

Diversity of Platyhelminthes, Xenacoelomorpha, Nematoda, Acanthocephala, Brachiopoda, Kinorhyncha, Nemertea, Chaetognatha, Tardigrada, Gastrotricha, Rotifera, Phoronida, Echinodermata and Chordata (Tunicata, Cephalochordata and Hemichordata) from the coasts of Türkiye

MELİH ERTAN ÇINAR

DERYA ÜRKMEZ

BAKİ YOKEŞ

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Melih Ertan ÇINAR^{1*}, Derya ÜRKMEZ², Baki YOKEŞ³

¹Department of Hydrobiology, Faculty of Fisheries, Ege University, Bornova, İzmir, Türkiye

²Department of Hydrobiology, Faculty of Fisheries, Sinop University, Sinop, Türkiye

³AMBRD Doğa Bilimleri, Şişli, İstanbul, Türkiye

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Abstract: The current biodiversity of 14 phyla, namely Platyhelminthes, Xenacoelomorpha, Nematoda, Acanthocephala, Brachiopoda, Kinorhyncha, Nemertea, Chaetognatha, Tardigrada, Gastrotricha, Rotifera, Phoronida, Echinodermata, and Chordata (invertebrates only, including the subphyla Tunicata, Cephalochordata, and Hemichordata) from the coasts of Türkiye is revisited. It was found that a total number of 695 species occur along all the coastlines of Türkiye, with the Black Sea being represented by 297 species, the Sea of Marmara by 305 species, the Aegean Sea by 308 species, and the Levantine Sea by 204 species. The most species-rich phyla in these regions were Platyhelminthes (249 species), Nematoda (131), Echinodermata (98), and Chordata (85). A total of 26 alien species have been reported from the regions to date, of which one species belongs to Chaetognatha, 8 species to Echinodermata, and 17 species to Tunicata. The highest number of alien species (17) was encountered in the Levantine Sea and the lowest (2) was in the Black Sea.

Key words: Several phyla, invertebrates, checklist, biodiversity, alien species, Türkiye

1. Introduction

Free-living and parasitic flatworms (Platyhelminthes) are diverse in marine ecosystems, with nearly 11,690 marine species worldwide (Appeltans et al., 2021), 800–1000 species in the Mediterranean Sea (Coll et al., 2010), and 186 species along the coasts of Türkiye (Çinar, 2014). The majority of species are benthic and free-living (former class Turbellaria) and play an important role in the functioning of benthic ecosystems (Majdi et al., 2016). The existing knowledge of free-living flatworms in the eastern Mediterranean is poorly documented, with detailed studies coming from Ax (1959), Bulnes (2010), and Gammoudi et al. (2021), who described many new species and genera in the area. Since the publication of the first comprehensive checklist for this group (Çinar, 2014), only Gammoudi et al. (2021) studied the polyclad fauna of the Sinop Peninsula and found one species (*Cryptocelis sinopae*) new to science and five species new to the Black Sea coast of Türkiye. However, many parasitic species (>50) belonging to the classes Cestoda, Monogenea, and Trematoda have been reported from the coasts of Türkiye (Özer, 2021).

Free-living nematodes are one of the understudied groups along the coasts of Türkiye, but recent data from the Black Sea (e.g., Ürkmez et al., 2016a,b; Sergeeva et al., 2021) showed their high diversity in the region. Only six free-living nematode species were included in the 2014 checklist, but a compilation of old and new (post-2014) data on their diversity in the Black Sea revealed more than 90 species occurring in the region.

The phylum Echinodermata is exclusively marine, inhabiting a variety of benthic habitats from shallow water to the deep sea (Pawson, 2007). It consists of five classes and has almost 7,300 living species worldwide, of which the class Asterozoa (sea stars) is represented by 1922 species, Echinozoa (sea urchins) by 1000 species, Ophiurozoa (brittle stars) by 2064 species, Crinozoa (feather stars) by 623 species, and Holothurozoa (sea cucumbers) by 1683 species (Appeltans et al., 2012). Echinodermata contains 154 species (with 11 alien species) in the Mediterranean Sea (Coll et al., 2010; Galanidi et al., 2023) and 91 species (with 7 alien species) along the coasts of Türkiye (Öztoprak et al., 2014; Çinar et al., 2021). Following the 2014 checklist prepared by Öztoprak et al. (2014), several new species

* Correspondence: melih.cinar@ege.edu.tr

(e.g., Özgür Özbek, 2016; Özalp et al., 2022) were added to the echinoderm species list of Türkiye.

The phylum Tunicata is one of the most diverse groups in marine ecosystems, containing almost 3020 species worldwide (Appeltans et al., 2012), 229 species in the Mediterranean Sea (Coll et al., 2010), and 61 species along the coasts of Türkiye (Çinar, 2014). As its species-rich class Ascidiacea has sessile species, they have been introduced from one zoogeographical region to another via the hulls of ships (Lambert, 2001). Almost 30 alien species have been reported from the Mediterranean Sea (Galanidi et al., 2023). Some species (e.g., *Phallusia nigra*, *Didemnum vexillum*) pose risks to local benthic communities and human facilities (Çinar et al., 2006; Çinar and Özgül, 2023).

The other phyla covered in this paper have been generally poorly studied in the marine waters of Türkiye, but local efforts (e.g., Sorensen et al., 2021 for Kinorhyncha; Terbiyik-Kurt and Polat, 2019 for Chaetognatha) have improved our knowledge of their diversity in the regions. The phylum Rotifera was not included in the 2014 checklist (Çinar, 2014), but data from both old (pre-2014) and new reports indicate the presence of a number of species of this phylum in the marine and lagoon environments of Türkiye.

In the present study, a list of species belonging to 14 invertebrate phyla reported along the Turkish coast through May 2024 is presented, including newly reported species, and the presence of some species in the region is discussed.

2. Material and methods

The species list of the selected phyla [Platyhelminthes, Xenacoelomorpha, Nematoda, Acanthocephala, Brachiopoda, Kinorhyncha, Nemertea, Chaetognatha, Tardigrada, Gastrotricha, Rotifera, Phoronida, Echinodermata, and Chordata (invertebrates only including the subphyla Tunicata, Cephalochordata, and Hemichordata)] was constructed by compiling new data presented in this paper with existing data from the literature. The marine boundary between the Levantine and Aegean Seas was considered to be a straight line passing between the Dalaman River and Rhodes. Species records from Çanakkale (Dardanelles) and İstanbul (Bosporus) were added to the Sea of Marmara, as these straits are strongly influenced by the Black Sea's brackish water and have two layered water masses, typical of the Sea of Marmara.

As the first records of species reported up to 2014 are in the 2014 checklist (Çinar, 2014), in this update, the species reports in the seas before 2014 are represented as "+" unless a past missed reference (e.g., Nikitin, 1948;

Sergeeva, 1977) is specified. WORMS*¹ (2024) was used for the taxonomic categories and species names of the phyla.

Monitoring projects carried out along the coasts of Türkiye have revealed several species new to the marine fauna of Türkiye, some of which are reported here for the first time. The first post-2014 records of species have been included in the species list along with their compiled pre- and post-2014 depth and habitat preferences. Species whose presence in the regions seems questionable have also been listed and discussed. The list presented here is based on species recorded through May 2024. For stations where new species records were found, coordinates, localities, depths, and habitat characteristics are given in Table 1 and Figure 1. Soft bottom samples were taken with a standard Van Veen grab or box corer, and hard bottom samples were taken with a 20×20 cm quadrat. Samples were sieved in the field using a 0.5 mm mesh and fixed in 4% formalin. Materials were then transferred to the laboratory, sorted under a stereomicroscope, and preserved in 70% ethanol.

3. Results

3.1. New records

In national projects, one flatworm (*Prosthiostomum siphunculius*), three nemertean species (*Cerebratulus fuscus*, *C. marginatus*, and *Siphonenteron bilineatum*), two salpid tunicata (*Thalia democratica* and *T. orientalis*), and one hemichordata species (*Balanoglossus clavigerus*) were found to be new to the regional fauna of Türkiye. Among them, *T. orientalis* is new to the faunal inventory of Türkiye, *P. siphunculius* is new to the Aegean and Levantine coasts, *C. fuscus*, *C. marginatus*, *S. bilineatum*, and *B. clavigerus* are new to the Aegean coast, and *T. democratica* is new to the Levantine coast.

3.2. Species list

By May 2024, including the new records presented in this study, a total of 695 species belonging to Platyhelminthes (249 species), Xenacoelomorpha (11), Nematoda (131), Acanthocephala (9), Brachiopoda (5), Kinorhyncha (11), Nemertea (27), Chaetognatha (13), Tardigrada (3), Gastrotricha (1), Rotifera (48), Phoronida (4), Echinodermata (98), and Chordata [85, invertebrates only, including the subphyla Tunicata (82), Cephalochordata (1) and Hemichordata (2)] have been reported from the coasts of Türkiye, of which the Black Sea is represented by 297 species, the Sea of Marmara by 305 species, the Aegean Sea by 308 species, and the Levantine Sea by 204 species (Table 2, Figure 2).

Among the phyla presented in this paper, the phylum Platyhelminthes ranked first in terms of the number of species (249) along the coasts of Türkiye, comprising 33%–36% of all species in the Black Sea, Sea of Marmara,

*<https://www.marinespecies.org> (Accessed: 1 May 2024)

Table 1. Coordinates, habitat, and depth (m) characteristics of stations.

Sea	Station	Longitude	Latitude	Depth	Habitat
Aegean Sea	1	40.90680°N	26.02390°E	16	Mud
Aegean Sea	2	38.75030°N	26.84190°E	27	Sandy mud
Aegean Sea	3	38.63590°N	26.65160°E	69	Mud
Aegean Sea	4	38.36753°N	26.78365°E	0.5	<i>Padina pavonica</i>
Aegean Sea	5	37.36718°N	27.36815°E	20	Sandy Mud
Levantine Sea	6	36.0999°N	33.5456°E	0–100	Pelagic
Levantine Sea	7	36.298721°N	35.78208°E	1	<i>Jania rubens</i>



Figure 1. Map of the stations where new species were recorded. SM: Sea of Marmara

Table 2. Species list of Platyhelminthes, Xenacoelomorpha, Nematoda, Acanthocephala, Brachiopoda, Kinorhyncha, Nemertea, Chaetognatha, Tardigrada, Gastrotricha, Rotifera, Phoronida, Echinodermata, and Chordata (invertebrates only including the subphyla Tunicata, Cephalochordata, and Hemichordata) from Türkiye and their first reports in each sea. [*: alien species; BS: Black Sea; SM: Sea of Marmara; AS: Aegean Sea; LS: Levantine Sea; DR: depth range (I: 0–10 m; II: 11–50 m; III: 51–100 m; IV: 101–200 m; V: 201–400 m; VI: 401–600 m; VII: >600 m); H: habitat (Hs: hard substratum, including algae, sponge, mussels, etc.; Ss: soft substratum, including all phanerogames; P: pelagic; Pz: parasite); PS: present study (superscripted numbers correspond to stations shown in Figure 1). Numbers in cells refer to references in footnote.

Group/species	BS	SM	AS	LS	DR	H	Notes
Phylum: PLATYHELMINTHES							
Subphylum: Rhabditophora							
Order: Fecampiida							
Family: Urastomidae							
<i>Urastoma cyprinae</i> (Graff, 1882)	+	-	-	-	I	Hs	
Order: Polycladida							
Family: Cryptocelidae							
<i>Cryptocelis glandulata</i> Jacobowa, 1909	+	-	-	-	II	Ss	
<i>Cryptocelis sinopae</i> Gammoudi, Bulnes & Kurt, 2021	68	-	-	-	I	Hs	
Family: Discocelididae							
<i>Pseudodiscocelis aegeanensis</i> Bulnes, 2010	-	-	+	-	I	Hs	
Family: Euryleptidae							
<i>Prostheceraeus roseus</i> Lang, 1884	-	-	-	+	II	Hs	
<i>Prostheceraeus giesbrechtii</i> Lang, 1884	-	-	-	+	I	Hs	
<i>Prostheceraeus vittatus</i> (Montagu, 1815)	-	-	-	+	II	Ss	

Table 2. (Continued.)

Family: Gnesiocerotidae						
<i>Echinoplana celerrima</i> Haswell, 1907	68	-	-	-	I	Hs
Family: Leptoplanidae						
<i>Leptoplana tremellaris</i> (Müller OF, 1773)	68	+	+	-	I	Hs
<i>Leptoplana mediterranea</i> (Bock, 1913)	68	-	-	-	I	Hs
Family: Notoplanidae						
<i>Notoplana alcinoi</i> (Schmidt, 1862)	-	+	-	-	I	Hs
Family: Planoceridae						
<i>Planocera graffi</i> Lang, 1879	-	-	-	+	I	Hs
<i>Pseudoplanocera izmirensis</i> Bulnes, 2010	-	-	+	-	I	Hs
Family: Pleioplanidae						
<i>Izmira cinari</i> Bulnes, 2010	-	-	+	-	I	Hs
<i>Izmira turkeyi</i> Bulnes, 2010	-	-	+	-	I	Hs
<i>Pleioplana bosphorensis</i> Bulnes, Kalkan & Karhan, 2009	-	+	-	-	I	Hs
<i>Pleioplana okusi</i> Bulnes, Kalkan & Karhan, 2009	68	+	-	-	I	Hs
Family: Prosthlostomidae						
<i>Prosthlostomum siphunculus</i> (Delle Chiaje, 1822)	68	+	PS ⁴	PS ⁷	I	Hs,Ss
Family: Pseudocerotidae						
<i>Pseudoceros maximum</i> Lang, 1884	-	-	-	+	II	Hs
Family: Stylochidae						
<i>Stylochus argus</i> Czerniavsky, 1881	+	-	-	-	II	Ss
<i>Stylochus melihertani</i> (Bulnes, 2010)	-	-	+	-	I	Hs
<i>Stylochus pildidium</i> (Goette, 1881)	-	+	-	-	I	Hs
<i>Stylochus tauricus</i> Jakubowa, 1909	+	-	-	-	II	Ss
Family: Stylochoplanidae						
<i>Comoplana palmula</i> (Quatrefage, 1845)	-	+	-	-	I	Hs
Family: Stylostomidae						
<i>Stylostomum ellipse</i> (Dalyell, 1853)	-	+	-	+	I	Hs
Order: Prolecithophora						
Family: Protomonotresidae						
<i>Archimonotresis limophila</i> Meixner, 1938	+	+	-	-	I	Ss
Family: Pseudostomidae						
<i>Cylindrostoma monotrochum</i> (Graff, 1882)	-	+	-	-	I	Hs
<i>Enterostomula graffi</i> (de Beauchamp, 1913)	-	+	-	-	I	Hs,Ss
Order: Proseriata						
Family: Monocelididae						
<i>Archilina endostyla</i> Ax, 1959	+	+	-	-	I	Ss
<i>Archiloba petiti</i> Ax, 1956	-	+	-	-	I	Ss
<i>Duplominona istanbulensis</i> (Ax, 1959)	+	+	-	-	I-III	Ss
<i>Monocelis lineata</i> (Müller, 1774)	-	+	-	-	I	Ss
<i>Monocelis longiceps</i> (Duges, 1830)	-	+	-	-	I	Hs
<i>Pseudomonocelis agilis</i> (Schultze M, 1851)	-	+	-	-	I	Ss
<i>Pseudomonocelis ophiocephala</i> (Schmidt, 1861)	-	+	-	-	I	Ss
<i>Promonotus ponticus</i> Ax, 1959	+	+	-	-	I	Ss
Family: Otoplanidae						
<i>Otoplana bosporana</i> Ax, 1959	-	+	-	-	I	Ss
<i>Postbursoplana pontica</i> Ax, 1959	+	-	-	-	I	Ss
<i>Postbursoplana propontica</i> Ax, 1959	-	+	-	-	II	Ss
Order: Rhabdocoela						

Table 2. (Continued.)

<i>Bresslauilla relicta</i> Reisinger, 1929	+	-	-	-	I	Ss	
Family: Adenorhynchidae							
<i>Tvaerminnea karlingi</i> Luther, 1943	-	+	-	-	I	Ss	
Family: Brysophlebidae							
<i>Byrsophlebs simplex</i> (Ax, 1959)	-	+	-	-	I	Ss	
<i>Byrsophlebs uncinata</i> (Ax, 1959)	-	+	-	-	II	Ss	
Family: Cheliplanidae							
<i>Baltoplana valkanovi</i> Ax, 1959	-	+	-	-	I	Ss	
<i>Cheliplana euxeinus</i> Ax, 1959	+	-	-	-	I	Ss	
<i>Cheliplana orthocirra</i> Ax, 1959	-	+	-	-	II	Ss	
Family: Cicerinidae							
<i>Cicerina eucentrota</i> Ax, 1959	+	-	-	-	I	Ss	
Family: Cystiplanidae							
<i>Cystiplana paradoxa</i> Karling, 1964	+	+	-	-	I	Ss	
Family: Diascorhynchidae							
<i>Diascorhynchus caligatus</i> Ax, 1959	+	-	-	-	II	Ss	
Family: Graffillidae							
<i>Graffilla parasitica</i> (Czerniavsky, 1880)	+	-	-	-		Pz	<i>Tethys fimbria</i>
<i>Paravortex scrobiculariae</i> (Graff, 1882)	-	+	-	-	I	Hs	
Family: Koinocystididae							
<i>Axiutelga aculeata</i> (Ax, 1959)	-	+	-	-	I	Ss	
<i>Itaipusa sophiae</i> (v.Graff, 1905)	-	+	-	-	I	Hs	
Family: Placorhynchidae							
<i>Placorhynchus dimorphis</i> (Karling, 1947)	+	-	-	-	I	Ss	
<i>Placorhynchus octaculeatus</i> Karling, 1931	+	+	-	-	I	Ss	
Family: Polycystididae							
<i>Gyratrix hermaphroditus</i> Ehrenberg, 1831	-	+	-	-	I	Hs,Ss	
<i>Phonorhynchus pernix</i> Ax, 1959	-	+	-	-	I	Ss	
<i>Polycystis naegelii</i> Kölliker, 1845	+	+	-	-	I	Hs	
<i>Progyrator mamertinus</i> (Graff, 1874)	+	+	-	-	I	Hs	
<i>Rogneda polyrhabdota</i> Ax, 1959	-	+	-	-	I,II	Ss	
<i>Rogneda tripalmata</i> (Beklemischev, 1927)	-	+	-	-	I	Ss	
Family: Promesostomidae							
<i>Promesostoma bilineatum</i> Pereyaslawzewa, 1892	-	+	-	-	I	Hs,Ss	
<i>Promesostoma ensifer</i> (Uljanin, 1870)	-	+	-	-	I	Hs,Ss	
<i>Promesostoma maculosum</i> Ax, 1956	-	+	-	-	I-III	Ss	
<i>Paramesostoma neapolitanum</i> (Graff, 1882)	-	+	-	-	I	Hs	
Family: Provorticidae							
<i>Selimia vivida</i> Ax, 1959	-	+	-	-	I	Ss	
<i>Selimia similis</i> Ax, 1959	-	+	-	-	I	Ss	
<i>Tamanawas helictos</i> (Ax, 1956)	+	-	-	-			
Family: Schizorhynchidae							
<i>Proschizorhynchus tricingulatus</i> Ax, 1959	+	+	-	-	II	Ss	
Family: Trigonostomidae							
<i>Ceratopera falcata</i> (Ax, 1953)	+	+	-	-	I,II	Ss	
<i>Proxenetes simplex</i> Luther, 1948	+	+	-	-	I,II	Ss	= <i>Proxenetes angustus</i>
<i>Ptychopera plebeia</i> (Beklemischev, 1927)	-	+	-	-	I	Ss	
<i>Trigonostomum mirabile</i> (Pereyaslawzewa, 1892)	+	+	-	-	I,II	Hs,Ss	

Table 2. (Continued.)

<i>Trigonostomum setigerum</i> (Schmidt, 1852)	+	+	-	-	I	Hs	
<i>Trigonostomum venenosum</i> (Uljanin, 1870)	+	+	-	-	I	Hs	
Family: Typhoplanidae							
<i>Thalassoplanina geniculata</i> (Beklemischev, 1927)	+	-	-	-	I	Ss	
Order: Tricladida							
Family: Cercyridae							
<i>Cercyra hastata</i> Schmidt, 1862	-	+	-	-	I	Hs,Ss	
<i>Sabussowia dioica</i> (Claparède, 1863)	+	-	-	-	II	Ss	
Family: Procerodidae							
<i>Procerodes lobata</i> (Schmidt, 1862)	-	+	-	-	I	Hs	
Superorder: Macrostromorpha							
Family: Macrostromidae							
<i>Macrostromum ermini</i> Ax, 1959	+	-	-	-	I	Ss	
<i>Macrostromum hystricinum</i> Beklemischev, 1951	+	+	-	-	I	Ss	
<i>Macrostromum mediterraneum</i> Ax, 1956	-	+	-	-	I	Ss	
<i>Macrostromum pusillum</i> (Ax, 1951)	-	+	-	-	I	Ss	
Order: Dolichomicrostomida							
Family: Dolichomacrostromidae							
<i>Cylindromacrostromum mediterraneum</i> (Ax, 1955)	+	+	-	-	II,III	Ss	
<i>Paromalostomum dubium</i> (de Beauchamp, 1927)	+	-	-	-	II	Ss	
Family: Microstromidae							
<i>Microstromum papillosum</i> Graff, 1882	+	+	-	-	I-III	Ss	
SuperClass: Neodermata							
Class: Cestoda							
Order: Bothriocephalidea							
Family: Bothriocephalidae							
<i>Bothriocestus claviceps</i> (Goeze, 1782)	-	-	30	-		Pz	<i>Anguilla anguilla</i>
<i>Bothriocephalus scorpii</i> (Müller, 1776)	44	20	+	-		Pz	different fish
<i>Clestobothrium crassiceps</i> (Rudolphi, 1819)	-	+	-	-		Pz	<i>Merluccius merluccius</i>
Order: Cyclophyllidea							
Family: Gryporhynchidae							
<i>Paradilepis scolecina</i> (Rudolphi, 1819)	+	-	-	-		Pz	<i>Platichthys flesus</i>
Family: Hymenolepididae							
<i>Flamingolepis liguloides</i> (Gervais, 1847)	-	-	78	-		Pz	<i>Artemia salina</i>
Order: Diphyllidea							
Family: Echinobothriidae							
<i>Echinobothrium typus</i> Van Beneden, 1849	-	-	+	-		Pz	different fish
Order: Onchoproteocephalidea							
Family: Onchobothriidae							
<i>Acanthobothrium coronatum</i> (Rudolphi, 1819)	44	-	+	-		Pz	different fish
<i>Acanthobothrium dujardinii</i> Van Beneden, 1849	-	-	+	-		Pz	<i>Raja clavata</i>
Family: Proteocephalidae							
<i>Proteocephalus macrocephalus</i> (Creplin, 1825)	-	30	30	-		Pz	<i>Anguilla anguilla</i>
Order: Phyllobothriidea							
Family: Phyllobothriidae							
<i>Phyllobothrium lactuca</i> (Van Beneden, 1850)	-	-	+	-		Pz	different fish
Order: Rhinebothriidea							
Family: Anthocephaliidae							

Table 2. (Continued.)

<i>Anthocephalum gracile</i> (Wedl, 1855)	-	-	+	-	Pz	different fish
Family: Echeneibothriidae						
<i>Echeneibothrium variabile</i> Van Beneden, 1850	44	-	+	-	Pz	different fish
Order: Spathebothriidea						
Family: Acrobothriidae						
<i>Didymobothrium rudolphii</i> Nybelin, 1922	-	+	-	-	Pz	<i>Solea solea</i>
Order: Tetracystellidae						
Family: Tetracystellidae						
<i>Scolex pleuronectis</i> Müller, 1788	44	-	28	-	Pz	different fish
Order: Trypanorhyncha						
Family: Eutetrarhynchidae						
<i>Tetrarhynchobothrium tenuicolle</i> Diesing, 1850	44	-	+	-	Pz	different fish
Family: Lacistorhynchidae						
<i>Callitetrarhynchus gracilis</i> (Rudolphi, 1819)	-	-	30	-	Pz	<i>Euthynnus alletteratus</i>
<i>Grillotia erinaceus</i> (Van Beneden, 1858)	+	-	-	-	Pz	different fish
<i>Grillotia heptanchi</i> (Vaullegeard, 1899)	-	30	-	-	Pz	<i>Solea solea</i>
Family: Progrillotiidae						
<i>Progrillotia dasyatidis</i> Beveridge, Neifar & Euzet, 2004	+	+	-	-	Pz	different fish
Class: Monogenea						
Order: Capsalidea						
Family: Capsalidae						
<i>Benedenia sciaenae</i> (Van Beneden, 1852)	-	-	+	-	Pz	<i>Argyrosomus regius</i>
<i>Capsala laevis</i> (Verrill, 1875)	-	-	30	-	Pz	<i>Xiphias gladius</i>
<i>Tristoma coccineum</i> Cuvier, 1817	-	-	30	-	Pz	<i>Xiphias gladius</i>
<i>Tristoma integrum</i> Diesing, 1850	-	-	30	-	Pz	<i>Xiphias gladius</i>
<i>Trochopus gaillimhe</i> Little, 1829	-	+	-	-	Pz	<i>Eutrigla gurnardus</i>
<i>Trochopus pini</i> (Van Beneden & Hesse, 1863)	-	+	-	-	Pz	<i>Eutrigla gurnardus</i>
Order: Dactylogyridea						
Family: Amphibdellatidae						
<i>Amphibdella torpedinis</i> Chatin, 1874	-	-	28	-	Pz	<i>Torpedo marmorata</i>
Family: Ancyrocephalidae						
<i>Ligophorus acuminatus</i> Euzet&Suriano, 1977	-	-	+	-	Pz	<i>Chelon saliens</i>
<i>Ligophorus angustus</i> Euzet&Suriano, 1977	-	-	+	69	Pz	<i>Chelon labrosus</i>
<i>Ligophorus cephalii</i> Rubtsova, Balbuena, Sarabeev, Blasco-Costa & Euzet, 2006	29	-	-	-	Pz	<i>Chelon auratus</i>
<i>Ligophorus chabaudi</i> Euzet&Suriano, 1977	-	-	+	-	Pz	<i>Mugil cephalus</i>
<i>Ligophorus confusus</i> Euzet&Suriano, 1977	-	+	+	-	Pz	<i>Chelon ramada</i>
<i>Ligophorus heteronchus</i> Euzet&Suriano, 1977	-	-	+	-	Pz	<i>Chelon saliens</i>
<i>Ligophorus imitans</i> Euzet&Suriano, 1977	-	-	+	-	Pz	<i>Chelon ramada</i>
<i>Ligophorus macrocolpos</i> Euzet & Suriano, 1977	-	-	+	-	Pz	<i>Chelon saliens</i>
<i>Ligophorus mediterraneus</i> Sarabeev, Balbuena & Euzet, 2005	29	-	-	-	Pz	<i>Chelon auratus</i>
<i>Ligophorus minimus</i> Euzet&Suriano, 1977	-	-	+	-	Pz	<i>Chelon saliens</i>
<i>Ligophorus mugilinus</i> (Hargis, 1955)	69	-	+	-	Pz	<i>Mugil cephalus</i>
<i>Ligophorus szidati</i> Euzet&Suriano, 1977	79	+	+	-	Pz	Mullidae
Family: Diplectanidae						
<i>Diplectanum aequans</i> (Wagener, 1857)	31	-	+	69	Pz	<i>Dicentrarchus labrax</i>
<i>Lamellodiscus echeneis</i> (Wagener, 1857)	-	-	+	69	Pz	<i>Sparus aurata</i>
<i>Lamellodiscus elegans</i> Bychowsky, 1957	34	-	30	-	Pz	different fish
<i>Lamellodiscus fraternus</i> Bychowsky, 1957	34	-	-	-	Pz	<i>Diplodus annularis</i>

Table 2. (Continued.)

<i>Lamellodiscus ignoratus</i> Palombi, 1943	-	-	+	69		Pz	different fish
Family: Pseudodactylogyrida							
<i>Pseudodactylogyrus anguillae</i> (Yin & Sproston, 1948)	-	-	69	-		Pz	<i>Anguilla anguilla</i>
<i>Pseudodactylogyrus bini</i> (Kikuchi, 1929)	-	-	30	-		Pz	<i>Anguilla anguilla</i>
Family: Tetraonchidae							
<i>Ergenstrema mugilis</i> Paperna, 1965	-	-	+	-		Pz	Mugilidae
Order: Gyrodactylidea							
Family: Gyrodactylidae							
<i>Gyrodactylus alviga</i> Dmitrieva & Gerasev, 2000	26	-	-	-		Pz	<i>Merlangius merlangus</i>
<i>Gyrodactylus anguillae</i> Ergens, 1960	-	-	30	-		Pz	<i>Anguilla anguilla</i>
<i>Gyrodactylus arcuatus</i> Bychowsky, 1933	69	-	-	-		Pz	<i>Gasterosteus aculeatus</i>
<i>Gyrodactylus flesi</i> Malmberg, 1957	+	-	-	-	I	Pz	<i>Platichthys flesus</i>
<i>Gyrodactylus proterorhini</i> Ergens, 1964	+	-	-	-	I	Pz	<i>Neogobius melanostomus</i>
Family: Tetraonchoididae							
<i>Tetraonchoides paradoxus</i> Bychowsky, 1951	69	+	-	-		Pz	<i>Uranoscopus scaber</i>
Order: Mazocraeidea							
Family: Axinidae							
<i>Axine belones</i> Abildgaard, 1794	+	+	-	-	I	Pz	<i>Belone belone</i>
Family: Diclidophoridae							
<i>Choricotyle chrysophryi</i> Van Beneden & Hesse, 1863	-	-	+	-		Pz	different fish
<i>Diclidophora bellones</i> (Otto, 1823)	-	-	+	-		Pz	different fish
Family: Discocotylidae							
<i>Anthocotyle merluccii</i> Van Beneden & Hesse, 1863	-	+	93	-		Pz	<i>Merluccius merluccius</i>
Family: Gastrocotylidae							
<i>Pseudaxine trachuri</i> Parona & Perugia, 1889	-	-	+	-		Pz	<i>Trachurus mediterraneus</i>
Family: Heteraxinidae							
<i>Zeuxapta seriola</i> (Meserve, 1938)	-	-	93	69		Pz	different fish
Family: Mazocraeidae							
<i>Grubea cochlear</i> Diesing, 1858	-	83	30	-		Pz	<i>Scomber</i> spp.
<i>Kuhnia scombri</i> (Kuhn, 1829)	-	-	+	30		Pz	<i>Scomber colias</i>
<i>Mazocraes alosae</i> Hermann, 1782	69	-	93	-		Pz	<i>Alosa fallax</i>
Family: Microcotylidae							
<i>Aspinatrium trachini</i> (Parona & Perugia, 1889)	-	-	+	-		Pz	different fish
<i>Atrispinum acarne</i> Maillard & Noisy, 1979	-	-	93	-		Pz	<i>Pagellus acarne</i>
<i>Atrispinum salpae</i> (Parona & Perugia, 1890)	-	-	93	-		Pz	<i>Sarpa salpa</i>
<i>Atrispinum seminalis</i> (Euzet & Maillard, 1973)	-	-	93	-		Pz	<i>Diplodus</i> spp.
<i>Bivagina alcedinis</i> (Parona & Perugia, 1889)	-	-	93	-		Pz	different fish
<i>Metamicrocotyla cephalus</i> (Azim, 1939)	-	-	+	-		Pz	<i>Mugil cephalus</i>
<i>Microcotyle erythrini</i> Van Beneden & Hesse, 1863	-	-	+	-		Pz	Different fish
<i>Microcotyle pomatomi</i> Goto, 1891	-	+	-	-		Pz	<i>Pomatomus saltatrix</i>
<i>Solostamenides mugilis</i> (Vogt, 1879)	29	+	+	-		Pz	Mugilidae
<i>Sparicotyle chrysophrii</i> (Van Beneden & Hesse, 1863)	-	-	+	-		Pz	<i>Sparus aurata</i>
Family: Plectanocotylidae							
<i>Plectanocotyle gurnardi</i> (Van Beneden & Hesse, 1863)	-	-	93	-		Pz	<i>Chelidonichthys lucerna</i>
Family: Pyragraphoridae							
<i>Pyragraphorus pyragraphorus</i> (MacCallum & MacCallum, 1913)	-	-	-	+		Pz	<i>Trachinotus ovatus</i>
Class: Trematoda							
SubClass: Digenea							

Table 2. (Continued.)

Order: Diplostomida**Family: Diplostomidae**

<i>Diplostomum spathaceum</i> (Rudolphi, 1819)	29	-	-	-	Pz	<i>Mugil cephalus</i>
<i>Tylodelphys clavata</i> (von Nordmann, 1832)	29	-	-	-	Pz	<i>Chelon auratus</i>

Order: Plagiorchiida**Family: Acanthocolpidae**

<i>Lepidauchen stenostoma</i> Nicoll, 1913	-	-	+	-	Pz	different fish
<i>Stephanostomum baccatum</i> (Nicoll, 1907)	-	+	-	-	Pz	<i>Gaidropsarus mediterraneus</i>
<i>Stephanostomum bicoronatum</i> (Stossich, 1883)	44	-	+	-	Pz	different fish
<i>Stephanostomum caducum</i> (Looss, 1901)	-	+	-	-	Pz	<i>Merluccius merluccius</i>
<i>Stephanostomum cesticillus</i> (Molin, 1858)	44	-	-	-	Pz	<i>Parablennius tentacularis</i>
<i>Stephanostomum gaidropsari</i> Bartoli & Bray, 2001	-	+	-	-	Pz	<i>Gaidropsarus mediterraneus</i>
<i>Stephanostomum minutum</i> (Looss, 1901)	+	-	+	-	Pz	<i>Uranoscobus scaber</i>

Family: Aephniogenidae

<i>Holorchis pycnopus</i> Stossich, 1901	-	-	+	-	Pz	<i>Lithognathus mormyrus</i>
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Family: Allocreadiidae

<i>Allocreadium transversale</i> (Rudolphi, 1802)	-	-	69	-	Pz	<i>Scorpaena</i> spp.
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Family: Bucephalidae

<i>Bucephalus anguillae</i> Spakulova, Macko, Berrilli & Dezfuli, 2002	-	-	69	-	Pz	<i>Anguilla anguilla</i>
<i>Bucephalus margaritae</i> Ozaki & Ishibashi, 1934	-	-	+	-	Pz	<i>Lichia amia</i>
<i>Bucephalus marinus</i> Vlasenko, 1931	44	+	-	-	Pz	different fish
<i>Bucephalus polymorphus</i> von Baer, 1827	-	-	30	-	Pz	<i>Anguilla anguilla</i>
<i>Prosorhynchoides haimeana</i> (Lacaze-Duthiers, 1854)	-	+	-	-	Pz	<i>Zosterisessor ophiocephalus</i>
<i>Prosorhynchus crucibulum</i> (Rudolphi, 1819)	-	-	+	-	Pz	different fish
<i>Rhipidocotyle genovi</i> Dimitrov, Kostadinova & Gibson, 1996	44	-	-	-	Pz	<i>Gaidropsarus mediterraneus</i>
<i>Skrjabiniella aculeata</i> (Odhner, 1905)	-	-	69	-	Pz	<i>Anguilla anguilla</i>

Family: Cryptogonimidae

<i>Anisocladium fallax</i> (Rudolphi, 1819)	+	+	+	-	Pz	<i>Uranoscopus scaber</i>
<i>Anisocladium gracile</i> (Looss, 1901)	+	-	-	-	Pz	<i>Uranoscopus scaber</i>
<i>Anisocoelium capitellatum</i> (Rudolphi, 1819)	+	+	30	-	Pz	different fish
<i>Anoiktostoma coronatum</i> (Wagener, 1852)	-	-	+	-	Pz	<i>Sciaena umbra</i>
<i>Metadena pauli</i> (Vlasenko, 1931)	44	-	-	-	Pz	different fish
<i>Proctoacaeum absconditum</i> (Looss, 1901)	-	-	-	30	Pz	<i>Dicentrarchus labrax</i>
<i>Siphoderina aloysiae</i> (Stossich, 1885)	-	-	+	-	Pz	<i>Sciaena umbra</i>

Family: Derogenidae

<i>Arnola microcirrus</i> (Vlasenko, 1931)	44	-	-	-	Pz	<i>Diplodus annularis</i>
<i>Magnibursatus blennii</i> (Paggi & Orecchia, 1975)	69	-	-	-	Pz	<i>Parablennius sanguinolentus</i>
<i>Magnibursatus skrjabini</i> (Vlasenko, 1931)	44	-	-	-	Pz	different fish

Family: Deropristidae

<i>Deropristis inflata</i> (Molin, 1859)	-	69	30	-	Pz	<i>Anguilla anguilla</i>
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Family: Faustulidae

<i>Bacciger bacciger</i> (Rudolphi, 1819)	-	-	+	-	Pz	different fish
<i>Bacciger israelensis</i> Fischthal, 1980	-	-	+	-	Pz	different fish
<i>Pronoprymna ventricosa</i> (Rudolphi, 1819)	+	-	-	-	Pz	<i>Alosa fallax</i>

Family: Fellodistomidae

<i>Monascus filiformis</i> (Rudolphi, 1819)	44	+	+	-	Pz	<i>Trachurus</i> spp.
<i>Proctoeces maculatus</i> (Looss, 1901)	70	-	-	-	Pz	<i>Symphodus</i> spp.
<i>Steringotrema pagelli</i> (Van Beneden, 1871)	-	-	+	-	Pz	<i>Spicara flexuosum</i>

Table 2. (Continued.)

<i>Tergestia laticollis</i> (Rudolphi, 1819)	-	-	+	-	Pz	<i>Trachurus mediterraneus</i>
Family: Gorgoderidae						
<i>Phyllodistomum acceptum</i> Looss, 1901	44	-	-	-	Pz	<i>Parablennius</i> spp.
<i>Phyllodistomum crenilabri</i> Dolgikh & Naidenova, 1968	70	-	-	-	Pz	<i>Symphodus</i> spp.
Family: Gyliuachenidae						
<i>Robphildollfusium fractum</i> (Rudolphi, 1819)	-	-	-	30	Pz	<i>Sarpa salpa</i>
Family: Gymnophallidae						
<i>Parvatrema duboisi</i> (Dollfus, 1923)	+	-	-	-	Pz	mussel
Family: Haploporidae						
<i>Dicrogaster contracta</i> Looss, 1902	-	69	+	-	Pz	Mugilidae
<i>Dicrogaster perpusilla</i> Looss, 1902	-	+	30	-	Pz	different fish
<i>Haploporus benedenii</i> (Stossich, 1887)	-	30	30	-	Pz	Mugilidae
<i>Saccocoelium obesum</i> Looss, 1902	79	+	+	67	Pz	Mugilidae
<i>Saccocoelium tensum</i> Looss, 1902	79	30	+	-	Pz	Mugilidae
Family: Haploplanchnidae						
<i>Haploplanchnus pachysoma</i> (Eysenhardt, 1829)	29	30	+	-	Pz	Mugilidae
<i>Schikhobalotrema sparisomae</i> (Manter, 1937)	79	+	+	-	Pz	Mugilidae
Family: Hemiuridae						
<i>Aphanurus stossichi</i> (Monticelli, 1891)	84	-	+	30	Pz	different species
<i>Ectenurus lepidus</i> Looss, 1907	44	30	+	69	Pz	different fish
<i>Hemiurus communis</i> Odhner, 1905	-	-	+	-	Pz	<i>Boops boops</i>
<i>Lecithochirium grandiporum</i> (Rudolphi, 1819)	-	-	+	-	Pz	<i>Conger conger</i> , <i>Muraena helena</i>
<i>Lecithochirium musculus</i> (Looss, 1907)	+	-	-	-	Pz	<i>Ophidion rochei</i>
<i>Lecithochirium rufoviride</i> (Rudolphi, 1819)	-	-	30	-	Pz	<i>Anguilla anguilla</i>
<i>Lecithocladium excisum</i> (Rudolphi, 1819)	-	+	+	-	Pz	<i>Scomber scombrus</i>
Family: Heterophyidae						
<i>Ascocotyle coleostoma</i> (Looss, 1896)	69	-	-	-	Pz	different fish
<i>Ascocotyle felippeii</i> Travassos, 1929	44	-	-	-	Pz	different fish
<i>Ascocotyle longa</i> Ransom, 1920	29	-	-	-	Pz	<i>Chelon auratus</i>
<i>Condyllocotyla pilodora</i> Pearson & Prévot, 1985	70	-	-	-	Pz	<i>Symphodus cinereus</i>
<i>Galactosomum lacteum</i> (Jägerskiöld, 1896)	44	-	-	-	Pz	different fish
<i>Heterophyes heterophyes</i> (Siebold, 1853)	-	-	+	-	Pz	Mugilidae
<i>Pygidiopsis genata</i> Looss, 1907	+	-	-	-	Pz	<i>Neogobius melanostomus</i>
Family: Lecithasteridae						
<i>Lecithaster confusus</i> Odhner, 1905	44	-	-	-	Pz	<i>Alosa immaculata</i>
<i>Lecithaster helodes</i> Overstreet, 1973	-	-	+	-	Pz	Mugilidae
Family: Lepidapedidae						
<i>Lepidapedon elongatum</i> (Lebour, 1908)	-	-	+	69	Pz	<i>Scomber colias</i>
Family: Lepocreadiidae						
<i>Lepocreadium album</i> (Stossich, 1890)	-	-	+	-	Pz	different fish
<i>Opechona bacillaris</i> (Molin, 1859)	+	+	+	-	Pz	different fish
<i>Opechona olssoni</i> (Yamaguti, 1934)	-	-	+	-	Pz	<i>Scomber colias</i>
<i>Opechona pyriformis</i> (Linton, 1900)	-	17	+	-	Pz	<i>Trachurus mediterraneus</i>
<i>Prodistomum polonii</i> (Molin, 1859)	26	+	69	-	Pz	<i>Trachurus trachurus</i> <i>Merlangius merlangus</i>
Family: Mesometridae						
<i>Elstia stossichianum</i> (Monticelli, 1892)	-	-	+	-	Pz	<i>Sarpa salpa</i>
<i>Mesometra brachycoelia</i> Lühe, 1901	-	-	-	30	Pz	<i>Sarpa salpa</i>
<i>Mesometra orbicularis</i> (Rudolphi, 1819)	-	-	+	30	Pz	<i>Sarpa salpa</i>

Table 2. (Continued.)

Family: Monorchiiidae

<i>Ancylocoelium typicum</i> Nicoll, 1912	44	-	-	-	Pz	<i>Trachurus trachurus</i>
<i>Monorchis monorchis</i> (Stossich, 1890)	69	-	69	-	Pz	different fish
<i>Monorchis parvus</i> Looss, 1902	44	-	-	-	Pz	<i>Diplodus annularis</i>
<i>Proctotrema bacilliovatum</i> Odhner, 1911	44	-	+	-	Pz	different fish

Family: Opecoelidae

<i>Allopodocotyle pedicellata</i> (Stossich, 1887)	-	-	+	-	Pz	<i>Pagrus pagrus</i>
<i>Gaevskajatrema perezi</i> (Mathias, 1926)	70	+	-	-	Pz	<i>Symphodus spp.</i>
<i>Helicometra fasciata</i> (Rudolphi, 1819)	+	+	+	-	Pz	different fish
<i>Helicometra insolita</i> Polyanski, 1955	-	69	-	-	Pz	<i>Symphodus tinca</i>
<i>Macvicaria alacris</i> (Looss, 1901)	-	+	-	-	Pz	<i>Symphodus tinca</i>
<i>Nicolla gallica</i> (Dollfus, 1941)	-	-	30	-	Pz	<i>Anguilla anguilla</i>
<i>Opecoeloides furcatus</i> (Bremser in Rudolphi, 1819)	-	-	+	-	Pz	<i>Mullus surmuletus</i>
<i>Pachycreadium carnosum</i> (Rudolphi, 1819)	-	-	+	-	Pz	<i>Pagellus acarne</i>
<i>Peracreadium genu</i> (Rudolphi, 1819)	61	-	-	-	Pz	<i>Parablennius sanguinolentus</i>
<i>Plagioporus dogieli</i> Pogoreltseva, 1975	-	+	-	-	Pz	<i>Symphodus tinca</i>

Family: Opisthorchiidae

<i>Cryptocotyle concava</i> (Creplin, 1825)	44	-	-	-	Pz	different fish
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Family: Zoogonidae

<i>Diphtherostomum brusinae</i> (Stossich, 1889)	-	+	-	-	Pz	<i>Zosterisessor ophiocephalus</i>
<i>Lecithostaphylus retroflexus</i> Molin, 1859	-	+	69	-	Pz	<i>Belone belone</i>

Phylum: XENACOELOMORPHA

Order: Acoela

Family: Convolutidae

<i>Convoluta convoluta</i> (Abildgaard, 1806)	+	+	-	-	I	Hs
<i>Convoluta hipparchia</i> Pereyaslawzewa, 1892	+	+	-	-	I	Hs
<i>Convoluta variabilis</i> (Pereyaslawzewa, 1892)	+	-	-	-	II	Ss
<i>Symsagittifera schultzei</i> (Schmidt, 1852)	+	+	-	-	I	Hs

Family: Dakuidae

<i>Notocelis subsalina</i> (Ax, 1959)	-	+	-	-	I	Hs
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Family: Isodiametridae

<i>Baltalimania kosswigi</i> Ax, 1959	-	+	-	-		
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Family: Mecynostomidae

<i>Paramecynostomum diversicolor</i> (Örsted, 1845)	-	+	-	-	I	Hs,Ss
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Family: Nadinidae

<i>Nadina pulchella</i> Uljanin, 1870	+	+	-	-	I	Hs,Ss
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Family: Otocelididae

<i>Otocelis rubropunctata</i> (Schmidt, 1852)	-	+	-	-	I	Ss
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Family: Proporidae

<i>Haplogonaria arenaria</i> (Ax, 1959)	+	+	-	-	I-III	Ss
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Family: Tauridae

<i>Taurida fulvomaculata</i> (Ax, 1959)	+	+	-	-	II,III	Ss
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Phylum: NEMATODA

Class: Chromadorea

Order: Araeolaimida

Family: Axonolaimidae

<i>Axonolaimus setosus</i> Filipjev, 1918	36	-	-	-	I	Ss
<i>Odontophora angustilaima</i> (Filipjev, 1918)	36	-	-	-	I	Ss

Table 2. (Continued.)

<i>Parodontophora quadristicha</i> (Schuurmans Stekhoven, 1950)	14	-	-	-	III	Ss
Family: Comesomatidae						
<i>Sabatieria abyssalis</i> (Filipjev, 1918)	+	-	-	-	II	Ss
<i>Sabatieria aspera</i> Sergeeva, 1973	11	-	-	-	III	Ss
<i>Sabatieria longicaudata</i> Filipjev, 1922	71	-	-	-	III-IV	Ss
<i>Sabatieria praebosporica</i> Sergeeva, 1973	11	-	-	-	III	Ss
<i>Sabatieria pulchra</i> (Schneider, 1906)	71	-	-	-	III-V	Ss
Family: Diplopeltidae						
<i>Araeolaimus elegans</i> de Man, 1888	-	5	-	-	I	Hs
<i>Araeolaimus steineri</i> (Steiner, 1916)	-	6	-	-	I	Hs
<i>Campylaimus siwaschensis</i> Sergeeva, 1981	71	-	-	-	IV	Ss
Order: Chromadorida						
Family: Chromadoridae						
<i>Atrochromadora parva</i> (de Man, 1893)	-	5	-	-	I	Hs
<i>Chromadora nudicapitata</i> Bastian, 1865	-	6	-	-	I	Hs
<i>Chromadorella parapoecilosoma</i> (Micoletzky, 1922)	-	3	-	-	I	Hs
<i>Chromadorina germanica</i> (Bütschli, 1874)	-	6	-	-	I	Hs
<i>Chromadorina laeta</i> (de Man, 1876)	-	5	-	-	I	Hs
<i>Euchromadora striata</i> (Eberth, 1863)	-	5	-	-	I	Hs
<i>Neochromadora poecilosomoides</i> (Filipjev, 1918)	36	-	-	-	I	Ss
<i>Neochromadora sabulicola</i> (Filipjev, 1918)	36	-	-	-	I	Ss
<i>Prochromadora megadonta</i> Filipjev, 1922	+	-	-	-	II	Ss
Family: Cyatholaimidae						
<i>Cyatholaimus gracilis</i> (Eberth, 1863)	-	6	-	-	I	Hs
<i>Paracanthonchus caecus</i> (Bastian, 1865)	71	-	-	-	III, IV	Ss
Family: Selachinematidae						
<i>Cobbionema acrocerca</i> Filipjev, 1922	71	-	-	-	III	Ss
<i>Halichoanolaimus lukjanovae</i> Sergeeva, 1973	11	-	-	-	III-IV	Ss
<i>Halichoanolaimus robustus</i> (Bastian, 1865)	71	-	-	-	III, V	Ss
Order: Desmodorida						
Family: Aponchiidae						
<i>Synonema obtusicaudatum</i> (de Man, 1889)	-	6	-	-	I	Hs
Family: Desmodoridae						
<i>Acanthopharynx micans</i> Eberth, 1863	-	5	-	-	I	Hs
<i>Desmodora conica</i> Vitiello, 1971	71	-	-	-	III	Ss
<i>Desmodora pontica</i> Filipjev, 1922	+	-	-	-	I	Ss
<i>Onyx perfectus</i> Cobb, 1891	36	-	-	-	I	Ss
Family: Microlaimidae						
<i>Aponema pontica</i> Revkova, 2017	71	-	-	-	IV-V	Ss
<i>Microlaimus kaurii</i> Wieser, 1954	71	-	-	-	IV	Ss
<i>Microlaimus ponticus</i> Sergeeva, 1976	71	-	-	-	IV-V	Ss
<i>Microlaimus tenuispiculum</i> de Man, 1922	71	-	-	-	IV	Ss
<i>Pseudomicrolaimus murinae</i> Sergeeva, 1976	36	-	-	-	I	Ss
Order: Desmoscolecida						
Family: Desmoscolecidae						
<i>Desmoscolex minutus</i> Claparède, 1863	71	-	-	-	III-IV	Ss
<i>Desmoscolex tenuiseta</i> Filipjev, 1922	71	-	-	-	III-IV	Ss
<i>Desmoscolex (Desmolorenzenia) euryricus</i> Filipjev, 1922	71	-	-	-	III-IV	Ss

Table 2. (Continued.)

<i>Tricoma (Quadricoma) loricata</i> (Filipjev, 1922)	71	-	-	-	III-IV	Ss	
<i>Tricoma (Quadricoma) tenuis</i> Steiner, 1916	22	-	-	-	I, IV	Ss	
Order: Monhysterida							
Family: Linhomoeidae							
<i>Eleutherolaimus longus</i> Filipjev, 1922	71	-	-	-	III, IV	Ss	
<i>Linhomoeus filiformis</i> Filipjev, 1918	71	-	-	-	III	Ss	
<i>Linhomoeus tenuicaudatus</i> Bütschli, 1874	71	-	-	-	III, IV	Ss	
<i>Metalinhomoeus zosterae</i> Filipjev, 1918	71	-	-	-	IV	Ss	
<i>Prosphaerolaimus eurypharynx</i> Filipjev, 1918	71	-	-	-	III-IV	Ss	
<i>Terschellingia antonovi</i> Filipjev, 1922	71	-	-	-	V	Ss	
<i>Terschellingia longicaudata</i> de Man, 1907	+	-	-	-	I	Ss	
<i>Terschellingia pontica</i> Filipjev, 1918	71	-	-	-	III, V	Ss	
Family: Monhysteridae							
<i>Gammarinema ampullocauda</i> (Paramonov, 1926)	71	-	-	-	IV	Ss	
<i>Thalassomonhystera longicapitata</i> (Filipjev, 1922)	71	-	-	-	IV	Ss	
<i>Thalassomonhystera parva</i> (Bastian, 1865)	71	-	-	-	III, IV	Ss	
<i>Thalassomonhystera collaris</i> (Filipjev, 1922)	71	-	-	-	III, IV	Ss	
Family: Sphaerolaimidae							
<i>Parasphaerolaimus dispar</i> (Filipjev, 1918)	71	-	-	-	III-IV	Ss	
<i>Sphaerolaimus gracilis</i> de Man, 1876	71	-	-	-	III-IV	Ss	
<i>Sphaerolaimus macrocirculus</i> Filipjev, 1918	71	-	-	-	III-IV	Ss	
<i>Sphaerolaimus ostreae</i> Filipjev, 1918	71	-	-	-	III-IV	Ss	
Family: Xyalidae							
<i>Daptonema conicum</i> (Filipjev, 1922)	71	-	-	-	III-V	Ss	
<i>Daptonema longicaudatum</i> (Filipjev, 1922)	71	-	-	-	III	Ss	
<i>Daptonema normandicum</i> (de Man, 1890)	-	3	-	-	I	Hs	
<i>Paramonohystera elliptica</i> (Filipjev, 1918)	71	-	-	-	IV	Ss	
<i>Steineria pontica</i> Groza-Rojancovski, 1972	71	-	-	-	III, IV	Ss	
<i>Stylotheristus paramutilus</i> Revkova & Sergeeva, 2024	90	-	-	-	III-V	Ss	
<i>Theristus sabulicola</i> (Filipjev, 1918)	71	-	-	-	III	Ss	
Order: Plectida							
Family: Camacolaimidae							
<i>Deontolaimus bathycola</i> (Filipjev, 1922)	71	-	-	-	III	Ss	
<i>Deontolaimus dolichocercus</i> (Filipjev, 1922)	71	-	-	-	III	Ss	
Family: Leptolaimidae							
<i>Leptolaimus sergeevae</i> (Ürkmez & Brennan, 2013)	+	-	-	-	III-V	Ss	
Order: Rhabditida							
Family: Anguillicolidae							
<i>Anguillicola crassus</i> Kuwahara, Niimi & Itagaki, 1974	-	-	69	30	Pz		<i>Anguilla anguilla</i>
Family: Anguinidae							
<i>Halenchus mediterraneus</i> (Micoletzky, 1923)	-	3	-	-	Pz		?
Family: Anisakidae							
<i>Anisakis pegreffii</i> Campana-Rouget & Biocca, 1955	+	80	85	69	Pz		different fish
<i>Anisakis simplex</i> (Rudolphi, 1809)	-	+	+	30	Pz		different fish
<i>Anisakis typica</i> (Diesing, 1860)	-	72	85	62	Pz		different fish
<i>Anisakis ziphidarum</i> Paggi, Nascetti, Webb, Mattiucci, Cianchi & Bullini, 1988	-	-	85	-	Pz		<i>Scorpaena scrofa</i>
<i>Contracaecum pelagicum</i> Johnston & Mawson, 1942	-	72	-	-	Pz		<i>Scomber colias</i>
<i>Contracaecum overstreeti</i> Mattiucci, Paoletti, Solorzano & Nascetti, 2010	-	-	69	-	Pz		<i>Mugil cephalus</i>

Table 2. (Continued.)

<i>Contraecaecum rudolphii</i> Hartwich, 1964	69	-	-	-		Pz	<i>Proterorhinus marmoratus</i>
<i>Phocanema decipiens</i> (Krabbe, 1878)	-	-	73	-		Pz	
<i>Skrjabinisakis physeteris</i> (Baylis, 1923)	-	72	-	-		Pz	<i>Trachurus trachurus</i>
Family: Cucullanidae							
<i>Cucullanus campanae</i> Lebre & Petter, 1984	44	-	-	-		Pz	<i>Solea solea</i>
<i>Cucullanus hians</i> (Dujardin, 1845)	-	-	+	-		Pz	<i>Conger conger</i>
<i>Cucullanus longicollis</i> (Stossich, 1899)	-	-	+	-		Pz	<i>Mullus surmuletus</i>
<i>Cucullanus micropapillatus</i> Tornquist, 1931	-	-	30	-		Pz	<i>Symphodus</i> sp.
<i>Dichelyne (Cucullanellus) minutus</i> (Rudolphi, 1819)	+	30	-	-		Pz	different fish
<i>Dichelyne (Cucullanellus) tripapillatus</i> (Gendre, 1927)	-	-	+	-		Pz	different fish
Family: Cystidicolidae							
<i>Ascarophis valentina</i> Ferrer, Aznar, Balbuena, Kostadinova, Raga & Moravec, 2005	44	-	-	-		Pz	<i>Mullus barbatus</i>
<i>Spinitectus oviflagellis</i> Fourment, 1883	-	+	-	-		Pz	<i>Gaidropsarus mediterraneus</i>
<i>Spinitectus tamari</i> Naidenova, 1966	44	-	-	-		Pz	<i>Gaidropsarus mediterraneus</i>
Family: Gnathostomatidae							
<i>Echinocephalus spinosissimus</i> von Linstow, 1905	-	-	+	-		Pz	<i>Raja clavata</i>
<i>Spiroxys contortus</i> (Rudolphi, 1819)	30	-	-	-		Pz	<i>Platichthys flesus</i>
Family: Philometridae							
<i>Philometra filiformis</i> (Stossich, 1896)	-	-	-	+		Pz	<i>Pagellus erythrinus</i>
<i>Philometra globiceps</i> (Rudolphi, 1819)	+	-	-	-		Pz	different fish
<i>Philometra lateolabracis</i> (Yamaguti, 1935)	-	-	-	+		Pz	different fish
<i>Philometra saltatrix</i> Ramachandran, 1973	-	-	-	+		Pz	<i>Pomatomus saltatrix</i>
Family: Raphidascarididae							
<i>Hysterothylacium aduncum</i> (Rudolphi, 1802)	+	+	+	30		Pz	different fish
<i>Hysterothylacium fabri</i> (Rudolphi, 1819)	44	-	+	74		Pz	different fish
<i>Hysterothylacium reliquens</i> (Norris & Overstreet, 1975)	-	-	69	-		Pz	
Class: Enoplea							
Order: Enoplida							
Family: Anticomidae							
<i>Anticoma acuminata</i> (Eberth, 1863)	71	6	-	-	I, III	Ss	
Family: Enchelidiidae							
<i>Eurystomina ornata</i> (Eberth, 1863)	-	6	-	-	I	Hs	
<i>Symplocostoma tenuicolle</i> (Eberth, 1863)	-	4	-	-	I	Hs	
Family: Enoplidae							
<i>Enoplus meridionalis</i> Steiner, 1921	-	-	+	-	I	Ss	
<i>Enoplus quadridentatus</i> Berlin, 1853	45	6	-	-	I	Hs	
Family: Ironidae							
<i>Parironus ponticus</i> Sergeeva, 1973	12	-	-	-	III	Ss	
Family: Leptosomatidae							
<i>Leptosomatium filipjevi</i> Schuurmans Stekhoven, 1950	71	-	-	-	III, IV	Ss	
Family: Oncholaimidae							
<i>Filoncholaimus ponticus</i> Sergeeva, 1974	13	-	-	-	III	Ss	
<i>Metoncholaimus albidus</i> (Bastian, 1865)	18	-	-	-	IV	Ss	
<i>Metoncholaimus pristiurus</i> (Zur Strassen, 1894)	-	6	-	-	I	Hs	
<i>Oncholaimellus mediterraneus</i> Schuurmans Stekhoven, 1942	36	-	-	-	I	Ss	
<i>Oncholaimus campylocercoides</i> De Coninck & Schuurmans Stekhoven, 1933	71	-	-	-	III	Ss	
<i>Oncholaimus dujardinii</i> de Man, 1876	-	6	-	-	I	Hs	

Table 2. (Continued.)

<i>Oncholaimus viridis</i> Bastian, 1865	-	6	-	-	I	Hs	
<i>Viscosia klatti</i> (Allgen, 1941)	-	6	-	-	I	Hs	
<i>Viscosia minudonta</i> Vitiello, 1970	14	-	-	-	III	Ss	
Family: Oxystominidae							
<i>Halalaimus brevispiculum</i> Sergeeva, 1973	71	-	-	-	III, IV	Ss	
<i>Halalaimus gracilis</i> de Man, 1888	-	4	-	-	I	Hs	
<i>Halalaimus ponticus</i> Filipjev, 1922	71	-	-	-	III, IV	Ss	
<i>Halalaimus sobakini</i> Sergeeva, 1973	12	-	-	-	III	Ss	
<i>Halalaimus wodjanizkii</i> Sergeeva, 1972	71	-	-	-	III	Ss	
<i>Oxystomina clavicauda</i> (Filipjev, 1918)	71	-	-	-	III	Ss	
<i>Oxystomina elongata</i> Bütschli, 1874	71	-	-	-	III, IV	Ss	
Family: Phanodermatidae							
<i>Crenopharynx brevicaudata</i> (Schuermans Stekhoven, 1950) Wieser, 1953	14	-	-	-	III	Ss	
<i>Micoletzkyia longispicula</i> Huang & Cheng, 2011	-	-	-	36	III	Ss	
Family: Rhabdolaimidae							
<i>Syringolaimus striatocaudatus</i> de Man, 1888	-	4	-	-	I	Hs	
Family: Thoracostomopsidae							
<i>Mesacanthion heterospiculum</i> Sergeeva, 1974	13	-	-	-	III, IV	Ss	
<i>Paramesacanthion truncum</i> Vitiello, 1971	71	-	-	-	III, IV	Ss	
Family: Trefusiidae							
<i>Halanonchus bullatus</i> Gerlach, 1964	71	-	-	-	III	Ss	
<i>Trefusia longicauda</i> de Man, 1893	35	-	-	-	IV	Ss	
Family: Tripyloididae							
<i>Bathylaimus australis</i> Cobb, 1894	36	-	-	-	I	Ss	
<i>Bathylaimus cobbi</i> Filipjev, 1922	71	-	-	-	III	Ss	
<i>Tripyloides marinus</i> (Bütschli, 1874) de Man, 1886	71	-	-	-	IV, V	Ss	
Order Trichinellida							
Family: Capillariidae							
<i>Capillaria (Procapillaria) gracilis</i> (Bellingham, 1840)	44	-	-	-		Pz	<i>Solea solea</i>
Order: Triplonchida							
Family: Pandolaimidae							
<i>Pandolaimus ponticus</i> (Sergeeva, 1972)	71	-	-	-	III-V	Ss	
Family: Rhabdodemaniidae							
<i>Rhabdodemia pontica</i> Platonova, 1965	71	-	-	-	III	Ss	
Phylum: ACANTHOCEPHALA							
Class: Eocanthocephala							
Order: Neoechinorhynchida							
Family: Neoechinorhynchidae							
<i>Neoechinorhynchus (Neoechinorhynchus) agilis</i> (Rudolphi, 1819)	+	+	+	69		Pz	Mullidae
<i>Neoechinorhynchus (Neoechinorhynchus) rutili</i> (Müller, 1780)	+	-	-	-		Pz	different fish
Class: Palaeacanthocephala							
Order: Echinorhynchida							
Family: Arhythmacanthidae							
<i>Acanthocephaloides irregularis</i> Amin, Oğuz, Heckmann, Tepe & Kvach, 2011	+	-	-	-		Pz	different fish
Family: Echinorhynchidae							
<i>Solearhynchus rhytidotes</i> (Meyer, 1933)	69	+	-	-		Pz	different fish
Family: Leptorhynchoididae							

Table 2. (Continued.)

<i>Telosentis exiguus</i> (von Linstow, 1901)	-	30	-	-		Pz	<i>Platichthys flesus</i>
Family: Paracanthocephalidae							
<i>Acanthocephalus clavula</i> (Dujardin, 1845)	-	-	-	30		Pz	<i>Anguilla anguilla</i>
<i>Acanthocephalus lucii</i> (Müller, 1777)	-	-	-	+		Pz	different fish
Family: Pomphorhynchidae							
<i>Longicollum pagrosomi</i> Yamaguti, 1935	-	+	+	-		Pz	different fish
<i>Pomphorhynchus laevis</i> (Zoega in Müller, 1776)	-	-	+	-		Pz	<i>Symphodus tinca</i>
Phylum: BRACHIOPODA							
Class: Rhynchonellata							
Order: Terebratulida							
Family: Kraussinidae							
<i>Megerlia truncata</i> (Linnaeus, 1767)	-	+	-	-	II,III	Hs	
Family: Megathyrididae							
<i>Argyrotheca cuneata</i> (Risso, 1826)	-	+	60	-	II,III	Hs	
<i>Joania cordata</i> (Risso, 1826)	-	+	60	-	II,III	Ss	
<i>Megathiris detruncata</i> (Gmelin, 1789)	-	+	-	63	III	Ss	
Family: Terebratulidae							
<i>Gryphus vitreus</i> (Born, 1778)	-	-	32	46	II-IV	Ss	
Phylum: KINORHYNCHA							
Class: Allomalorhagida							
Family: Pycnophyidae							
<i>Pycnophyes communis</i> Zelinka, 1908	+	-	-	-	III	Ss	
<i>Setaphyes dentatus</i> (Reinhard, 1881)	86	-	-	-	II, III	Ss	
<i>Setaphyes kielensis</i> (Zelinka, 1928)	86	-	-	-	II, III	Ss	
Class: Cyclorhagida							
Family: Campyloderidae							
<i>Campyloderes vanhoeffeni</i> Zelinka, 1913	-	-	75	-	I	Ss	
Family: Echinoderidae							
<i>Cephalorhyncha flosculosa</i> Yildiz, Sørensen & Karaytuğ, 2016	-	-	39	-	I	Ss	
<i>Echinoderes antalyaensis</i> Yamasaki & Durucan, 2018	53	-	-	-	I	Hs	
<i>Echinoderes bispinosus</i> Higgins, 1982	-	-	40	-	I	Ss	
<i>Echinoderes dujardinii</i> Claparède, 1863	37	-	-	-	I	Ss	
<i>Echinoderes gerardi</i> Higgins, 1978	-	-	40	75	I	Hs,Ss	
<i>Echinoderes riedli</i> Higgins, 1966	-	-	75	-	I	Ss	
<i>Echinoderes shahmaranae</i> Sørensen, Herranz, Pardos & Durucan, 2021	-	-	-	75	I	Ss	
Phylum: NEMERTEA							
Class: Pilidiophora							
Order: Heteronemertea							
Family: Lineidae							
<i>Cerebratulus fuscus</i> (McIntosh, 1874)	-	+	PS ⁵	+	I,II	Hs,Ss	
<i>Cerebratulus marginatus</i> Renier, 1804	+	-	PS ¹	-	II	Ss	
<i>Cerebratulus urticans</i> (Müller, 1854)	-	-	+	-	I	Ss	
<i>Lineus lacteus</i> (Rathke, 1843)	+	+	-	-	I,II	Hs,Ss	
<i>Lineus longissimus</i> (Gunnerus, 1770)	-	+	-	-	I	Hs	
<i>Lineus ruber</i> (Müller, 1774)	+	64	+	+	I,II	Hs,Ss	
<i>Micrura aurantiaca</i> (Grube, 1855)	-	-	-	+	II	Hs	
<i>Micrura dellechiajei</i> (Hubrecht, 1879)	-	64	-	-	I	Hs	
<i>Micrura fasciolata</i> Ehrenberg, 1828	+	+	-	-	I,II	Hs,Ss	

Table 2. (Continued.)

<i>Micrura tristis</i> (Hubrecht, 1879)	+	-	-	-	II	Ss
<i>Notospermus geniculatus</i> (Delle Chiaje, 1828)	+	-	-	+	II	Hs,Ss
<i>Pussylineus gabriellae</i> Corrêa, 1956	+	-	-	-	II	Ss
<i>Siphonenteron bilineatum</i> Meneghini in Renier, 1847	+	+	PS ³	-	I-III	Hs,Ss
Family: Valenciniidae						
<i>Baseodiscus delineatus</i> (Delle Chiaje, 1825)	-	+	-	+	II	Ss
Class: Hoplonemertea						
Order: Polystilifera						
Family: Drepanogigantidae						
<i>Drepanogigas albolineatus</i> (Bürger, 1895)	-	-	-	+	II	Hs
Family: Drepanophoridae						
<i>Drepanophorus spectabilis</i> (Quatrefages, 1846)	-	+	-	-	II	Ss
Order: Monostilifera						
Family: Emplectonematidae						
<i>Emplectonema gracile</i> (Johnston, 1837)	-	+	+	+	I	Hs
<i>Nemertopsis bivittata</i> (Delle Chiaje, 1841)	+	-	+	47	I,II	Hs,Ss
Family: Malacobdellidae						
<i>Malacobdella grossa</i> (Müller, 1776)	+	-	-	-	II	Ss
Family: Prosorhochmidae						
<i>Prosorhochmus claparedii</i> Keferstein, 1862	-	-	+	+	I	Hs
Family: Tetrastemmatidae						
<i>Tetrastemma coronatum</i> (Quatrefages, 1846)	+	+	-	-	I	Hs
<i>Tetrastemma flavidum</i> Ehrenberg, 1828	-	+	-	-	I	Hs
Class: Palaeonemertea						
Order: Archinemertea						
Family: Cephalothricidae						
<i>Cephalothrix linearis</i> (Rathke, 1799)	+	-	-	-	II	Ss
Order: Carinomiformes						
Family: Carininidae						
<i>Carinina heterosoma</i> Müller, 1965	+	-	-	-	II	Ss
Order: Tubulaniformes						
Family: Tubulanidae						
<i>Tubulanus superbus</i> (Kölliker, 1845)	-	+	-	+	II	Ss
<i>Tubulanus linearis</i> (McIntosh, 1874)	-	64	+	+	I-III	Hs,Ss
<i>Tubulanus polymorphus</i> Renier, 1804	-	-	+	+	I,II	Hs,Ss
Phylum: CHAETOGNATHA						
Class: Sagittoidea						
Order: Aphragmophora						
Family: Krohnittidae						
<i>Krohnitta subtilis</i> (Grassi, 1881)	-	-	-	19		P
Family: Sagittidae						
<i>Decipisagitta decipiens</i> (Fowler, 1905)	-	-	-	56		P
* <i>Ferosagitta galerita</i> (Dallot, 1971)	-	-	-	+	I,II	P
<i>Flaccisagitta enflata</i> (Grassi, 1881)	-	+	+	+	I-III	P
<i>Flaccisagitta hexaptera</i> (d'Orbigny, 1836)	-	-	-	56		P
<i>Mesosagitta minima</i> (Grassi, 1881)	-	-	-	+	I,II	P
<i>Parasagitta friderici</i> (Ritter-Záhony, 1911)	-	-	-	+	I,II	P
<i>Parasagitta megalophthalma</i> (Dallot & Ducret, 1969)	-	+	-	+	I,II	P
<i>Parasagitta setosa</i> (Müller, 1847)	+	+	+	+	I-IV	P

Table 2. (Continued.)

<i>Parasagitta tenuis</i> (Conant, 1896)	-	-	-	+	I,II	P
<i>Pseudosagitta lyra</i> (Krohn, 1853)	-	-	-	+	I,II	P
<i>Sagitta bipunctata</i> Quoy & Gaimard, 1828	+	+	-	+	I,II	P
<i>Serratosagitta serratodentata</i> (Krohn, 1853)	-	-	+	+	I,II	P
Phylum: TARDIGRADA						
Class: Heterotardigrada						
Order: Arthrotardigrada						
Family: Halechiniscidae						
<i>Dipodarctus subterraneus</i> (Renaud-Debyser, 1959)	+	-	-	-	III-IV	Ss
Family: Tanarctidae						
<i>Tanarctus ramazzotti</i> Renaud-Mornant, 1975	+	-	-	-	III-V	Ss
Family: Stygarctidae						
<i>Megastygarcides sezginii</i> Ürkmez, Ostrowska, Roszkowska, Gawlak, Zawierucha, Kristensen & Kaczmarek, 2017	48	-	-	-	I	Ss
Phylum: GASTROTRICHA						
Order: Chaetonotida						
Family: Muselliferidae						
<i>Musellifer profundus</i> Vivier, 1974	57	-	-	-	III-IV	Ss
Phylum: ROTIFERA						
Class: Eurotatoria						
Order: Flosculariaceae						
Family: Hexarthridae						
<i>Hexarthra fennica</i> (Levander, 1892)	23	-	-	25	I	P
<i>Hexarthra mira</i> (Hudson, 1871)	23	24	-	27	I	P
Family: Testudinellidae						
<i>Pompholyx sulcata</i> Hudson, 1885	27	-	27	27	I	P
<i>Testudinella elliptica</i> (Ehrenberg, 1834)	-	27	27	27	I	P
<i>Testudinella patina</i> (Hermann, 1783)	23	-	-	27	I	P
Family: Trochosphaeridae						
<i>Filinia longiseta</i> (Ehrenberg, 1834)	23	24	27	25	I	P
<i>Filinia terminalis</i> (Plate, 1886)	23	-	27	27	I	P
Order: Ploima						
Family: Asplanchnidae						
<i>Asplanchna girodi</i> de Guerne, 1888	27	-	27	-	I	P
<i>Asplanchna priodonta</i> Gosse, 1850	23	24	27	-	I	P
Family: Brachionidae						
<i>Brachionus angularis</i> Gosse, 1851	23	-	27	27	I	P
<i>Brachionus bidentatus</i> Anderson, 1889	-	-	-	27	I	P
<i>Brachionus calyciflorus</i> Pallas, 1766	23	27	27	27	I	P
<i>Brachionus diversicornis</i> (Daday, 1883)	27	-	27	27	I	P
<i>Brachionus plicatilis</i> Müller, 1786	23	-	27	27	I	P
<i>Brachionus quadridentatus</i> Hermann, 1783	23	-	27	25	I	P
<i>Brachionus rotundiformis</i> Tschugunoff, 1921	-	-	-	25	I	P
<i>Brachionus urceolaris</i> Müller, 1773	23	-	27	27	I	P
<i>Keratella cochlearis</i> (Gosse, 1851)	23	24	-	-	I	P
<i>Keratella quadrata</i> (Müller, 1786)	23	24	27	27	I	P
<i>Keratella tecta</i> (Gosse, 1851)	27	27	27	27	I	P
<i>Keratella tropica</i> (Apstein, 1907)	23	27	27	-	I	P

Table 2. (Continued.)

<i>Notholca acuminata</i> (Ehrenberg, 1832)	23	24	27	25	I	P
<i>Notholca salina</i> Focke, 1961	-	27	27	27	I	P
<i>Notholca squamula</i> (Müller, 1786)	23	-	-	-		P
Family: Euchlanidae						
<i>Euchlanis deflexa</i> (Gosse, 1851)	27	-	27	-	I	P
<i>Euchlanis dilatata</i> Ehrenberg, 1832	23	-	-	-		
<i>Tripleuchlanis plicata</i> (Levander, 1894)	27	-	-	27	I	P
Family: Epiphanidae						
<i>Epiphanes senta</i> (Müller, 1773)	-	27	27	-	I	P
Family: Gastropodidae						
<i>Ascomorpha ecaudis</i> Perty, 1850	-	27	-	-	I	P
<i>Ascomorpha saltans</i> Bartsch, 1870	-	27	27	25	I	P
Family: Lecanidae						
<i>Lecane bulla</i> (Gosse, 1851)	23	-	27	-	I	P
<i>Lecane closterocerca</i> (Schmarda, 1859)	23	-	-	-		
<i>Lecane inermis</i> (Bryce, 1892)	-	-	27	27	I	P
<i>Lecane luna</i> (Müller, 1776)	23	-	-	27	I	P
<i>Lecane lunaris</i> (Ehrenberg, 1832)	-	24	-	-	I	P
Family: Lepadellidae						
<i>Colurella adriatica</i> Ehrenberg, 1831	23	-	-	-	I	P
<i>Colurella colurus</i> (Ehrenberg, 1830)	23	-	-	-	I	P
<i>Lepadella patella</i> (Müller, 1773)	23	-	-	-	I	P
Family: Notammatidae						
<i>Cephalodella gibba</i> (Ehrenberg, 1830)	23	-	-	27	I	P
Family: Synchaetidae						
<i>Polyarthra major</i> Burckhardt, 1900	-	24	-	-	I	P
<i>Polyarthra vulgaris</i> Carlin, 1943	23	27	27	27	I	P
<i>Synchaeta elsteri</i> Hauer, 1963	-	65	-	-	I	P
<i>Synchaeta pectinata</i> Ehrenberg, 1832	23	24	27	-	I	P
Family: Trichocercidae						
<i>Trichocerca marina</i> (Daday, 1890)	77	-	-	-	I	P
<i>Trichocerca rattus</i> (Müller, 1776)	-	27	-	-	I	P
<i>Trichocerca stylata</i> (Gosse, 1851)	23	-	-	-	I	P
Family: Trichotriidae						
<i>Trichotria pocillum</i> (Müller, 1766)	23	-	-	27	I	P
<i>Trichotria tetractis</i> (Ehrenberg, 1830)	23	-	-	27	I	P
Phylum: PHORONIDA						
Family: Phoronida						
<i>Phoronis australis</i> Haswell, 1883	-	-	+	+	I,II	Ss
<i>Phoronis hippocrepi</i> Wright, 1856	-	-	+	-	I	Hs
<i>Phoronis muelleri</i> Selys-Lonchamps, 1903	-	-	+	+	I,II	Ss
<i>Phoronis psammophila</i> Cori, 1889	+	-	+	+	I,II	Ss
Phylum: ECHINODERMATA						
Class: Crinoidea						
Order: Comatulida						
Family: Antedonidae						
<i>Antedon mediterranea</i> (Lamarck, 1816)	-	+	+	+	I-V	Ss
<i>Leptometra phalangium</i> (Müller, 1841)	-	+	+	-	II-VI	Ss

Table 2. (Continued.)

Class: Asteroidea

Order: Brisingida

Family: Brisingidae

Hymenodiscus coronata (Sars G.O., 1872) - - + 41 I-VII Ss

Order: Forcipulatida

Family: Asteroiidae

**Asterias rubens* Linnaeus, 1758 + + - - II,III Hs, Ss

Coscinasterias tenuispina (Lamarck, 1816) - + + + I-III Hs

Marthasterias glacialis (Linnaeus, 1758) 8 + + + I-V Hs, Ss

Sclerasterias richardi (Perrier in Milne-Edwards, 1882) - - - 41 III, IV Ss

Order: Paxillosida

Family: Astropectinidae

Astropecten aranciacus (Linnaeus, 1758) - + + + I-IV Ss

Astropecten bispinosus (Otto, 1823) - + + + I-V Ss

Astropecten irregularis (Pennant, 1777) - + + + I-V Ss

Astropecten irregularis pentacanthus (Delle Chiaje, 1827) - + + - I-V Ss

Astropecten jonstoni (Delle Chiaje, 1827) - + + 21 I,II Ss

Astropecten platyacanthus (Philippi, 1837) - + + - I-III Ss

Astropecten spinulosus (Philippi, 1837) - + + + I,II Ss

Tethyaster subinermis (Philippi, 1837) - - + + II-V Ss

Family: Luidiidae

Luidia ciliaris (Philippi, 1837) - + + + I-IV Ss

Luidia sarsii Düben & Koren in Düben, 1845 - - + + II,III Ss

Order: Spinulosida

Family: Echinasteridae

Echinaster (Echinaster) sepositus (Retzius, 1783) - + + + I-V Ss

Order: Valvatida

Family: Asterinidae

Anseropoda placenta (Pennant, 1777) - + + + I-V Ss

Asterina gibbosa (Pennant, 1777) - + + + I-III Hs

Asterina pancerii (Gasco, 1870) - + + + I-IV Ss

Asterina phylactica Emson & Crump, 1979 - 58 - - I Hs

Family: Chaetasteridae

Chaetaster longipes (Retzius, 1805) - - + + II-V Ss

Family: Goniasteridae

Ceramaster grenadensis grenadensis (Perrier, 1881) - - - 41

Peltaster placenta (Müller & Troschel, 1842) - + 2 + II-VI Ss = *Pentagonaster mirabilis*

Family: Odontasteridae

Odontaster mediterraneus (Marenzeller, 1893) - - + + II-VI Ss

Family: Ophidiasteridae

Hacelia attenuata Gray, 1840 - + + 41 I-V Ss

Ophidiaster ophidianus (Lamarck, 1816) - - + + III-V Hs

Class: Ophiuroidea

Order: Amphilepidida

Family: Amphiuridae

Acrocrida brachiata (Montagu, 1804) - - - + I,II Ss

**Amphiodia (Amphispina) obtecta* Mortensen, 1940 - - - + I-III Ss

Amphipholis squamata (Delle Chiaje, 1828) + + + + I-III Hs,Ss

Table 2. (Continued.)

<i>Amphiura cherbonnieri</i> Guille, 1972	-	+	-	-	II,III	Hs,Ss
<i>Amphiura chiajei</i> Forbes, 1843	8	+	+	+	I-VII	Hs,Ss
<i>Amphiura filiformis</i> (O.F. Müller, 1776)	+	+	+	+	I-V	Hs,Ss
<i>Amphiura lacazei</i> Guille, 1976	-	+	-	-	I	Ss
<i>Amphiura (Ophiopeltis) securigera</i> (Düben & Koren, 1846)	-	+	-	-	I	Ss
<i>Amphiura stepanovi</i> Chernyavskii, 1861	+	-	-	-	IV,V	Hs
Family: Ophiactidae						
* <i>Ophiactis macrolepidota</i> Marktanner-Turneretscher, 1887	-	-	-	+	I-III	Ss
* <i>Ophiactis savignyi</i> (Müller & Troschel, 1842)	-	-	+	41	I,II	Ss
<i>Ophiactis virens</i> (M. Sars, 1857)	-	-	+	+	I,II	Ss
Family: Ophiopsilidae						
<i>Ophiopsila annulosa</i> (M. Sars, 1859)	-	-	+	-	II,III	Ss
<i>Ophiopsila aranea</i> Forbes, 1843	-	+	+	+	II,III	Hs, Ss
Family: Ophiotrichidae						
<i>Ophiotrix fragilis</i> (Abildgaard, in O.F. Müller, 1789)	+	+	+	+	I-IV	Hs, Ss
<i>Ophiotrix quinquemaculata</i> (Delle Chiaje, 1828)	-	+	+	+	II-IV	Ss
Order: Ophiacanthida						
Family: Ophiacanthidae						
<i>Ophiacantha setosa</i> (Bruzelius, 1805)	-	+	+	41	III,IV	Ss
Family: Ophiodermatidae						
<i>Ophioderma longicaudum</i> (Bruzelius, 1805)	-	+	+	41	I-III	Ss
Family: Ophiomyxidae						
<i>Ophiomyxa pentagona</i> (Lamarck, 1816)	-	+	+	+	I-III	Hs
Family: Ophiacanthida incertae sedis						
<i>Pectinura vestita</i> Forbes, 1843	-	-	+	1	II,III	Ss
Order: Ophiurida						
Family: Ophiuridae						
<i>Ophiocten abyssicolum</i> (Forbes, 1843)	-	+	42	-	II-VII	Ss
<i>Ophiura albida</i> Forbes, 1839	+	+	+	+	I-V	Ss
<i>Ophiura grubei</i> Heller, 1863	+	+	+	41	I-III	Ss
<i>Ophiura ophiura</i> (Linnaeus, 1758)	+	+	+	+	I-VII	Ss
Class: Echinoidea						
Order: Arbacioida						
Family: Arbaciidae						
<i>Arbacia lixula</i> (Linnaeus, 1758)	-	+	+	+	I-III	Hs
Order: Camarodonta						
Family: Echinidae						
<i>Echinus melo</i> Lamarck, 1816	-	+	-	41	II-IV	Hs
<i>Gracilechinus acutus</i> (Lamarck, 1816)	-	+	+	-	I-IV	Ss
Family: Parechinidae						
<i>Paracentrotus lividus</i> (Lamarck, 1816)	-	+	+	+	I-IV	Hs,Ss
<i>Psammechinus microtuberculatus</i> (Blainville, 1825)	-	+	+	+	I-VII	Hs,Ss
Family: Toxopneustidae						
<i>Sphaerechinus granularis</i> (Lamarck, 1816)	-	+	+	+	I-III	Ss
Family: Trigonocidaridae						
<i>Genocidaris maculata</i> A. Agassiz, 1869	-	+	+	41	II	Hs,Ss
Order: Cidaroida						
Family: Cidaridae						

Table 2. (Continued.)

<i>Cidaris cidaris</i> (Linnaeus, 1758)	-	+	+	+	II-VII	Hs,Ss
<i>Stylocidaris affinis</i> (Philippi, 1845)	-	+	+	+	II-V	Ss
Order: Diadematoida						
Family: Diadematidae						
<i>Centrostephanus longispinus</i> (Philippi, 1845)	-	+	+	+	II-IV	Ss
* <i>Diadema setosum</i> (Leske, 1778)	-	-	33	+	I,II	Ss
Order: Echinolampadacea						
Family: Fibulariidae						
<i>Echinocyamus pusillus</i> (O.F. Müller, 1776)	10	+	+	+	I-III	Hs,Ss
Order: Spatangoida						
Family: Brissidae						
<i>Brissopsis atlantica mediterranea</i> Mortensen, 1913	-	-	+	-	V	Ss
<i>Brissopsis lyrifera</i> (Forbes, 1841)	-	+	+	+	I-VII	Hs,Ss
<i>Brissus unicolor</i> (Leske, 1778)	-	+	+	-	I,II	Ss
Family: Loveniidae						
<i>Echinocardium cordatum</i> (Pennant, 1777)	-	+	+	41	I-V	Ss
<i>Echinocardium mediterraneum</i> (Forbes, 1844)	-	+	+	-	I,II	Ss
Family: Schizasteridae						
<i>Ova canalifera</i> (Lamarck, 1816)	-	+	+	-	I-IV	Ss
Family: Spatangidae						
<i>Spatangus purpureus</i> O.F. Müller, 1776	-	+	+	+	II-V	Ss
<i>Spatangus subinermis</i> Pomel, 1887	-	-	+	-	II-V	Hs
Class: Holothuroidea						
Order: Apodida						
Family: Synaptidae						
<i>Leptosynapta decaria</i> (Östergren, 1905)	9	-	-	-	III	Ss
<i>Leptosynapta inhaerens</i> (O.F. Müller, 1776)	+	+	+	-	I-III	Ss
<i>Leptosynapta macrankyra</i> (Ludwig, 1898)	-	-	-	+	I,II	Ss
<i>Oestergrenia digitata</i> (Montagu, 1815)	+	+	+	+	I-VII	Hs,Ss
<i>Synapta hispida</i> Heller, 1868	7	+	-	-	?	Ss
* <i>Synaptula reciprocans</i> (Forskål, 1775)	-	-	+	15	I,II	Ss
Order: Dendrochirotida						
Family: Cucumariidae						
<i>Hemiocnus syracusanus</i> (Grube, 1840)	-	-	+	15	I,II	Ss
<i>Ocnus planci</i> (Brandt, 1835)	+	+	+	-	I-III	Ss
<i>Panningia hyndmani</i> (Thompson, 1840)	+	-	-	-	I-III	Ss
<i>Paraleptopentacta elongata</i> (Düben & Koren, 1846)	16	+	+	-	I-III	Hs,Ss
<i>Paraleptopentacta tergestina</i> (M. Sars, 1857)	-	+	+	-	I-IV	Ss
<i>Pseudocnus koellikeri</i> (Semper, 1868)	-	+	+	-	II-VII	Ss
<i>Stereoderma kirchsbergii</i> (Heller, 1868)	7	+	+	-	I-III	Ss
Family: Phyllophoridae						
<i>Phyllophorus (Phyllophorus) urna</i> Grube, 1840	-	+	+	-	I-III	Ss
<i>Thyone fusus</i> (O.F. Müller, 1776)	-	+	-	-	II	Ss
Order: Holothuriida						
Family: Holothuriidae						
<i>Holothuria forskali</i> Delle Chiaje, 1823	-	81	+	-	I	Ss
* <i>Holothuria (Theelothuria) hamata</i> Pearson, 1913	-	-	-	59	II	Ss
<i>Holothuria (Thymiosycia) impatiens</i> (Forskål, 1775)	-	-	+	-	I,II	Ss
<i>Holothuria (Holothuria) mammata</i> Grube, 1840	-	81	+	41	I-IV	Ss

Table 2. (Continued.)

<i>Holothuria (Roweothuria) poli</i> Delle Chiaje, 1824	-	81	+	-	I-III	Ss
<i>Holothuria (Platyperona) sanctori</i> Delle Chiaje, 1823	-	-	+	+	I,II	Ss
<i>Holothuria (Holothuria) tubulosa</i> Gmelin, 1791	+	+	+	41	I-III	Hs,Ss
Family: Mesothuriidae						
<i>Mesothuria intestinalis</i> (Ascanius, 1805)	-	-	+	-	II,III	Ss
Order: Molpadida						
Family: Molpadiidae						
<i>Molpadia musculus</i> Risso, 1826	-	91	-	-	II,III	Ss
Order: Synallactida						
Family: Stichopodidae						
* <i>Apostichopus japonicus</i> (Selenka, 1867)	-	92	-	-	II	Hs,Ss
<i>Parastichopus regalis</i> (Cuvier, 1817)	-	+	+	+	I-VI	Ss
Phylum: CHORDATA						
Subphylum: TUNICATA						
Class: Ascidiacea						
Order: Aplousobranchia						
Family: Clavelinidae						
<i>Clavelina dellavallei</i> (Zirpolo, 1825)	-	-	+	-	II	Hs
<i>Clavelina lepadiformis</i> (Müller, 1776)	-	-	+	+	I	Hs
* <i>Clavelina oblonga</i> Herdman, 1880	-	-	49	-	I	Hs
<i>Pycnoclavella aurilucens</i> Garstang, 1891	-	-	-	+	I,II	Hs
<i>Pycnoclavella nana</i> (Lahille, 1890)	-	+	+	+	I	Hs
<i>Pycnoclavella taureanensis</i> Brunetti, 1991	-	-	-	+	I,II	Hs
Family: Diazonidae						
<i>Diazona violacea</i> Savigny, 1816	-	81	+	+	II-IV	Hs,Ss
<i>Rhopalaea neapolitana</i> Philippi, 1843	-	+	+	-	II,III	Hs
Family: Didemnidae						
* <i>Didemnum ahu</i> Monniot C. & Monniot F., 1987	-	-	66	-	I	Hs
<i>Didemnum commune</i> (Della Valle, 1877)	-	+	-	-	II	Hs
<i>Didemnum maculosum</i> (Milne-Edwards, 1841)	-	+	+	+	I,II	Ss
<i>Didemnum perlucidum</i> Monniot F., 1983	-	-	-	87	I	Hs
<i>Didemnum protectum</i> (Daumézou, 1908)	-	81	-	-	II	Hs
* <i>Didemnum vexillum</i> Kott, 2002	-	-	88	-	I,II	Hs
* <i>Diplosoma listerianum</i> (Milne-Edwards, 1841)	-	+	+	-	I,II	Hs
<i>Diplosoma spongiforme</i> (Giard, 1872)	-	81	-	-	II	Hs
<i>Polysyncraton lacazei</i> (Giard, 1872)	-	81	-	-	II	Hs
Family: Polyclinidae						
<i>Aplidium conicum</i> (Olivi, 1792)	-	81	+	+	I,II	Hs
<i>Aplidium elegans</i> (Giard, 1872)	-	81	+	+	I,II	Hs
<i>Aplidium nordmanni</i> (Milne Edwards, 1841)	-	81	-	-	II	Hs
<i>Aplidium tabarquensis</i> Ramos-Espla, 1991	-	-	60	-	II	Hs
<i>Aplidium turbinatum</i> (Savigny, 1816)	-	+	-	+	I,II	Hs
<i>Polyclinella azemai</i> Harant, 1930	-	-	-	+	I	Hs
* <i>Polyclinum constellatum</i> Savigny, 1816	-	-	54	87	I	Hs
Family: Polycitoridae						
<i>Cystodytes dellechiajei</i> (Della Valle, 1877)	-	+	-	-	II	Hs
<i>Polycitor adriaticus</i> (Drasche, 1883)	-	81	-	-	II	Hs
Order: Phlebobranchia						
Family: Ascidiidae						

Table 2. (Continued.)

<i>Ascidia involuta</i> Heller, 1875	-	-	-	+	II	Hs
<i>Ascidia malaca</i> (Traustedt, 1883)	-	+	-	-	II	Ss
<i>Ascidia mentula</i> Müller, 1776	+	+	+	+	I,II	Hs
<i>Ascidia virginea</i> Müller, 1776	+	+	+	+	II,III	Hs
* <i>Asciidiella aspersa</i> (Müller, 1776)	7	+	+	+	I-III	Hs,Ss
<i>Phallusia fumigata</i> (Grube, 1864)	-	+	+	+	I-III	Hs
<i>Phallusia ingeria</i> Traustedt, 1883	-	+	-	-	II	Hs
<i>Phallusia mammillata</i> (Cuvier, 1815)	-	+	+	+	I,II	Ss
* <i>Phallusia nigra</i> Savigny, 1816	-	81	+	+	I,II	Hs
Family: Clionidae						
<i>Ciona intestinalis</i> (Linnaeus, 1767)	7	+	+	+	I-III	Hs,Ss
* <i>Ciona robusta</i> Hoshino & Tokioka, 1967	-	-	54	-	I	Hs
<i>Ciona roulei</i> Lahille, 1887	-	-	-	+	II	Hs
Family: Corellidae						
<i>Corella parallelogramma</i> (Müller, 1776)	-	+	-	-	II,III	Hs
* <i>Rhodosoma turcicum</i> (Savigny, 1816)	-	-	-	76	I	Hs
Order: Stolidobranchia						
Family: Molgulidae						
<i>Eugyra adriatica</i> Drasche, 1884	7	+	-	-	I,II	Ss
<i>Molgula appendiculata</i> Heller, 1877	7	+	-	-	II	Ss
<i>Molgula impura</i> Heller, 1877	-	+	-	-	I,II	Hs
<i>Molgula manhattensis</i> (De Kay, 1843)	67	+	+	+	I-III	Hs, Ss
<i>Molgula occidentalis</i> Traustedt, 1883	-	-	+	-	I	Hs
<i>Molgula occulta</i> Kupffer, 1875	-	+	-	-	II	Hs
Family: Pyuridae						
<i>Halocynthia papillosa</i> (Linnaeus, 1767)	-	+	+	+	I-III	Hs
* <i>Herdmania momus</i> (Savigny, 1816)	-	-	-	+	I,II	Hs,Ss
* <i>Microcosmus exasperatus</i> Heller, 1878	-	-	+	+	I	Hs
<i>Microcosmus polymorphus</i> Heller, 1877	-	-	+	+	II	Ss
<i>Microcosmus sabatieri</i> Roule, 1885	-	81	-	+	I	Hs
* <i>Microcosmus squamiger</i> Michaelsen, 1927	-	-	66	-	I	Hs
<i>Microcosmus vulgaris</i> Heller, 1877	-	+	+	+	I-IV	Hs
<i>Pyura dura</i> (Heller, 1877)	-	-	+	+	I	Hs,Ss
<i>Pyura microcosmus</i> (Savigny, 1816)	-	+	-	-	II	Ss
<i>Pyura squamulosa</i> (Alder, 1863)	-	+	+	-	I,II	Hs
Family: Styleidae						
<i>Botrylloides israeliensis</i> Brunetti, 2009	-	-	-	87	I	Hs
<i>Botrylloides leachii</i> (Savigny, 1816)	-	-	66	+	I	Hs
* <i>Botrylloides niger</i> Herdman, 1886	-	-	-	89	I	Hs
* <i>Botryllus humilis</i> Monniot C., 1988	-	-	-	87	I	Hs
<i>Botryllus renierii</i> (Lamarck, 1815)	-	+	-	-	I,II	Hs
<i>Botryllus schlosseri</i> (Pallas, 1766)	7	+	+	+	I-III	Hs
<i>Distomus variolosus</i> Gaertner, 1774	-	+	-	-	II,III	Hs,Ss
<i>Polycarpa pomaria</i> (Savigny, 1816)	-	+	+	-	I,II	Hs
<i>Styela canopus</i> (Savigny, 1816)	-	+	+	+	I,II	Hs
* <i>Styela clava</i> Herdman, 1881	-	43	-	-	I	Hs
* <i>Styela plicata</i> (Lesueur, 1823)	-	-	+	+	I-III	Hs,Ss
* <i>Symplegma brakenhielmi</i> (Michaelsen, 1904)	-	-	54	+	I	Hs
Class: Thaliacea						

Table 2. (Continued.)

Order: Doliolida

Family: Doliolidae

<i>Doliolina (Doliolina) muelleri</i> (Krohn, 1852)	-	-	+	-	I,II	P
<i>Doliolum denticulatum</i> Quoy & Gaimard, 1834	-	-	+	-	I	P

Order: Pyrosomatida

Family: Pyrosomatidae

<i>Pyrosoma atlanticum</i> Péron, 1804	-	-	-	50		P
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Order: Salpida

Family: Salpidae

<i>Thalia democratica</i> (Forskål, 1775)	-	+	+	PS ⁶	I,II	P
<i>Thalia orientalis</i> Tokioka, 1937	-	-	-	PS ⁶	I-III	P
<i>Salpa maxima</i> Forskål, 1775	-	82	51	19	I	P

Class: Appendicularia

Order: Copelata

Family: Oikopleuridae

<i>Oikopleura (Coecaria) fusiformis</i> Fol, 1872	-	-	+	-	I	P
<i>Oikopleura (Coecaria) longicauda</i> (Vogt, 1854)	-	-	+	-	I	P
<i>Oikopleura (Vexillaria) cophocerca</i> (Gegenbaur, 1855)	-	-	-	+	II	P
<i>Oikopleura (Vexillaria) dioica</i> Fol, 1872	+	+	+	-	I-IV	P
<i>Stegosoma magnum</i> (Langerhans, 1880)	-	-	+	19	I	P

Family: Fritillariidae

<i>Fritillaria borealis</i> Lohmann, 1896	-	-	+	-	I	P
<i>Fritillaria pellucida</i> (Busch, 1851)	-	-	+	-	I,II	P
<i>Tectillaria fertilis</i> (Lohmann, 1896)	-	-	+	-	I,II	P

Subphylum: CEPHALOCHORDATA

Class: Leptocardii

Family: Branchiostomatidae

<i>Branchiostoma lanceolatum</i> (Pallas, 1774)	52	+	+	+	I,II	Ss
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Subphylum: HEMICHORDATA

Class: Enteropneusta

Family: Spengelidae

<i>Glandiceps talaboti</i> Marion, 1876	-	+	-	+	II-V	Ss
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Family: Ptychoderidae

<i>Balanoglossus clavigerus</i> Delle Chiaje, 1829	-	-	PS ²	+	II	Ss
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+ see references Çınar (2014) and Öztoprak et al. (2014). 1. Forbes, 1843; 2. Perrier, 1875; 3. Micoletzky, 1922; 4. Micoletzky, 1924a; 5. Micoletzky, 1924b; 6. Allgen, 1941; 7. Nikitin, 1948; 8. Tortonese and Demir, 1960; 9. Vinogradov and Zakutsky, 1964; 10. Kiseleva, 1969; 11. Sergeeva, 1973a; 12. Sergeeva, 1973b; 13. Sergeeva, 1974; 14. Sergeeva, 1977; 15. Ünsal, 1982; 16. Kiseleva and Mikhailova, 1992; 17. Akmirza, 2001; 18. Luth, 2004; 19. Mutlu, 2005; 20. Keser et al., 2007; 21. Mutlu and Ergev, 2008; 22. Ürkmez et al. 2011; 23. Saygi et al., 2011; 24. Özçalkap and Temel, 2011; 25. Yalın et al., 2011; 26. Özer et al. 2012; 27. Ustaoglu et al., 2012; 28. Akmirza, 2013a; 29. Özer and Kirca, 2013; 30. Öktener, 2014; 31. Ogut and Uzun, 2014; 32. Gönülal and Güreşen, 2014; 33. Katsanevakis et al., 2014; 34. Özer et al., 2015; 35. Ürkmez et al., 2015; 36. Ürkmez et al., 2016a; 37. Ürkmez et al., 2016b; 38. Ürkmez and Sezgin, 2016; 39. Yıldız et al., 2016; 40. Sönmez et al., 2016; 41. Özgür Özbek, 2016; 42. Karachle et al., 2016; 43. Çınar, 2016; 44. Özer and Öztürk, 2017; 45. Ürkmez, 2017; 46. Gönülal and Dalyan, 2017; 47. Çınar et al., 2017; 48. Ürkmez et al., 2017; 49. Ulman et al., 2017; 51. Topçu et al., 2017; 52. Kurt-Şahin et al., 2017; 53. Yamasaki and Durucan, 2018; 54. Aydın-Önen, 2018; 55. Çınar et al., 2019; 56. Terbiyık-Kurt and Polat, 2019; 57. Sergeeva et al., 2019; 58. Uysal et al., 2019; 59. Aydın et al., 2019; 61. Öztürk and Güven, 2020; 62. Pekmezci and Onuk, 2020; 63. Mutlu, 2020; 64. Çınar et al., 2020; 65. İsinibilir and Doğan, 2020; 66. Aydın-Önen, 2020; 67. Miroğlu and Yalçın, 2020; 68. Gammoudi et al., 2021; 69. Özer, 2021; 70. Öztürk and Güven, 2021; 71. Sergeeva et al., 2021; 72. Aldık et al., 2021; 73. Kuran et al., 2021; 74. Şimşek et al., 2021; 75. Sorensen et al., 2021; 76. Çınar et al., 2021; 77. Özdemir et al. 2021; 78. Koru, 2022; 79. Özer and Acar, 2022; 80. Çelik et al., 2022; 81. Özalp et al., 2022; 82. İsinibilir et al., 2022; 83. Aldık and Çakır, 2023; 84. Öztürk and Güven, 2023; 85. Aydın and Pekmezci, 2023; 86. González-Casarrubios et al., 2023; 87. Karahan et al., 2023; 88. Çınar and Özgül, 2023; 89. Temiz et al., 2023; 90. Revkova and Sergeeva, 2024; 91. Çınar et al., 2024; 92. Aydın et al., 2024; 93. Akmirza, 2013b.

and Aegean Sea, but it ranked third in the Levantine Sea, with only 21 species (10.3% of all species) (Figure 2). Three free-living (*Cryptocelis sinopae*, *Echinoplana celerrima*, and *Leptoplana mediterranea*) and 61 parasitic species were added to the marine species inventory of Türkiye after 2014. In Platyhelminthes, only 86 species are free-living; the others are parasitic belonging to the classes Cestoda (19 species), Monogenea (54), and Trematoda (90). Among the free-living flatworms, the order Rhabdoceola has the highest number of species (37), all reported from the Black Sea and the Sea of Marmara, followed by Polycladida (24) and Proseriata (11). The majority of parasitic species were found on fish, but *Graffilla parasitica* was reported on the sea slug *Tethys fimbria*, *Flamingolepis liguloides* on the brine shrimp *Artemia salina*, and *Parvatrema duboisi* on the black mussel *Mytilus galloprovincialis*.

A total of 131 nematode species have been reported from the coasts of Türkiye, of which 30 species are parasites and the rest (101) are free-living. The class Chromadorea is represented by 95 species and Enoplea by 36 species. Among the orders, Enoplida has the highest number of species (33 species), followed by Rhabditida (29) and Monhysterida (23). The number of free-living nematode species has increased significantly in the last decade, from six species in the 2014 checklist to 101 species in the present study, mainly due to the past (missed in the 2014 checklist) and recent contributions from the Black Sea and the Sea of Marmara. Due to the differing intensities of scientific efforts in the regions, the highest number of species (90 species, 11 parasitic and 79 free-living) was found in the Black Sea and the lowest (10 species, 9 parasitic and 1 free-living) was found in the Levantine Sea.

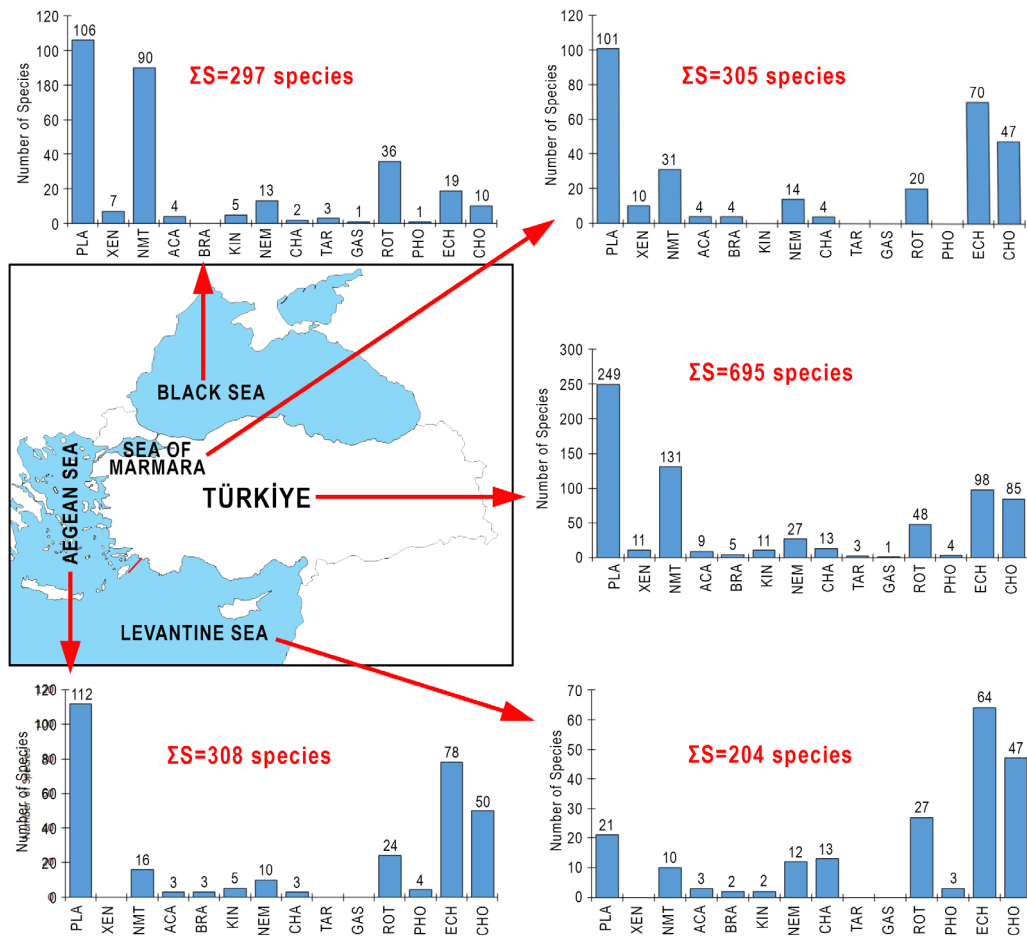


Figure 2. The number of species of Platyhelminthes (PLA), Xenacoelomorpha (XEN), Nematoda (NMT), Acanthocephala (ACA), Brachiopoda (BRA), Kinorhyncha (KIN), Nemertea (NEM), Chaetognatha (CHA), Tardigrada (TAR), Gastrotricha (GAS), Rotifera (ROT), Phoronida (PHO), Echinodermata (ECH), and Chordata (CHO, invertebrates only, including the subphyla Tunicata, Cephalochordata, and Hemichordata) along the coasts of Türkiye. ΣS indicates the total number of species.

A total of 98 echinoderm species are known from the coasts of Türkiye, of which 2 species belonged to class Crinoidea, 26 to Asteroidea, 24 to Ophiuroidea, 20 to Echinoidea and 26 to Holothuroidea. Three sea star (*Sclerasterias richardi*, *Asterina phylactica*, and *Ceramaster grenadensis grenadensis*) and four sea cucumber (*Leptosynapta decaria*, *Holothuria hamata*, *Molpadia musculus*, and *Apostichopus japonicus*) species were added to the echinoderm list of Türkiye in the last decade. The number of species in the region ranged from 19 (Black Sea) to 79 (Aegean Sea). No crinoid species have been reported from the Black Sea.

The phylum Chordata (including only invertebrates) is one of the most species-rich phyla considered in this paper, with a total of 85 species. Among the chordates, Tunicata are represented by 82 species, of which 68 belong to the class Ascidiacea, 6 to Thaliacea, and 8 to Appendicularia. Together with a new species record (*Thalia orientalis*) presented in this study, 21 new tunicata species have been added to the marina fauna of Türkiye since 2014. The number of Tunicata species is almost the same in the Aegean Sea (48 species), the Sea of Marmara (45) and the Levantine Sea (44), but only 9 Tunicata species have been reported from the Black Sea. The subphylum Cephalochordata is represented by only one species (*Branchiostoma lanceolatum*), and the subphylum Hemichordata is represented by two species (*Glandiceps talaboti* and *Balanoglossus clavigerus*) in the regions.

The known diversity of Kinorhyncha on the coasts of Türkiye has increased significantly in the last decade, thanks to recent studies bringing the number of species known in Türkiye from one (in 2014) to 11. The phylum Rotifera was omitted from the 2014 checklist, but the literature review showed 48 species reported from the coastal lagoons and

marine environments of Türkiye. A few species of the other phyla (i.e. three species in Chaetognatha, and one species each in Tardigrada, Nemertea, and Brachiopoda) were added to the marine fauna of Türkiye. No species additions have been made in the phyla Phoronida and Xenacoelomorpha in the last decade.

3.3. Depth and habitat distribution

The number of species in the phyla Platyhelminthes (only free-living species), Nematoda (only free-living species), Echinodermata, and the subphylum Tunicata showed different patterns in depth intervals, primarily depending on which depth-relevant studies were undertaken. In the relatively well-studied group Echinodermata, species were present at all depth intervals, but no free-living flatworms were reported at depths greater than 100 m (Figure 3). All groups have the highest number of species in the shallow waters (0–50 m depth), with the exception of the phylum Nematoda, which has its maximum species number in the 51–100 m depth interval. Some of the free-living nematode species (e.g., *Terschellingia pontica*, *Daptonema conicum*, *Stylotheristus paramutilus*, *Microlaimus ponticus*, and *Aponema pontica*) occurred at greater depths (200–400 m) in the Black Sea, where samples were taken from the prebosphoric region via a multicorer. Among the echinoderm species, *Amphiura chiajei*, *Ophiura ophiura*, *Psammochinus microtuberculatus*, *Brissopsis lyrifera*, and *Oestergrenia digitata* occurred at all depth intervals. A total of 32 echinoderm species were reported from the deep-sea environments, and one species (*Brissopsis atlantica mediterranea*) was reported only in the 201–400 m depth interval.

The majority of the species of the phyla considered in this study were found to occur on soft substrata (241 species) or to infect marine animals such as fish and sea

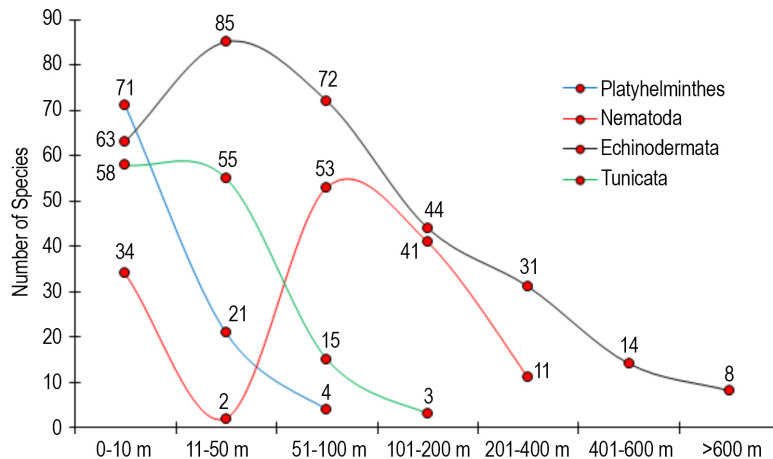


Figure 3. The number of species of the phyla Platyhelminthes (free-living species), Nematoda (free-living species), Echinodermata, and Tunicata reported at different depth intervals along the coasts of Türkiye.

slugs (203). A total of 123 species were reported only from hard substrata, 45 species from both hard and soft substrata, and 75 species from pelagic habitats.

3.4. Alien species

As of May 2024, only three of the studied phyla (Chaetognatha, Echinodermata, and Chordata) have alien species. A total of 26 alien species were reported from the coasts of Türkiye, of which one species belonged to Chaetognatha (*Ferosagitta galerita*), eight to Echinodermata and 17 to Chordata (Tunicata) (Figure 4). The number of alien species varied from sea to sea, reaching a maximum (17 species) in the Levantine Sea and a minimum (2) in the Black Sea.

4. Discussion

The number of species of the studied phyla known from the coasts of Türkiye has increased significantly since the publication of the first checklist in 2014 (Çınar, 2014). For example, only 26 nematode species were reported in 2014, whereas their diversity increased to 131 species thanks to the studies conducted on the free-living species in the Black Sea (e.g., Ürkmez et al., 2016a; Sergeeva et al., 2021). The faunistic analyses of samples collected in 2009 from a relatively small area in the prebosphoric region (10 stations) revealed 51 free-living nematode species new to the marine fauna of Türkiye (Sergeeva et al., 2021). This shows the importance of the availability of experts to adequately assess the real biodiversity of biota. This is also true for the phylum Kinorhyncha, which was represented by only one species (*Pycnophyes communis*) in the 2014 checklist (Çınar, 2014), whereas 11 species are now known from the coasts, mainly thanks to studies by Sorensen et al. (2021) and González-Casarrubios et al. (2023). On the other hand, due to a lack of expertise, few or no species from some phyla (e.g. Xenacoelomorpha, Phoronida, Nemertea, Platyhelminthes (free-living species), and

Tardigrada) have been reported from the coasts of Türkiye during the last decade.

The species diversity of the southern Black Sea is known to be impoverished compared to the other coasts of Türkiye (see papers published in the Turkish Journal of Zoology, vol. 38, 2014). However, thanks to the recent contributions to elucidate the diversity of some groups (especially Nematoda) in the Black Sea (e.g., Sergeeva et al., 2021), the total number of species of all phyla included in this paper reported from the Black Sea coast of Türkiye (297 species) is almost the same as that reported from the Sea of Marmara (305) and the Aegean Sea (308), and higher than that reported from the Levantine Sea (204). This is mainly due to the difference in scientific effort on some groups in the region. The actual number of nematode species known from the Black Sea is almost three times higher than that from the Sea of Marmara, six times higher than that from the Aegean Sea, and nine times higher than that from the Levantine Sea. This figure does not indicate differences in species diversity according to the environmental conditions, but it does indicate the importance of detailed, targeted studies for an adequate biodiversity inventory.

The phyla presented in this paper have been poorly studied in the eastern Mediterranean, with the exception of Echinodermata and Chordata. In a review of the echinoderm fauna (Koukouras et al., 2007), a total of 108 species were listed in the Aegean Sea, of which 2 species belonged to the class Crinoidea, 25 to Asteroidea, 24 to Ophiuroidea, 24 to Echinoidea and 33 to Holothuroidea. Along the Aegean coast of Türkiye, 78 echinoderm species (Crinoidea with 2 species, Asteroidea with 22, Ophiuroidea with 17, Echinoidea with 19, and Holothuroidea with 18) have been reported so far, representing 72% of the total number of species inhabiting the entire Aegean Sea. Among the Mediterranean ecoregions, the western Mediterranean

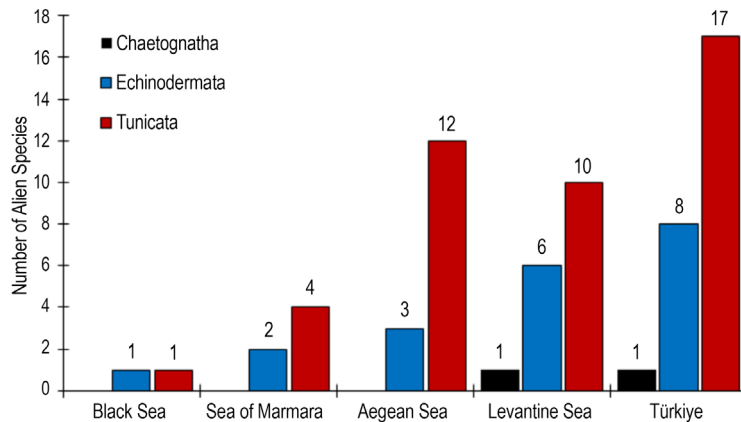


Figure 4. The number of alien species of Chaetognatha, Echinodermata, and Tunicata along the coasts of Türkiye.

is characterized by a highly diversified echinoderm fauna with 148 species, and the Levantine Sea by an impoverished fauna with 72 species (Koukouras et al., 2007). Although there are marked ecological differences between the two regions, this big difference in species number is partly due to the fact that the Levantine Sea is the least studied region in the Mediterranean Sea. In well-studied groups, there was much less difference between the number of species in the Levantine Sea and those in other regions of the Mediterranean Sea. The syllid fauna associated with *Posidonia oceanica* meadows in the Northern Cyprus Sea (40 species) and Aegean Sea (64) was found to be as rich as that reported from the western Mediterranean (almost 40 species) (Çinar, 2002, 2003; Çinar and Ergen, 2003; Çinar et al., 2003).

The ascidian fauna of the Mediterranean Sea has been relatively well studied, with a total of 229 species known from the entire basin, of which 165 were reported from the western Mediterranean and only 86 from the eastern Mediterranean (Shenkar and Swalla, 2011). Along the coasts of Greece, including the Aegean and Ionian Seas, a total of 75 species have been reported to date, with Aplousobranchia (32 species) and Stolidobranchia (25) being the most species-rich orders (Antoniadou et al., 2016). So far, 68 ascidians have been reported from the Turkish coasts, of which 26 species belong to the order Aplousobranchia and 28 to Stolidobranchia. However, the ascidian species reports increased in the regions in the last decade (up to 10 new species), thanks to studies carried out in the Çanakkale Strait and the Aegean and Levantine seas, where new alien species were also noted (Özalp et al., 2022; Aydın-Önen, 2018; Temiz et al., 2023).

Meiobenthic research is a relatively new topic in Türkiye compared to the longer history of macrobenthic studies in Turkish seas. Only a few comprehensive studies have been carried out on the meiobenthos of the southern Black Sea (Sinop coasts) and the prebosphoric region. While taxa such as Tardigrada, Gastrotricha, and Kinorhyncha are rarely found in samples, the highest number of species reported belong to the free-living nematodes, which are also the dominant group in terms of the number of individuals. In addition to the list of species given here, more are waiting to be reported from the Black Sea (D. Ürkmez, N.G. Sergeeva, unpublished data). Among the free-living nematodes mentioned in this paper, *Viscosia klatti*, *Chromadorina laeta*, *Daptonema normandicum*, *Terschellingia pontica*, *T. antonovi*, *Thalassomonhystera longicapitata*, *T. collaris*, *Paramonohystera elliptica*, *Theritus sabulicola*, *Deontolaimus bathycola*, and *Deontolaimus dolichocercus* are classified as *taxon inquirendum* by the WORMS and NEMYS databases, either because they have not been reported after their first records in the region or because they need redescrptions. However, we have included all records from the Turkish seas to date.

Some of the nematod species of uncertain status are from rocky hard substrata habitats. It should be noted that recent meiobenthic samples from the Black Sea are from soft substrata, which have a completely different species composition compared to those from hard substrata. In addition, several genera such as *Thalassomonhystera*, *Daptonema*, *Theristus*, and *Terschellingia* need to be revised and redescrbed, especially for the species present in the Black Sea. For example, although *T. antonovi* is synonymized with *T. longicaudata* in the databases, we accept it as a valid species, because it shows different morphological characteristics when compared to the latter species living in the Black Sea (pers. comm. N.G. Sergeeva).

The latest review of marine alien species from Türkiye (Çinar et al., 2021) listed seven echinoderms and 14 ascidians, with the highest number (14 species in total) being reported from the Aegean and Levantine seas. Following this review, a holothurian, *Apostichopus japonicus* was reported from the Sea of Marmara (İzmit Bay), based on material first collected in January 2020 (Aydın et al., 2024). This species was presumably introduced to the area by the ballast water of ships and has become a dominant component of soft-bottom benthic assemblages. Almost 300–400 individuals of this species were observed during a 1-hour dive (Aydın et al., 2024). The North Atlantic sea star *Asterias rubens*, first observed in the Sea of Marmara in 1993, has invaded hard and soft benthic habitats of the northern Sea of Marmara and its population was estimated as 54,200 ind.ha⁻¹ near Sivriada (Yılmaz and Sadler, 2001). High densities of this species were also observed in the southern Sea of Marmara during the last decade (pers. obs., MEÇ). The Lessepsian invader *Synaptula reciprocans* was known to be first reported from the Levantine coast of Türkiye in 2005 by Çinar et al. (2006), but this species was previously misidentified as *Leptosynapta* sp. in the region collected in 1978 (Ünsal, 1982).

As for the ascidians, 10 alien species were added to the alien species list of Türkiye after the 2014 checklist (Çinar, 2014) and three species (*Botrylloides niger*, *B. humilis*, and *Didemnum vexillum*) were added after the 2021 review (Çinar et al., 2021), indicating a dynamic process in the introduction of ascidian species in the region. Among the species, *Styela clava* in the Sea of Marmara and *D. vexillum* in the Aegean Sea showed a restricted distribution pattern; where they occurred, they dominated the natural and artificial substrata, such as cage farm nets (Çinar, 2016; Çinar and Özgül, 2023). They have invasive characters and may pose risks to biodiversity and human activities in the sea.

The number of species of some specific phyla (e.g., Nematoda) reported from the seas surrounding Türkiye increased sharply after the first checklist appeared in 2014

(Çinar, 2014), demonstrating the correlation between the level of scientific effort and the level of accurate representation of the biodiversity. The monitoring projects carried out on the coasts of Türkiye have significantly contributed to the understanding of the coastal biodiversity and its changes over the years. However, due to the lack of experts in Türkiye for some groups (e.g., Platyhelminthes, Nemertea, and Xenacoelomorpha), no or little information was gathered after the 2014 checklist. New young researchers should therefore be recruited to these groups to maintain a better understanding of the true biodiversity of invertebrates in the regions.

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