



Contents lists available at ScienceDirect

Zoologischer Anzeiger

journal homepage: www.elsevier.com/locate/jcz

Zoologischer
Anzeiger

Kinorhyncha from Italy, a revision of the current checklist and an account of the recent investigations

Matteo Dal Zotto^{a,b,*}, M. Antonio Todaro^b

^a Consortium for the Interuniversity Center of Marine Biology and Applied Ecology, Livorno, Italy

^b Department of Life Sciences, University of Modena and Reggio Emilia, via Campi, 213/d, 41125 Modena, Italy

ARTICLE INFO

Article history:

Received 20 October 2015

Received in revised form 11 January 2016

Accepted 15 January 2016

Available online xxx

Keywords:

Meiofauna

Biogeography

Taxonomy

Biodiversity

Mediterranean

ABSTRACT

Except for the noticeable investigations carried out in 1928 by Karl Zelinka in the Gulf of Naples and Gulf of Trieste, research on the Italian kinorhynch fauna has been rather erratic in space and time. According to the current checklist of the Italian marine biota, 48 species of Kinorhyncha were reported up to 2008 along the Italian coastlines. However, 31 of them are considered *nomina dubia* and hence of doubtful utility. Here we point out those taxa and provide new information based on recent publications and on novel investigations carried out in selected areas of the Adriatic Sea (3 localities), Ligurian Sea (4), Tyrrhenian Sea (8), and Ionian Sea (1). New data derives from qualitative as well as from quantitative samples. The analysis of the new samples yielded 6 families, 9 genera, and 29 species, of which only 16 were previously recorded from peninsular waters. In summary, we recorded one new genus and two new species for Italy, together with 13 additional species that appear new to science. Particularly interesting is the finding of two new species belonging to rare genus *Condyloderes*, as it represents the first record of this taxon in the Mediterranean Sea. The most speciose genus is *Echinoderes*, followed by *Pycnophyes* with 10 and 8 species, respectively. The former genus includes the taxon showing the highest abundance, *E. capitatus*, with recorded densities up to 184 ind./10 cm², while the latter includes the most common species *P. communis*, found in 7 out of the 16 new investigated localities. New faunistic information prompted the revision of the checklist, which in the new version includes 36 species in 9 genera and 6 families. Old and new data were utilized for a preliminary discussion on the geographic distribution of the recorded fauna, from which it appeared that five species only can be considered ubiquitous in the four Italian sea basins, whereas the other taxa appear to be restricted to one or two seas. However, many sectors of the Italian coastline remain unexplored. Besides those areas (e.g., mid Tyrrhenian and Ionian coasts), future research should be focused on peculiar habitats, such as submarine caves, lagoons, and coarse biogenic sediments, as many species and species records come from these neglected biotopes, often representing biodiversity hotspots.

© 2016 Elsevier GmbH. All rights reserved.

1. Introduction

The number of new kinorhynch taxa is growing at a fast pace. Especially during the last two decades the effort by groups of international researchers, backed by new microscopical techniques, has led to the discovery and description of several new species and particular interesting new higher taxa. One hundred and seven species, almost half of those currently known, have been described in the timespan 1995–2015. New records come from different areas of the World, and often relevant discoveries are from previously neglected geographic regions (e.g., Dal Zotto et al., 2013; Sánchez et al., 2014; Sørensen and Thormar, 2010; Sørensen et al., 2000). A

modern approach to the taxonomy of the kinorhynchs is changing also the long-standing thoughts about the in-group relationships of the traditional higher taxa. This is best testified by the recent inclusive revision of the systematics of the Kinorhyncha based on a phylogenetic approach (Sørensen et al., 2015). As for September 2015, the phylum comprises more than 220 species and 23 genera, whose geographic distribution appears to be largely patchy. This fact likely reflects more the limited number of investigated areas and the relatively low number of taxonomists with expertise on Kinorhyncha rather a real biogeographical phenomenon. The most species rich genera (*Echinoderes*, *Pycnophyes*, and *Kinorhynchus*) exhibit a cosmopolitan distribution (*sensu* Sterrer, 1973), while the genera characterized by a low number of species have been reported solely from one or two ecoregions (see Neuhaus, 2013). Nevertheless, new studies point out that taxa apparently endemic to a given region often reveal a wider distribution. Paradigmatic

* Corresponding author.

E-mail address: dalozotto.matteo@yahoo.com (M. Dal Zotto).