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Assessing exemptions under the ballast water management convention: preclude the Trojan horse

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ABSTRACT

The International Maritime Organization (IMO) Ballast Water Management Convention (BWMC) is a powerful instrument aimed at reducing spread of harmful aquatic organisms and pathogens (HAOPs). As BWMC is expected to enter into force soon, shipping companies will start seeking exemptions for ballast water management in accordance with BWMC Regulation A-4. However, without scientifically robust risk assessment (RA) and consistent rules, the exemptions may introduce a new form of risk within a convention generally designed to reduce risks. This paper describes an adaptive system for granting exemptions, consisting of six major components: target species selection procedure, port-to-port RA, monitoring, information support, administrative decision and review process. The system is based on key principles defined in the IMO guidelines for RA and is designed to continuously accumulate evolving experience on granting exemptions. The ultimate goal is to contribute to the control of the spread of HAOPs, without placing an unnecessary burden on the shipping industry.

1. Introduction

Ballast water carried by ships has been recognized as a major vector for the transfer of non-indigenous organisms, causing harm to the environment, economy and human health (Carlton, 1985; Hallegraeff and Bolch, 1991; Carlton and Geller, 1993; Olenin et al., 2000; Gollasch et al., 2002; Hewitt et al., 2009; Briski et al., 2012; David and Gollasch, 2015). Several decades have passed since the ballast water problem gained public recognition and intensive work by Marine Environmental Protection Committee of the International Maritime Organization (IMO) led to the design of the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWMC), and, finally, its adoption in 2004 (IMO, 2004; David et al., 2013a). BWMC is a powerful instrument that should eventually reduce the spread of harmful aquatic organisms and pathogens (HAOPs) thereby reducing anthropogenic pressure on marine ecosystems globally.

As the BWMC is expected to enter into force soon, it seems entirely reasonable that signatory States should examine possibilities to minimize costs and inconvenience to their shipping industries by exempting vessels from certain BWMC requirements. Regulation A-4 spells out the conditions under which such exemptions can be made (IMO, 2004), i.e. when they are: a) granted to a ship or ships on a voyage or voyages between specified ports or locations; or to a ship which operates exclusively between specified ports or locations; b) effective for a period of no more than five years subject to intermediate review; and c) granted to ships that do not mix ballast water or sediments other than between the ports or locations specified above.

The current situation with regard to exemptions officially sanctioned at national level is difficult to assess. It appears that some States may have reserved their positions until the BWMC enters into force while others may either be conducting the necessary risk assessments (RAs) or assessing the adequacy of the BWMC D-2 standard for protecting sea areas under their jurisdiction. In the U.S. for example, some states feel that the D-2 standard may not be sufficiently stringent (Albert et al., 2013). From the available literature, it is apparent that most exemptions so far developed nationally are to be regarded as interim. A number of states have already introduced national plans and/or regulations that include exemptions for ships operating on fixed routes or short sea voyages allowing some degree of relief from the ballast water treatment provisions specified in Regulation B-3 (ABS, 2014). In the U.S. exemptions can be granted for: a) vessels operating within a single Coast Guard zone); b) vessels which travel no more than 10 nm without crossing physical barriers (e.g. locks); c) vessels operating exclusively on the Great Lakes; and d) inland and seagoing vessels less than 1600 gross registered tons (ABS, 2014). In Canada, there are exemptions for vessels operating exclusively in Canadian waters, vessels that operate exclusively in the Great Lakes, small research

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vessels, vessels with permanent ballast and government vessels (Albert et al., 2013). In New Zealand, the import health standard applies to ballast water loaded within the territorial waters of a country other than New Zealand and intended for discharge in New Zealand waters. The standard does not apply to: ballast water that will not be discharged in New Zealand waters; ballast water loaded in New Zealand waters; or emergency discharge of ballast water (MAF, 2005).

From a scientific perspective, exemptions from ballast water treatment requirements spanning large geographical areas (e.g. across national boundaries, more than one regional sea) could be far more problematic. As a minimum, there is a need for centralized data sources and standardized approaches to RA that could be used by the relevant agencies and institutions of the various States affected (Awad et al., 2014; Olenin et al., 2014). The aim of such harmonized procedures would be to ensure that any wide-scale ballast water treatment exemption will not increase the risk of introductions, above that which could reasonably be achieved, where treatment is part of the suite of recommended BWMC procedures.

The guidelines for RA under regulation A-4 of the BWMC outline methods that will enable Parties to identify unacceptable high risk scenarios and acceptable low risk scenarios, they also contain the key principles that should be taken into account in RA (IMO, 2007). These principles constitute the "methodological backbone" of an adaptive system for granting exemptions, described in the present paper. The system is adaptive in order to constantly accommodate evolving experience on granting exemptions by improving interaction between its elements. The ultimate goal of the system is to contribute to the control of the spread of HAOPs, without placing an unnecessary burden on the shipping industry. The adaptive system consists of six major components: target species (TS) selection procedure, port-to-port RA, monitoring, information support, administrative decision and review process. We present these elements and describe their interaction; we also illustrate the working procedure with examples of port-to-port RAs and, in this context, discuss the concept of low versus high risk.

2. The adaptive system for granting exemptions

The proposed system is formed of six major interlinked components (Fig. 1, sub-chapters 2.1–2.6).

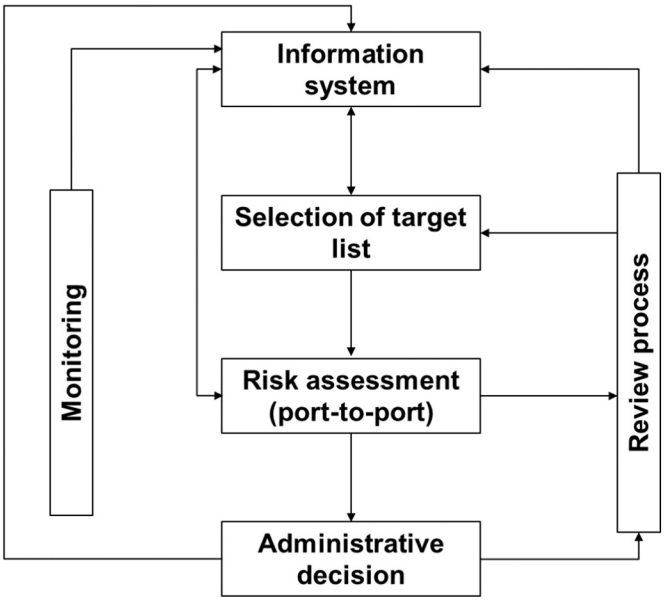

Fig. 1. The adaptive system for granting exemptions under the Ballast Water Management Convention Regulation A-4. Please see text for detailed description of the system components and their links (sub-chapters 2.1–2.6).

Box 1
Target species (TS)

Species identified by a Party that meet specific criteria indicating that they may impair or damage the environment, human health, property or resources and are defined for a specific port, State or biogeographic region (IMO, 2007).

2.1. Target species list: Selection criteria and the procedure

The first step towards identifying the TS (Box 1) is to define the spatial context concerned, which depends on the purpose of the RA procedure i.e. whether the ports of both departure and arrival are situated within one or two Large Marine Ecosystem (LME) (sensu Sherman and Duda, 1999). The IMO RA guidelines recommend that sea areas under the LME scheme be used including subdivisions of these areas where appropriate (IMO, 2007). In addition, we hereby propose to also include larger regional waterbodies, not covered by the LME framework (NOAA, 2015), such as the Caspian Sea or the Laurentian Great Lakes of North America, to involve all important geographical areas of shipping activities and major donor/recipient areas of NIS (Olenin et al., 2014).

TS identification is greatly dependent upon the availability and accessibility of reliable up-to-date data in ports of concern. Unfortunately, not all port surveys undertaken to date have been performed at the required level (Hewitt and Martin, 2001; Hayes et al., 2005; Morrisey et al., 2007; Bishop and Hutchings, 2011). Consequently, where port biological data are considered of insufficient quality, information from wider regions surrounding selected ports (i.e., sub-regions of distinct sea-areas) should be used. Importantly, both native HAOPs as well as non-indigenous (NIS) and cryptogenic (CS) species (Box 2) should be included in the initial list of species.

The initial list of native species should contain all HAOPs (IMO, 2004), by including harmful algal bloom species (HABs) as well as aquaculture pests, parasites and disease agents. For compiling the initial lists of these species, the World Health Organization (WHO), World Trade Organization (WTO) and World Organization of Animal Health (OIE) sources should be consulted. The initial list of NIS and CS species should be obtained from continuously updated and verified sources, such as the Information system on Aquatic Non-Indigenous and Cryptogenic Species (AquaNIS. Editorial Board, 2015) or similar reliable databases.

TS will consist of a small subset of the native HAOPs, NIS and CS occurring within a defined region. Only those native species for which evidence of HAOP status has been well documented should be included on the TS list. To be entered on the list, NIS/CS should either be those species with documented impacts or those for which there is insufficient evidence to exclude potential impacts (Fig. 2). As information on the impacts of NIS/CS in marine ecosystems is poor and often lacking, uncertainty regarding the impacts of certain species is inevitable and this needs to be taken into account (Ojaveer et al., 2015).

The proposed criteria for the selection of TS are given in Box 3. These follow IMO RA guidelines (IMO, 2007) and require a yes/no answer to the suggested questions (Fig. 2).

Box 2
Harmful aquatic organisms and pathogens (HAOP)

Aquatic organisms or pathogens which, if introduced into the sea including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas (IMO, 2004).

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