

**Report of the BSRP/HELCOM/COLAR Workshop on
“Ballast water introductions of alien species into the Baltic Sea”
21-25 February 2005, Palanga, Lithuania**



Introduction

Many of the invasive alien species present in the Baltic Sea originate from ship ballast water introductions. The role of shipping as a vector of introduction is constantly increasing. Presently, the IMO Ballast Water Management Convention (BWMC) is open for ratification, and if properly implemented, the BWMC will minimize the risk of further shipping mediated biological invasions. The implementation of the IMO BWMC in the Baltic Sea area will require a large number of scientific advice and administrative decisions.

Aims of the Workshop:

- 1) to assess applicability of the risk assessment and port baseline survey methodologies developed under the IMO GloBallast and other relevant projects for the Baltic Sea;
- 2) to evaluate the research capacity, technical potential and financial resources needed for the risk assessment and the port baseline surveys;
- 3) to elaborate common principles for the monitoring system of invasive species in the Baltic Sea;
- 4) to develop a common information system for the Baltic Sea supporting the implementation of the IMO BWMC Convention.

Participants of the Workshop

The Workshop was attended by 22 participants from all Baltic Sea countries as well as from Ukraine and Norway. Also HELCOM, the GEF-UNDP-IMO GloBallast Programme and the ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV) were represented. Technical assistance was provided by students of Klaipeda University. The list of participants is given in **Annex 1**.

Agenda of the Workshop

The Workshop format included introductory lectures on specific topics given by invited specialists, presentation of case studies and team work targeted on pre-defined questions. The agenda of the Workshop is given in **Annex 2**.

Need for regional cooperation

In accordance with the IMO BWMC article 13 “Technical assistance, co-operation and regional cooperation” the Workshop stressed that cooperation within the Baltic Sea region is crucial for minimizing the risk of ballast water mediated introductions of invasive alien

species into the Baltic Sea region. Development of methodologies for port baseline biological surveys and risk assessment, design of alien species monitoring programmes, early-warning system and exchange of information would be most effective, both financially and scientifically, if done in cooperation, between states both within the Baltic Sea region and outside it.

HELCOM action to address ballast water issue

The Workshop discussed the draft HELCOM Recommendation “Measures to address the threat of invasive species transported via the ballast water of ships” (October 2004) elaborated in accordance with the IMO’s BWMC. The Workshop welcomed the draft HELCOM Recommendation as being very valuable for the organisation of work to prevent ballast water mediated introductions of invasive alien species.

The Workshop also agreed that because of the geographical characteristics of the Baltic Sea (a mean depth of 55 metres; all areas deeper than 200 m are within less than 50 nautical miles to the nearest land) the requirements of the BWMC (Regulation B-4, paragraphs 1.1. and 1.2.) for conducting ballast water exchange cannot be met in the Baltic Sea. An evaluation of the suitability of designating areas in the Baltic where a ship may conduct ballast water exchange, in accordance with Regulation B-4, paragraph 2, must be made by the port states. Ballast water exchange within the Baltic may prevent the spread of freshwater invasive alien species from one freshwater Baltic port to another. However, the ballast water exchange should not be considered as the only effective measure for managing ballast water within the Baltic. Development of risk assessment methodology and other tools (biological surveys, monitoring, early-warning systems, appropriate treatment of ballast water) is extremely important for prevention of ballast water mediated introductions of invasive alien species.

Risk assessment of ballast water mediated introductions

The Workshop stressed that the main benefits of carrying out risk assessment are:

- High risk ships can be identified through risk assessment and special measures can be applied for the management of their ballast water (for example treatment, exchange of ballast water in designated areas outside the Baltic or treatment at land-based ballast water and sediment reception facilities).
- Measures can be adopted to reduce or ameliorate the risks identified in risk assessments.
- Knowledge about the risk of invasive species can be used to support concerted action in other international fora, e.g. IMO and EU.

The Workshop discussed experiences from the IMO GloBallast, DNV, and BITIS projects for assessing the risks of introductions with ballast water. The Workshop noted that although risk

assessment is a very valuable and essential tool, it could become a resource consuming activity. The Workshop agreed that a common approach to risk assessment within the Baltic Sea region is needed and recommended that future work be based on:

- 1- An analysis (present and future) of shipping patterns in the Baltic Sea, which includes the origins of ballast water and the spatial and temporal patterns of discharge within the Baltic in order to quantify and understand the possible risks to the Baltic [2005-2006].
- 2- An environmental similarity analysis for the Baltic Sea region should be performed to identify potential source regions of alien species that are of high risk [2005-2006].
- 3- Methodologies for risk assessment should be evaluated to determine which methodology is best suited for the Baltic Sea region. This evaluation should be based on the outcome of the analysis of shipping patterns, the environmental similarity analysis and the results from full-scale pilot studies from the Baltic Sea region.
- 4- Risk assessments should be made for areas/ports of special interest (applying the principles of the IMO guidelines)
- 5- The Workshop agreed that there is a need for an additional workshop in the end of 2005 – beginning of 2006 in order to:
 - a. Agree on final risk assessment procedures incorporating experience and knowledge collected during actions 1, 2 and 3 to the methodology of risk assessment;
 - b. Develop a common structured procedure for species specific assessment to be used in developing a “black list” of harmful or potentially harmful alien species that are especially undesirable to be introduced to the Baltic Sea;
 - c. Develop principles for an early-warning system concerning ballast water uptake in certain areas such as areas known to contain outbreaks of toxic (algal) blooms (BWMC regulation C-2)].

The Workshop agreed that the internal Baltic ship traffic is not of primary interest for the risk assessments because alien species once settled in some part of the Baltic, are able to spread through natural means, if the environmental conditions (salinity, temperature, etc.) are acceptable, as well as through ballast water and other human-mediated vectors. Possibilities are very limited for effectively preventing secondary introductions through ballast water within the region and thus limit the advantages of using risk assessment procedures. However, there could be certain cases where the internal shipping risks should be analyzed, for example when extraordinary measures are required to prevent the spread of a particularly harmful species (such as a pathogen or toxic algae).

Port Baseline Surveys

The Workshop agreed that the port baseline surveys should be carried out by the Contracting Parties. The aim of the surveys should be: a) to provide necessary baseline data on the alien species composition, distribution and abundance in ports and adjacent areas for the risk assessment procedure and b) to outline the reference conditions in ports and adjacent areas to be used in development of an early-warning system, future monitoring of alien species and for the ecosystem management systems. More details are given in **Annex 3**.

Common principles of the monitoring system of invasive species in the Baltic Sea

The Workshop took note of the information on the HELCOM data and assessment strategy and the ongoing review of the HELCOM COMBINE monitoring programme. The Workshop also noted that the input to the review process should be given via national contacts to MONAS and MON-PRO.

The Workshop indicated that it is important to report to HELCOM on findings of alien species at national monitoring stations which presently are not included into the HELCOM COMBINE system (e.g. county's monitoring, national fishery institutes' surveys, etc.)

For management of ballast water it is important to include other groups that are currently not monitored (e.g. pathogenic microflora, meiobenthos, resting stages, marine fungi, etc.). Special attention should be paid to the groups which are listed in the BWMC [Ballast Water Performance Standard (regulation D-2)]. A common methodology should be developed for the monitoring of those groups.

Proposals for common information system for the Baltic Sea

The Workshop agreed that there is a need for a common information system for the Baltic Sea States supporting the implementation of the IMO Ballast Water Management Convention. The system should support risk assessment activities and decision making in Baltic Sea ports. It should also serve as a data source for other regions that may be potential recipients of Baltic Sea species. The system should also provide a basis for exchanging information and feed into an early-warning system.

The Workshop took note of the information that GloBallast Risk Assessment Methodology included a port-to-port environmental matching process and has developed a database on the port environmental parameters for more than 350 major ports around the world and the data would be available for the Contracting Parties for non-commercial use. It will be advantageous if similar regional database is developed for the HELCOM area. The Workshop underlined the value of such data for the risk assessment process and agreed that the HELCOM information system should be designed to be compatible with the GloBallast database.

The common information system should include:

- an early-warning system on new introductions and spread of invasive alien species and warning for outbreaks of harmful organisms which may affect the suitability of ballast water uptake (BWMC Regulation C-2);
- information for Baltic Sea countries and recipient countries outside the Baltic Sea region about the status of alien species etc.;
- information on water quality and abiotic conditions in Baltic harbours;
- a list of targeted or most unwanted species.

Whenever possible, such a common information system should benefit from the recent European initiatives, such as the FW6 IP ALARM and FW6 STREP DAISIE as well from the information system already existing in the Baltic Sea region, such as the Baltic Sea Alien Species Database, NOBANIS, etc.

Research capacity, technical potential and financial resources needed for the risk assessment and the port baseline surveys

HELCOM could, through initiating projects, provide valuable assistance to the Baltic Sea States in developing the first stages of risk assessment methodologies and the common information system for the Baltic.

Development of the various measures for implementing the BWMC (risk assessment, port baseline studies, environmental monitoring, etc.) will require allocation of national resources. A common approach within the Baltic region is crucial for success. It is, therefore, important that the HELCOM action plan on ballast water management is adopted and that decisions by relevant HELCOM working bodies are taken as soon as possible.

Regional Introductory Training Programme on Ballast Water Management

The Workshop recommended that HELCOM together with the IMO GloBallast programme organize a regional introductory training course for port administrators, environmental and fisheries administrators as well as NGOs. The GloBallast programme has developed an Introductory Training Course for ballast water management and may methodologically assist in the organisation of such a workshop (contact person: Dr. Jose Matheickal, GEF/UNDP/IMO Global Ballast Water Management Programme, London, jmatheic@imo.org).

Annex 1.

BSRP/HELCOM/COLAR Workshop on “Ballast water introductions of alien species into the Baltic Sea”, 21-25 February 2005, Palanga, Lithuania

WORKSHOP PARTICIPANTS

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Local organising committee

Coastal Research and Planning Institute, Klaipeda University, Lithuania:

Anastasija Zaiko, Irina Ovcharenko, Andrius Šaulys.

Annex 2.

BSRP/HELCOM/COLAR Workshop on “Ballast water introductions of alien species into the Baltic Sea”, 21-25 February 2005, Palanga, Lithuania

AGENDA

<u>Day</u>	<u>Time</u>	<u>Event</u>
February 21, Monday		Arrival of participants
	16.00-18.00	Registration of participants
	18.00	“Ice breaker”
February 22, Tuesday	09.00-10.00	Registration of participants
	10.00-10.15	Sergej Olenin (Klaipeda University, Lithuania). Opening of the workshop. Adoption of Agenda
	10.15-10.45	Short introductions of the workshop participants
	10.45-11.05	Tadas Navickas (HELCOM) HELCOM approach to the IMO Ballast Water Management (BWMC) Convention
	11.05-11.30	Coffee break
	11.30-12.00	Jose Matheickal (IMO) IMO BWM Convention, GloBallast Experience and Vision for Partnerships
	12.00-12.30	Stephan Gollasch (GoConsult, Hamburg, Germany) IMO BWMC: history, present status and challenges to the research society
	12.30-14.00	Lunch
	14.00-14.30	Borys Aleksandrov (IBSS, Odessa, Ukraine) Experience from the GloBallast program implementation in the Odessa port
	14.30-15.00	Henn Ojaveer (Estonian Marine Institute, Estonia) Biological surveys of Estonian ports: take away lessons for the Baltic Sea
	15.00-15.15	Introduction to team work “Surveys for alien species in ports: aims, design and results”.
	15.15-15.45	Coffee break
	15.45-17.30	Team work Team 1 (Convener – Stephan) Team 2 (Convener – Tadas) Team 3 (Convener – Henn)
	17.30-18.00	Plenary: presentation of team work results

February 23, Wednesday	09.00-10.30	Finalization of the “Surveys for alien species in ports” team work results
	10.30-11.00	Erkki Leppakoski (Abo Akademi University, Turku, Finland) Risk assessment methodology within the BITIS Project
	11.00-11.30	Coffee break
	11.30-12.00	Nikolay Aladin (ZIN RAS, St. Petersburg, Russia) Chronology of <i>Mnemiopsis</i> and <i>Beroe</i> invasions to the Black, Azov and Caspian Seas. Risk of <i>Mnemiopsis</i> invasion to the Baltic Sea
	12.00-12.30	Hanna Lee Behrens (Det Norske Veritas, Norway) Ballast Water Risk Assessment Methodologies: which one to choose?
	12.30-14.00	Lunch
	14.00-14.30	Jose Matheickal (IMO) and Borys Aleksandrov Experience of Globallast Risk Assessment Methodology.
	14.30-15.30	Nikolay Aladin (ZIN RAS, St. Petersburg, Russia) <i>Cercopagis</i> : taxonomy, morphology, distribution, ecology, physiology and evolution. Some questions that should be answered
	15.30-16.00	Coffee break
	16.00-17.00	Team work “Risk assessment methodology”.
	17.00-17.30	Plenary: presentation of team work results
	18.45	Bus. Departure to the workshop dinner. Return at 22.00 (by the same bus)
February 24, Thursday	09.00-09.20	Henn Ojaveer (Estonia), V. Panov (Russia), J. Kotta (Estonia), A. Laine (Finland) Gulf of Finland as demonstration site for developing approaches to monitoring and management of invasive species for the Baltic Sea region
	09.20-09.40	Elena Karasiova & Elena Naumenko (AtlantNIRO, Kaliningrad, Russia) Monitoring of invasive species in the SE Baltic Sea
	09.40-10.00	Piotr Gruszka (University of Agriculture, Szczecin, Poland) Monitoring of invasive species in the Polish coastal waters
	10.00-10.20	Tadas Navickas (HELCOM) HELCOM biological monitoring system: present situation and perspectives (COMBINE program)
	10.20-11.00	Plenary discussion: is it possible to incorporate monitoring of alien species into the existing international biological monitoring system (HELCOM)?
	11.00-11.30	Coffee break
	11.30-11.50	Ari Laine (Finland) Monitoring of alien aquatic species in the Finnish coastal waters
	11.50-12.10	Melanie Josefsson (Swedish EPA, Sweden) Nordic Baltic Network on Invasive Species (NOBANIS)
	12.10-12.30	Sergej Olenin (Klaipeda University) Baltic Sea Alien Species Database
	12.30-14.00	Lunch
	14.00-15.30	Plenary discussion: information support needs for the implementation BWMC in the Baltic Sea
	15.30-16.00	Coffee break
	16.00-17.00	Final remarks, closing of the workshop
February 25, Friday	Departure of participants	

Annex 3.

PORT BASELINE SURVEYS (PBS)

1. General principles and aims of the survey

The BSRP/HELCOM/COLAR Workshop on “Ballast water introductions of alien species into the Baltic Sea” (21-25 February 2005, Palanga, Lithuania) defined the main goals of the PBS as follows:

- a) to provide baseline data on the alien species composition, distribution and abundance in ports and adjacent areas for the risk assessment procedure;
- b) to outline the reference conditions in ports and adjacent areas to be used for development of an early-warning system on “outbreaks” of harmful organisms, future monitoring of alien species as well environmental control and ecosystem management systems.

The PBS should be as much as possible harmonized with the risk assessment methodology. The surveys should be aimed at:

- a. collation and summarization of the existing data on abiotic conditions and biological communities in a port and its adjacent area;
- b. detection of alien species;
- c. identification of native species which have a potential to become invaders in other regions.

Whenever possible, the PBS should identify alteration(s) of ecosystem (hybridization with native species, changes in community structure, alteration of food web, competition with native species, etc.) and damage(s) to uses (biofouling, obstacles to water abstraction, toxic blooms, etc.) caused by invasive species.

Organization and implementation of the PBS should be used for rising of public awareness on bioinvasion problems and for capacity building (skills and resource development).

The PBS should take advantage of existing knowledge and use the existing water quality monitoring scheme as much as possible.

2. Selection of ports for the PBS

Selection of ports for the PBS is a prerogative of the HELCOM Contracting Parties. It is recommended that at least one port per biogeographical sub-region is selected (e.g. Bothnian Bay, Gulf of Riga, Baltic Proper). Cooperation between the neighbouring countries is advised when selecting ports for PBS as it is recommended in Articles 6 and 13 of the BWMC.

The outcome of the initial risk evaluation (actions 1 and 2 in risk assessment) should provide a basis for the selection of the ports/areas for the PBS with the following aspects. While selecting the port for the PBS the priority should be given to ports:

- with higher cargo turnover (i.e. higher turnover of ballast water),
- with higher number of long distance (overseas) calls,
- which are frequently visited by tankers,
- where other vectors of introduction (aquaculture facilities, inland waterways, etc.) may be present,
- with high number of known invasions (“hot spots”).

An important prerequisite for successful implementation of the PBS is the availability of local technical and intellectual resources (university facilities, taxonomic expertise, existing monitoring).

It is important that the PBS would be performed not only in coastal but also in inland ports with intensive international traffic.

Sampling design

The sampling methodology should use as much as possible internationally accepted existing sampling protocols and follow agreed quality assurance procedures (see HELCOM, 1988 and further relevant documents) to make possible comparison of results. Additional tested methods, for instance those which were used during the implementation the IMO GloBallast programme, are also welcome.

The selection of parameters should be adjusted for each PBS. The Workshop considered the following parameters as most appropriate and important: Abiotic environment (salinity, temperature, current velocity, nutrients), Phytoplankton, Cysts and resting spores, Macroalgae, Mesozooplankton, Macrozooplankton, Fouling community (on berths, navigation buoys, hydrotechnical constructions and artificial substrates), Zoobenthos, Fish (traps, nets), Pathogenic microflora.

Selection of sampling points within a port

Sampling points need to represent, in an adequate way, the habitats present in a particular port and the number of sampling stations should be proportional to the geographic dimension of a port. Sampling stations should be also located in areas with altered (e.g. higher) salinity and/or temperature (e.g. power plant outlets). The sampling stations should not be limited to port regions only and should include adjacent areas, inland canals (or at least canal entrances).

Time and duration of the survey as well as frequency of sampling should be decided based on conditions in the particular port. Whenever possible, the survey should adequately reflect seasonal cycles of various organism groups in particular ports.

Analysis of samples

Taxonomic identification of species will require involvement of national experts as well as help from international experts, not only from the Baltic Sea area, but also from overseas regions. The port survey budget should include necessary funds for taxonomic expertise.

The Workshop stressed the importance of developing a network of regional and international taxonomic experts (in accordance with the BWMC Article 6).

Standard labelling and reporting format, storage of samples

The GloBallast approach and HELCOM-OSPAR quality assurance procedures should be used. The PBS samples should be stored in the responsible institutions. Samples of alien species should be preserved in alcohol so that it will be possible to perform DNA analysis for identification.