



The ships' ballast water impact on the Black Sea marine environment

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Ships use ballast water to provide stability during voyages. This type of seawater loaded on board from one geographical area and discharged in very different port areas as ballasting practice, turned into a vector for spreading the non-native sea life species. The reduction and limitation of invasive species is a problem that the modern world addresses. Thus, the International Maritime Organization (IMO) developed the BWM 2004 Convention. Adopting international regulations influences the socio-economic sector and this is the reason why the ballast water, the subject of this paper, has been on the IMO Marine Environment Protection Committee's agenda for more than 10 years, while the Convention has not yet been ratified and enforced. Although the Black Sea was subject to incidents regarding the invasive species the Romanian Government, as member of the IMO, did not ratify the Convention.

The Black Sea was the subject of four major incidents regarding the ships' ballast water. One of them refers to the North American Comb Jelly, native from the Eastern Seaboard of America, introduced in the Black, Azov and Caspian Seas and seriously affecting the Romanian coastal environment in the 1990's. This invasive species has negative impacts: it reproduces rapidly under favourable conditions, it feeds excessively on zooplankton, it depletes zooplankton stocks, altering the food web and the ecosystem functionality, and contributed significantly to the collapse of Black and Azov Sea fisheries in the 1990s, with massive economic and social impact. There are studies for identifying the invasive species for the Black sea, structured in a database for marine species - the Black Sea Red Data Book. For these invasive species, there have been identified and developed charts to emphasize their ways of migration into the Black Sea.

This paper aims to analyse the marine traffic in Romanian ports, broken down according with seasons and types of vessels, and to assess its relationship with the spread of the invasive species. Marine traffic will be based on data collected from the Automatic Identification System (AIS), required for seagoing ships according to IMO Maritime Safety Committee's regulations.