

SPATIAL DISTRIBUTION OF CTENOPHORE *MNEMIOPSIS LEIDYI* IN AEGEAN SEA

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Abstract

The invasive ctenophore *Mnemiopsis leidyi* was accidentally introduced into the Black Sea in the early 1980s and it was first sighted in the Aegean Sea in the early 1990s. This paper presents the spatial distribution of *M. leidyi* in Aegean Sea during early summer 2004-2006 and 2008.

Keywords: Aegean Sea, Ctenophora, Plankton

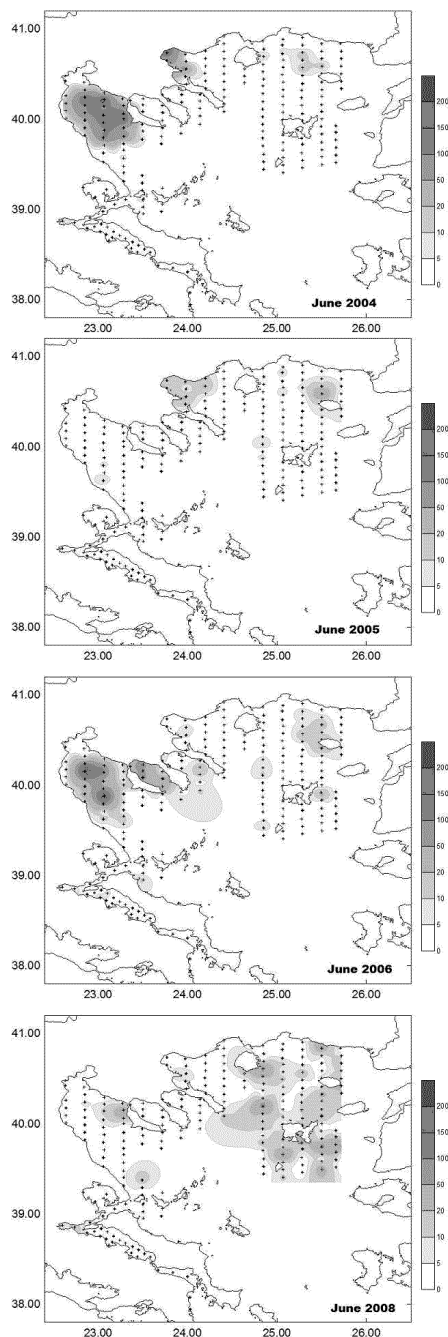


Fig. 1. Distribution maps of *M. leidyi* (individual / m²) for June 2004, 2005 2006 and 2008 respectively.

Introduction

The ctenophore *Mnemiopsis leidyi* is a voracious zooplanktivorous species

and its native habitat is estuaries and coastal regions along the eastern coast of North and South America. It was accidentally introduced into the Black Sea in the early 1980s [1] possibly with ballast water from ship coming from the northwestern Atlantic coastal region. The first occurrence *M. leidyi* in Aegean Sea was recorded during late spring-summer 1990 in Saronikos Gulf (45-75 ind m⁻², [2]). After 1991, *M. leidyi* swarms were observed in several coastal areas of the northern Aegean and few specimens were collected in offshore waters [3]. It is believed that the flow of Black Sea water mass to the northern Aegean Sea contributes to the dispersal of *M. leidyi* in the area.

Materials and methods

Plankton specimens were collected during four research surveys during early summer in the northern Aegean Sea in June 2004-2006 and 2008. Sampling design was based on a grid of stations spaced on parallel transects that were approximately 10 nautical miles apart (Fig. 1). A total of 205 stations were located on 5 nautical miles intervals on each transect. Standard vertical plankton tows were made at each station, by a WP2 sampler (mouth opening: 0.255 m², mesh-size: 0.200-mm). *M. leidyi* specimens were identified and counted on board

Results and discussion

The spatial distribution of *M. leidyi* in Aegean Sea in early summer of 2004-2006 and 2008 (including both larvae and adult specimens) are shown in Fig. 1. Although its abundance and distribution shows a large degree of interannual variability, the highest abundances were observed in Thermaikos gulf and Strymonikos gulf where large rivers outflow. The lowest abundances were recorded in June 2005 (3 to 50 ind m⁻²), whereas the highest in June 2004 (4 to 188 ind m⁻²). The wider and most southern distribution (up to N. Evoikos Gulf) of the species was observed in 2006 and 2008 compared to the previous years. The percentage of occurrence of *M. leidyi* into the sampling stations increase during the years from 20 and 18% in June 2004 and 2005 to 37 and 50% in June 2006 and 2008. In June 2008 the highest abundances were observed in areas that have been characterised by Black Sea Water influence (e.g. Thracian Sea, Limnos-Imvros plateau). A spatial model has been applied based on Aegean Sea satellite data to determine the environmental conditions that characterize areas where *M. leidyi* is present and based on this to identify other potential areas that could support species presence in the Hellenic and Mediterranean Seas [4]. Furthermore, future work could involve examining whether the local conditions (e.g. temperature, salinity, prey's availability and/or predators' abundance) in the Hellenic Sea could favour *Mnemiopsis* successful reproduction, high populations or bloom levels during all year round that could possibly lead to an alteration of the food web in similar way to the case of the Black Sea.

References

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