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## Journal of Sea Research

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## Editorial

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September 2017 is a special month for both shipping and nature conservation. Thirteen years have passed since the International Maritime Organization (IMO) adopted the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* (BWM Convention). Obviously important for shipping, but why so for nature conservation?

Already over 100 years ago, the Scandinavian scientist Ostensfeld suspected ballast water to be the responsible means of transport of a phytoplankton alga that was found blooming in the North Sea. This was the first time in scientific literature that ballast water was suggested as a suitable species transport vector.

In many follow up studies the same suspicion was mentioned, but only in Australia in 1973 the presence of living zooplankton in a vessel's ballast tank after a transoceanic voyage was documented. This study confirmed the supposition that ballast water was a species transport vector.

Follow-up studies aimed to document the composition and risk of communities being transported by ships. Noting the problems caused by species introductions, as shown by the introduction of zebra mussels in North America and a comb jelly in the Black and Caspian Seas, a solution to this problem was sought. Subsequent research focused on the development of management systems to minimize the transfer of organisms in ballast water.

National concerns about the ballast water transfer of organisms were voiced at the IMO, the United Nations body that deals with shipping. It was agreed that a globally applicable instrument to address this problem was needed and a working group was established. As a first step, a ballast water management guideline was prepared and adopted in 1993. As research continued and data became known to IMO, this guideline was updated and a new version was adopted in 1997.

However, guidelines have a voluntary nature and it was noted that this man-made problem deserved more attention. Ballast water was believed to be the leading vector for the introduction of aquatic species globally and a mandatory instrument was developed by IMO to cope with this problem, i.e., the Ballast Water Management (BWM) Convention of 2004. This convention entered into force in September 2017 with an agreed phase-in of ballast water management requirements that will be completed by 2024 at the latest.

As the Convention neared its entry-into-force date, research focus turned towards evaluating different processes and systems for ballast water management, as well as new tools to rapidly determine if a ship's ballast water meets the discharge standards. In one such study, 19 researchers from 7 countries embarked on a voyage on the RV METEOR, from Mindelo, Cape Verde to Hamburg, Germany, as a collaborative effort to assess sampling devices and analytical tools to monitor ballast water compliance. This research provided the impetus for this special issue, though it represents only one such example of the many active research projects in the field of ballast water assessment and management.

This special issue of the Journal of Sea Research aims to gather the most recent advances in research supporting ballast water management including recommendations for sampling ballast water and for Port State Control compliance monitoring, calculations on and risk assessments of the amount of ballast water ports receive, disinfection methods and side effects of chemical ballast water treatment and advances in organism detection technologies.

The world's key players working on ballast water have contributed to this special issue so that this volume summarizes the most up-to-date science on this subject. It was exciting as editors to handle the manuscripts submitted to this special issue and we look forward to receiving feedback from the readers.

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