CEPHALORHYNCHA

Kinoryncha

Compiled by Birger Neuhaus and Jacob van der Land

The ERMS list for Kinorhyncha and Loricifera was compiled by J. van der Land and Birger Neuhaus. The list of valid species of Kinorhyncha is based on an unpublished list of synonymies by Robert P. Higgins made available to B. Neuhaus.

The Kinorhyncha are a group of microscopic marine animals that comprise some 130 valid species (Pardos *et al.* 1998). Few species live exclusively in eulittoral sediments (e.g., *Echinoderes coulli* Higgins, 1977, *E. caribiensis* Kirsteuer, 1964) or in beach sands (e.g., *Cateria styx* Gerlach, 1956). However, most species inhabit the eulittoral and sublittoral including the deep-sea. Kinorhyncha live in the interstitial cavities and crevices of coarse or fine sandy substrate or of muddy sediments (Gerlach 1956, Higgins 1990, Vanhove *et al.* 1995, Zelinka 1928). Only the upper 1-10 cm of oxygen-rich substratum contain Kinorhyncha both in the eulittoral and sublittoral (Horn 1978, Thistle *et al.* 1985). Kinorhyncha feed on diatoms or bacteria (Higgins 1990, own observations). Kinorhyncha can be extracted from the sediment by the bubble and blot technique (Higgins & Thiel 1988). Higgins & Thiel (1988) describe additional suggestions for specimen processing.

Close to nothing is known about the biogeography of kinorhynch species. Every scientist trying to identify Kinorhyncha from the area covered by ERMS is, therefore, well advised to consider species described from neighbouring areas as well, such as the following recorded from other parts of the Arctic Ocean: *Echinoderes angustus* Higgins & Kristensen, 1988, *Echinoderes aquilonius* Higgins & Kristensen, 1988, *Echinoderes arlis* Higgins, 1966, *Echinoderes eximus* Higgins & Kristensen, 1988, *Echinoderes peterseni* Higgins & Kristensen, 1988, *Echinoderes tubilak* Higgins & Kristensen, 1988, *Pycnophyes borealis* Higgins & Korczynski, 1989, *Pycnophyes canadensis* Higgins & Korczynski, 1989, *Pycnophyes chukchiensis* Higgins, 1991, *Pycnophyes cryopygus* Higgins & Kristensen, 1988, *Pycnophyes greenlandicus* Higgins & Kristensen, 1988, *Pycnophyes mokievskii* Adrianov, 1995, *Pycnophyes spitsbergensis* Adrianov, 1995

It is also not impossible that species described from the North American coast may occur in European waters or species new to science may turn up. More recent keys for identification include Adrianov (1995), Higgins (1983), Higgins & Kristensen (1988), Huys & Coomans (1989), Pardos *et al.* (1998). Valuable information is also found in Adrianov & Malakhov (1994), Higgins (1977, 1978, 1985, 1990), Moore (1973), Nebelsick (1990), and Zelinka (1928).

References

Adrianov, A.V. & V.V. Malakhov 1994: *Kinorhyncha: structure, development, phylogeny and taxonomy.* - Nauka Publ., Moscow, pp. 260. [in Russian]

Adrianov, A. V. 1995: The first description of kinorhynchs from the Spitsbergen Archipelago (Greenland Sea), with a key to the genus *Pycnophyes* (Homalorhagida, Kinorhyncha). *Canadian Journal of Zoology* 73, 1554-1566.

Gerlach, S. 1956 Über einen aberranten Vertreter der Kinorhynchen aus dem Küstengrundwasser. *Kieler Meeresforschungen* 12: 120-124.

Higgins, R. P. 1977: Redescription of *Echinoderes dujardinii* (Kinorhyncha) with descriptions of closely related species. *Smithsonian Contributions to Zoology* 248, 1-26.

Higgins, R. P. 1978: *Echinoderes gerardi* n. sp. and *E. riedli* (Kinorhyncha) from the Gulf of Tunis. *Transactions of the American Microscopical Society* 97: 171-180.

Higgins, R. P. 1983: The Atlantic barrier reef ecosystem at Carrie Bow Cay, Belize, II: Kinorhyncha. *Smithsonian Contributions to Marine Science* 18:1-131.

Higgins, R .P. 1985: The genus *Echinoderes* (Kinorhyncha: Cyclorhagida) from the English channel. *Journal of the Marine biological Association of the United Kingdom* 65: 785-800.

Higgins, R. P. 1990: Zelinkaderidae, a new family of cyclorhagid Kinorhyncha. *Smithsonian Contributions to Zoology* 500: 1-26.

Higgins, R. P. & R. M. Kristensen 1988: Kinorhyncha from Disko Island, West Greenland. *Smithsonian Contributions to Zoology* 458:1-56.

Higgins, R. P. & H. Thiel 1988: Introduction to the study of meiofauna. - Smithsonian Institution press, Washington, D. C., 488 pp.

Horn, T. D. 1978: The distribution of *Echinoderes coulli* (Kinorhyncha) along an interstitial salinity gradient. *Transactions of the American Microscopical Society* 97: 586-589.

Huys, R. & A. Coomans 1989: *Echinoderes higginsi* sp. n. (Kinorhyncha, Cyclorhagida) from the southern North Sea with a key to the genus *Echinoderes* Claparede. *Zoologica Scripta* 18: 211-221.

Moore, P. G. 1973: *Campyloderes macquariae* Johnston, 1938 (Kinorhyncha: Cyclorhagida) from the northern hemisphere. *Journal of Natural History* 7: 341-354.

Nebelsick, M. 1990: *Antygomonas incomitata* gen. et sp. n. (Cyclorhagida, Kinorhyncha) and its phylogenetic relationships. *Zoologica Scripta* 19: 143-152.

Pardos, F., R. P. Higgins & J. Benito 1998: *Echinoderes cantabricus* sp. n. and *E. hispanicus* sp. n. (Kinorhyncha, Cyclorhagida) from the north coast of Spain. *Zoologischer Anzeiger* 237: 195-208.

Rachor, E. 1975: Quantitative Untersuchungen uber das meiobenthos der nordostatlantischen Tiefsee. *"Meteor" Forschungsergebnisse, Reihe D*, 21: 1-10.

Thistle, D., J. Y. Yingst & K. Fauchald 1985: A deep-sea benthic community exposed to strong near-bottom currents on the Scotian Rise (Western Atlantic). *Marine Geology* 66: 91-112.

Vanhove, S., J. Wittoeck, G. Desmet, B. van den Berghe, R. L. Herman, R. P. M. Bak, G. Nieuwland, J. H. Vosjan, A. Boldrin, S. Rabitti & M. Vincx 1995: Deep-sea meiofauna communities in Antarctica: Structural analysis and relation with the environment. *Marine Ecology Progress Series* 127: 65-76.

Zelinka, K. 1928: *Monographie der Echinodera.* Verlag W. Engelmann, Leipzig, 396 S.

PHYLUM CEPHALORHYNCHA

Class Kinorhyncha

Order Cyclorhagida

Family Antygomonidae

Antygomonas
incomitata Nebelsick, 1990 M

Family Centroderidae

Campyloderes
adherens Nyholm, 1947 A
macquariae Johnston, 1938
Centroderes
eisigii Zelinka, 1928 M
spinosus (Reinhard, 1881) M
Condyloderes
multispinosus (McIntyre, 1962) A

Family Echinoderidae

Echinoderes
agigens Bacescu, 1968 M

cantabricus Pardos, Higgins & Benito, 1998	A
capitatus (Zelinka, 1928)	M
citrinus Zelinka, 1928	M
druxi d'Hondt, 1973	M
dujardini Claparède, 1863	A
elongatus Nyholm, 1947	A
ferrugineus Zelinka, 1928	M
gerardi Higgins, 1978	M
higginsi Huys & Coomans, 1989	
hispanicus Pardos, Higgins & Benito, 1998	A
krishnaswamyi Higgins, 1985	A
kristenseni Higgins, 1985	A
levanderi Karling, 1954	A
riedli Higgins, 1966	M
setiger Greef, 1869	
worthingii Southern, 1914	A
Family Semnoderidae	
Semnoderes	
armiger Zelinka, 1928	A M
ponticus Bacescu & Bacescu, 1956	M
Family Zelinkaderidae	
Zelinkaderes	
submersus (Gerlach, 1969)	A

Order Homalorhagida

Family Neocentrophyidae	
Paracentrophyes	
quadridentatus (Zelinka, 1928)	A M
Family Pycnophyidae	
Kinorhynchus	
giganteus (Zelinka, 1928)	A M
paraneapolitanus Sheremetevskij, 1974	M
Pycnophyes	
calmani Southern, 1914	A
carinatus Zelinka, 1928	M
communis Zelinka, 1908	A M
dentatus (Reinhard, 1881)	A M
flaveolatus Zelinka, 1928	A M
kielensis Zelinka, 1928	A M
maximus Reimer, 1963	A
ponticus (Reinhard, 1881)	M
robustus Zelinka, 1928	M
rugosus Zelinka, 1928	M
zelinkaei Southern, 1914	A

Loricifera

Compiled by Jacob van der Land and Birger Neuhaus

The marine Loricifera are now known with 11 species from North America, Europe, and the Japanese deep-sea (Higgins & Kristensen 1986, Kristensen 1983, Todaro & Kristensen 1998). Only 2 species have been reported from Europe (Kristensen 1983, Todaro & Kristensen 1998). Loricifera inhabit various kinds of sediment from coarse sand or shelly gravel to red clay with silt and sand. They may be extracted from the substratum either by freshwater shock (Kristensen 1983) or by multiple decantations (Todaro & Kristensen 1998). It is certain that species new to science inhabit the area covered by the ERMS programme.

References

Higgins, R. P. & R. M. Kristensen 1986: New Loricifera from Southeastern United States coastal waters. *Smithsonian Contributions to Zoology* 438: 1-70.

Kristensen, P. M. 1983: Loricifera, a new phylum with Aschelminthes characters from the meiobenthos. *Zeitschrift für zoologische Systematik und Evolutionsforschung* 21: 163-180.

Todaro, M. A. & R. M. Kristensen 1998: A new species and first report of the genus *Nanaloricus* (Loricifera, Nanaloricida, Nanaloricidae) from the Mediterranean Sea. *Italian Journal of Zoology* 65: 219-226.

Class Loricifera

Family Nanaloricidae	
Nanaloricus	
mysticus Kristensen, 1983	A
khaitatus Todaro & Kristensen, 1998	M

Nematomorpha and Priapulida

Compiled by Jacob van der Land

The ERMS lists for Priapulida and Nematomorpha were based on Adrianov & Malakhov (1996) and on Malakhov & Adrianov (1995).

References

Adrianov, A.V. & V.V. Malakhov (1996): Priapilida [sic] (Priapulida): structure, development, phylogeny, and classification. - KMK Scientific Press, Moscow, pp. 266. [in Russian]

Malakhov, V.V. & A.V. Adrianov (1995): Cephalorhyncha - A new phylum of the animal kingdom. - KMK Scientific Press, Moscow, pp. 202. [in Russian]

Class Nematomorpha

Order Nectonematida

Family Nectonematidae	
Nectonema	
agile Verril, 1879	A M
svensksundi Bock, 1908	A
munidae Brinkmann, 1930	A

Class Priapulida

Family Chaetostephanidae	
Maccabeus	
tentaculatus Por, 1973	M
Family Priapulidae	
Halicryptus	
spinulosus von Siebold, 1849	A
Priapulopsis	
bicaudatus (Koren & Danielssen, 1868)	A
cnidephorus Salvini-Plawen, 1973	M
Priapulus	
abyssorum Menzies, 1959	A M
caudatus Lamarck, 1816	A
Family Tubiluchidae	
Tubiluchus	
arcticus Adrianov *et al.*, 1989	A