

# **Ships' Ballast Water Reception and Treatment, A New Method to Combat Invasive Aquatic Species**

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## **Abstract**

Many years ago, aquatic species freely spread all over the world through natural factors like oceanic currents and winds, meteorological phenomena, sticking to floating objects, etc. with only biological and environmental factors like temperature, salinity of water and natural predators to prevent them. Today, ships and their ballast water are the main transferring mode for seven to ten thousand species including aquatic animals, plants and micro-organisms. These species are 1 of the 4 major threats to world's oceans; the other 3 major threats are land-sourced marine pollution, over-exploitation of living marine resources; & physical alteration/destruction of habitats. Transfer of aquatic species has increased in the past century in terms of extent and degree of damage, and evidence shows its continuity. It is estimated that some 12 billion tons of ballast water is annually transferred by ships in the world and at least 3 to 4 thousand species are transferred everyday (Matheickal, 2006).

**Key word:** Reception and Treatment facility- Ballast Water Management- Invasive Species

## **Preface**

The unintentional introduction of non-indigenous organisms has resulted in the establishment of many species outside their native ranges with the potential to threat native environments and economies. It is assumed that the main vector concerning transportation of organism is, beside the introduction of species for aquaculture purposes, the unintentional transport with ships.

Non-indigenous species are not only introduced with ballast water and associated sediments, but also fouling organisms on the ship's hull. It has been estimated that the major cargo vessels of the world are transferring 12 billion tons of ballast water globally per year indicating a global concern for the problem. The distribution of ballast within a vessel will depend on the design criteria, size and strength of the vessel (Fig.1)

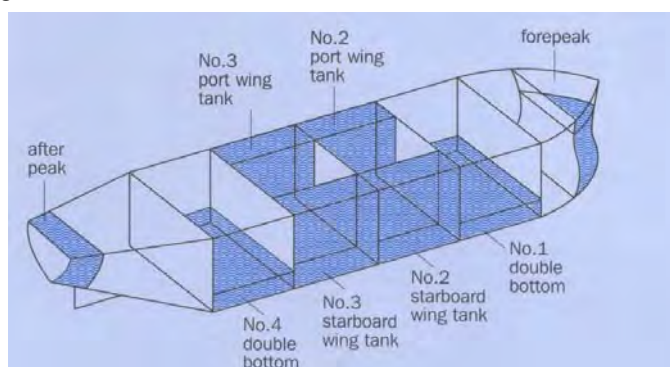


Figure 1 – Tank arrangement and tank capacity

In response to this threat, the International Maritime Organization (IMO), responsible for taking measures in regard with safety of navigation and marine environment protection started to seek a solution under the motto of “Safe, secure and efficient shipping on clean oceans”, namely:

- Guidelines for Preventing and Introduction of Unwanted Organisms and Pathogens from Ships' Ballast Water and Sediment Discharges, Resolution A.868(20). Management and control options recommended by these guidelines include:

- Minimize the uptake of organisms during ballasting, by avoiding areas in ports where outbreaks or population of harmful organisms are known to occur, in shallow water and in darkness, when bottom-dwelling organisms may rise in the water column.