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

TG BALLAST 6-2015 agreed that the Online Decision Support Tool, which supports the Joint Harmonised Procedure, needed to be redeveloped to improve the visual appearance and to take into account the development of separate target species lists for the North East Atlantic and Baltic Sea (Outcome of HELCOM/OSPAR TG BALLAST 6-2015, para. 4.1). To facilitate this, the Secretariats developed a proposal for the redevelopment of the tool (document 5-1 to TG BALLAST 8-2017). The proposal has two phases as outlined below, one for essential upgrades to ensure the continued functioning of the tool, and one for desirable upgrades that would improve its functioning.

Phase 1/ Priority*:*

- Upgrading to latest Oracle Apex version for enhanced tools, user interface and lay-out, to ease independent use of the tool by stakeholders (e.g. ports, shipping companies and national authorities);
- Implementing the two revised target species lists (endorsed by OSPAR and HELCOM in 2015) in the JHP tool.
- Double/Check verification that the Risk Assessment algorithm in the JHP tool runs correctly.

Phase 2/Desirable upgrades:

- Semi-automatic data upload function, to ensure ease of updating and quality control of data feeding the system;
- To consider and if feasible implement map (GIS) functionalities, to enhance visualization of the information in the tool;
- Automatic report generation, to enable ease of use of the tool results in exemption applications to national authorities according to IMO BWMC Regulation A-4;
- To consider and if feasible implement live links to existing European non-indigenous species databases (such as DAISIE and AquaNIS), to maximize synergies with other data sources.

The OSPAR Secretariat was able to access funding to undertake the first phase of priority improvements and Brockmann Consult were contracted to undertake the work during autumn 2016/ Spring 2017. The upgraded tool can be found at jointbwmexemptions.org. The HELCOM Secretariat is undertaking the second phase of work through the COMPLETE project as agreed by HELCOM/OSPAR TG BALLAST 8-2017 (Outcome of HELCOM/OSPAR TG BALLAST 8-2017, para. 5.6). Furthermore, those suggestions made by Finland on usability are also being taken into account (Outcome of HELCOM/OSPAR TG BALLAST 8-2017, para. 5.5).

Simultaneously to the COMPLETE project, HELCOM is working on the upgrade of the HELCOM Baltic Sea species checklist under the project BaltiCheck. BaltiCheck aims to consolidate, establish a database

and make publicly available via online web application macro species abundance and distribution data resulting from various HELCOM projects and activities.

This document contains an update of the work done in relation to the upgrades of Phase 2 and the proposed linkage to other HELCOM work in the frame of the BaltiCheck project.

Action required

The Meeting is invited to consider and agree on:

- the modified form for port survey data submission as included in Annex 1 to this document;
- making use of the modified form when reporting new port survey data;
- redesigning the online user interface (moving away from Oracle APEX platform) and inclusion of GIS component as well as the display of selected map layers proposed in relation to the implementation of GIS functionalities;
- the automatic report on the outcome of the risk assessment for a particular route as included in Annex 2 to this document;
- the inclusion of an additional level in the risk assessment algorithm which would evaluate the human pathogens concentration, accordingly to the BWMC Regulation D2;
- the substitution in the current species salinity tolerance range data for SALINITY_MAX and SALINITY_MIN and use of these values when conducting the risk assessment;
- on-going process to create a link between the online JHP decision support tool and AquaNIS database; and
- transferring the so far collected port survey data from the online JHP decision support tool to the BaltiCheck database and storing of future port survey observations in the BaltiCheck database.

Update on the improvement of the online JHP decision support tool

TG BALLAST 8-2017 agreed on the desirable upgrades (Phase 2) to the online JHP decision support tool to be implemented by HELCOM in the frame of the COMPLETE project (Outcome of HELCOM/OSPAR TG BALLAST 8-2017, para. 5.6). Therefore, based on discussion at the meeting and further developments in the COMPLETE project, an overview of the different steps taken is presented below, including open issues in the short-mid and future term to be discussed.

- Data upload functionality (using web-form)

The uploading process of port survey data to the online decision support tool could be enhanced by limiting the data requested in the submission form to only the information used by the risk assessment tool in the analyses. The HELCOM-OSPAR JHP details an exhaustive port survey protocol assuring the reproducibility and comparison of results among ports included in the online JHP decision support tool. Nevertheless, many of the environmental parameters sampled and measured have no weight in the risk assessment algorithm used to analyze ship routes.

Consequently, a proposal for a modified form for Port survey data submission is included as **Annex 1** to this document. **It is suggested to only store data used for the purpose of granting ballast water exemptions in the online tool**. Thus, reducing the volume of data submitted would allow a faster submission, quality control and availability of this data on the online database. The proposal includes the following modifications detailed below:

1. Listed below are the parameters suggested **not to be included** in the submission form:
    a. Atmospheric conditions
    b. Depth and sediment profile (organic content, granulometry)
    c. Turbidity
    d. Dissolved oxygen profile
    e. Water temperature profile
    f. Methodological description
        i. Sampling duration
        ii. Area covered, water volume sampled, depth penetration
        iii. Parallel samples
        iv. Sampling, pretreatment, measuring and stored methods
        v. Depth

2. Salinity profile. In contrast to the parameters listed above, salinity is an essential parameter in the risk assessment analysis, thus it is of key importance to carry out the salinity measures described in the HELCOM-OSPAR JHP. However, the risk assessment algorithm will evaluate the risk according to the port salinity range and therefore it is suggested to report the salinity

as SALINITY_MAX and SALINITY_MIN, which will refer to **the maximum**, **and the minimum salinity** respectively, found during the port survey.

3. According to the JHP document section 2.38 *"all species present in the samples are identified to the lowest taxonomic level possible"* and reported for its inclusion in the risk assessment tool database. However, the risk assessment is performed at species level, therefore **it is suggested to only report observations which have been identified to species level**. To favor this task and to assure taxonomical quality control it is proposed to modify the submission form where the SPECIES_NAME attribute will display all the species present in the database for the user to select which have been found in each observation. The selection of the species name will automatically be linked, when available, to WoRMS database, the World Register of Marine Species. It is suggested to use established WoRMS taxonomy as the currently accepted taxonomy to avoid taxonomical errors. For those species, which are currently not present in WoRMS database, the link will be automatically created to an alternative database such as ITIS, the Integrated Taxonomic Information System. In case that a species not present in the database is identified during the port survey the new species would be added manually to the submission form, submitted to the online database and included in the list of species present in the database for future submissions.

4. Harbour code. Port surveys data are linked to the harbour location by a unique code of three letters generated by the originator (HARBOUR_CODE). It is suggested to replace this code by the United Nations Code for Trade and Transport Locations (UN/LOCODE) for uniformity and avoiding any risk of confusion.

- Implementation of GIS functionalities (Frame for interactive map layers)

To enhance the visualization of the data stored in the online JHP decision support tool, i**t is proposed to implement a GIS interface** similar to HELCOM Map and Data service, but with preselected set of map layers and extended base to cover both HELCOM and OSPAR regions.
The proposal would be to display the following map layers:

1. Ports included in the risk assessment tool as polygons including all the sampling locations (points) surveyed by each port.
2. Species. Observation points (GPS)
    - Target species occurrence
    - All species present in the risk assessment tool surveyed by ports
    - Observations from AquaNIS database of all the species included in the risk assessment tool
3. Environmental parameters, such as salinity

- Automatic report generation

In order to facilitate the attachment of the risk assessment tool outcome in ballast water exemption applications to national authorities, it is proposed that the online JHP decision support tool generates an automatic report, ready for downloading as PDF file, summarizing the route input details, the analyses carried out and the outcome of the risk assessment for a particular route.

1. A one-page document (**Annex 2**) has been designed as a template for the risk assessment tool report to be reviewed by the meeting.

- Link implementation to existing European non-indigenous species databases (AquaNIS)

In cooperation with Klaipeda University, HELCOM is working to create a link between the online JHP decision support tool and AquaNIS database. This link will provide to the risk assessment tool with essential data, e.g. species salinity tolerance range, for an accurate risk assessment performance. In addition, AquaNIS will supply georeferenced species-of-interest observation data across the HELCOM-OSPAR region. These data will be publicly available for GIS visualization together with the data supplied by ports for monitoring and species distribution purposes. Update interval for the data harvested from AquaNIS is to be explored, but could be applied e.g. annually.

- Other issues

1. Human pathogens, as described in the JHP (para. 2.19 and dedicated section on p. 33), must be reported in the port survey as concentration to the online JHP decision support tool to be included in the risk assessment evaluation according to the concentration thresholds defined in the BWMC Regulation D2. Nevertheless, the risk assessment tool does not take these data into the analyses since the risk assessment algorithm only evaluates the presence/absence of target species in the donor and receiver port. Human pathogens are currently not considered as target species for the HELCOM-OSPAR region and its inclusion would not be appropriate for this task due to the necessity of the evaluation of pathogens' concentration in the water. Therefore, **it is suggested to include an additional level in the risk assessment algorithm which would evaluate the human pathogens concentration, accordingly to the BWMC Regulation D2**, in the donor port to evaluate the risk of the route in consequence.

2. The risk assessment algorithm analyses, in the sixth level, the salinity tolerance range of the target species found in the route assessed. Currently the online decision support tool uses for this purpose the species salinity tolerance range, which is stored in the risk assessment tool as Native and Baltic. **It is proposed to substitute the current species salinity tolerance range data for SALINITY_MAX and SALINITY_MIN**, which will include the maximum and minimum values observed/reported for that species instead of Native and Baltic, considering that this would more appropriate reflect the salinity tolerance of an specie.

3. In addition, a **modification on the sixth level of the risk assessment algorithm *"Number of species tolerate wide ranges of salinity (PSU)"* is proposed**. Wide range of salinity is considered by the JHP document as wider than 30 PSU. It is proposed to rephrase it to a more informative sentence e.g. *"Number of species with salinity tolerance wider than 30 PSU".*

4. Moreover, it has been noticed that the classification of species as "wide salinity tolerant" is dependent of the shipping route analyzed, *e.g. N. melanostomus* is marked as species with a wide range of salinity >30 PSU (4-40 PSU) when the route is from Gothenburg to Turku but not when the route is Gothenburg to Kokkola. **It is suggested to amend this to assure that the classification of species is not dependent of the shipping route selected**.

5. Simultaneously to the COMPLETE project, HELCOM is working on the upgrade of the HELCOM Baltic Sea species checklist under the project BaltiCheck. BaltiCheck aims to consolidate, establish a database and make publicly available via online web application macro species abundance and distribution data resulting from various HELCOM projects and activities. The project develops a spatial database (PostgreSQL, postGIS) based on commonly used species observation data model (Darwin Core) and aims to use controlled taxonomical vocabulary service from WoRMS. **It is suggested to transfer the current observation data from JHP decision support tool to the new Balticheck database.** This will provide synergy and assure the appropriate storage of the data reported by port surveys and its public availability beyond its primary goal of supporting the applications for granting ballast water exemptions. This new common database will host additionally data from European species observation databases such as AquaNIS, which would support the monitoring and distribution studies of species of

interest, e.g. non-indigenous species, in the HELCOM-OSPAR region. The RA tool user interface would need to be redesigned and would be maintained as the tool for granting ballast water exemptions and only using the species data reported by port surveys during the risk assessment analyses.

OSPAR COMMISSION

Protecting and conserving the North-East Atlantic and its resources

HELCOM

Automatic HELCOM/OSPAR JHP Risk Assessment report

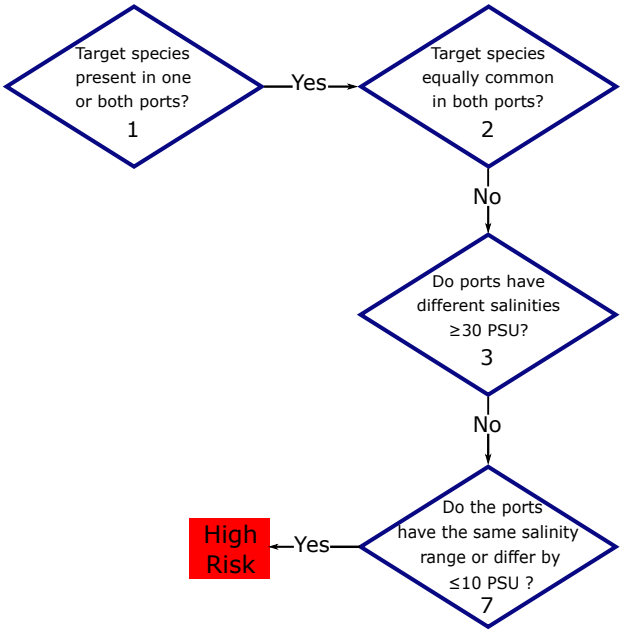
A joint regional online decission support tool to identify low risk routes for IMO Ballast Water Convention exemptions (A-4)

Donor Port
Gothenburg (GOT)

MAP HERE WITH THE LOCATION OF THE 2 PORTS

Recipient Port
Turku (TKU)

RA decision path diagram



RA calculation for the trip from GOT to TKU

1) Presence of target species for region HELCOM in both ports
   - GOT *Neogobius melanostomus*
   - TKU *Cercopagis pengoi*
   - TKU *Gammarus tigrinus*
   - TKU *Mytilopsis leucophaeata*
   - TKU *Palaemon elegans*
   - TKU *Rhithropanopeus harrisii*

2) Target species for region HELCOM in donor port (GOT) not present in recipient port (TKU)
   Neogobius melanostomus

3) Salinity ranges in both ports (PSU)
   GOT: 3-35
   TKU: 3.7-11.8

4) Species that tolerate wide range of salinity (≥30 PSU)
   Neogobius melanostomus 4-40 PSU

Risk Assessment Decision (Time: 30.10.2018 10:13): **High Risk**