

*How to stop the increase in invasive organisms; a challenge for research (the EU Ballast Water Opportunity project).*

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Ships transport 5-10 billion tons of ballast water annually all over the globe, loaded with a enormous variety of organisms. These organisms belong to the natural ecosystem in the port of origin but they might not be endemic in the ports of destination at the end of a ship's journey. In hundreds of cases around the world, this has resulted in severe damage to the receiving ecosystem because these non native organisms developed into a plague, in the North Sea region up to 1000 cases of invasive species have been identified. This often has a high impact on the ecosystem, resulting in a decrease of stocks of commercially valuable fish and shellfish species and occasionally outbreaks of diseases like cholera. To minimize these risks for the future, the International Maritime Organization (IMO) of the United Nations has adopted a Ballast Water Convention in 2004. This Convention states that finally ALL ships (>50,000 in number) should install proper ballast water treatment (BWT) equipment on board from 2009 onwards. NIOZ is currently the coordinator of an EU-Interreg IVB project aiming to determine the efficacy and environmental impact of BWT system under severe conditions. This project is a major contribution to the upcoming Marine Strategy Directive of the EU-Commission with respect to negative effect of invasive organisms.

To achieve this, we have to developed and adapted an array of (semi)automated analyzing methods for phytoplankton, zooplankton and bacteria to be used for accurate counting and assessing viability. In cooperation with various partners (Wageningen-IMARES, ZebraBioScience) also ecotoxicology and human pathogens are studied.