



## **Climate change impact on the spread of the invasive species *Mnemiopsis leidyi* A.Agassiz, 1865 over the southern seas of Europe**

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The introduction of invasive aquatic species into new habitats has been identified as one of the four greatest threats for the world oceans. Aquatic invasions are virtually irreversible and, once the new-comers are established, their impact may also increase in severity over time. During the last decades, a dramatic increase in the number of non-native species has been observed in different marine ecosystems. Many of these species became successfully adapted to their new habitats, thereby creating to serious ecosystem changes alteration, disruptions of ecosystem functioning, with the associated economic consequences.

One of a drastically impacting invasive species – the representative of gelatinous zooplankton – ctenophore *Mnemiopsis leidyi*, known strongly reduce pelagic fish stocks, has been considered in this work. This species spread over seas of Europe, and often affected ecosystem trophic levels both top down and bottom up (Shiganova et al., 2004) dominate the local food webs due to its high adaptation capacity in favorable conditions. Among these conditions are the water temperature and available food.

It is known that over the last decades climate warming has occurred faster and wider in Eurasia than the average on the globe. Thus, one of the pressing issues facing modern science is the question of the relationship of the spreading of invader *Mnemiopsis leidyi* in ecosystems of European southern seas with global climate change.

The main objective of this work is to determine the spatial changes expansion of *M.leidyi* in the ecosystems of the southern seas under the influence of climatic pressures and to offer a method for assessing environmental risk. Study of the climatology of the main hydrophysical and hydrobiological characteristics of the southern seas of Europe (temperature and salinity of water, currents and wind, chlorophyll concentration, and others) have been performed for this purpose. A comparative analysis of the existing climatology with the multi-year field data obtained by the scientific group of this work in various regions of the southern seas of Europe has been conducted.

### References

Shiganova TA, Dumont HJ, Mikaelyan A, Glazov DM, Bulgakova YV, Musaeva EI, et al., 2004. Interaction between the invading ctenophores *Mnemiopsis leidyi* A. Agassiz and *Beroe ovata* Mayer 1912, and their Influence on the pelagic ecosystem of the northeastern Black Sea. Dumont H, Shiganova TA, Niermann U (Editors). The Ctenophore *Mnemiopsis leidyi* in the Black, Caspian and Mediterranean Seas and Other Aquatic Invasions. NATO Science Series: IV. Earth and Environmental Sciences. Vol. 35. Kluwer Academic Publishers, Dordrecht. 2004;35. pp. 33-70.