

Zooplankton as an indicator of thermohaline changes in the Adriatic Sea over the last 125 years

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Available zooplankton data in the Adriatic Sea from the literature from the beginning of the 20th century to the present, as well as data from our studies over the last 30 years, were analysed. These data show that in certain years species from the eastern Mediterranean (Indopacific origin) or from the western Mediterranean/Atlantic regularly enter the Adriatic Sea. In addition, the available data show the occurrence of zooplankton taxa and/or their unusual abundance and biomass in relation to the different thermohaline conditions in the Adriatic. Studies over the last 30 years show that the multi-annual changes of the zooplankton community in the Adriatic Sea followed the continuum of the circulation regime in the Northern Ionian Gyre (NIG). Depending on the direction of circulation in the NIG, the pathways of the colder and less saline Atlantic water and of the warmer and more saline eastern Mediterranean water change of decadal scale, consequently changing the thermohaline properties of the water entering the Adriatic, bringing species of different preferences and origins. We can assume that this mechanism also worked in the past and influenced the diversity of zooplankton species in the Adriatic Sea. However, according to our research, the sea temperature has increased significantly in the last 10 years, opening a favourable window of opportunity for tropical species in the Adriatic Sea. Monitoring the plankton communities in the Adriatic Sea is important as the circulation patterns and thus the biodiversity of the Adriatic are likely to change under the influence of climate change.