

REVIEW

Rotifers in saltwater environments, re-evaluation of an inconspicuous taxon

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Rotifers are microscopic aquatic animals that comprise more than 1800 species. Most rotifer species live in freshwater and limno-terrestrial habitats, while thalassic environments (brackish+seawater) are thought to host few species. No recent review of saline rotifers is available. Here we report the results of a review of the literature concerning rotifers from saline environments, distinguished into three categories: stenohaline, euryhaline, and haloxenous, and found both in truly marine habitats and/or in inland saline waters. A total of about 200 studies, mentioning fully identified rotifers from saline waters, allowed us to list as many as 443 rotifer taxa at either specific, subspecific and infrasubspecific rank, corresponding to 391 nominal species. Truly thalassic taxa, not found in inland saline waters only, accounted for 289, including the 'stenohaline' (143) and the euryhaline (146) ones. As for freshwaters, the majority of the thalassic rotifers inhabit the psammon, or display a benthic–periphytic way of life, while the plankton likewise is less species rich and less abundant. The geographical distribution of the brackish and marine rotifers largely reflects the distribution of rotifer investigators, therefore, no biogeographical analysis can be performed yet. In conclusion, the analysis of literature citing rotifers in salt waters, uncovers an unexpected rotifer fauna: the apparent richness of the group in thalassic environments is worthy of being addressed by further investigations, as many species have been reported only by their description, suggesting either considerable endemism or taxonomic errors.

INTRODUCTION

Rotifers are microscopic aquatic animals that comprise more than 1800 species (Segers, 2002). Most rotifer species live in freshwater and limno-terrestrial habitats, while the common feeling is that the thalassic environments (i.e. brackish+seawater) host few species, that have been rather neglected so far (see for instance de Beauchamp, 1965; Wulfert, 1969; Nogrady et al., 1993; Smith, 2001; Segers, 2004). Real estimates of the total number of rotifers inhabiting thalassic waters are very few. Remane (1929) was the first to present an estimate of the number of marine and brackish water species, amounting to 5% of the 1000 species known at the time. Myers (1936) states that about 12% of the 1500 known rotifer species have been recorded from these environments, and Bērziņš (1952) notes that 5% of the 1700 known species occur in marine and brackish water, and 2.5% are strictly marine. Although some of the first rotifer species described in the 18th and 19th Centuries were originally collected in the sea (e.g. *Notholca bipalium* (Müller, 1786), *Proales reinhardti* (Ehrenberg, 1834) among the monogononts, all seisonids, and the bdelloid *Zelinkiella synaptae* (Zelinka, 1887)), in more recent times, rotifer communities of continental waters received much more attention than those of thalassic waters, and the available list of species is mostly confined to inland habitats (Segers, 2002). Nevertheless, the thalassic plankton and meiobenthos harbour several rotifer species that can represent a consistent fraction of the biomass (e.g. Schnese, 1973; Tzschaschel, 1980;

Johansson, 1983; Egloff, 1988), and likewise can play an important role in the energy transfer in thalassic food webs (Gifford, 1988; Mallin & Paerl, 1994).

Despite our skewed knowledge of rotifers in favour of freshwater habitats, it seems remarkable that our basic understanding of physiology and reproductive biology of monogonont rotifers is mostly based on the *Brachionus plicatilis* Müller, 1786 species complex that lives in salt waters and is moreover commonly cultivated for aquaculture purposes.

A review on thalassic Rotifera of the North Sea and Baltic Sea has been published by Remane (1929), who recognized 55–60 stenohaline species restricted to brackish and marine waters, and 40 euryhaline species occurring both in sea- and freshwater. More recently 160 taxa have been listed for the same area by NEAT, Marine Invertebrates of Scandinavia (NEAT, 1997), whereas 115 species are reported by the European Register of Marine Species (MarBEF Data System, 2005) for the European thalassic waters. The rotifers of the Black Sea were compiled by Rudescu (1961), who mentioned 111 species and varieties, with 35.1% imported from freshwater, 5.4% euryhaline species, 35.4% brackish water taxa, and 27.0% marine species. The Mediterranean rotifer fauna has been reviewed recently by Ahlrichs (2003) and Ricci & Fontaneto (2003). The analyses revealed that about 90 rotifer species were mentioned by a total of 25 studies, but only few of these focused specifically on the rotifer fauna. Outside Europe thalassic rotifers were reviewed only, as far as we know, for the Canadian coastal waters by Shih

et al. (1971), who recorded 12 plankton taxa, with six and seven taxa from the Atlantic and Pacific part respectively, and a single species from arctic Baffin Island.

Here we report on published results on rotifers from saline environments, with emphasis on the marine and brackish ones, to produce a database for further studies on the thalassic fauna. When possible, we shall relate the rotifer taxa to the nature of the habitat, and try to add to their geographical distribution.

MATERIALS AND METHODS

The systematic position of Rotifera in the 'tree of life' is an open issue and still under study. Recent analyses on morphological and molecular traits confirm that the parasitic Acanthocephala are to be considered a group of rotifers (Giribet et al., 2004). In the present study, 'rotifers' refer to the group of microscopic aquatic pseudocoelomates characterized by an apical ciliated apparatus (corona), specialized pharynx (mastax) and intracytoplasmic lamina (Clément & Wurdak, 1991). Traditionally, the rotifers *sensu stricto* are divided into three major groups: Seisonidea, Bdelloidea, and Monogononta. Seisonidea, with three species, are epibiotic on crustaceans of the genus *Nebalia*, and known from marine habitats only. Bdelloidea and Monogononta comprise about 380 and 1400 species respectively, most of them living in freshwater habitats (Nogrady et al., 1993; Segers, 2002).

We searched the studies, reporting rotifer species in saline environments, that were recorded by the basic databases such as Zoological Record and Web of Science. The search was run on the co-occurrence of two nouns, 'rotifer' and 'saltwater'. As saltwater we arbitrarily refer to those habitats with a salinity higher than 1‰, to include the seas and oceans world-wide, as well as the brackish waters (i.e. mixtures of freshwater and seawater), such as lagoons, estuaries, rock pools, etc., and inland saline waters, like salt lakes, soda lakes, saline springs, etc. Fixing the boundary between fresh and saline water on basis of salinity is very arbitrary indeed, and almost impossible as well on basis of changes in the composition of the biota, as the spectrum of salinity tolerance appears to be a continuous one (Beadle, 1981; Williams, 1981). In the various classifications (for a review see e.g. Remane (1971) and Hammer (1986)) the boundary between fresh and saline water has been put at <0.21–0.5‰ salinity for brackish water (with true seawater ~32–38‰ salinity), and 3‰ salinity for inland saline water. The upper limit of the freshwater range for a biological classification has been suggested to be 1‰ by Löffler (1961), based on the distribution of Entomostraca in inland waters of Iran, and Beadle (1969) who states that almost all so-called freshwater animals are found below that value. According to Ruttner-Kolisko (1971), the boundary at which the rotifer biocenosis is changing characteristically lies at 1.5‰ salinity.

Most papers did not report exactly the salinity of their samples; at the state of the knowledge, a distinction between brackish and true seawater would be possible only in very few cases. Therefore, we will refer to brackish and seawaters together, as thalassic environment.

Inevitably, the species list will contain a number of misidentifications, since most of the records are undocumented

and thus unverifiable. Some of these records may result from real misidentifications but also from recent changes in taxonomic views (e.g. Segers, 1995), and their reliability may be doubtful.

Rotifers found in saltwater were distinguished into three categories: (1) **steno haline**, referring to the species found in saltwater only and never reported from freshwater; (2) **eury haline**, referring to species that were found in both freshwater and saltwater; and (3) **haloxenous** for the freshwater species that are reported as occasional findings in saltwater. Only the steno haline and the eury haline groups will be analysed in this study; these are called 'saltwater' rotifers.

Rotifer taxa are further divided into three major groups on the basis of the habitat in which they mostly occur: (1) **plankton**, those found in the water column; (2) **benthic–periphytic** species living in contact with a substratum, including benthos *sensu stricto*, periphyton and psammon; and (3) **epibionts** and **parasites**, species living in association with other animals.

RESULTS

Taxonomic richness of the saltwater rotifer fauna

A total of about 200 studies, mentioning fully identified rotifers from saline waters, have been used in the present study. Few more reports referring to unidentified species, or rotifers identified to genus level only, were left out of consideration. The analysis allowed us to list as many as 443 rotifer taxa, at either specific, subspecific and infrasubspecific rank, corresponding with 391 nominal species. At present we are unable to establish whether some of the subspecies listed (e.g. subspp. of *Keratella cochlearis* and *Trichocerca marina*) are valid taxa or actually separate species, or merely synonyms. A similar problem arises with the infrasubspecific taxa. Some of them are true phenotypes (e.g. the formae of *Brachionus calyciflorus* (see e.g. Gilbert, 1980)), and others (e.g. some formae of *Lecane ludwigii*) might turn out to be valid species. Considering the above remarks, and in view of their low share in the total number of taxa (37 in number that is 8% of total observed taxa), infrasubspecific taxa were included in the rotifer lists as well.

Out of the 443 taxa, at least 106 (23.9%) (Appendix 1) are known from freshwater habitats, and found in saltwater only occasionally and sparsely ('haloxenous taxa'), and will not be analysed in this study. Some other 173 taxa (39.1%) are reported from both fresh- and saltwater habitats, and here considered truly eury haline. Finally, as many as 164 taxa or 37.0% (corresponding to 148 species) have been found in saltwater only, and considered steno haline. With saltwater we refer to two different habitats: inland saline lakes, and true thalassic environments. The microfauna of saline lakes includes 133 rotifer taxa or 30.0% of the total observed number of rotifer taxa, of which 48 (10.8%) have never been found in thalassic habitats (Appendix 1). The remaining 85 taxa or 19.2% are shared by saline lakes and thalassic environments, and can be treated with the thalassic taxa. Thus, starting from a list of 443 rotifer taxa reported in saltwater, our analysis will concern 289 thalassic taxa, including the steno haline

Table 1. Number of species, genera, and families of rotifers found in salt waters, and their percentage of the overall diversity.

	Species			Genera			Families		
	Overall	Marine	%	Overall	Salt	%	Overall	Salt	%
Seisonids	3	3	100.00	1	1	100.00	1	1	100.00
Bdelloids	374	3	0.80	19	3	15.79	4	1	25.00
Monogononts	1441	248	17.21	106	43	40.56	29	21	72.41
All rotifers	1818	254	13.97	126	47	37.30	34	23	67.65

(143 or 32.2%) and the euryhaline (146 or 33.0%) ones (Appendix 1).

Ecological distribution

The majority of the thalassic rotifers inhabit the intertidal psammon, or display a benthic–periphytic way of life. In this group the genera *Encentrum* (41 taxa, 38 stenohaline), *Lecane* (23 taxa, 3 stenohaline), *Colurella* (15 taxa, 4 stenohaline), and *Proales* (12 taxa, 10 stenohaline) are the most common. These genera are common benthic–periphytic representatives in freshwater habitats, as well. At the family level Dicranophoridae is the most diverse, represented by 7 genera and 59 taxa, 53 of which are strictly thalassic.

In the littoral plankton the most common rotifer genera are *Synchaeta* (31 taxa, 24 thalassic), *Keratella* (20 taxa, 6 strictly thalassic), and *Notholca* (18 taxa, 11 strictly thalassic). The rotifer plankton of the open ocean is restricted to *Synchaeta* spp. and *Trichocerca marina*. At the family level Brachionidae is the most rich, represented by four genera and 48 taxa, 20 of which are stenohaline. Synchaetidae with only two genera has 33 planktonic taxa, but 24 are stenohaline. As usually holds for freshwaters, the thalassic rotifer plankton likewise is less species rich and less abundant than the benthic–periphytic fauna.

Epibiotic–parasitic rotifers live on crustaceans (*Proales paguri*, *Brachionus rubens* and Seisonidae), hydroids (*Proales christinae*, *P. gonothyræae*) and holothurians (*Zelinkiella synaptae*), and in the gut of annelids (*Albertia crystallina*). Most of them are thought to be epibionts and not true parasites, although these symbioses have never been investigated in detail. Suitable hosts for rotifers like crustaceans are much more frequent and abundant in the sea than in freshwater, and one could predict that, other things being equal, epibiotic–parasitic rotifers experience many more opportunities to encounter and settle on a host in the sea than in freshwater. In contrast, rather few rotifers live in the sea as epibionts, while in freshwater about 30 monogononts and a dozen of bdelloids live on arthropods permanently.

Apart from remarkable differences in abundances, the ecology of the thalassic rotifers reflects their ecology in freshwater, with benthic–periphytic species more abundant than planktonic ones, and with the epibiotic–parasitic relationships mostly concerning arthropods.

Geographical distribution

Not surprisingly, the geographical distribution of the brackish and marine rotifers largely reflects the

distribution of rotifer investigators. Thus, rotifers seem rather abundant around Europe, whereas the other regions of the world received less attention. Nevertheless, we cannot exclude the possibility that some areas may be more species-rich than others. More than 100 taxa are listed in only five studies on the Black Sea, while the 25 studies on the Mediterranean only reported 90 rotifer taxa.

Too little information is available to speculate about possible endemisms in thalassic rotifers. We can only state that environments like polar seas, with prevailing stressful conditions, are inhabited by rotifer taxa that live in other areas also: for instance of the 41 rotifers reported from the Arctic-seas only nine seem to be endemic, and out of 11 species found in the Antarctic the presumed endemics are only four. But these results may be underestimates owing to the very few studies and poor state of areal coverage.

DISCUSSION

The analysis of literature citing rotifers in saltwater, uncovers an unexpected fauna, composed of freshwater (106 taxa), inland saline (133 taxa) and thalassic (brackish-marine) (289 taxa) elements. Part of this freshwater fraction probably concerns species at the upper limit of their salinity tolerance. The majority, however, must be seen as introductions by rivers, streams, etc. In this respect it is interesting to note, that the viability of rotifer diapausing eggs is almost not affected by exposure to open-ocean water, despite the low salinity tolerance of the adult stages of most species (Gray et al., 2005). Inland saline waters, although studied to a much larger extent (see e.g. Hammer, 1986) than marine-brackish waters, show a smaller number of rotifer taxa, with 48 of them restricted to these environments. Undoubtedly this lower number results from environmental stress, due to high salinities, ionic composition, high pH values, unstable physicochemical conditions and other extreme variables of many of these systems. In contrast with the apparent situation in marine-brackish waters, inland saline waters, viz. soda lakes, show a number of true endemics.

The not insignificant rotifer species richness in thalassic environments is worth being addressed by further investigations as, for instance, many species have been reported only by their description, suggesting either considerable endemism or taxonomic errors. The euryhaline taxa, occurring in both fresh and salt waters, are apparently very tolerant and cope with considerable changes of salinity. However, it may also be possible that freshwater species and thalassic species, displaying identical phenotypes, possess different genotypes and are actually sibling species. In fact, rotifer siblings are known to differ for

ecological requirements and cannot be seen as ecological analogues (e.g. Ciros-Perez et al., 2001; Gomez et al., 2002).

The rotifer fauna has been searched for in a number of thalassic habitats, from psammon of sandy shores (e.g. Turner, 1990, 1993), periphyton of tidal pools (e.g. Saunders-Davies, 1995, 1998) and deep sediments (Sommer et al., 2003), to plankton (e.g. Arndt et al., 1990; Viitasalo, 1994; De Smet, 2006). Although our knowledge of rotifer diversity in thalassic waters is far from being complete, the major groups, i.e. Seisonidea, Monogononta and Bdelloidea, seem to be unevenly represented. Seisonidea are exclusively marine (Ricci et al., 1993; Ahlrichs, 1998). About 17% of monogonont species and 1% of known bdelloids live in thalassic environments (Table 1). The overall ratio of bdelloid to monogonont species from freshwater habitats is 1:3, and reasonably, thalassic species should occur in a similar proportion. In contrast, the bdelloids appear highly under-represented (ratio 1:83). Actually, bdelloids are often mentioned in thalassic species lists as 'bdelloid undetermined'. Commonly, this results from problems with identification, due to contraction and deformation of the specimens after addition of fixative to the samples (almost all of them can only be identified alive). Thus the bdelloids might have been poorly documented in thalassic habitats because of this problem with identification. However, at the present stage of knowledge, we cannot rule out the hypothesis that bdelloids are physiologically 'incompatible' with the thalassic environment.

The low number of thalassic rotifer species, probably also results in part from the occasional nature of the samplings. More extensive research at a single site over a longer period will reveal many more species. Tzschaschel (1979) for example, reported in a single paper concerning the North Sea, 21 psammobiotic species, with 13 of them new to science.

On the whole, although unexpectedly high, the diversity of Rotifera is much lower in thalassic environments than in freshwaters. If this is to be ascribed to scarce investments into this field, to poor efforts of rotifer investigators, or to some biological peculiarity of the rotifers it is premature to say. But, if the relatively poor attention paid to the thalassic rotifers has generated a list of 289 taxa with 254 species, representing about 14% of the actually known species considered valid, we can reasonably predict that the rotifer diversity in thalassic environments is much more relevant.

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Appendix 1. Saltwater rotifers found in thalassic environments and inland saline waters, their ecology and distribution.

Species	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Adineta glauca</i> Wulfert, 1942	×	×	×	×	×	×	×	×			×	×	×											
<i>Adineta gracilis</i> Janson, 1893	×	×	×	×	×	×	×	×																
<i>Adineta grandis</i> Murray, 1910	×	×	×	×	×	×	×	×																
<i>Albertia crystallina</i> Schultze, 1851	×	×	×	×	×	×	×	×																
<i>Anuraeopsis fissa</i> (Gosse, 1851)	×	×	×	×	×	×	×	×																
<i>Anuraeopsis navicula</i> Rousslet, 1910	×	×	×	×	×	×	×	×																
<i>Ascomorpha ecaudis</i> Perty, 1850	×	×	×	×	×	×	×	×																
<i>Ascomorpha ovalis</i> (Bergendal, 1892)	×	×	×	×	×	×	×	×																
<i>Ascomorpha saltans</i> Bartsch, 1870	×	×	×	×	×	×	×	×																
<i>Aspelta clydona</i> Haring & Myers, 1928	×	×	×	×	×	×	×	×																
<i>Aspelta europaea</i> (Hauer, 1939)	×	×	×	×	×	×	×	×																
<i>Aspelta harringi</i> (Remane, 1929)	×	×	×	×	×	×	×	×																
<i>Aspelta mollis</i> Rodewald-Rudescu, 1960 sp. inq.	×	×	×	×	×	×	×	×																
<i>Aspelta pachida</i> (Gosse, 1887)	×	×	×	×	×	×	×	×																
<i>Aspelta reibischi</i> (Remane, 1929)	×	×	×	×	×	×	×	×																
<i>Asplanchna brightwellii</i> Gosse, 1850	×	×	×	×	×	×	×	×																
<i>Asplanchna herriickii</i> De Guerne, 1888	×	×	×	×	×	×	×	×																
<i>Asplanchna priodonta</i> Gosse, 1850	×	×	×	×	×	×	×	×																
<i>Asplanchna sieboldi</i> (Leydig, 1854)	×	×	×	×	×	×	×	×																
<i>Asplanchnopus byalinus</i> Harring, 1913	×	×	×	×	×	×	×	×																
<i>Asplanchnopus syrinx</i> (Ehrenberg, 1837)	×	×	×	×	×	×	×	×																
sp. inq.																								
<i>Brachionus angularis</i> f. <i>bidens</i> Plate, 1886	×	×	×	×	×	×	×	×																
<i>Brachionus angularis</i> Gosse, 1851	×	×	×	×	×	×	×	×																

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenus	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Brachionus asplanchnoides</i> Charin, 1947	×					×	×																	
<i>Brachionus bennini</i> (Leissling, 1924)	×	×				×		×			×													
<i>Brachionus calyciflorus</i> f. <i>amphiceros</i> Ehrenberg, 1838	×	×			×	×	×				×	×												
<i>Brachionus calyciflorus</i> f. <i>auraeiformis</i> Brehm, 1909	×	×			×	×	×				×	×												
<i>Brachionus calyciflorus</i> f. <i>dorcax</i> Gosse, 1851	×	×			×	×	×				×	×												
<i>Brachionus calyciflorus</i> Pallas, 1766	×	×			×	×	×				×	×						×	×					
<i>Brachionus caudatus</i> Barrois & Daday, 1894	×	×				×	×																	
<i>Brachionus</i> cf. <i>nilsoni</i> (Ahlstrom, 1940)	×	×				×	×																	
<i>Brachionus dimidiatus</i> f. <i>dimidiatus</i> (Bryce, 1931)	×					×	×																	
<i>Brachionus dimidiatus</i> f. <i>inermis</i> (Schmarda, 1854)	×					×	×																	
<i>Brachionus dimidiatus</i> f. <i>quartarius</i> de Beauchamp, 1932	×					×	×																	
<i>Brachionus diversicornis</i> (Daday, 1893)	×	×				×	×																	
<i>Brachionus falcatus</i> Zacharias, 1898	×	×				×	×																	
<i>Brachionus forficula</i> f. <i>minor</i> Voronkov, 1913	×	×				×	×																	
<i>Brachionus ibericus</i> Ciroso-Perez, Gomez & Serra, 2001	×	×				×	×																	

(Continued)

Bibliographic references (in alphabetical order)

Rong et al. (1998)
 De Ridder (1983)
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 Sorensen (2001a)
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 Jenkin (1936), Nogrady (1983), Pourriot et al. (1967), Vareschi & Jacobs (1984), Vareschi & Jacobs (1985), Vareschi & Vareschi (1984)
 de Beauchamp (1932a), de Beauchamp (1932b), Nogrady (1983), Rong et al. (1998)
 de Beauchamp (1932a), de Beauchamp (1932b), Nogrady (1983)
 Rudescu (1961)
 Saint Jean & Pagano (1987)
 Rudescu (1961)
 Ciroso-Perez et al. (2001b)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																								
	Inland	Marine	Haloxenus	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic		
<i>Brachionus leydigi</i> Cohn, 1862	×				×		×				×														
<i>Brachionus novaezelandiae</i> Morris, 1913	×				×		×																		
<i>Brachionus novaezelandiae</i> var. <i>hungaricus</i> Nogrady, 1957	×				×		×																		
<i>Brachionus plicatilis</i> (Müller, 1786)	×			×			×				×														
<i>Brachionus quadridentatus</i> f. <i>brevispinus</i> Ehrenberg, 1832		×			×						×														
<i>Brachionus quadridentatus</i> f. <i>byphalmiros</i> Tschugunoff, 1921		×			×						×														
<i>Brachionus quadridentatus</i> f. <i>melhemi</i> (Barrois & Daday, 1894)		×			×																				
<i>Brachionus quadridentatus</i> Hermann, 1783		×			×						×														

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenus	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Brachionus quadridentatus</i> var <i>entzii</i> f. <i>convergens</i> Nógrádi, 1957	×			×		×						×						×						
<i>Brachionus rotundiformis</i> Tschugunoff, 1921		×		×							×		×											
<i>Brachionus rubens</i> Ehrenberg, 1838	×	×		×				×			×													
<i>Brachionus sessilis</i> Varga, 1951			×																					
<i>Brachionus urceolaris</i> Müller, 1773	×	×		×				×			×		×											
<i>Cephalodella auriculata</i> (Müller, 1773)	×	×		×							×													
<i>Cephalodella catellina</i> (Müller, 1786)	×	×		×							×													
<i>Cephalodella delicata</i> Wulfert, 1937		×		×							×													
<i>Cephalodella fumatilis</i> (Zawadowski, 1926)		×		×																				
<i>Cephalodella forficata</i> (Ehrenberg, 1832)	×		×																					
<i>Cephalodella forficula</i> Ehrenberg, 1832	×	×		×																				
<i>Cephalodella gibba</i> (Ehrenberg, 1832)	×	×		×							×													
<i>Cephalodella gisleni</i> Bērziņš, 1953			×																					
<i>Cephalodella globata</i> (Gosse, 1887)			×																					
<i>Cephalodella gracilis</i> (Ehrenberg, 1832)	×	×		×							×													
<i>Cephalodella hoodi</i> (Gosse, 1886)			×																					

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																							
	Inland	Marine	Haloxenus	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Cephalodella marina</i> Myers, 1924		x		x		x												x						
<i>Cephalodella megaloccephala</i> (Glascott, 1893)	x	x			x	x				x														Nogrady et al. (1995), Pasquali (1940) Althaus (1957a), De Ridder (1968), Godske Björklund (1972b)
<i>Cephalodella mineri</i> Myers, 1924	x			x		x																		Nogrady et al. (1995)
<i>Cephalodella obvia</i> Donner, 1950	x				x																			Vareschi & Vareschi (1984)
<i>Cephalodella pachyactyla</i> Wulfert, 1937		x				x																		Godske Björklund (1972b)
<i>Cephalodella pentaplastax</i> Wulfert, 1943	x				x	x																		De Ridder (1968), Nogrady et al. (1995), Wulfert (1943)
<i>Cephalodella stenroosi</i> Wulfert, 1937	x				x	x																		Koste (1978)
<i>Cephalodella sterea</i> (Gosse, 1887)	x				x	x																		De Ridder (1968)
<i>Cephalodella sterea minor</i> Donner, 1950	x				x	x																		Althaus (1957a)
<i>Cephalodella tenuiseta</i> (Burn, 1890)		x				x																		Remane (1929)
<i>Cephalodella ventripes</i> (Dixon-Nuttall, 1901)	x	x			x	x																		Althaus (1957a), Althaus (1957b), De Ridder (1968), Godske Björklund (1972b)
<i>Collotheca campanulata</i> (Dobie, 1849)	x				x	x					x													Remane (1929)
<i>Collotheca cornuta</i> (Dobie, 1849)	x	x			x	x																		De Ridder (1968), Hauer (1925), Remane (1929), Schwarz (1955/1956), Schwarz (1962)
<i>Collotheca coronetta</i> (Cubitt, 1869)	x				x	x																		Althaus (1957a), De Ridder (1968)
<i>Collotheca mutabilis</i> (Hudson, 1885)	x	x			x	x				x														Pejler (1972), Remane (1929), Schwarz (1955/1956), Schwarz (1959), Schwarz (1962)
<i>Collotheca ornata</i> (Ehrenberg, 1832)	x	x			x	x				x														Armitage & House (1962), De Ridder (1968), Hauer (1925), Remane (1929), Schwarz (1955/1956), Schwarz (1962), Sick (1933)
<i>Collotheca ornata</i> f. <i>natans</i> Tschugunoff, 1921	x				x	x																		Rudescu (1961)
<i>Collotheca pelagica</i> (Rousselet, 1893)	x				x	x				x														Remane (1929), Rudescu (1961), Schwarz (1955/1956), Schwarz (1962)
<i>Colurella adriatica</i> Ehrenberg, 1831	x	x			x	x				x														Althaus (1957a), Althaus (1957b), d'Hondt (1970), De Manuel et al. (1992), De Manuel (1995), De Ridder (1957a), De Ridder (1958), De Ridder (1959), De Ridder (1960), De Ridder (1961), De Ridder (1967), De Ridder (1968), De Ridder (1983), De Smet (2006), Forés et al. (1986), Gessner (1957), Godske Björklund (1972b), Godske Eriksen (1968), Hauer (1925), Hauer (1957), Nográdi (1957), Pasquali (1940), Pax & Wulfert (1941), Pax & Wulfert (1942), Pretus et al. (1992), Remane (1929), Rentz (1940), Rudescu (1961), Saunders-Davies (1995), Schwarz (1955/1956), Schwarz (1962), Sick (1933), Turner (1993), Voropayev et al. (1985), Wulfert (1942a)

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																								
	Inland	Marine	Haloxenus	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic		
<i>Colurella adriatica</i> f. <i>alpha</i> Hauer, 1925		×		×	×	×						×													
<i>Colurella adriatica</i> f. <i>beta</i> Hauer, 1925		×		×	×	×						×													
<i>Colurella adriatica</i> f. <i>gamma</i> Hauer, 1925		×		×	×	×						×													
<i>Colurella anadonta</i> Carlin, 1939		×		×	×	×						×													
<i>Colurella colurus</i> (Ehrenberg, 1830)		×		×	×	×						×													
<i>Colurella colurus</i> f. <i>compressa</i> Lucks, 1912		×	×		×	×						×													
<i>Colurella dicentra</i> Gosse, 1887		×	×		×	×						×													
<i>Colurella geophila</i> Donner, 1951		×	×		×	×						×													
<i>Colurella geophila hallensis</i> Althaus, 1957		×	×		×	×						×													
<i>Colurella geophila limnetica</i> Althaus, 1957		×	×		×	×						×													
<i>Colurella halophila</i> Wulfert, 1942		×	×		×	×						×													
<i>Colurella hindenburgi</i> Steinecke, 1917		×	×		×	×						×													
<i>Colurella marinovi</i> Althaus, 1957		×	×		×	×						×													
<i>Colurella obtusa</i> (Gosse, 1886)		×	×		×	×						×													
<i>Colurella ornata</i> Fadeew, 1927		×	×		×	×						×													
<i>Colurella salina</i> Althaus, 1957		×	×		×	×						×													
<i>Colurella subtilis</i> Althaus, 1957		×	×		×	×						×													

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenus	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Colurella uncinata</i> (Müller, 1773)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Colurella uncinata</i> f. <i>bicuspidata</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Colurella uncinata</i> f. <i>deflexa</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Colurella uncinata</i> Godske Eriksen, 1968	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Conochilus hippocrepis</i> (Schränk, 1830)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Conochilus unicornis</i> Rousset, 1892	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Dicranophoroides caudatus</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Dicranophorus bulgaricus</i> Althaus, 1957	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Dicranophorus forcipatus</i> (Müller, 1786)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Dicranophorus proclistes</i> Harring & Myers, 1928	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Dipleuchlanis propatula</i> (Gosse, 1886)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum algente</i> Harring, 1921	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum arenarium</i> Althaus, 1957	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum astridae</i> Sørensen, 2001	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum axi</i> Tzschaschel, 1979	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum barti</i> De Smet, 2000	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum bidentatum</i> (Lie-Petersen, 1906)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum boddensis</i> Schwarz, 1962	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum cruentum</i> Harring & Myers, 1928	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum dieteri</i> De Smet, 1995	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum enteromorphae</i> Otto, 1936	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum enteromorphae</i> Harring & Myers, 1928	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Encentrum eulitorale</i> Tzschaschel, 1978	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																							
	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Enicentrum flexile</i> Godske Eriksen, 1968	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum frenoti</i> De Smet, 2002	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum glaucum</i> Wulfert, 1936	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum graingeri</i> Chengalath, 1985	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum gulo</i> Wulfert, 1936	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum incertum</i> Althaus, 1957	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
sp. inq.																								
<i>Enicentrum kostei</i> Tzschaschel, 1978	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum lacidum</i> Harring & Myers, 1928	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum limicola</i> Otto, 1936	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum listense</i> Tzschaschel, 1978	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum listensoides</i> De Smet, 2000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum longirostrum</i> Tzschaschel, 1978	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum marinum</i> (Dujardin, 1841)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum matthesi</i> Remane, 1949	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum mustela</i> (Milne, 1885)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum myersi</i> Wulfert, 1936	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum nesites</i> Harring & Myers, 1928	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum obesum</i> Tzschaschel, 1979	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum oculatum</i> Harring & Myers, 1928	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Enicentrum pachypus</i> Wulfert, 1936	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Encentrum permutandum</i> Tzschaschel, 1979	×		×	×	×	×					×													
<i>Encentrum forssidi</i> Sorensen, 1998	×		×	×	×	×				×	×													
<i>Encentrum psammophilum</i> Althaus, 1957	×		×	×	×	×					×	×												
<i>Encentrum putorius</i> Wulfert, 1936	×		×		×	×							×											
<i>Encentrum remanei</i> Voigt, 1957	×		×	×	×	×					×													
<i>Encentrum rousseloti</i> (Lie-Pettersen, 1906)	×		×	×	×	×					×	×												
<i>Encentrum sacculiforme</i> Tzschaschel, 1978	×		×	×	×	×					×													
<i>Encentrum salinum</i> Dartnall, 1997	×		×	×	×	×																		
sp. <i>in</i> q.																								
<i>Encentrum salsum</i> Myers, 1936	×		×	×	×	×					×													
<i>Encentrum simillimum</i> Remane, 1929	×		×	×	×	×					×													
<i>Encentrum spatiatum</i> Wulfert, 1936	×		×		×	×																		
<i>Encentrum striatum</i> Althaus, 1957	×		×	×	×	×					×	×												
<i>Encentrum lectipes</i> Remane, 1949	×		×	×	×	×					×													
<i>Encentrum tenuidigitatum</i> De Smet, 2000	×		×	×	×	×					×													
<i>Encentrum valkanovi</i> Althaus, 1957	×		×	×	×	×					×	×												
<i>Encentrum villosum</i> Harring & Myers, 1928	×		×	×	×	×					×													
<i>Eosphora ehrenbergi</i> Weber, 1918	×		×	×	×	×						×												
<i>Eosphora najas</i> Ehrenberg, 1830	×		×	×	×	×						×												
<i>Ephiphanes senta</i> (Müller, 1773)	×		×		×	×																		
<i>Ephiphanes macroura</i> (Barrois & Daday, 1894)	×		×		×	×																		
<i>Erigonatha longidentata</i> Sorensen, 2001	×		×		×	×																		
<i>Erigonatha sagittata</i> Harring & Myers, 1928	×		×		×	×																		

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenus	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Erigonatha thienemanni</i> Remane, 1929 nom. dub.	x	x	x	x	x	x				x														
<i>Euchlanis deflexa</i> Gosse, 1851	x	x	x	x	x	x					x	x												
<i>Euchlanis dilatata</i> Ehrenberg, 1832	x	x	x	x	x	x					x	x												
<i>Euchlanis dilatata</i> f. <i>macrura</i> Ehrenberg, 1832	x	x	x	x	x	x					x	x												
<i>Euchlanis incisa</i> Carlin, 1939	x	x	x	x	x	x																		
<i>Euchlanis lyra</i> Hudson, 1886	x	x	x	x	x	x					x	x												
<i>Euchlanis parva</i> Rousselet, 1892 sp. inq.	x	x	x	x	x	x																		
<i>Filimia brachiata</i> (Rousselet, 1901)	x	x	x	x	x	x																		
<i>Filimia cornuta</i> (Weisse, 1847)	x	x	x	x	x	x																		
<i>Filimia limnetica</i> (Zacharias, 1893)	x	x	x	x	x	x					x	x												
<i>Filimia longiseta</i> (Ehrenberg, 1834)	x	x	x	x	x	x					x	x	x											
<i>Filimia passa</i> (Müller, 1786)	x	x	x	x	x	x					x	x												
<i>Filimia terminalis</i> (Plate, 1886)	x	x	x	x	x	x					x	x												
<i>Floscularia melicerta</i> (Ehrenberg, 1832)	x	x	x	x	x	x																		
<i>Gastropus hypoptopus</i> (Ehrenberg, 1838)	x	x	x	x	x	x																		
<i>Gastropus stylifer</i> Imhof, 1887	x	x	x	x	x	x																		
<i>Habrotrocha constricta</i> (Dujardin, 1841)	x	x	x	x	x	x																		

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																							
	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Hexarthra fennica</i> (Levander, 1892)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra fennica medica</i> Löffler, 1954	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra jenkiniae</i> (de Beauchamp, 1932)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra jenkiniae nakuru</i> Koste, 1977	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra libica</i> (Manfredi, 1939)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra mira</i> (Hudson, 1871)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra oxyuris</i> (Zernov, 1903)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra polydonta</i> (Hauer, 1957)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Hexarthra polydonta soaplakeensis</i> Koste, 1977	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Itura aurita</i> (Ehrenberg, 1830)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Itura myersi</i> Wulfert, 1935	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Kellicoltia longispina</i> (Kellcott, 1879)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Keratella americana</i> Carlin, 1943	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Keratella cochlearis</i> (Gosse, 1851)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Keratella cochlearis ballica</i> (Imhof, 1886)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Keratella cochlearis hispida</i> Lauterborn, 1900	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																									
	Inland	Marine	Haloxenous	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic			
<i>Keratella cochlearis micracantha</i> Lauterborn, 1900	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Rudescu (1961)	
<i>Keratella cochlearis recurvispina</i> (Jägerskiöld, 1894)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Pejler (1972), Remane (1929), Rudescu (1961), Silina (1990)
<i>Keratella cochlearis tecta</i> (Gosse, 1851)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	De Ridder (1959), De Ridder (1960), Hauer (1957), Heerkloss & Schnese (1999), Rudescu (1961), Schiewer et al. (1990), Schwarz (1955/1956), Schwarz (1959), Schwarz (1962)
<i>Keratella crassa</i> Ahlstrom, 1943	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Russell (1953)
<i>Keratella cruciformis</i> (Thompson, 1892)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	d'Hondt (1970), Godske Eriksen (1968), Meiners et al. (2002), Pejler (1972), Remane (1929), Rentz (1940), Rudescu (1961), Wibaut-Isebre Moens (1954)
<i>Keratella eichwaldi</i> (Levander, 1894)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Arndt & Heerkloss (1989), De Ridder (1981), Gillard (1959), Godske Björklund (1972b), Hada (1939), Heerkloss & Schnese (1999), Rentz (1940), Rudescu (1961), Schwarz (1955/1956), Schwarz (1962)
<i>Keratella quadrata</i> (Müller, 1786)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Althaus (1957a), De Pauw (1969), De Ridder (1957a), De Ridder (1957b), De Ridder (1958), De Ridder (1959), De Ridder (1960), De Ridder (1961), De Ridder (1968), De Ridder (1981), De Ridder (1983), De Smet (1995), Forés et al. (1986), Godske Björklund (1972b), Hauer (1925), Hauer (1957), Koski et al. (1999), Meiners et al. (2002), Nögrádi (1957), Ovander (1985), Pasquali (1940), Pejler (1972), Remane (1929), Rentz (1940), Rudescu (1961), Schwarz (1955/1956), Schwarz (1959), Schwarz (1962), Sládeček (1955), Thiel (1996), Viitasalo et al. (1995), Wibaut-Isebre Moens (1954)
<i>Keratella quadrata</i> f. <i>dispersa</i> Carlin, 1943	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Sládeček (1955)
<i>Keratella quadrata</i> f. <i>divergens</i> (Voigt, 1902)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Rudescu (1961)
<i>Keratella quadrata</i> f. <i>frenzeli</i> (Eckstein, 1895)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Silina (1990)
<i>Keratella quadrata</i> f. <i>platei</i> (Jägerskiöld, 1894)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Rudescu (1961), Silina (1990)
<i>Keratella quadrata</i> var. <i>brevispina</i> (Gosse, 1851)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Nögrádi (1957)
<i>Keratella testudo</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	De Ridder (1981)
<i>Keratella tropica</i> (Apstein, 1907)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Forés et al. (1986), Kameswara Rao & Mohan (1984)
<i>Keratella tropica</i> f. <i>brehmi</i> (Klausener, 1908)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Rudescu (1961)

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Keratella tropica</i> var. <i>taurocephala</i> Koste, 1978	×	×	×	×	×	×	×				×													
<i>Keratella valga</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×				×	×					×							
<i>Keratella valga</i> f. <i>heterospina</i> (Klausener, 1908)	×	×	×	×	×	×	×				×	×					×							
<i>Keratella valga</i> f. <i>monospina</i> (Klausener, 1908)	×	×	×	×	×	×	×				×	×												
<i>Lecane abanica</i> Segers, 1994	×	×	×	×	×	×	×																	
<i>Lecane althausi</i> Rudescu, 1960 sp. inq.	×	×	×	×	×	×	×																	
<i>Lecane arcuata</i> (Bryce, 1891)	×	×	×	×	×	×	×																	
<i>Lecane arcuata</i> Harring, 1914	×	×	×	×	×	×	×																	
<i>Lecane aspasia</i> Myers, 1917	×	×	×	×	×	×	×																	
<i>Lecane bifurca</i> (Bryce, 1892)	×	×	×	×	×	×	×																	
<i>Lecane bulla</i> (Gosse, 1851)	×	×	×	×	×	×	×																	
<i>Lecane closteroerca</i> (Schmarda, 1859)	×	×	×	×	×	×	×				×	×												
<i>Lecane cornuta</i> (Müller, 1786)	×	×	×	×	×	×	×				×	×												
<i>Lecane difficilis</i> Segers & Pourriot, 1997	×	×	×	×	×	×	×																	
<i>Lecane eutarsa</i> Harring & Myers, 1926	×	×	×	×	×	×	×																	
<i>Lecane flexilis</i> (Gosse, 1886)	×	×	×	×	×	×	×																	
<i>Lecane furcata</i> (Murray, 1913)	×	×	×	×	×	×	×																	
<i>Lecane galeata</i> (Bryce, 1892)	×	×	×	×	×	×	×																	
<i>Lecane grandis</i> (Murray, 1913)	×	×	×	×	×	×	×																	
<i>Lecane hamata</i> (Stokes, 1896)	×	×	×	×	×	×	×																	
<i>Lecane hastata</i> (Murray, 1913)	×	×	×	×	×	×	×																	
<i>Lecane inconspicua</i> Segers & Dumont, 1993	×	×	×	×	×	×	×																	

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Lecane inermis</i> (Bryce, 1892)	x	x	x	x	x	x					x													
<i>Lecane intrasinuata</i> (Olofsson, 1917)		x	x	x	x	x		x																
<i>Lecane lamellata</i> (Daday, 1893)	x	x	x	x							x	x												
<i>Lecane ligona</i> (Dunlop, 1901)		x	x	x	x	x					x													
<i>Lecane ludwigii</i> (Eckstein, 1883)		x	x	x	x	x																		
<i>Lecane ludwigii</i> f. <i>ichthyoura</i> (Anderson & Shepard, 1892)		x	x	x	x	x					x													
<i>Lecane ludwigii</i> f. <i>lacinulata</i> Hauer, 1938	x	x	x	x	x	x																		
<i>Lecane ludwigii</i> f. <i>ohioensis</i> (Herrick, 1885)	x	x	x																					
<i>Lecane luna</i> (Müller, 1776)	x	x	x	x	x	x					x	x												
<i>Lecane lunaris</i> (Ehrenberg, 1832)	x	x	x	x	x	x					x	x												
<i>Lecane muscicola</i> (Bryce, 1891)	x	x	x	x	x	x																		
<i>Lecane nana</i> (Murray, 1913)	x	x	x	x	x	x					x													
<i>Lecane papuana</i> (Murray, 1913)		x	x	x	x	x																		
<i>Lecane paradoxa</i> (Steinecke, 1916)	x	x	x	x	x	x																		
<i>Lecane paxiana</i> Hauer, 1940	x	x	x	x	x	x																		
<i>Lecane psammophila</i> (Wiszniewski, 1932)		x	x	x	x	x																		
<i>Lecane punctata</i> (Murray, 1913)	x	x	x	x	x	x					x													
<i>Lecane pyriformis</i> (Daday, 1905)	x	x	x	x	x	x																		
<i>Lecane quadridentata</i> (Ehrenberg, 1832)	x	x	x	x	x	x					x													

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																								
	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic		
<i>Lecane rhytida</i> Harring & Myers, 1926																									
<i>Lecane sinuosa</i> Nogrady, 1957 sp. inq.																									
<i>Lecane stenroosi</i> (Meissner, 1908)																									
<i>Lecane tenuiseta</i> Harring, 1914																									
<i>Lecane thalera</i> (Harring & Myers, 1926)																									
<i>Lecane unguolata</i> (Gosse, 1887)																									
<i>Lepadella acuminata</i> (Ehrenberg, 1834)																									
<i>Lepadella amphitropis</i> Harring, 1916																									
<i>Lepadella arabica</i> Segers & Dumont, 1993																									
<i>Lepadella duvigneaudi</i> De Ridder, 1968																									
<i>Lepadella minuta</i> (Montet, 1918)																									
<i>Lepadella oblonga</i> (Ehrenberg, 1834)																									
<i>Lepadella ovalis</i> (Müller, 1786)																									
<i>Lepadella patella</i> (Müller, 1786)																									
<i>Lepadella patella similis</i> Lucks, 1912																									
<i>Lepadella pontica</i> Koch-Althaus, 1957																									
<i>Lepadella psammophila</i> Tzschaschel, 1974																									
<i>Lepadella quadricarinata</i> (Stenroos, 1898)																									
<i>Lepadella rhomboides</i> (Gosse, 1886)																									
<i>Lepadella rhomboidula</i> (Bryce, 1890)																									
<i>Lepadella triptera</i> (Ehrenberg, 1830)																									
<i>Lindia annexa</i> Harring & Myers, 1922																									

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																								
	Inland	Marine	Haloxenous	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic		
<i>Lindia elsaë</i> De Smet, 2006	×	×	×	×	×	×	×	×			×					×									
<i>Lindia gravitata</i> (Lie-Pettersen, 1906)	×	×	×	×	×	×	×	×		×	×	×													
<i>Lindia tecusa</i> Harring & Myers, 1922	×	×	×	×	×	×	×	×		×	×	×													
<i>Lindia torulosa</i> Dujardin, 1841	×	×	×	×	×	×	×	×		×	×	×													
<i>Lophocharis ambidentata</i> De Ridder, 1960	×	×	×	×	×	×	×	×		×	×	×													
<i>Lophocharis najas</i> Wulfert, 1942	×	×	×	×	×	×	×	×		×	×	×													
<i>Lophocharis oxystemon</i> (Gosse, 1851)	×	×	×	×	×	×	×	×		×	×	×													
<i>Lophocharis salpina</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×		×	×	×													
<i>Mniobia symbiotica</i> (Zelinka, 1886)	×	×	×	×	×	×	×	×		×	×	×													
<i>Monommata dentata</i> Wulfert, 1940	×	×	×	×	×	×	×	×		×	×	×													
<i>Monommata grandis</i> Tessin, 1890	×	×	×	×	×	×	×	×		×	×	×													
<i>Monommata longiseta</i> (Müller, 1776)	×	×	×	×	×	×	×	×		×	×	×													
<i>Mytilina mucronata</i> (Müller, 1773)	×	×	×	×	×	×	×	×		×	×	×													
<i>Mytilina ventralis</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×		×	×	×													
<i>Mytilina ventralis</i> f. <i>brevispina</i> Ehrenberg, 1832	×	×	×	×	×	×	×	×		×	×	×													
<i>Mytilina videns</i> (Levander, 1894)	×	×	×	×	×	×	×	×		×	×	×													
<i>Notholca acuminata</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×		×	×	×													
<i>Notholca angakkoq</i> Sørensen, 1998	×	×	×	×	×	×	×	×		×	×	×													
<i>Notholca bipalium</i> (Müller, 1786)	×	×	×	×	×	×	×	×		×	×	×													

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																								
	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic		
<i>Notholca caudata</i> Carlin, 1943		×	×	×	×	×	×	×		×	×	×													
<i>Notholca foliacea</i> (Ehrenberg, 1838)	×	×	×	×	×	×	×	×		×	×	×													
<i>Notholca ikaitophila</i> Sørensen & Kristensen, 2000		×	×	×	×	×	×	×		×															
<i>Notholca japonica</i> (Marukawa, 1928)		×	×	×	×	×	×	×		×															
<i>Notholca japonica kisselevi</i> Kutikova, 1970		×	×	×	×	×	×	×		×															
<i>Notholca labis</i> Gosse, 1887		×	×	×	×	×	×	×		×															
<i>Notholca liepelterseni</i> Godske Björklund, 1972		×	×	×	×	×	×	×		×															
<i>Notholca marina</i> Focke, 1961		×	×	×	×	×	×	×		×															
<i>Notholca pacifica</i> Russell, 1962		×	×	×	×	×	×	×		×															
<i>Notholca psammarina</i> Buchholz & Rühmann, 1956		×	×	×	×	×	×	×		×															
<i>Notholca squamula</i> (Müller, 1786)		×	×	×	×	×	×	×		×															
<i>Notholca squamula salina</i> f. <i>damonti</i> De Ridder & Verheye, 1981		×	×	×	×	×	×	×		×															
<i>Notholca squamula salina</i> Focke, 1961		×	×	×	×	×	×	×		×															
<i>Notholca striata</i> (Müller, 1786)		×	×	×	×	×	×	×		×															

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenus	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	Bibliographic references (in alphabetical order)
<i>Notholca striata</i> f. <i>acuminata</i> (Ehrenberg, 1832)	x	x	x	x	x	x	x	x			x						x							Hada (1939), Hauer (1925)
<i>Notholca striata</i> f. <i>biremis</i> (Ehrenberg, 1832)		x		x			x			x							x							Hada (1939), Rentz (1940), Schwarz (1955/1956)
<i>Notholca verae</i> Kutikova, 1958	x	x	x	x	x	x	x	x																Korotkevich (1964)
<i>Notommata aurita</i> Ehrenberg, 1830	x	x	x	x	x	x	x				x													Nógrádi (1957), Rudescu (1961)
<i>Notommata cyrtopus</i> Gosse, 1886	x	x	x									x												Althaus (1957a), De Ridder (1968)
<i>Notommata glyphura</i> Wulfert, 1935	x	x	x	x	x	x	x				x													Althaus (1957a), De Ridder (1968), Rudescu (1961), Wulfert (1943)
<i>Paradicranophorus hudsoni</i> (Glascott, 1893)	x	x	x	x	x	x	x				x													De Smet & Pourriot (1997)
<i>Paradicranophorus sinus</i> De Smet, 2003	x	x	x	x	x	x	x				x													De Smet (2003)
<i>Paradicranophorus sordidus</i> Donner, 1968	x	x	x	x	x	x	x				x													Dartnall (1997)
<i>Paradicranophorus wesenberglandi</i> Sørensen, 2001	x	x	x	x	x	x	x				x													Sørensen (2001b)
<i>Philodina acuticornis</i> Murray, 1902	x	x	x	x	x	x	x				x													Pax & Wulfert (1941), Pax & Wulfert (1942), Wulfert (1942b)
<i>Philodina alata</i> Murray, 1910	x	x	x	x	x	x	x				x													Korotkevich (1964)
<i>Philodina citrina</i> Ehrenberg, 1832	x	x	x	x	x	x	x				x													Althaus (1957a), De Ridder (1968), Remane (1929), Rentz (1940), Rudescu (1961), Schwarz (1955/1956), Schwarz (1962)
<i>Philodina gregaria</i> Murray, 1910	x	x	x	x	x	x	x				x													Armitage & House (1962), Spurr (1957)
<i>Philodina megalotrocha</i> Ehrenberg, 1832	x	x	x	x	x	x	x				x													Althaus (1957a), De Ridder (1968)
<i>Philodina roseola</i> Ehrenberg, 1832	x	x	x	x	x	x	x				x													Althaus (1957a), De Ridder (1968), Münch & Petzold (1955/1956), Pax & Wulfert (1942), Rudescu (1961), Schwarz (1955/1956), Schwarz (1962), Wulfert (1942b), Wulfert (1943)
<i>Philodina tranquilla</i> Wulfert, 1942	x	x	x	x	x	x	x				x													Pax & Wulfert (1942), Wulfert (1942b)
<i>Philodinaurus paradoxus</i> (Murray, 1905)	x	x	x	x	x	x	x				x													Pax & Wulfert (1942)
<i>Platys quadricornis</i> (Ehrenberg, 1832)	x	x	x	x	x	x	x				x													De Ridder (1960), De Ridder (1961), De Ridder (1962), De Ridder (1968)
<i>Platyonius patulus</i> (Müller, 1786)	x	x	x	x	x	x	x				x													De Ridder (1960), De Ridder (1961), De Ridder (1968), De Ridder (1983), Forés et al. (1986)
<i>Pleurotrocha atlantica</i> Myers, 1936	x	x	x	x	x	x	x				x													Nogrady et al. (1995), Wulfert (1942a)
<i>Pleurotrocha petromyzon</i> Ehrenberg, 1830	x	x	x	x	x	x	x				x													Althaus (1957a), De Ridder (1968)
<i>Ploesoma hudsoni</i> (Imhof, 1891)	x	x	x	x	x	x	x				x													Remane (1929), Rentz (1940), Wibaut-Isebrece Moens (1954)
<i>Ploesoma lenticulare</i> Herrick, 1885	x	x	x	x	x	x	x				x													Hollowday (2002)
<i>Ploesoma truncatum</i> (Levander, 1894)	x	x	x	x	x	x	x				x													Remane (1929)

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																							
	Inland	Marine	Haloxenus	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Polyarthra dolichoptera</i> Idelson, 1925	×	×	×	×	×	×	×	×			×							×						
<i>Polyarthra remata</i> Skorikov, 1896	×	×	×	×	×	×	×	×			×		×					×						
<i>Polyarthra vulgaris</i> Carlin, 1943	×	×	×	×	×	×	×	×			×							×						
<i>Pompholyx complanata</i> Gosse, 1851	×	×	×	×	×	×	×	×			×							×						
<i>Pompholyx sulcata</i> (Hudson, 1885)	×	×	×	×	×	×	×	×			×							×						
<i>Proales christinae</i> De Smet, 1994	×	×	×	×	×	×	×	×			×							×						
<i>Proales commutata</i> Althaus, 1957	×	×	×	×	×	×	×	×			×							×						
<i>Proales decipiens</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×			×							×						
<i>Proales fallaciosa</i> Wulfert, 1937	×	×	×	×	×	×	×	×			×							×						
<i>Proales fleetensis</i> Saunders-Davies, 1995 sp. inq.	×	×	×	×	×	×	×	×			×							×						
<i>Proales germanica</i> Tzschaschel, 1978	×	×	×	×	×	×	×	×			×							×						
<i>Proales globulifera</i> (Hauer, 1921)	×	×	×	×	×	×	×	×			×							×						
<i>Proales gonothyracae</i> Remane, 1929	×	×	×	×	×	×	×	×			×							×						
<i>Proales halophila</i> Remane, 1929	×	×	×	×	×	×	×	×			×							×						
<i>Proales litoralis</i> De Smet, 1996	×	×	×	×	×	×	×	×			×							×						
<i>Proales minima</i> (Montet, 1915)	×	×	×	×	×	×	×	×			×							×						
<i>Proales oculata</i> Tzschaschel, 1978	×	×	×	×	×	×	×	×			×							×						
<i>Proales paguri</i> Thane-Fenchel, 1966	×	×	×	×	×	×	×	×			×							×						
<i>Proales reinhardii</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×			×							×						

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																							
	Inland	Marine	Haloxenus	Stictyhaline	Euryhaline	Benthic-periphytic	Plankton	Epihont-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Proales similis</i> de Beauchamp, 1907	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Proales sylvensis</i> Tzschaschel, 1978	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Proales theodora</i> (Gosse, 1887)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Proales weerneckii</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Ptygura crystalina</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Ptygura melicerta</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Ptygura melicerta</i> var. <i>agassizi</i> Edmondson, 1948	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Resticula melandocus</i> (Gosse, 1887)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rhinoglena fertoensis</i> Varga, 1929	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rhinoglena frontalis</i> Ehrenberg, 1853	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rotaria citrina</i> (Ehrenberg, 1838)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rotaria laticeps</i> Wulfert, 1942	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rotaria macrura</i> (Schrank, 1803)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rotaria neptunia</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rotaria rotatoria</i> (Pallas, 1766)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Rotaria tardigrada</i> (Ehrenberg, 1832)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Scavidium longicaudum</i> (Müller, 1786)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Seison africanus</i> Sørensen, Segers & Funch, 2005	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Seison annulatus</i> Claus, 1876	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Seison nebulosae</i> Grube, 1861	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Sinantherina socialis</i> (Linné, 1758)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Squatinnella rostrum</i> (Schmarda, 1846)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																							
	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Synchaeta arcifera</i> Xu, 1998																								Xu (1998)
<i>Synchaeta atlantica</i> Zelinka, 1907																								Hada (1939), Remane (1929), Zelinka (1907)
<i>Synchaeta bacillifera</i> Smirnov, 1933																								Friedrich & De Smet (2000)
<i>Synchaeta baltica</i> Ehrenberg, 1934																								Berzins (1952), Godske Björklund (1972b), Hamelin (1956), Heinbokel et al. (1988), Johansson (1987), Koski et al. (1999), Koste (1981), Lam-Hoai et al. (1997), Meiners et al. (2002), Pasquali (1940), Pejler (1972), Remane (1929), Rentz (1940), Rougier & Lam-Hoai (1997), Rougier et al. (2000), Rudescu (1961), Russell (1953), Schwarz (1955/1956), Schwarz (1962), Seisuma & Legdzhinya (1988), Silina (1990), Viitasalo et al. (1995)
<i>Synchaeta bicornis</i> Smith, 1904																								Branco et al. (1998), Koste (1981), Remane (1929), Wibaut-Isebree Moens (1954)
<i>Synchaeta cecilia</i> f. <i>fusipes</i> Buchholz, 1954																								Rudescu (1961)
<i>Synchaeta cecilia</i> Roussetlet, 1902																								Arndt et al. (1990), Bérzins (1952), d'Hondt (1970), Fenchel & Jansson (1966), Friedrich & De Smet (2000), Godske Björklund (1972b), Godske Eriksen (1968), Hamelin (1956), Heinbokel et al. (1988), Koste (1981), Pasquali (1940), Remane (1929), Rougier & Lam-Hoai (1997), Rougier et al. (2000), Rougier et al. (2005), Rudescu (1961), Russell (1953), Sick (1933)
<i>Synchaeta curvata</i> Lie-Pettersen, 1906																								Godske Eriksen (1968), Remane (1929), Rudescu (1961), Russell (1962), Schwarz (1955/1956), Schwarz (1959), Schwarz (1962)
sp. inq.																								Althaus (1957a), De Ridder (1968)
<i>Synchaeta cylindrica</i> Althaus, 1957																								Forés et al. (1986), Hauer (1963)
<i>Synchaeta elsteri</i> Hauer, 1963																								Forés et al. (1986), Hauer (1963)
<i>Synchaeta fennica</i> Roussetlet, 1909																								Koste (1981), Pejler (1972), Remane (1929), Russell (1953)
<i>Synchaeta glacialis</i> Smirnov, 1932																								Friedrich & De Smet (2000)
<i>Synchaeta grimpei</i> Remane, 1929																								Koste (1981), Lam-Hoai et al. (1997), Remane (1929), Rougier & Lam-Hoai (1997), Rougier et al. (2000), Schwarz (1955/1956), Schwarz (1962)
<i>Synchaeta gyrina</i> Hood, 1887																								Godske Björklund (1972b), Godske Eriksen (1968), Pejler (1972), Remane (1929), Rentz (1940), Rudescu (1961), Schwarz (1955/1956), Schwarz (1962)
<i>Synchaeta hutchingsi</i> Brownell, 1988																								Brownell (1988)
<i>Synchaeta hyperborea</i> Smirnov, 1932																								Friedrich & De Smet (2000)
<i>Synchaeta jolianseni</i> Harring, 1921																								Hada (1939), Remane (1929)
<i>Synchaeta kitina</i> Roussetlet, 1902																								De Manuel et al. (1992), Forés et al. (1986), Pretus et al. (1992)
<i>Synchaeta littoralis</i> Roussetlet, 1902																								Althaus (1957a), Arndt et al. (1990), De Ridder (1968), Forés et al. (1986), Godske Eriksen (1968), Hada (1939), Hamelin (1956), Hollowday (1949), Remane (1929), Rentz (1940), Rudescu (1961), Schwarz (1955/1956), Schwarz (1959), Schwarz (1962), Silina (1990)
sp. inq.																								

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenus	Stictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
Bibliographic references (in alphabetical order)																								
<i>Synchaeta monopus</i> Plate, 1889	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta neapolitana</i> Rousselet, 1902	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta oblonga</i> Ehrenberg, 1832	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta pectinata</i> Ehrenberg, 1832	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta pontica</i> Rudescu, 1960 sp. inq.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta roussellei</i> Zelinka, 1927	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta squamadigitata</i> De Smet, 2006	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta stylata</i> Wierzejski, 1893	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta tamara</i> Smirnov, 1932	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta tavina</i> Hood, 1893	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta tremula</i> (Müller, 1786)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta triophthalma</i> Lauterborn, 1894	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Synchaeta vorax</i> Rousselet, 1902	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

(Continued)

Appendix 1. (Continued).

Species	Bibliographic references (in alphabetical order)																									
	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epihost-parasite	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic			
<i>Testudinella clypeata</i> (Müller, 1786)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	d'Hondt (1970), De Manuel et al. (1992), De Manuel (1995), De Ridder (1957a), De Ridder (1957b), De Ridder (1960), De Ridder (1961), De Ridder (1962), Gillard (1959), Godske Björklund (1972b), Godske Eriksen (1968), Pretus et al. (1992), Remane (1929), Rentz (1940), Rudescu (1961), Saunders-Davies (1995), Schwarz (1955/1956), Schwarz (1962), Sick (1933), Wulfert (1942a) Rentz (1940), Schwarz (1955/1956), Schwarz (1962), Schwarz (1962) De Ridder (1960), De Ridder (1961)	
<i>Testudinella elliptica</i> (Ehrenberg, 1834)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	d'Hondt (1970), Ghilarov (1967), Rudescu (1961), Turner (1993)	
<i>Testudinella incisa</i> f. <i>emarginata</i> Stenroos, 1898	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Althaus (1957a), De Manuel et al. (1992), De Manuel (1995), De Ridder (1960), De Ridder (1961), De Ridder (1962), De Ridder (1968), Hauer (1925), Kameswara Rao & Mohan (1984), Ovander (1985), Pretus et al. (1992), Remane (1929), Rentz (1940), Rudescu (1961), Sládeček (1955), Wibaut-Isebre Moens (1954)	
<i>Testudinella obscura</i> Althaus, 1957	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Althaus (1957a), De Manuel et al. (1992), De Manuel (1995), De Ridder (1960), De Ridder (1961), De Ridder (1962), De Ridder (1968), Hauer (1925), Kameswara Rao & Mohan (1984), Ovander (1985), Pretus et al. (1992), Remane (1929), Rentz (1940), Rudescu (1961), Sládeček (1955), Wibaut-Isebre Moens (1954)	
<i>Testudinella patina</i> (Hermann, 1783)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Althaus (1957a), De Manuel et al. (1992), De Manuel (1995), De Ridder (1960), De Ridder (1961), De Ridder (1962), De Ridder (1968), Hauer (1925), Kameswara Rao & Mohan (1984), Ovander (1985), Pretus et al. (1992), Remane (1929), Rentz (1940), Rudescu (1961), Sládeček (1955), Wibaut-Isebre Moens (1954)	
<i>Testudinella reflexa</i> (Gosse, 1887)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Pasquali (1940)	
<i>Testudinella truncata</i> (Gosse, 1886)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Althaus (1957a)	
<i>Trichoerca armanni</i> (Zelinka, 1927) sp. inq.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Zelinka (1927)	
<i>Trichoerca brachyura</i> (Gosse, 1851)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Althaus (1957a), De Ridder (1960), De Ridder (1961), De Ridder (1968), Godske Björklund (1972b)	
<i>Trichoerca capucina</i> (Wierzejski & Zacharias, 1893)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Remane (1929), Rudescu (1961), Schwarz (1955/1956), Schwarz (1962)	
<i>Trichoerca cavia</i> (Gosse, 1886)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	De Ridder (1968)	
<i>Trichoerca curvata</i> (Levander, 1894) sp. inq.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Remane (1929)	
<i>Trichoerca henseni</i> (Zelinka, 1907) sp. inq.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Zelinka (1907)	
<i>Trichoerca heterodactyla</i> (Tschugunoff, 1921)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Koste (1978)
<i>Trichoerca insignis</i> (Herrick, 1885)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Rougier et al. (2005)
<i>Trichoerca longiseta</i> (Schränk, 1802)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	De Ridder (1968), Godske Björklund (1972b), Remane (1929)

(Continued)

Appendix 1. (Continued).

Species	Inland	Marine	Haloxenous	Strictly haline	Euryhaline	Benthic-periphytic	Plankton	Epibiont-parasitic	Antarctica	Arctic	Baltic and North Sea	Black Sea	British Channel	Caspian Sea	China Sea	Indian Ocean	Japanese Sea	Mediterranean	NE Atlantic	New Zealand	NW Atlantic	SE Atlantic	SW Atlantic	
<i>Trichoerca marina</i> (Daday, 1890)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca marina caspica</i> (Tschugunoff, 1921)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca marina longicauda</i> (Tschugunoff, 1921)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca obtusidens</i> (Olofsson, 1918)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca pediculus</i> Remane, 1949	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca porcellus</i> (Gosse, 1851)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca pusilla</i> Lauterborn, 1898	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca rattus</i> (Müller, 1776)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca rousseti</i> (Voigt, 1902)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca rutneri</i> (Donner, 1953)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca stylata</i> (Gosse, 1851)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca taurocephala</i> (Hauer, 1931)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichoerca tenuior</i> (Gosse, 1886)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichotria pocillum</i> (Müller, 1776)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Trichotria tetractis</i> (Ehrenberg, 1830)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Tripleuchlanis plicata</i> (Levander, 1894)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Wierzejskiella ambigua</i> (Tzschaschel, 1979)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Wierzejskiella elongata</i> (Wiszniewski, 1932)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Wierzejskiella marina</i> Remane, 1949	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Wierzejskiella subterranea</i> Remane, 1949	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Wigrrella amphora</i> (Remane, 1929)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
<i>Zelinkiella synaptae</i> (Zelinka, 1888)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

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Koste (1978)

Godske Björklund (1972b)

Remane (1949)

Althaus (1957a), De Ridder (1968)

Althaus (1957a), De Ridder (1968), Pretus et al. (1992)

Althaus (1957a), Althaus (1957b), De Ridder (1960), De Ridder (1961), De Ridder (1968), De Ridder (1981), Godske Björklund (1972b), Remane (1929), Rentz (1940), Rudescu (1961)

Wibaut-Isebrece Moens (1954)

Koste (1978)

Nógrádi (1957)

Gessner (1957), Godske Björklund (1972b), Hauer (1957), Turner (1990), Turner (1993), Wiszniewski (1934)

Althaus (1957a), De Ridder (1968)

Althaus (1957a), Althaus (1957b), De Ridder (1960), De Ridder (1961), De Ridder (1968), Godske Björklund (1972b), Remane (1929), Schwarz (1955/1956)

De Ridder (1962), Kameswara Rao & Mohan (1984)

De Ridder (1960), De Ridder (1961), De Ridder (1962), De Ridder (1968), Godske Björklund (1972b), Hauer (1925), Kameswara Rao & Mohan (1984), Remane (1929), Schwarz (1955/1956), Schwarz (1962), Segers & Dumont (1993)

Tzschaschel (1979), Tzschaschel (1980)

Tzschaschel (1979)

De Smet & Pourriot (1997), Tzschaschel (1979), Tzschaschel (1980)

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