+	-	-	-
Diplodasys ankeli	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-
Pseudostomella etrusca	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Pseudostomella roscovita	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
Ptychostomella tyrrhenica	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetranch. cirrophorum	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
Tetranch. esarabdophorum	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
Tetranchyroderma hirtum	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-
Tetranch. inaequitubulatum	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Tetranch. megastomum	-	-	-	-	-	+	-	+	+	-	-	-	-	-	+	-	-	-
Tetranchyroderma papii	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Tetranc. quadritentaculatum	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-
Tetranch. thysanophorum	-	-	-	+	+	-	-	+	-	-	-	-	-	-	+	-	-	-
Thaumastoderma heideri	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Thaumast. mediterraneus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thaumast. ramuliferum	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBANELLIDAE																		
Paraturbanella dhorni	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-
Paraturbanella pallida	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paraturbanella teissieri	+	-	-	-	+	+	-	+	-	+	-	-	-	-	+	+	+	+
Turbanella cornuta	+	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-

Species of five, elsewhere widely distributed, genera have so far been found only in the western basin: i.e., *Crasiella* (1 sp.), *Paradasys* (1 sp.), *Pleurodasys* (1 sp.) *Neodasys* (1 sp.) and *Musellifer* (2 spp.); however, giving the occasionality of these findings the presence also in the eastern basin of these genera cannot be escluded. Likevise the apparent absence from the eastern basin of the genus

Tab. IV - Gastrotricha Chaetonotida species list and distribution in 18 new investigated Mediterranean locations. Data refers to sublittoral sites, except location # 4 Fiumicino, where only the littoral site was sampled.

Taxon	Location																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
XENOTRICHULIDAE																		
Daculiciteria tesserata	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heteroxenotrichula squamosa	+	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-
Xenotrichula intermedia	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
Xenotrichula puntata	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
CHAETONOTIDAE																		
Aspidiop. mediterraneus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Aspidiop. paramediterraneus	+	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-
Chaetonotus apechochaetus	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus atrox	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus lacunosus	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Chaetonotus neptuni	+	-	-	-	-	+	-	+	-	-	-	-	-	-	+	-	-	-
Chaetonotus siciliensis	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus variosquamatus	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Halichaetonotus aculifer	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	+	-	-
Halichaetonotus decipiens	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halichaetonotus paradoxus	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halichaetonotus spinosus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Musellifer delamarei	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-

Tab. V - Investigated locations and gastrotrich-fauna in 13 Mediterranean and Black Sea countries.

Coutry	n. Location	n. Species (C, M)	n. Families (C, M)	n. Genera (C, M)
Algeria	16	11 (4C, 7M)	6 (2C, 4M)	9 (3C, 6M)
Tunisia	5	2 (0C, 2M)	1 (0C,1M)	1 (0C, 1M)
Malta	2	2 (0C, 2M)	2 (0C, 2M)	2 (0C, 2M)
Egypt	28	81 (47C, 34M)	7 (2C, 5M)	19 (7C, 12M)
Israel	15	55 (37C, 18M)	7 (2C, 5M	15 (7C, 8M)
Cyprus	9	42 (25C, 17M)	7 (2C, 5M)	20 (7C, 13M)
Bulgaria	3	11 (6C, 5M)	6 (2C, 4M)	7 (4C, 3M)
Romania	7	30 (16C, 14M)	7 (2C, 5M)	16 (7C, 9M)
Greece	46	80 (45C, 35M)	7 (2C, 5M)	20 (7C, 13M)
Croatia	1	12 (9C, 3M)	4 (2C, 2M)	7 (4C, 3M)
Italy	246	177 (70C, 107M)	8 (2C, 6M)	34 (10C, 24M)
France*	37	70 (27C, 43M)	8 (3C, 5M)	24 (8C, 16M)
Spain	1	3 (1C, 2M)	3 (1C, 2M)	3 (1C, 2M)
Global data	417	274 (131C, 143M)	9 (3C, 6M)	35 (11C, 24M)

*including Corsica; C, Chaetonotida; M, Macrodasyida.

Platydasys, particularly speciose in the western region (but present also in the Black Sea), seems due more to research shortfalls than to stringent eco-physiological requirement of these species, or to the geological history of the Mediterranean area.

Tab. VI - Statistics about number of species per location, most common species of the two orders found in 13 Mediterranean and Black Sea countries, and number of endemic species in each country.

Country	n. species mean ± s.d.	Range	Most common species (% localities)	n. endemic species
Algeria	3.38 ± 2.06	1-7	*Xenotrichula velox* (81%) *Paraturbanella teissieri* (62%)	1
Tunisia	1.00 ± 0.00	NA	NA NA	-
Malta	1.00 -	NA	NA NA	-
Egypt	12.86 ± 8.03	1-28	*Halichaetonotus spinosus* (64%) *Turbanella ambronensis* (54%)	27
Israel	10.80 ± 5.16	2-17	*Halichaetonotus spinosus* (67%) *Acanthodasys aculeatus* (67%)	14
Cypro	8.56 ± 5.36	1-17	*Draculiciteria tesselata* (33%) *Tetranchyroderma heterotubulatum* (67%)	7
Bulgaria	5.00 ± 3.00	2-	*Turbanella cornuta* (100%) *Halichaetonotus pleuracanthus* (67%)	-
Romania	7.57 ± 4.20	1-12	*Aspidiophorus mediterraneus* (43%) *Acanthodasys aculeatus* (43%)	1
Greece	8.24 ± 5.74	1-23	*Heteroxenotrichula squamosa* (39%) *Macrodasys caudatus* (50%)	12
Croatia	11.00 -	NA	NA NA	3
Italy	8.42 ± 6.96	1-37	*Halichaetonotus aculifer* (33%) *Acanthodasys aculeatus* (29%)	71
France	5.43 ± 5.43	1-26	*Paraturbanella dohrni* (24%) *Heteroxenotrichula squamosa* (19%)	5
Spain	3.00 -	Na	NA NA	-
Global data	8.04 ± 6.69	1-37	*Halichaetonotus aculifer* (28%) *Acanthodasys aculeatus* (28%)	141

NA, not applicable.

At species level, about 140 taxa have so far been found only in the Mediterranean; based on comparison with the well studied north European fauna (including the British Islands) it may be said that the endemicity rate of the basin is genuinely relevant. The remainder species (about 49% of total)

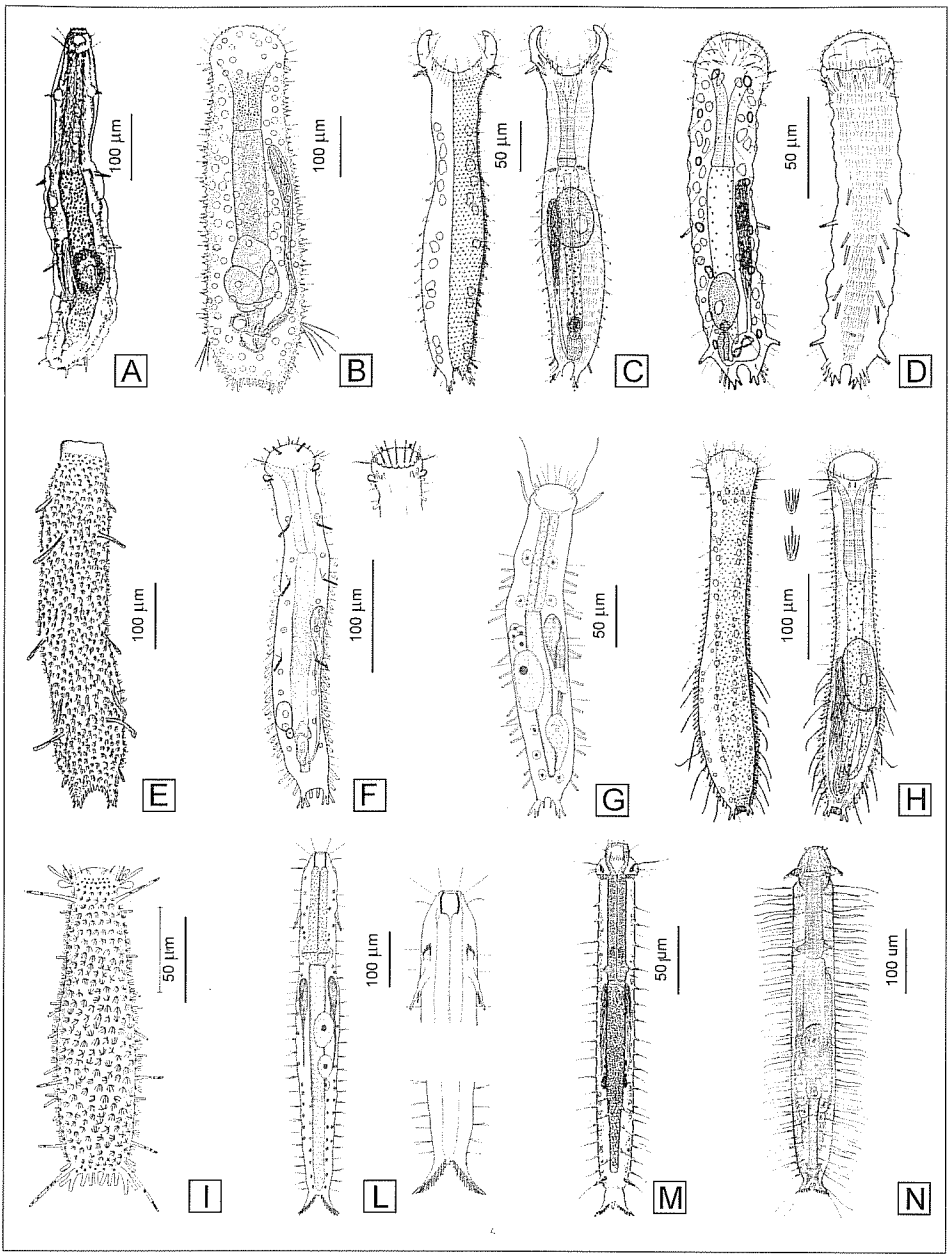

Fig. 4 - Representative specie belonging to families and genera found in the Mediterranean basin. A-I: Thaumastodermatidae, A: *Hemidasys agaso*; B: *Platydasys phacellatus*; C: *Pseudostomella etrusca*; D: *Ptychostomella tyrrhenica*; E: *Tetranchyroderma cirrophorum*; F: *T. esarabdophorum*; G: *T. papii*; H: *T. thysanophorum*; I: *Thamastoderma ramuliferum*. L-N: Turbanellidae, L: *Paraturbanella pallida*; M: *Turbanella ambronensis*; N: *T. cornuta*.

have a geographic range extending to the North-Atlantic, and several (e.g., Fig. 5H) are considered regional cosmopolitans (i.e., reported from at least two Oceans). Within the Mediterranean, the species geographic distribution does not appear to be homogeneous, with several taxa restricted to either the western or to the Levantine basin, yet, Italy, Egypt and Israel show the highest numbers of endemic species, 70, 24 and 14, respectively. Of the widely distributed species, *Halichaetonotus atlanticus*, *Paraturbanella aggregotubulata* and *Pseudostomella cataphracta* seems restricted to the

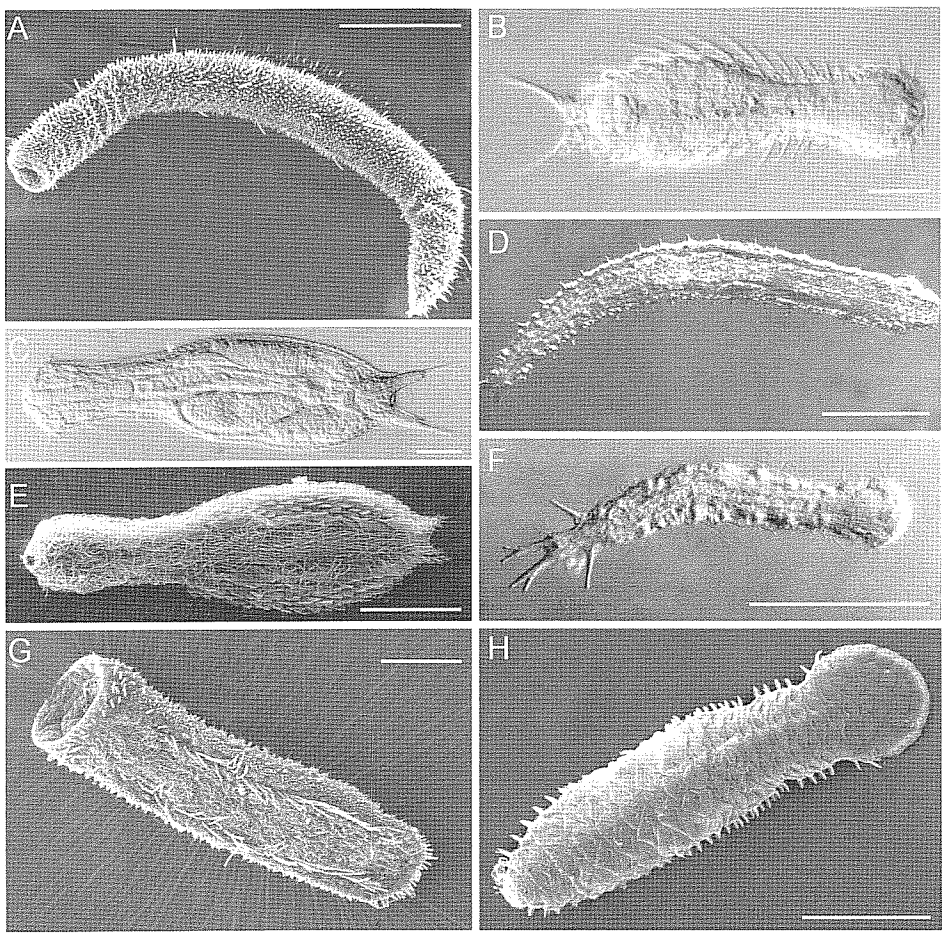

Fig. 5 - Selected gastrotrich species found in the Mediterranean basin. A,B: The most common species of the two order, A: the macrodasyidan *Acanthodasys aculeatus*; B: the chaetonotidan *Halichaetonotus aculifer*. C,D: Species typical of the littoral zone, C: *Xenotrichula intermedia*; D: *Turbanella ambronensis*. E,F: Brackish-water species, E: *Heterolepidoderma foliatum*, F: *Dendrodasys ponticum*. G,H: Species inhabiting organogenous sand, G: *Platydasys phacellatus*; H: *Diplodasys ankeli*. A,E,G,H: SEM micrographs. B,C,D,F - DIC micrographs. Bar = A: 200 μm; B,C,E: 20 μm; D,F,G,H: 100 μm.

western basin, whereas *Dactypodola baltica* and *Megadasys sterreri* are confined within the eastern area.

Only one species, *Chaetonotus antipai*, seems restricted to the Black Sea, testifying exchange of euryhaline species between the two Seas and/or the persistence of Sarmatic elements, which when tied to selected environments (i.e., brackish waters) were able to overcome the Messinian saline crisis (Sarà, 1985; Hsu, 1987; Bianchi and Morri, 2000); the recent findings of *Dendrodasys ponticus* (Fig. 5F) and *Turbanella* cf. *ponticus* also in the brackish water of the northern Adriatic Sea, perhaps, stands testimony of this (Tongiorgi et al., 1999). Among meiobenthic taxa, faunistic liaisons between the Northern Adriatic and the Pontic brackish areas were also highlighted by Ceccherelli and Mistri (1990) in a study analysing the ecological and zoogeographic association of brackish water harpacticoid copepods in the Mediterraenan and Black Seas. In the case of the gastrotrich-fauna, a cluster analysis using the Bray-Curtis presence-absence similarity value to examine the relationship between the investigated locations (organised prior analysis in 11 main areas) shows a clear separation between the Black Sea and the Mediterranean domain and within this the Algerian-Tunisian area is separated from the remaining 9 (Fig. 6). The latter 9 areas appear arranged in two main clusters, one clearly harmonious, including the southernmost Levantine regions (i.e., Egypt, Israel and Cyprus), whereas the other appears geographically somewhat less homogeneous, in that it contentiously unites regions of the northwestern basin, the Adriatic Sea and the two Greek sub-regions. Going into detail of this apparently contrasted cluster, the region comprising coastal France and Spain (Formentera), appears separated from the one containing, arranged into two distinct subsets, the three Italian and the two Greek areas. It is possible that the apparently lower faunistic similarity between coastal France and the western areas of Italy derives from discrepancies in the sampling effort made in two regions. It should however be emphasised that, in general, it is difficult to say if the scenarios depicted by the cluster analysis reflects real faunistic similarity among areas, or artefacts due to the different methodology used to gather faunistics data. For instance, information from Algeria and Tunisia derives from samples taken in the littoral zone only, whilst in Romania only the shallow sublittoral has so far been investigated. Since it has been shown that the littoral area hosts a much less diversified gastrotrich fauna (Todaro et al., 1995, 2002; Todaro and Rocha, 2003), yet selected species are typical of these sediments (Fig. 5C,D), it is therefore likely that gastrotrichs biodiversity in these countries is well under-estimated, this statement is reinforced by considering also the very few locations sampled in these coastal areas, which is also true for several others (Table V). In turn, the unexplored portion of the biodiversity may unveil faunisitic similarity among areas not pinpointed so far.

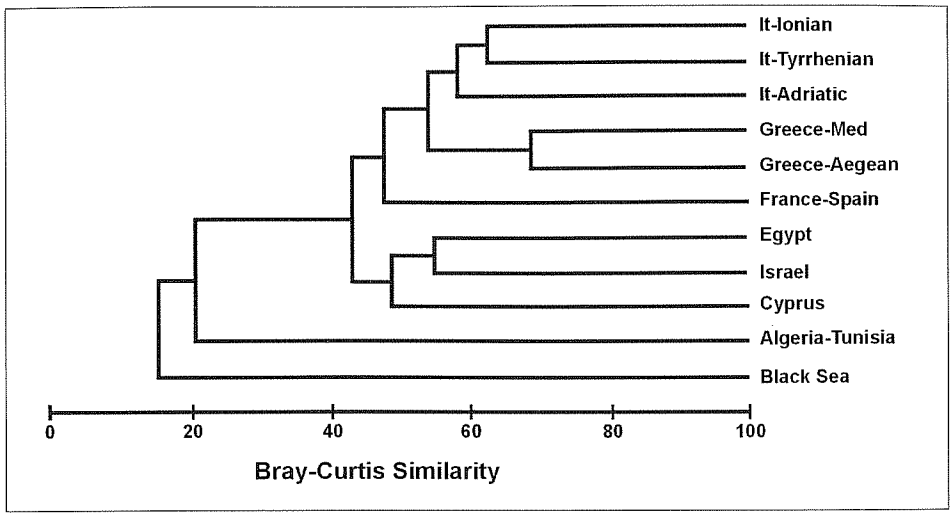

Fig. 6 - Classification of Mediterranean and Black Sea areas, following cluster analysis on a species by location matrix after pooling data into 11 main regions.

CONCLUSION

The Mediterranean Sea and the Black Sea host a rich and diversified gastrotrich-fauna, including about half of the nearly 500 marine gastrotrich specie known world-wide; moreover, all marine family and vast majority of marine genera have representatives in the Mediterranean basin, with two being endemic. It is likely that species richness of the basin will increase, as investigation will explore new promising habitat such as submarine caves (cfr. Todaro et al., 2001b), deep-sea sandy substrata or brackish environments.

As the Mediterranean apparently harbours somewhat between 4% and 18% of the world marine macroscopic species (Bianchi and Morri, 2000), it can be said that comparatively speaking the Gastrotricha represent one of the best known taxon in the basin. However, notwithstanding the extensive data set available, the paucity and/or absence of data from zoogeographical meaningful areas may hamper, more or less extensively, the meaning of any zoogeographical analysis. Information from Spain, Morocco and Turkey (both Mediterranean and Black Sea shores) is strongly needed to improve our current perception about diversity and distribution of the Mediterranean gastrotrich-fauna. In absence of such information, a more conservative use of the available records (e.g., analysing only information obtained by authors using a standardised methods) may also prove to be a task well worth tackling. Possibly in the light of the statement by Todaro (1992) and Todaro et al. (2001a) who, commenting on the distributional pattern of Italian species pointed out the importance of the edaphic factors in shaping local gastrotrich communities (Fig. 5E,G,H) in a basin, such as the Mediterranean, that lacks clear

barriers to dispersal of this meiofaunal group. Progress in molecular biology techniques and the falling cost of the consumables make nowadays feasible to carry out also in small-bodied organisms studies of population genetics, crucial to add information on the temporal scale; this in turn may help decoupling ecological factors and geological events, and consequentely shed some light about origin and causes of the Mediterranean Gastrotricha biodiversity.

According to Hummon and Hummon (1995a) of the species found only in Red Sea or the Mediterranean, 20% are shared by both; molecular investigation could finally help distinguish also "modern migrant via the Suez canal, from the Tethyan relict persisting from an ancient, shared fauna".

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Appendix I – Species list of Gastrotricha Macrodasyida found so far in 11 Mediterranean and 2 Black Sea countries.

Taxon	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Romania	Greece	Croatia	Italy	Malta	France	Spain
Family DACTYLOPODOLIDAE													
Genus ***Dactylopodola*** Strand, 1929													
Dactylopodola baltica (Remane, 1926)	-	-	+	-	-	-	-	+	-	-	-	-	-
Dactylopodola mesotyphle Hummon et al., 1998	-	-	+	-	+	-	-	+	-	+	-	+	-
Dactylopodola typhle (Remane, 1927)	+	-	+	+	+	-	+	-	-	+	-	+	-
Genus ***Dendrodasys*** Wilke, 1954													
Dendrodasys affinis Wilke, 1954	-	-	-	-	-	-	-	-	-	+	-	-	-
Dendrodasys gracilis Wilke, 1954	-	-	-	-	-	-	-	+	-	+	-	-	-
Dendrodasys ponticus Valkanov, 1957	-	-	-	-	-	+	+	-	-	+	-	-	-
Genus ***Dendropodola*** Hummon et al., 1993													
Dendropodola transitionalis Hummon et al., 1993	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Xenodasys*** Swedmark, 1967													
Xenodasys sp. A [Todaro et al., 2003]	-	-	-	-	-	-	-	-	-	+	-	-	-
Family LEPIDODASYIDAE													
Genus ***Cephalodasys*** Remane, 1926													
Cephalodasys hadrosomus Hummon et al., 1993	-	-	-	-	-	-	-	-	-	+	-	-	-
Cephalodasys littoralis Renaud-Debyser, 1964	-	-	-	-	-	-	-	-	-	+	-	-	-
Cephalodasys palavensis Fize, 1963	-	-	-	-	-	-	-	-	-	-	-	+	-
*Cephalodasys swedmarki***	-	-	-	-	-	-	-	-	-	-	-	+	-
Cephalodasys turbanelloides (Boaden, 1960)	-	-	-	-	-	-	-	+	-	+	-	+	-
Cephalodasys sp. A Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Genus ***Dolichodasys*** Gagne, 1977													
Dolichodasys elongatus Gagne, 1977	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Lepidodasys*** Remane, 1926													
Lepidodasys martini Remane, 1926	-	-	-	-	-	-	-	-	-	+	-	+	-
Lepidodasys platyurus Remane, 1927	-	-	-	-	-	-	+	-	-	+	-	-	-
Lepidodasys unicarenatus Balsamo et al., 1994	-	-	-	-	-	-	-	-	-	+	-	-	-
Lepidodasys sp. A [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Megadasys*** Schmidt, 1974													
Megadasys minor Kisielewski, 1987	-	-	-	-	-	-	-	-	-	+	-	-	-
Megadasys sterreri (Boaden, 1974)	-	-	+	-	+	-	-	-	-	-	-	-	-
Genus ***Mesodasys*** Remane, 1951													
Mesodasys adenotubulatus Hummon et al., 1993	-	-	+	+	-	-	-	+	-	+	-	+	+
Mesodasys ischiensis Hummon et al., 1993	-	-	-	-	-	-	-	-	-	+	-	-	-
Mesodasys laticaudatus Remane, 1951	-	-	+	+	-	-	-	+	-	+	-	+	-
Mesodasys littoralis Remane, 1951	+	-	+	+	+	-	-	+	-	+	-	+	-
Mesodasys sp. A Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Genus ***Paradasys*** Remane, 1934													
Paradasys subterraneus Remane, 1934	-	-	-	-	-	-	-	-	-	+	-	+	-
Paradasys sp. A France*	-	-	-	-	-	-	-	-	-	-	-	+	-
Genus ***Pleurodasys*** Remane, 1927													
Pleurodasys helgolandicus Remane, 1927	-	-	-	-	-	-	-	-	-	+	-	+	-
Family MACRODASYIDAE													
Genus ***Macrodasys*** Remane, 1924													

	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Romania	Greece	Croatia	Italy	Malta	France	Spain
Macrodasys africanus Valkanov, 1957	-	-	-	-	-	+	+	-	-	-	-	-	-
Macrodasys balticus Roszczak, 1939	-	-	-	-	-	-	+	-	-	-	-	-	-
Macrodasys buddenbrocki Remane, 1924	-	-	-	-	-	-	+	-	-	-	-	-	-
Macrodasys caudatus Remane, 1927	-	-	+	+	-	-	-	+	+	+	-	+	-
Macrodasys gerlachi Papi, 1957	-	-	-	-	-	-	-	-	-	+	-	-	-
Macrodasys neapolitanus Papi, 1957	-	-	-	-	-	-	-	-	-	+	-	-	-
Macrodasys thuscus Luporini et al., 1973	-	-	-	-	-	-	-	-	-	+	-	-	-
Macrodasys sp. A Cyprus*	-	-	-	-	+	-	-	-	-	-	-	-	-
Macrodasys sp. E Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Macrodasys sp. A Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Macrodasys sp. A Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. B Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. C Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. D Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. J Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. K Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. M Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. N Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. S Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Macrodasys sp. C Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Macrodasys sp. D Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Macrodasys sp. E Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Macrodasys sp. B [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Macrodasys sp. C [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Macrodasys sp. E [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Urodasys*** Remane, 1926													
Urodasys acanthostylis Fregni et al., 1998	-	-	-	-	-	-	-	-	-	+	+	-	-
Urodasys apuliensis Fregni et al., 1999	-	-	-	-	-	-	-	-	-	+	-	-	-
Urodasys bucinastylis Fregni et al., 1999	-	-	-	-	-	-	-	-	-	+	-	-	-
Urodasys viviparus Wilke, 1954	-	-	-	-	+	-	-	+	+	+	-	+	-
Family PLANODASYIDAE													
Genus ***Crasiella*** Clausen, 1968													
Crasiella sp. A [Fregni et al., 1999]	-	-	-	-	-	-	-	-	-	+	-	-	-
Family THAUMASTODERMATIDAE													
Genus ***Acanthodasys*** Remane, 1927													
Acanthodasys aculeatus Remane, 1927	-	-	+	+	+	+	+	+	-	+	-	+	-
Acanthodasys sp. A [Schrom, 1972]	-	-	-	-	-	-	-	-	-	+	-	-	-
Acanthodasys sp. B [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Acanthodasys sp. C [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Diplodasys*** Remane, 1927													
Diplodasys ankeli Wilke, 1954	-	-	+	-	-	-	-	-	-	+	-	+	-
Diplodasys meloriae Todaro et al., 1992	-	-	-	-	-	-	-	-	-	+	-	-	-
Diplodasys minor Remane, 1926	-	-	-	-	-	-	+	+	-	+	-	-	-
Diplodasys platydasyoides Remane, 1927	-	-	-	-	-	-	-	-	-	+	-	-	-
Diplodasys sp. A Cyprus*	-	-	-	-	+	-	-	-	-	-	-	-	-

	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Romania	Greece	Croatia	Italy	Malta	France	Spain
Diplodasys sp. A [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Hemidasys*** Claparède, 1867													
Hemidasys agaso Claparède, 1867	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Platydasys*** Remane, 1927													
Platydasys maximus Remane, 1927	-	-	-	-	-	-	+	-	-	+	-	-	-
Platydasys ocellatus Clausen, 1965	-	-	-	-	-	-	-	-	-	+	-	-	-
Platydasys phacellatus Clausen, 1965	-	-	-	-	-	-	-	-	-	+	-	-	-
Platydasys ruber Swedmark, 1956	-	-	-	-	-	-	-	-	-	+	-	+	-
Platydasys stiliferus Boaden, 1965	-	-	-	-	-	-	-	-	-	+	+	-	-
Platydasys tentaculatus Swedmark, 1956	-	-	-	-	-	-	-	-	-	+	-	+	-
Genus ***Pseudostomella*** Swedmark, 1956													
Pseudostomella cataphracta Ruppert, 1970	-	-	-	-	-	-	-	-	-	+	-	-	-
Pseudostomella etrusca Hummon et al., 1993	-	-	+	+	+	-	-	+	-	+	-	+	-
Pseudostomella roscovita Swedmark, 1956	+	-	-	-	-	-	-	+	-	+	-	+	-
Genus ***Ptychostomella*** Remane, 1926													
Ptychostomella mediterranea Remane, 1927	-	-	-	-	-	-	-	-	-	+	-	-	-
Ptychostomella tyrrhenica Hummon et al., 1993	-	-	+	-	+	-	-	-	-	+	-	+	-
Genus ***Tetranchyroderma*** Remane, 1926													
Tetranchyroderma anomalopsum Humm. et al., 1996	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma antennatum Luporini et al., 1973	-	+	-	-	-	-	-	+	-	+	-	-	-
Tetranchyroderma aphenothigmum Humm. et al., 1998	-	-	-	-	-	-	-	+	-	+	-	-	-
Tetranchyroderma apum Remane, 1927	-	-	-	-	-	-	+	-	-	+	-	-	-
Tetranchyroderma boadeni Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma cirrophorum Levi, 1950	-	-	-	-	+	-	-	-	-	+	-	+	-
Tetranchyroderma coelopodium Boaden, 1963	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma esarabdophorum Tong. et al., 1984	-	-	-	-	-	-	-	+	-	+	-	-	-
Tetranchyroderma heterotubulatum Humm. et al., 1993	-	-	+	+	+	-	-	+	-	+	-	+	-
Tetranchyroderma hirtum Luporini et al., 1973	-	-	-	-	-	-	-	-	-	+	-	+	-
Tetranchyroderma hypopsilancrum Humm. et al., 1993	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma inaequitubulatum Todaro et al., 2002	-	-	-	-	-	-	-	-	-	+	-	+	-
Tetranchyroderma insulare Balsamo et al., 1994	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma kontosomum Hummon et al., 1996	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma massilense Swedmark, 1956	-	-	-	-	-	-	-	-	-	-	-	+	-
Tetranchyroderma megastomum (Remane, 1927)	-	-	+	-	-	-	-	+	-	+	-	+	-
Tetranchyroderma pachysomum Hummon et al., 1993	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma papii Gerlach, 1953	+	+	+	+	+	-	-	+	-	+	-	+	-
Tetranchyroderma polypodium Luporini et al., 1973	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma polyprobolostomum Humm.et al., 1996	-	-	+	-	-	-	-	+	-	+	-	-	-
Tetranchyroderma psilotopum Hummon et al., 1998	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma quadritentaculatum Tod. et al., 1992	-	-	-	-	-	-	-	+	-	+	-	+	-
Tetranchyroderma sanctaecaterinae Todaro et al., 1992	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sardum Todaro et al., 1988	-	-	-	-	-	-	-	+	-	+	-	+	-
Tetranchyroderma symphorochetum Hummon et al., 1998	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma tanymesatherum Hummon et al., 1996	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma thysanogaster Boaden, 1965	-	-	-	-	-	-	-	-	-	+	-	-	-

	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Romania	Greece	Croatia	Italy	Malta	France	Spain
Tetranchyroderma thysanophorum Hummon et al., 1993	-	-	-	-	-	-	-	+	-	+	-	+	-
Tetranchyroderma verum Wilke, 1954	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. A Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Tetranchyroderma sp. B Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Tetranchyroderma sp. A Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Tetranchyroderma sp. D Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Tetranchyroderma sp. A [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. B [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. AB [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. AC [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. AD [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. W [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. II [Schrom, 1972]	-	-	-	-	-	-	-	-	-	+	-	-	-
Tetranchyroderma sp. III [Schrom, 1972]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Thaumastoderma*** Remane, 1927													
Thaumastoderma bifurcatum Clausen, 1991	-	-	-	-	-	-	-	-	-	+	-	-	-
Thaumastoderma heideri Remane, 1926	-	-	-	-	-	-	-	-	-	+	-	-	-
Thaumastoderma mediterraneum Remane, 1927	-	-	-	-	-	-	-	+	+	+	-	+	-
Thaumastoderma ramuliferum Clausen, 1965	-	-	-	-	+	-	-	-	-	+	-	+	-
Thaumastoderma swedmarki Levi, 1959	-	-	-	-	-	-	-	-	-	-	-	+	-
Family TURBANELLIDAE													
Genus ***Paraturbanella*** Remane, 1927													
Paraturbanella aggregotubulata Evans, 1992	-	-	-	-	-	-	-	-	-	-	-	+	-
Paraturbanella dohrni Remane, 1927	-	-	-	-	-	-	-	+	-	+	-	+	-
Paraturbanella levantina **	+	-	-	-	-	-	-	-	-				
Paraturbanella pallida Luporini et al., 1973	-	-	+	-	-	-	-	+	-	+	-	+	-
Paraturbanella teissieri Swedmark, 1954	+	-	+	-	-	-	-	+	-	+	-	+	+
Paraturbanella sp. A Egypt*	-	-	+	-	+	-	-	-	-	-	-	-	-
Genus ***Turbanella*** Schultze, 1853													
Turbanella ambronensis Remane, 1943	+	-	+	+	+	-	-	+	-	+	-	+	-
Turbanella bocqueti Kaplan, 1958	-	-	+	+	+	-	-	+	-	+	-	+	-
Turbanella cornuta Remane, 1924	+	-	+	-	-	+	+	+	-	+	-	+	-
Turbanella hyalina Schultze, 1853	-	-	-	-	-	-	+	+	-	+	-	+	-
Turbanella otti Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Turbanella petiti Remane, 1952	-	-	-	-	-	-	-	-	-	+	-	+	-
Turbanella pontica Valkanov, 1957	-	-	-	-	-	+	+	-	-	+	-	-	-
Turbanella subterranea Remane, 1935	-	-	-	+	-	-	+	-	-	+	-	-	-
Turbanella veneziana Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Turbanella sp. A Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-

*Undescribed species, reported in Hummon (2001a).

**Nomen nudum, reported in Hummon (2001a).

Appendix II – Species list of Gastrotricha Chaetonotida found so far in 11 Mediterranean and 2 Black sea countries.

Taxon	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Greece	Croatia	Italy	Malta	France	Spain	Romania
Suborder **MULTITUBULATINA**													
Family NEODASYIDAE													
Genus ***Neodasys*** Remane, 1927													
Neodasys uchidai Remane, 1961	-	-	-	-	-	-	-	-	-	-	-	+	-
Suborder **PAUCITUBULATINA**													
Family XENOTRICHULIDAE													
Genus ***Draculiciteria*** Hummon, 1974													
Draculiciteria tesserata (Renaud-Mornant, 1968)	-	-	+	+	+	-	-	+	-	+	-	+	-
Genus ***Heteroxenotrichula*** Wilke, 1954													
Heteroxenotrichula affinis (Remane, 1934)	-	-	-	+	-	-	-	-	-	-	-	-	-
Heteroxenotrichula arcassonensis Ruppert, 1979	-	-	-	-	-	-	-	-	-	+	-	-	-
Heteroxenotrichula pygmaea (Remane, 1934)	-	-	+	+	-	+	-	+	-	+	-	+	-
*Heteroxenotrichula pseudosquamosa***	-	-	+	+	-	-	-	-	-	-	-	-	-
Heteroxenotrichula squamosa Wilke, 1954	-	-	+	+	+	-	-	+	-	+	-	+	+
Heteroxenotrichula subterranea (Remane, 1934)	-	-	+	+	-	-	-	-	-	+	-	-	-
Heteroxenotrichula sp. A Egypt*	-	-	+	+	-	-	-	-	-	-	-	-	-
Genus ***Xenotrichula*** Remane, 1927													
Xenotrichula bispina Roszczak, 1957	-	-	-	-	-	-	+	-	-	-	-	-	-
Xenotrichula cornuta Wilke, 1954	-	-	-	-	-	-	-	-	-	+	-	-	-
Xenotrichula intermedia Remane, 1934	+	-	+	+	+	+	+	+	-	+	-	+	-
Xenotrichula lineata Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Xenotrichula punctata Wilke, 1954	-	-	+	-	-	-	-	+	-	+	-	+	-
Xenotrichula soikai Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Xenotrichula velox Remane, 1927	+	-	-	-	-	-	-	+	-	-	-	+	-
Family CHAETONOTIDAE													
Genus ***Aspidiophorus*** Voigt, 1904													
Aspidiophorus lamellophorus Hummon et al., 1992	-	-	-	-	-	-	-	-	-	+	-	-	-
Aspidiophorus marinus Remane, 1926	-	-	-	-	-	-	+	-	-	-	-	-	-
Aspidiophorus mediterraneus Remane, 1927	-	-	+	-	-	+	+	+	+	+	-	+	-
Aspidiophorus paramediterraneus Hummon, 1974	-	-	+	+	+	-	-	+	-	+	-	+	-
Aspidiophorus polystictos Balsamo & Todaro, 1987	-	-	+	+	+	-	-	+	-	+	-	+	-
Aspidiophorus tentaculatus Wilke, 1954	-	-	-	-	-	-	-	+	-	+	-	-	-
Aspidiophorus sp. Israel A*	-	-	-	+	-	-	-	-	-	-	-	-	-
Genus ***Chaetonotus*** Eherenberg, 1830													
Subgenus ***Euchaetonotus*** Schwank, 1990													
Chaetonotus aegilonensis Balsamo et al., 1992	-	-	+	-	+	-	-	+	-	+	-	+	-
Chaetonotus aequispinosus Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus angustus Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	
Chaetonotus antipai Rodewald, 1938	-	-	-	-	-	-	+	-	-	-	-	-	-
Chaetonotus apechochaetus Hummon et al., 1992	-	-	+	-	+	-	-	+	-	+	-	+	-

	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Greece	Croatia	Italy	Malta	France	Spain	Romania
Chaetonotus apolemmus Hummon et al., 1992	-	-	+	+	+	-	-	+	-	+	-	+	-
Chaetonotus ichthydioides Tongiorgi et al., 1999	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus magnificus Balsamo et al., 1997	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus mariae Todaro, 1992	-	-	+	-	+	-	-	-	-	+	-	-	-
Chaetonotus maximus Ehrenberg, 1830	-	-	-	-	-	-	+	-	-	-	-	-	-
Chaetonotus mediterraneus Balsamo et al., 1997	-	-	-	-	-	-	-	+	-	+	-	-	-
Chaetonotus napoleonicus Balsamo et al., 1992	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus parthenopeius Wilke, 1954	+	-	-	+	-	-	-	-	-	+	-	-	-
Chaetonotus siciliensis Hummon et al., 1992	-	-	-	-	-	-	-	+	-	+	-	+	-
Chaetonotus similis Zelinka, 1889	-	-	-	-	-	-	+	-	-	-	-	-	-
Chaetonotus sp. E [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus sp. F [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus sp. P [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus sp. Q [Todaro et al., 2001]	-	-	+	+	+	-	-	+	-	-	-	+	-
Subgenus ***Hystricochaetonotus*** Schwank, 1990													
Chaetonotus lacunosus Mock, 1979	-	-	+	+	+	-	-	+	-	+	-	+	-
Chaetonotus variosquamatus Mock, 1979	-	-	+	+	-	-	-	+	-	+	-	+	-
Subgenus ***Schizochaetonotus*** Schwank, 1990													
Chaetonotus atrox Wilke, 1954	-	-	+	+	+	-	-	+	-	+	-	+	-
Chaetonotus dispar Wilke, 1954	-	-	+	+	-	-	-	+	+	+	-	+	-
Chaetonotus hilarus Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus inaequidentatus Kisielewski, 1988	-	-	-	-	-	-	-	-	-	+	-	-	-
Chaetonotus jucundus (d'Hondt, 1971)	-	-	+	+	-	-	-	-	-	-	-	-	-
Chaetonotus luporinii Balsamo et al., 1996	-	-	-	-	+	-	-	-	-	+	-	-	-
Chaetonotus modestus Schrom, 1972	-	-	-	-	-	-	-	-	+	-	-	-	-
Chaetonotus neptuni Wilke, 1954	-	-	+	-	+	-	-	+	-	+	-	+	-
Chaetonotus schromi Hummon, 1974	-	-	-	-	-	-	-	-	+	-	-	-	-
Chaetonotus serenus Schrom, 1972	-	-	-	-	-	-	-	-	+	+	-	-	-
Chaetonotus balticus Remane, 1926	-	-	-	-	-	-	+	-	-	-	-	-	-
Subgenus unknown													
Chaetonotus sp. A Cyprus*	-	-	+	-	+	-	-	-	-	-	-	-	-
Chaetonotus sp. B Cyprus*	-	-	-	-	+	-	-	-	-	-	-	-	-
Chaetonotus sp. C Cyprus*	-	-	-	-	+	-	-	-	-	-	-	-	-
Chaetonotus sp. D Cyprus*	-	-	-	-	+	-	-	-	-	-	-	-	-
Chaetonotus sp. E Cyprus*	-	-	-	-	+	-	-	-	-	-	-	-	-
Chaetonotus sp. A Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. B Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. C Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. F Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. G Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. H Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. J Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-

	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Greece	Croatia	Italy	Malta	France	Spain	Romania
Chaetonotus sp. K Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. L Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. M Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Chaetonotus sp. E England*	-	-	-	-	-	-	-	+	-	-	-	-	-
Chaetonotus sp. A Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Chaetonotus sp. C Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Chaetonotus sp. H Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Chaetonotus sp. A Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Chaetonotus sp. F Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Genus ***Halichaetonotus*** (Remane, 1936)													
Halichaetonotus aculifer (Gerlach, 1953)	+	-	+	+	+	-	+	+	-	+	-	+	-
Halichaetonotus atlanticus Kisielewski, 1988	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus batillifer (Luporini et al., 1972)	-	-	-	+	-	-	-	+	-	+	-	-	-
Halichaetonotus clavicornis Balsamo et al., 1995	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus decipiens (Remane, 1926)	-	-	+	-	-	+	+	+	-	+	-	+	-
Halichaetonotus etrolomus Hummon et al., 1992	-	-	+	+	-	-	-	+	-	+	-	-	-
Halichaetonotus genatus Balsamo et al., 1995	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus italicus Balsamo, et al., 1997	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus jucundus (d'Hondt, 1971)	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus margaretae Hummon et al., 1992	-	-	+	+	-	-	-	+	-	+	-	-	-
Halichaetonotus marivagus Balsamo et al., 1992	-	-	-	-	-	-	-	+	-	+	-	-	-
Halichaetonotus paradoxus (Remane, 1927)	-	-	+	+	+	-	-	+	-	+	-	+	-
Halichaetonotus parvus (Wilke, 1954)	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus pleuracanthus (Remane, 1927)	-	-	-	-	-	+	+	-	-	-	-	+	-
Halichaetonotus riedli Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus spinosus Mock, 1979	-	-	+	+	+	-	-	+	-	+	-	+	-
Halichaetonotus swedmarki Schrom, 1972	-	-	-	-	-	-	-	-	+	-	-	-	-
Halichaetonotus thalassopais Hummon et al., 1992	-	-	+	+	-	-	-	+	-	+	-	+	-
Halichaetonotus sp. A Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Halichaetonotus sp. A Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Halichaetonotus sp. B Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Halichaetonotus sp. G Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Halichaetonotus sp. B Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Halichaetonotus sp. V [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Halichaetonotus sp. Z [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Heterolepidoderma*** Remane, 1926													
Heterolepidoderma armatum Schrom, 1966	-	-	-	-	-	-	-	-	-	+	-	-	-
Heterolepidoderma clipeatum Schrom, 1972	-	-	-	+	-	-	-	+	+	-	-	-	-
Heterolepidoderma contectum Schrom, 1972	-	-	-	+	-	-	-	+	+	-	-	-	-
Heterolepidoderma foliatum Renaud-Mornant, 1967	-	-	-	-	-	-	-	-	-	+	-	-	-
Heterolepidoderma hermaphroditum Wilke, 1954	-	-	-	-	-	-	-	-	-	+	-	-	-
Heterolepidoderma istrianum Schrom, 1972	-	-	-	-	+	-	-	-	+	+	-	-	-

	Algeria	Tunisia	Egypt	Israel	Cyprus	Bulgaria	Greece	Croatia	Italy	Malta	France	Spain	Romania
Heterolepidoderma loricatum Schrom, 1972	-	-	+	+	+	-	-	+	-	+	-	-	-
Heterolepidoderma marinum Remane, 1926	-	-	-	-	-	+	+	-	-	-	-	-	-
Heterolepidoderma ocellatum (Metschnikoff, 19864)	-	-	-	-	-	-	+	-	-	-	-	-	-
Heterolepidoderma sp. A Cyprus*	-	-	+	-	+	-	-	-	-	-	-	-	-
Heterolepidoderma sp. A Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. B Egypt *	-	-	+	-	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. D Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. I Egypt*	-	-	+	-	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. A Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Heterolepidoderma sp. B Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Heterolepidoderma sp. C Greece*	-	-	-	-	-	-	-	+	-	-	-	-	-
Heterolepidoderma sp. A Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. B Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. D Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. E Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. F Israel*	-	-	-	+	-	-	-	-	-	-	-	-	-
Heterolepidoderma sp. A [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Heterolepidoderma sp. B [Schrom, 1972]	-	-	-	-	-	-	-	+	-	+	-	-	-
Heterolepidoderma sp. C [Todaro et al., 2001]	-	-	-	-	-	-	-	-	-	+	-	-	-
Genus ***Ichthydium*** Ehrenberg, 1830													
Ichthydium podura (O.F. Müller, 1773)	-	-	-	-	-	-	+	+	-	+	-	-	-
Ichthydium tergestinum Gruenspan, 1908	-	-	-	-	-	-	+	-	-	+	-	-	-
Genus ***Lepidodermella*** Blake, 1933													
Lepidodermella limogena Schrom, 1972	-	-	-	-	-	-	-	-	-	+	-	-	-
Lepidodermella squamata (Dujardin, 1841)	-	-	-	-	-	-	+	-	-	+	-	-	-
Genus ***Musellifer*** Hummon, 1969													
Musellifer delamarei (Renaud-Mornant, 1968)	-	-	-	-	-	-	-	-	-	+	-	-	-
Musellifer profundus Vivier, 1974	-	-	-	-	-	-	-	-	-	-	-	+	-

*Undescribed species, reported in Hummon (2001a).

***Nomen nudum*, reported in Hummon (2001a).