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First checklist of free-living marine nematodes from the Israeli coast of the Mediterranean

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Abstract

This study presents an inventory of free-living marine nematodes from the deep waters of the southeastern part of the Levantine Basin. The meiofauna of this area, particularly the free-living marine nematodes, have been poorly investigated; hence, the present study has regional zoo-geographic importance. To fill this knowledge gap, nematodes were collected from the upper 0-3 cm sediment horizon from a transect located perpendicular to the Israel coast off Tel Aviv, with depths ranging between 76 and 1400 m. Our sampling yielded a diverse assemblage of nematodes representing 65 species belonging to 54 genera and 22 families. About 38% of the species have been previously reported in the Mediterranean; the remaining 62% are reported for the first time. A taxonomic checklist provides information on the worldwide distribution of the encountered species. This checklist provides a baseline for understanding the nematode community in this region and serves as a valuable resource for future studies.

Keywords: Free-living marine nematodes; South-east Mediterranean; meiofauna; Levantine Basin; Israeli Mediterranean waters.

Introduction

Free-living marine nematodes are the most abundant and diverse metazoans found in marine sediments. Their distribution spans from the high-water mark to the deepest oceanic trenches, asserting their dominance in both density and diversity within marine sediment ecosystems (Lambshead, 2004). Hodda's recent taxonomic review (2022) suggested that the phylum Nematoda consists of 3 classes, 8 subclasses, 12 superorders, 32 orders, 53 suborders, 101 superfamilies, 276 families, 511 subfamilies, 3,030 genera and 28,537 species. Hodda (2022) also reviewed a variety of estimates of the total existing number of nematode species, and the obtained range was between half a million and 10 million species. Although larger individuals exist, the free-living marine nematodes are generally considered to belong to the meiofaunal size group. There is no universally accepted size range for meiofauna, and according to Giere (2009), the accepted range is between an upper limit of 500-1000 µm and a lower limit of 44-63 µm.

The Mediterranean is a semi-enclosed water body characterized by constant temperatures at depths below 300-500 m. In the Eastern Mediterranean, the temperature ranges from 13.6°C to 13.8°C. Salinity levels are very high, ranging from 38.7 to 38.8‰, and the oxygen concentration just above the seafloor in the studied area is >175 µM (Kress *et al.*, 2014), indicating a well-oxygenated near-bottom water layer. In addition, the region is characterized as one of the most oligotrophic areas in the world (Berman-Frank & Rahav, 2012; Moore *et al.*, 2013; Siokou-Frangou *et al.*, 2010).

There are several faunistic species-level nematode checklists from the Mediterranean, mainly from relatively shallow waters (Schuurmans-Stekhoven, 1950; Wieser, 1956; Semprucci *et al.*, 2008; Semprucci, 2013 and Jouili *et al.*, 2018, and see also the literature in Table 2). The majority of them concern coastal European ecosystems. Thus our understanding of the eastern, non-European Mediterranean ecosystems is rather poor (Semprucci & Balsamo, 2012). Regarding the eastern Mediterranean, while several studies of free-living marine nematodes do exist (e.g. see reviews of Lampadariou & Sevastou, 2022; Sevastou & Lampadariou, 2021 and references therein), nematodes have been identified either to genus or, at best, to putative species (i.e. sp.1, sp.2 etc.) in most of them. To the best of our knowledge, nematodes from the deep Levantine Basin have never been identified to species level.

In the present study, nematodes from the Israeli part of the eastern Mediterranean were studied with the aim of providing a list of the nematode species across a deep-sea transect of the coast of Tel Aviv. A species checklist, together with some additional information on the distribution of the encountered species in other parts of the world, is provided. Such information will expand our knowledge of the biodiversity of nematodes in the Mediterranean and can be used as baseline information in future monitoring surveys.

Materials and Methods

Survey area

The heterogeneous Israeli continental slope comprises a prominently steep northern section incised by several canyons, a comparatively gentler seabed in its southern region, and two gravitational slumps known as Dor and Palmahim (Fig. 1). The relatively flatter bathyal basin extends westward to Crete, and the studied area in the Israeli waters is its shallow east part, with depths ranging between 1000 and 2000 m (Kanari *et al.*, 2020, and references therein). The specimens under scrutiny in this study were sampled from the southern part of the Israeli Mediterranean coast along a transect perpendicular to the Tel Aviv shoreline, encompassing a depth range of 76-1400 m (Fig. 1 and Table 1).

Sediment grain size declines gradually from 7 to 5 μm along the 100 to 1900 m depth gradient (Lubinevsky *et al.*, 2017).

Sampling and sorting

Meiofauna samples were acquired by sub-sampling from 0.25 m^2 box corer (BX-650, Ocean instruments, San Diego, CA) samples, employing a Plexiglas tube with an inner diameter of 9.4 cm. The upper 0-3 cm sediment layer was taken from each Plexiglas tube and preserved onboard in 99% ethanol while applying mild mixing to facilitate the ethanol penetration. The sampling cruise took place during the autumn of 2018 aboard the R/V "Bat Galim", operated by the Israel Oceanographic and Limnological Research (IOLR). Meiofaunal nematode specimens were separated from the ethanol-preserved sediments according to Harbuzov *et al.* (2022) following Heip *et al.* (1985) and Danovaro (2010), which included two major stages: sieving and density gradient centrifugation. This method revealed a specimen size range of 20-500 μm.

The selection procedure involved randomly choosing ~10 nematode individuals from each sample, combining the liquid containing the entire pool of sampled organisms, and then extracting the specimens using a pipette, ensuring a balanced representation across different stations. No permanent slides were prepared, and identification was conducted from individuals immediately placed in glycerol.

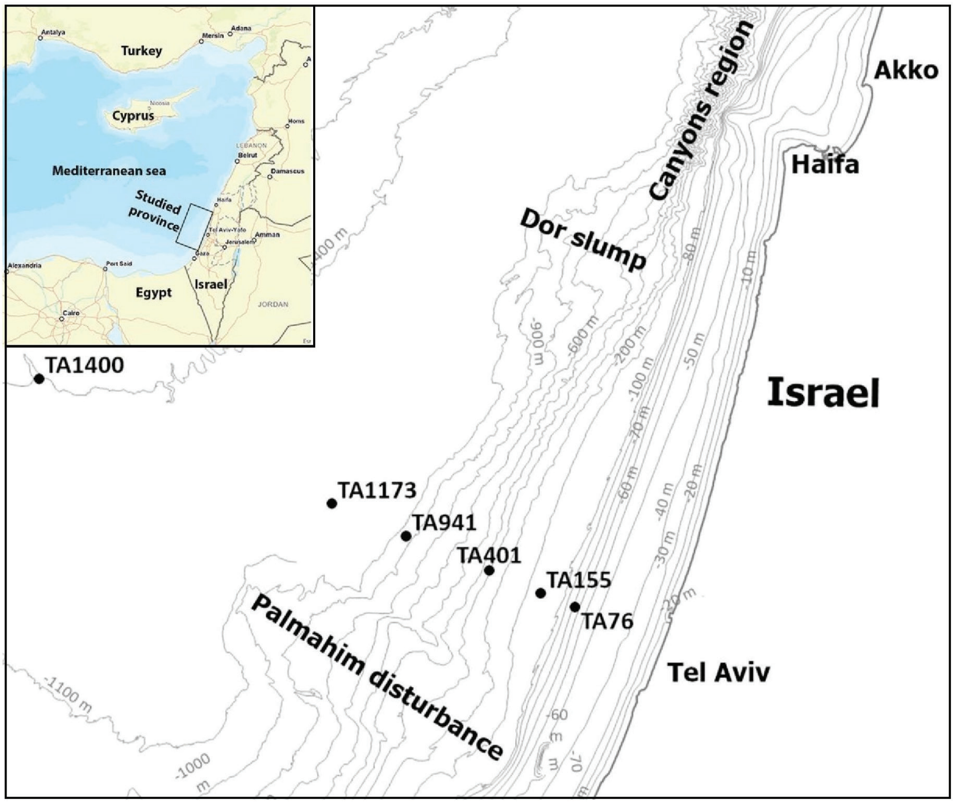

Fig. 1: Sampling sites map. TA – Tel Aviv transect; the studied sites are labeled by black dots. The numbers to the right of the station designations depict depth in meters. Palmahim and Dor are two gravitational sediment slumps.

Table 1. Geographical coordinates and depths of six sites sampled along the coast of Israel for studying marine nematodes

No.	Site name	Depth [m]	Longitude	Latitude
1	TA1400	1400	33.891	32.501
2	TA1173	1173	34.310	32.322
3	TA941	941	34.415	32.277
4	TA401	401	34.534	32.226
5	TA155	155	34.607	32.194
6	TA76	76	34.657	32.174

Morphological identification

The identification process involved utilizing the pictorial keys of Platt and Warwick (1983, 1988) and Warwick *et al.* (1998), as well as the work of Schuurmans-Stekhoven (1950) from the Mediterranean and the NeMys database accessible at Nemys eds. (2023), which contains the up-to-date taxonomic literature on free-living marine nematodes. All observations were conducted under a Nomarski interference contrast microscope employing a ×100 magnification.

Results

In total, 182 specimens belonging to 22 families, 54 genera and 65 species were identified. In some cases (25 out of 65), species identification was not possible, and species were ascribed as putative species or morphospecies (i.e. sp.1, sp.2 etc.). Of the 40 named species, 15 (38%) have been previously reported from the Mediterranean. Table 2 displays a detailed list of all species together with additional information on their distribution, synonyms, original description and other sources of references from the Mediterranean (e.g. Schuurmans-Stekhoven, 1950; Wieser, 1956; Semprucci *et al.*, 2008; Semprucci, 2013; Jouili *et al.*, 2018).

As depicted in Table 2, the various famlies elucidated specific depth distributions. Two families, Aegialoalaimidae and Rhabdolaimidae, were completely absent from the shallow 76-401 m depth range. Chromadoridae, Comesomatidae, and Xyalidae were encountered, with some exceptions, across the entire transect, indicating a wide depth distribution ranging from the shelf down to the bathyal basin. Selachinematidae, Phanodermatidae, Desmodoridae, Desmoscolecidae, Diplopeltidae, Ceramonematidae, Microlaimidae and Tarvaiidae were absent between the 941 and 1400 m depth range. Diplopeltidae, Phanodermatidae and Selachinematidae were found only at the shallowest 76 m station. Finally, species from the Rhabdolaimidae were found only at the deepest 1440 m station.

Discussion

Twenty-five species out of the 65 identified ones could not be conclusively attributed to known species. This limitation predominantly arose from the absence of adult males, which play a pivotal role in precise taxonomic identification. Juveniles and females often lack the requisite diagnostic features for accurate classification. Furthermore, suboptimal preservation conditions contributed to the challenge by compromising the visibility of the small morphological features essential for species-level identification. This may have been due to the choice of ethanol as a preservation medium, but this was necessary since our initial sampling strategy aimed at combining both morphological identifications and molecular techniques. The preservation method proposed by Yoder (2006), utilizing dimethyl sulfoxide-disodium EDTA in saturated NaCl and abbreviated DESS, was recently applied successfully in our laboratory and provided promising results and is thus recommended when both morphological identifications and molecular techniques are needed.

The 65 different species identified out of 182 individuals confirm previous reports of a rather high species diversity of nematodes in general (Appeltans *et al.*, 2012; Hodda, 2022) and in the deep sea in particular (e.g. Lambshead & Boucher, 2003). It should be mentioned, however, that nematode species-level data, particularly from the deep sea, are generally scarce since most studies are either conducted at the genus level or based on a separation into putative species. Lambshead (1993) provided a comparison of nematode alpha diversity from worldwide deep-sea studies. He reported numbers ranging between 81 and 316 species, although in most of the studies mentioned, a much higher sampling effort was applied. In a more recent compilation derived from various literature sources, Miljutin *et al.* (2010) provided a comprehensive summary of deep-sea nematode species. Their findings revealed considerable variability in nematode species numbers, ranging from 1 to 6 to as high as 175 species, contingent upon the specific geographic region. Notably, instances of lower species counts were predominantly associated with taxonomically focused

Table 2. List of Nematoda species found in the studied area of the Israeli coast. V - presence and (—) - absence of species. All the synonyms were taken from the World Register of Marine Species (WoRMS), and the notes refer to the original description of the species in the Mediterranean

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Nematoda									
Order Chromadorida									
Chromadoridae Filipjev, 1917									
Acantholaimus sp.1	—	v	v	—	—	v	-		
Chromadorella duopapillata Platt, 1973	v	v	—	—	v	—	Adriatic Sea, North Atlantic Ocean		A1, A5, A12, A15
Endeolophos sp.1	v	—	—	—	—	—	-		
Actinonema pachydermatum Cobb, 1920	—	v	—	—	—	v	Adriatic Sea, Belgium, Gulf of Mexico, Mediterranean Sea, North Atlantic Ocean, North Sea	*Actinonema amphidiscatum* (Schuurmans Stekhoven & Adam, 1931) Wieser, 1954 *Actinonema fragile* (Allgén, 1929) Wieser, 1954 *Adeuchromadora megamphida* Boucher & Bovée, 1972 *Euchromadora fragilis* Allgén, 1933 *Pareuchromadora amphidiscata* Allgén, 1940 *Pareuchromadora amphidiscata* Schuurmans Stekhoven & Adam, 1931 *Pareuchromadora fragilis* (Allgén, 1934) *Spiliphera fragilis* Allgén, 1929 *Spilophora fragilis* Allgén, 1929	A1, A2, A3, A5, A12
Hypodontolaimus schuurmansstekhoveni Gerlach, 1951	—	—	—	—	—	v	North Atlantic Ocean, North Sea		
Dichromadora geophila (de Man, 1876) Kreis, 1929	v	—	—	—	—	—	United States, North Atlantic Ocean, North Sea	*Chromadora canadensis* Cobb, 1914 *Hypodontolaimus geophilus* de Man, 1876 *Spiliphera canadensis* Cobb, 1914 *Spiliphera spectabilis* Allgén, 1929 *Spilophora canadensis* Cobb, 1914 *Spilophora geophila* de Man, 1876 *Spilophora spectabilis* Allgen, 1929	A6

Continued

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Ethmolaimidae Filipjev & Schuurmans Stekhoven, 1941									
Filitonchus filiformis Warwick, 1971	v	—	—	—	—	—	Belgium, North Atlantic Ocean, North Sea		A9, A12, A15
Comesa vitia Warwick, 1971	—	—	—	v	v	—	Barents Sea		
Neotonchus punctatus Cobb, 1933	—	—	—	v	—	—	Adriatic Sea		A17
Selachinematidae Cobb, 1915									
Choanolaimus psammophilus de Man, 1880	v	—	—	—	—	—	North Atlantic Ocean, North Sea		
Gammanema fennicum Gerlach, 1953	v	—	—	—	—	—	White Sea		
Cyatholaimidae Filipjev, 1918									
Paralongicyatholaimus minutus Warwick, 1971	—	v	—	—	—	—	North Atlantic Ocean, North Sea		
Marylynnia complexa (Warwick, 1971) Hopper, 1972	—	v	—	—	—	—	Adriatic Sea, Mediterranean Sea, North Atlantic Ocean, North Sea	*Longicyatholaimus complexus* Warwick, 1971 *Marilynia complexus* (Warwick, 1971) Hopper, 1972	A8, A17
Paracanthonchus longicaudatus Warwick, 1971	—	v	—	—	—	—	Barents Sea, North Atlantic Ocean, North Sea		
Metacyatholaimus sp.1	—	—	v	—	—	—	-		
Paracyatholaimus sp.1	v	—	—	—	—	v	-		
Pomponema sp.1	—	v	—	—	—	—	-		
Order Monhysterida									
Sphaerolaimidae Filipjev, 1918									
Sphaerolaimus hirsutus Bastian, 1865	—	—	v	—	—	—	Belgium, North Atlantic Ocean, North Sea		A5

Continued

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Sphaerolaimus macrocirculus Filipjev, 1918	—	—	—	v	—	—	Adriatic Sea, Black Sea, Mediterranean Sea, North Atlantic Ocean		A5, A10, A12
Doliolaimus agilis Lorenzen, 1966	—	—	—	—	—	v	North Atlantic Ocean, North Sea		
Xyalidae Chitwood, 1951									
Daptonema invagiferoum Platt, 1973	v	—	—	—	v	v	North Atlantic Ocean, North Sea	*Daptonema invagiferous* Platt, 1973 *Theristus invagiferous* Platt, 1973	
Daptonema setifer Gerlach, 1952	v	v	—	—	v	—	Mediterranean Sea, North Atlantic Ocean, North Sea	*Theristus setifer* Gerlach, 1952 *Trichotheristus setifer* Gerlach, 1952	A7, A8, A12
Elzalia sp.1	v	v	—	—	—	—	-		
Retrotheristus breviseta Juario, 1974	v	—	—	—	v	v	North Sea (the German Bight)	*Paramonhystera breviseta* Juario, 1974	
Scaptrella sp.1	—	—	—	—	—	v	-		
Amphimonhystrella megastoma Timm, 1961	—	—	—	—	v	v	Bay of Bengal		
Omicronema sp.1	—	—	—	v	—	—	-		
Paramonhystera sp.1	v	—	—	—	—	—	-		
Monhysteridae de Man, 1876									
Thalassomonhystera parva Bastian, 1865	—	v	—	—	v	—	Adriatic Sea, Belgium, Black Sea, France, Gulf of Mexico, Mediterranean Sea, North Atlantic Ocean, North Sea, Red Sea	*Monhystera heteroparva* Micoletzky, 1924 *Monhystera kossnensis* Paramonov, 1929 *Monhystera parva* (Bastian, 1865) Butschli, 1874 *Monhystera parva meridiana* Micoletzky, 1922 *Tachyhodites parvus* Bastian, 1865	A4, A17
Thalassomonhystera venusta Lorenzen, 1979	—	v	—	—	—	—	North Atlantic Ocean, North Sea	*Monhystera venusta* Lorenzen, 1979	
Linhomoeidae Filipjev, 1922									
Linhomoeus elongatus Bastian, 1865	—	v	—	—	—	—	France, New Zealand, North Atlantic Ocean, North Sea	*Eulinhomoeus elongatus* Bastian, 1865	

Continued

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Terschellingia longicaudata de Man, 1907	—	—	v	—	—	—	Adriatic Sea, Baltic Sea, Barents Sea, Belgium, Gulf of Mexico, Japan, Mediterranean Sea, New Zealand, North Atlantic Ocean, North Sea	*Terschellingia antonovi* Filipjev, 1922 *Terschellingia gerlachi* Inglis, 1968 *Terschellingia heteroseta* Schuurmans-Stekhoven, 1950 *Terschellingia longispiculata* Wieser & Hopper, 1967 *Terschellingia supplementa* Tchesunov, 1978	A1, A8, A10, A11, A12, A14, A15, A16,A17
Metalinhomoeus filicaudatus Allgén, 1930	v	—	—	—	—	—	North Atlantic Ocean, North Sea	*Linhomoeus (Metalinhomoeus) filicaudatus* Allgén	
Paralinhomoeus sp.1	—	—	—	—	—	v	-		
Order Plectida									
Aegialoalaimidae Lorenzen, 1981									
Aegialoalaimus sp.1	—	—	—	v	—	—	-		
Ceramonematidae Cobb, 1933									
Metadasynemella sp.1	v	v	—	—	—	—	-		
Pselionema sp.1	v	v	—	—	—	—	-		
Tarvaiidae Lorenzen, 1981									
Tarvaia angusta Gerlach, 1953	—	v	—	—	—	—	Mediterranean Sea, North Atlantic Ocean, North Sea		A8, A12
Order Enoplida									
Enchelidiidae Filipjev, 1918									
Pareurystomina vaughtae Keppner, 1989	—	—	—	—	v	—	St. Andrew Bay, Gulf of Mexico, Mexican Bay		
Belbolla longispiculata Nasira, Shahina & Shamim, 2014	v	—	—	—	—	—	Indus River		
Pareurystomina scilloniensis Warwick, 1977	v	—	—	—	—	—	North Atlantic Ocean		
Phanodermatidae Filipjev, 1927									

Continued

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Crenopharynx sp.1	v	—	—	—	—	—	-		
Ironidae de Man, 1876									
Dolicholaimus sp.1	v	—	—	—	v	—	-		
Oxystominidae Chitwood, 1935									
Halalaimus sp.1	—	—	v	—	—	v	-		
Oxystomina asetosa (Southern, 1914) Filipjev, 1921	—	v	—	—	—	—	Adriatic Sea, North Atlantic Ocean		A12, A17
Rhabdolaimidae Chitwood, 1951									
Syringolaimus sp.1	—	—	—	—	—	v	-		
Oncholaimidae Filipjev, 1916									
Viscosia abyssorum (Allgén, 1933) Wieser, 1953	v	v	v	—	—	—	Adriatic Sea, North Atlantic Ocean, North Sea, South Atlantic Ocean	*Oncholaimus abyssorum* Allgén, 1933	A15, A17
Viscosia viscosa (Bastian, 1865) de Man, 1890	—	—	—	v	—	—	Adriatic Sea, Baltic Sea, Belgium, France, North Atlantic Ocean, North Sea	*Mononcholaimus viscosus* Allgen, 1930 *Oncholaimus viscosus* Bastian, 1865 *Viscosia viscosia* Bastian, 1865	A17
Order Desmodorida									
Desmodoridae Filipjev, 1922									
Desmodora pontica Filipjev, 1922	v	v	—	—	—	—	Adriatic Sea, Belgium, Black Sea, Mediterranean Sea, North Atlantic Ocean, North Sea		A1, A8, A12, A12, A14, A17
Desmodora communis (Bütschli, 1874) De Man, 1889	v	v	—	—	—	—	Belgium, France, North Atlantic Ocean, North Sea	*Desmodora gracilis* Kreis, 1928 *Desmodora leucocephala* Schulz, 1932 *Desmodora problematica* Allgén, 1929 *Desmodora serpentulus* de Man, 1889 *Desmodora serpentulus suecica* Allgén, 1929 *Spiliphera communis* Bütschli, 1874 *Spilophora communis* Bütschli, 1874	

Continued

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Desmodora sp.1	v	v	—	—	—	—	-		
Desmodora sp.2	v	v	—	—	—	—	-		
Metachromadora sp.1	v	—	—	—	—	—	-		
Pseudonchus sp.1	—	v	—	—	—	—	-		
Microlaimidae Micoletzky, 1922									
Microlaimus tenuispiculum de Man, 1922	—	v	—	—	—	—	Baltic Sea, North Atlantic Ocean, North Sea, South Pacific Ocean, Southern Ocean	*Molgolaimus demani* Jensen, 1978	
Microlaimus robustidens Schuurmans Stekhoven & De Coninck, 1933	v	—	—	—	—	—	Belgium, Netherlands, North Atlantic Ocean, North Sea		
Order Desmoscolecida									
Desmoscolecidae Shipley, 1896									
Desmoscolex sp.1	—	v	—	—	—	—	-		
Tricoma sp.1	v	—	—	—	—	—	-		
Order Araeolaimida									
Diplopeltidae Filipjev, 1918									
Neodiplopeltula barentsi (Steiner, 1916) Holovachov & Boström, 2018	v	—	—	—	—	—	New Zealand	*Dipeltis barentsi* Steiner, 1916 *Diplopeltis asymmetricus* Allgén, 1935 *Diplopeltis barentsi* Steiner, 1916 *Diplopeltis ovalis* Ditlevsen, 1928 · *Diplopeltula cuspidiboja* Leduc, 2017 *Neodiplopeltula asymmetrica* (Allgén, 1935) Holovachov & Boström, 2018 *Neodiplopeltula cuspidiboja* (Leduc, 2017) Holovachov & Boström, 2018 *Neodiplopeltula ovalis* (Ditlevsen, 1928) Holovachov & Boström, 2018	
Comesomatidae Filipjev, 1918									

Continued

Taxonomy	Depth [m]						Geographical distribution	Synonymized names	Notes*
	76	155	401	941	1173	1400			
Dorylaimopsis longispicula Fu, Leduc, Rao & Cai, 2019	—	—	v	v	v	—	South China Sea		
Laimella longicauda Cobb, 1920	—	—	v	v	—	—	Gulf of Mexico, North Atlantic Ocean		
Sabatieria armata Gerlach, 1952	v	v	—	—	v	—	Mediterranean Sea, North Atlantic Ocean, North Sea		A8, A12
Sabatieria sp.1	—	—	v	—	—	—	-		
Setosabatieria hilarula de Man, 1922	—	v	—	—	—	—	Adriatic Sea, France, Gulf of Mexico, North Atlantic Ocean, North Sea	*Comesoma jubata* Cobb N.A., 1898 *Comesoma jubatum* Cobb, 1898 *Sabatieria chitwoodi* Wieser, 1954 *Sabatieria hilarula* (Chitwood, 1951) de Man, 1922 *Sabatieria jubata* (Cobb, 1898) *Sabatieria scotlandia* Inglis, 1961 *Setosabatieria chitwoodi* (Wieser, 1954) Platt, 1985	A1, A12, A15, A17
Setosabatieria sp.1	—	—	v	—	—	—	-		

***Notes**

A1 Ape *et al.*, 2016.
A2 Boucher & de Bovée, 1971.
A3 Coomans, 1989.
A4 De Coninck & Schuurmans Stekhoven, 1933.
A5 De Smet *et al.*, 2001.
A6 Gerlach, 1951.
A7 Gerlach, 1952.
A8 Gerlach & Riemann, 1973.
A9 Gheskiere, 2000.
A10 Jouili *et al.*, 2018.
A11 Mahmoudi *et al.*, 2008.
A12 Semprucci *et al.*, 2008.
A13 Schuurmans Stekhoven, 1943.
A14 Schuurmans Stekhoven, 1950.
A15 Semprucci, 2013.
A16 Thiermann *et al.*, 1994.
A17 Travisi & Vidakovic, 1997.

publications. Among the regions reported by Miljutin *et al.* (2010), the Mediterranean appears to be among the areas with the most reported species (e.g. 175 species in the Mediterranean vs. 131 in the NE Atlantic and 130 in the CE Pacific). Other more recent deep-sea studies from the Mediterranean where species-level identifications were employed reported similarly high numbers. For example, in the central Mediterranean, Danovaro *et al.* (2013) reported 320 species from 5084 individuals, while Danovaro *et al.* (2009) reported 15 to 82 species from >3000 individuals. Similarly, Gambi *et al.* (2014) reported 182 species from 3562 individuals from the central and western Mediterranean. In the eastern Mediterranean, Lampadariou *et al.* (2013) reported 143 species from >4000 individuals; although this study dealt with chemosynthetic environments, it did include one control station.

As mentioned above, due to the scarcity of species-level identification, a comparison of data and species lists is rather difficult. Nevertheless, 15 of the 40 named species found in the present study have been reported in the Mediterranean (e.g. Nemys eds., 2023; Schuurmans Stekhoven, 1950; Semprucci *et al.*, 2008; Wieser, 1956) while the remaining 25 are reported for the first time. It is expected that with increasing sampling efforts, many new records or new species will be found. In addition, the inclusion of molecular techniques along with morphological data will certainly improve species recognition. In this respect, the present checklist may serve as a starting point for further research on nematodes in this understudied area.

Conclusions

This study reports for the first time a partial inventory of free-living marine nematodes from the deep waters of the south-eastern part of the Levantine Basin. The families and genera found in this study are typical of deep-sea sediments. Approximately 38% of the species have been previously reported in the Mediterranean; the remaining 62% were mainly known from the Northwestern Europe and the North Atlantic, the two regions where most marine nematodes have been described. This emphasizes the value of this checklist as a baseline for future studies and the need for a larger sampling effort in this region where our current knowledge of the distribution and the biodiversity of marine nematodes is limited.

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