

Joint HELCOM/OSPAR Task Group on Ballast Water Management Convention Exemptions

Ninth Meeting

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Document title	Note on including natural dispersal as part of Risk Assessment of Marine Invasive Species when using the joint OSPAR/HELCOM harmonized procedure for granting exemptions
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Background

Marine invasive species may disperse by anthropogenic vectors as well as natural dispersal. For a few years Denmark and other parties in collaboration have explored ways to determine the extent of such natural dispersal in order to include this component in the risk assessment to be carried out prior to issuing exemptions under regulations implementing the BWMC. The scientific methodology chosen to address natural dispersal is connectivity as detailed in MEPC69/INF.25 (Denmark) and the approach on Same Risk Area is described in Stuer-Lauridsen et al. (2018). The OSPAR-HELCOM TG Ballast will recall that the SRA was presented at TG Ballast meeting in Brussels November 2016.

The IMO approved at MEPC71 to include the SRA as a part of the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7) and inserted text to this effect (Resolution MEPC.289(71)). In the submission to the MEPC71 it was emphasised that the SRA would be part of the existing risk assessment based on the G7 and that the novelty of SRA lies in the modelling of “connectivity” of species of concern, i.e. a distribution probability of their natural dispersal. The SRA approach is dependent on an understanding of this baseline risk generated by the natural dispersal of target species, which was not addressed in G7 and is currently not addressed in the Joint HELCOM/OSPAR Harmonised Procedure on granting exemptions (JHP) as adopted in 2013.

Please find the Note attached.

In the note Denmark wishes to provide information on recent activities regarding SRA (in A) and further to assist in aligning JHP with the changes in the Guidelines for risk assessment of the BWM Convention (in B).

Action required

The Meeting is invited to take note of the information about recent “Same Risk Area” activities and include the “Same Risk Area- concept” in JHP during its revision.

Note on including natural dispersal as part of Risk Assessment of Marine Invasive Species when using the joint OSPAR/HELCOM harmonized procedure for granting exemptions

Keywords: Ballast Water Management Convention (BWMC); Risk Assessment (RA); Guideline no. 7 (G7); Joint HELCOM /OSPAR Harmonized Procedure (JHP);

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Denmark wishes to provide information on recent activities regarding SRA (A) and further to assist in aligning JHP with the changes in the Guidelines for risk assessment of the BWM Convention (B).

A. Information on SRA activities

Denmark has undertaken several activities in support of SRA and provides information on the following: 1) the first international workshop on SRA and the recommendations and options for further work as presented by the workshop; 2) a status of the work on the Swedish/Danish Kattegat/Sound case; 3) the progress of the SRA freeware; and 4) the information on the publication of a research paper on SRA in the journal Marine Policy.

1) the first international workshop on SRA

30 participants from eight countries descended on Copenhagen on 7th and 8th of May 2018 for the first workshop hosted by Danish Shipping. The delegates representing first movers among administrations, shipowners, research and consultancy communities met to share experiences in designing studies for the SRA approach when assessing exemptions under the BWM Convention.

Currently, the possibility of exempting vessels provided they trade in a limited and presumably ecologically connected area has led to consideration of the following areas:

- The Kattegat/Sound area Denmark and Sweden
- The coastline Rotterdam to Zeebrugge in Belgium and the Netherlands

- Northernmost part of the Yellow Sea between China and South Korea

Australia, which has a restrictive biosecurity legislation, has already announced domestic SRAs in the Gulf of St. Vincent and Spencer Gulf in South Australia (near Adelaide) and the Port Phillip Bay in Victoria (near Melbourne) within their own EEZ. For reference please see <https://www.legislation.gov.au/Details/F2017N00071>.

2) a status of the work on the Swedish/Danish Kattegat/Sound case

An SRA is studied in Kattegat and the (northern part of the) Sound between Denmark and Sweden where ro-pax ferry lines operate and small number of coastal operators trade between ports in the two countries. The team working on the SRA study have identified the hydrodynamic data, the list of invasive species and the bulk of habitat data to be modelled. The modelling is completed for 20 species that are under assessment. The outcome will hopefully provide the shipowners seeking exemptions and the authorities in assessing the risks in both countries a well-informed basis for decisions regarding risks associated with granting exemptions from the BWM Convention in the area. A final workshop was held recently and a final report is underway from the main participant Danish Technical University (DTU Aqua).

3) the progress of the SRA freeware

Funded by the Danish Maritime Fund the Danish authorities involved in ballast water management have initiated a project in the Danish Technical University (DTU Aqua) to develop a software tool to support the delimitation of SARs. The tool is now ready for beta-testing and professionals are encouraged to upload hydrodynamic and biological data to test the versatility of the software. Briefly, the SRAAM software integrates connectivity analyses of marine systems, agent-based modeling and provides a decision support mechanism for the risk assessment of an SRA. The tool is available at a public web page and the software estimates the connectivity of areas based on the hydrography and biological traits of the pelagic larvae in the area modeled. The tool is found at <https://github.com/IBMLib/SRAAM>.

4) the information on the publication of a research paper on SRA

The consultants and researchers from Denmark and Singapore responsible for the bulk of the initial work on SRA have presented the concept in the journal 'Marine Policy' and therein summarised the current knowledge and presented the research underlying the area based approach encapsulated in SRA. The paper was awarded an open access grant from the Danish Maritime Fund and is freely available at <https://www.sciencedirect.com/science/article/pii/S0308597X17308424>.

B. Considerations regarding the SRA and JHP

The following sections address some of the issues raised by the changes to G7 regarding SRA. Our proposals are not meant to be prescriptive but rather to provide a JHP revision process some input on the SRA. Further directions on the process of identifying a potential SRA and of assessing it is available in the papers mentioned in the introduction and will be provided in the Kattegat/Øresund study, when published.

SRA and exemptions

The SRA is an area-based risk assessment approach relying on new or existing data aimed at providing documentation for the authorities' decision on granting an exemption to ships within a

well-defined marine area. An exemption means that ships exclusively operating within the designated area do not need manage ballast water according to D-2, i.e. *de facto* install treatment technologies. Ships that operate regularly or occasionally to and from an SRA will still need to treat the ballast water or avoid mixing of water and sediment, as required by the BWMC. The exemptions may be granted within a geographical delineation - the SRA - if the level of risk of natural dispersal of target species over time is considered equal to or higher than that associated with the transfer of the same target species via ballast water.

The SRA definition from Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7) may be required in JHP: *“an agreed geographical area based on a completion of a risk assessment carried out in line with these Guidelines”*.

Estimation of natural dispersal

Natural dispersal is the key component in the connectivity approach underlying the SRA as it is now included in the G7. An estimation or prediction of the natural dispersal of target species may conveniently be carried out by computational modelling of the existing and/or expected target species in the area under consideration. Dispersal modelling of marine organisms requires data on the hydrodynamic, environmental and meteorological conditions of the area and knowledge of the dispersal mechanisms of the target species considered. Using so-called “agent-based modelling” areas with high connectivity may be identified as may zones where natural dispersal is restricted due to dispersal barriers.

It is proposed that new text is required in JHP addressing the natural dispersal of the target species, e.g. in the following paragraph:

The SRA estimates the natural dispersal through modelling the characteristics governing the natural distribution of target species:

- *The biological features (characteristics) of the target species;*
- *The hydrodynamic, environmental and meteorological conditions of the area in question;*
- *The species’ habitat occurrence and preference.*

It is further proposed that new text is required regarding area-based risk assessment, e.g.:

The extent of natural dispersal of the target species should be modelled for the relevant water bodies if an SRA is considered. The area defined by the extent of connected locations of populations of target species may determine the extent of an SRA after a risk assessment.

Risk assessment

The risk assessment flow chart in 5.5 and Annex 4 should include natural dispersal as a component in the distribution of target species. For example, in 1.2 a question such as *“May target species spread by natural dispersal between ports?”* could be included. If the answer is “Yes” one may proceed to “Low” or “Medium risk”.

In section 5.6 the table on risk assessment has the current text in “Low risk” which could be amended to reflect the effect of natural dispersal (new text in italics): *“It is not very likely that target species are*

distributed with ballast water and occupy a new habitat, *or it is likely that in the Same Risk Area the target species are readily distributed by natural dispersal.*"

In table on risk assessment outcomes the Medium risk does address dispersal but not in the context of an area of high connectivity. Therefore a text such as the following would address the SRA regarding Medium risk:dispersal ability/mobility of the species, *also in the context of a Same Risk Area.*

SRA is primarily expected to be applied under a species-specific risk assessment method and specific assessments to include natural dispersal may be addressed through the following:

For a species-specific risk assessment, an assessment could be deemed low risk if:

- .1 target species are already present in the selected ports or locations of the SRA or are modeled to have a high probability for natural dispersal in the SRA within the agreed time window;*
- .2 if the probability of invasion of a target species introduced via ballast water is considered to be less than the likelihood of natural dispersal of that target species across the route(s) addressed in the risk assessment.*

On a final note we note that while the modelling of connectivity does require a considerable knowledge of the target species' characteristics similar to the base biological knowledge for a risk assessment through experts and detailed hydrodynamic data, the pre-modelling establishment of data provided by a biological survey is not an inherent requirement.

Reference:

Stuer-Lauridsen, F., G. Drillet, FT. Hansen, J. Saunders (2018) Same Risk Area: An area-based approach for the management of bioinvasion risks from ships' ballast water. Marine Policy 94, pp 147-155 <https://doi.org/10.1016/j.marpol.2018.05.009>