Is the comb jelly really to blame for it all? *Mnemiopsis leidyi* and the ecological concerns about the Caspian Sea

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ABSTRACT: The appearance in 1995 of the alien ctenophore *Mnemiopsis leidyi* in the Caspian Sea attracted considerable attention. In 1989, enormous mass development of the comb jelly in the Black Sea coincided with a breakdown of the commercially highly important anchovy *Engraulis encrasicolus* fishery in this area. This collapse probably resulted from multiple factors, among which overfishing and food competition from the ctenophore played a prominent role, enhanced by predation of *M. leidyi* on the early life stages of the anchovy. The abundance of food due to the depletion of the anchovy stock permitted a population explosion of *M. leidyi*. Subsequently, reduced fishing pressure allowed recovery of the anchovy stock and led to a new peak in anchovy landings in the Black Sea in 1995. Moreover, changes in the atmospheric and oceanic patterns in the northern hemisphere in the second half of the 1980s could have altered the composition of the phyto- and zooplankton communities and thus the food base of the small pelagic fish species. In the second half of the 1990s, the invasion of the Black Sea by another alien ctenophore, *Beroe ovata*, preying on ctenophores, raised hopes that this species could control *M. leidyi*. However, it is uncertain whether the preying capacity of *B. ovata* is sufficient to control *M. leidyi* in other than locally favourable conditions. At the present time, judging by the recent development in the Black Sea, the invasion of the Caspian Sea by *M. leidyi* does not yet seem to have reached maximum intensity. More consistent and comparable investigations in the Caspian and Black Seas are necessary to improve the protection, management and exploitation of the stocks of small pelagic fishes, in order to increase their capacity to resist and survive unforeseeable disturbances of their ecosystem by invaders such as *M. leidyi*. In view of the new invasion by this ctenophore, research into the exploitation of the Caspian kilka *Clupeonella* spp. stocks and the influence of atmospheric teleconnection patterns on ecological conditions in the Caspian Sea is of particular importance.

KEY WORDS: Bioinvasion · Caspian Sea · Black Sea · Ctenophores · *Mnemiopsis leidyi* · *Beroe ovata* · Anchovy fishery · Kilka fishery · Regime shift

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