

## From the Editor

In finishing-up the year, the October - December quarter of 2001 was yet again a busy time for GloBallast and we report on a range of activities, including the Legal Workshop held at the World Maritime University in Malmö, Sweden, and perhaps most significantly, the first two of our Regional Strategies that were initiated in both the Black and Baltic Seas.

In addition, GloBallast staff participated in the Annual PACPOL Workshop in Tahiti, the ROCRAM meeting in Ecuador and the *APEC Workshop on a Risk Management Framework for Introduced Marine Pests* in Hobart, Australia. These three events played an important role in initiating regional cooperation on ballast water issues in the Pacific Islands, South American and APEC regions respectively.

A major initiative in one of the GloBallast Pilot Countries last quarter was the commencement of ballast water sampling at nine Brazilian ports, under new regulations decreed by the National Agency of Sanitary Surveillance. Mr Alex Leal Neto of the GloBallast Programme in Brazil provides an update on pages 8 and 9.

An ongoing subject of discussion at many of the meetings outlined above was the effectiveness of the practice of ballast water exchange at sea. Much has been written and said in recent years about the safety and operational limitations of ballast water exchange, but there is still significant misconception about its biological effectiveness. To help clarify this issue, on page 3 we are most pleased to include an article from Dr Bella Galil of the National Institute of Oceanography in Israel and Dr N Hülsmann of the Free University of Berlin, reviewing recent studies and findings.

Our Guest Speaker in this issue is Mr Mike Hunter of the UK Maritime and Coast Guard Agency and Chairman of the IMO Ballast Water Working Group. He outlines the critical issues that must be addressed by IMO members in the next two years, in the lead-up to the planned Diplomatic Conference to adopt the new international legal instrument in late 2003.

As another year draws to an end and GloBallast enters a new defining phase, I would like to wish our readers all the best for 2002! Lets hope that the New Year heralds the prospect of a real decrease in harmful marine bio-invasions – that is our goal.



Steve Raaymakers  
Contributing Editor

Ballast Water News is the quarterly newsletter of the Global Ballast Water Management Programme (GloBallast). GloBallast is a cooperative initiative of GEF, UNDP and IMO to assist developing countries to reduce the transfer of harmful organisms in ships' ballast water, through the implementation of IMO ballast water management guidelines.

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The views expressed in Ballast Water News are not necessarily those of GEF, UNDP or IMO.

## From the Programme

Generally speaking most programmes have three distinct stages. First there is an inception phase, which sets the scene and establishes structures, then there is a middle phase, usually the most productive, and lastly a final phase, dedicated to conclusions, lessons learnt and preparations for ongoing and follow-up activities.

The past quarter was probably the most productive period of GloBallast to date. The Port Baseline Surveys were completed, leaving behind well-trained teams in each Pilot Country and the determination to continue in years to come. The Risk Assessments for each site are ready to commence and are awaiting the final green light from IMO. Legislative reviews were successfully completed and the awareness-raising campaign continued, with the "GloBallast Concept" making its way from Guayaquil in Ecuador to Hobart in Australia and from Tallinn in Estonia to Singapore in Asia. New regions around the world are looking to join the programme.

The highlight of this period, which has marked the beginning of an advanced phase of GloBallast, was the *1st Black Sea Conference on Ballast Water Management and Control*, held in Odessa, Ukraine. Among the most severely affected regions of the world, the Black Sea countries have already suffered huge losses from the notorious invasion of the *Mnemiopsis* jellyfish.

Senior officials from Bulgaria, Georgia, Romania, Russian Federation and Turkey worked with the GloBallast team of Ukraine to negotiate a Regional Action Plan and adopt a far-reaching Resolution. The final Resolution approved the Plan, requested the Istanbul Commission to coordinate activities and agreed to prioritise implementation of the IMO Guidelines (A.868(20)) and preparations for the forthcoming Convention. The Resolution also urged GEF, UNDP and IMO to secure continuation of the GloBallast Programme to ensure a seamless introduction of the new Convention.

A similar exercise was also carried out for the Baltic Sea resulting in a parallel Resolution. Following the clear messages sent by the Black and Baltic Sea Regions, the PCU is preparing a concept paper for further advancing the programme at the global level, with a focus on regional replication and implementation of the anticipated Convention. The new programme document will be discussed at the 3<sup>rd</sup> Global Task Force meeting in January 2002.



Dandu Pughiuc

Dandu Pughiuc  
Chief Technical Adviser



## Guest Speaker

**Mr Mike Hunter**  
**Chairman, IMO Ballast Water Working Group**



*Mike Hunter became Chairman of the IMO Ballast Water Working Group at MEPC 45 in 2000, taking over from the Group's founding Chairman, Mr Denis Paterson.*

*He is the Head of the Environment and Cargo Safety Branch of the UK's Maritime and Coastguard Agency. An engineer by profession, he has been a member of the Working Group since 1994, and assumed its chairmanship with the benefits of an in-depth appreciation of the previous proceedings, the IMO system and maritime operations.*

As we approach MEPC 47 and the next meeting of the Ballast Water Working Group in March 2003, I am conscious that this may be the most important meeting yet. The group has been tasked to develop a binding legal instrument for a Diplomatic Conference that is scheduled for 2003, which leaves only two meetings at MEPC 47 and 48 to prepare the base text for the Conference. To allow time for review and agreement, the text must be substantially written by the end of the forthcoming meeting if the programme is to be met.

At MEPC 46 in April 2001, several key issues were agreed by the Group and the next meeting should allow us to develop these into a coherent legal instrument, although there will be detail still to be added. So why has it taken so long to reach this point and why is this the right time to take a positive step into legislation?

I think that the answer to the first question is that the ballast water issue must be one of the most difficult

issues that have faced IMO. On the one hand the use of water as ballast is fundamental to the safety of shipping and to the operation of maritime trade; on the other hand the practice can have environmental consequences that are difficult to predict but can range from 'none' to devastating and irreversible. Trying to strike the right balance to minimise the risk has proved difficult. But at some stage we have to take the first steps and accept that although they may not be perfect, they will be in the right direction. The time seems to have arrived.

IMO's work has generated a growing awareness of the problem and encouraged many international research projects that have contributed to the sum of knowledge available to IMO and the Working Group. It has also generated concern amongst individual countries and ports that are beginning to look towards local legislation in advance of an international legal instrument. I view the trend towards local standards with dismay. A variety of local approaches will be difficult for shipping to accommodate, particularly if control measures are to include on-board equipment and/or constructional features. Such a piecemeal approach will tend to fragment the industry if ships meet some local standards but not others.

The lack of a clear international standard has inhibited investment in treatment equipment as will a variety of different local standards. The time has come to use the best information available to us now, to agree an international legal instrument including a standard, and to accept that both must be allowed to develop and improve over time. The IMO has come a long way in tackling the problem of organisms transported in ballast water. Setting a standard is the last major hurdle to be overcome. Thanks to the *1<sup>st</sup> International Ballast Water Treatment Standards Workshop* that was organised by the GloBallast team in March 2001, and the enthusiasm that event generated, I believe that the best information available has been articulated and that the first standard is within our grasp.

*Mike Hunter*

### Have your say!

Please feel free to submit articles or letters to the editor for consideration for publication in **Ballast Water News**, sraaymak@imo.org

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### ~ ~ ~ ANNOUNCEMENT! ~ ~ ~

### 11th International Conference on Aquatic Invasive Species

Alexandria, Virginia, USA  
 25-28 February 2002

[www.aquatic-invasive-species-conference.org](http://www.aquatic-invasive-species-conference.org)

## How Effective is Ballast Exchange?

Open ocean ballast water exchange (BWE) is at present the only IMO recommended technique to reduce the risk of ballast-mediated marine bio-invasions. The premise for advocating BWE is that it may replace any entrained coastal species with oceanic species that are ill-adapted for survival in near-shore environments. Moreover, where harbors are riverine or estuarine, the osmotic stress of salinity change following BWE is perceived to act as a biocide. The urgent need to control ballast-mediated invasions prompted the maritime industry and legislators to adopt BWE without rigorously testing its effectiveness in terms of eliminating ballast-entrained biota.

Early BWE evaluations used surrogate measurements. Rhodamine dye was used to study the effectiveness of BWE aboard a bulk carrier, resulting in an estimate that only 5% of the original ballast water remained after exchanging three tank volumes (1). An assumption underlying the above experiment was that ballast-entrained biota is diluted at the same rate as tank water. Recent studies of BWE effectiveness relative to a variety of organisms in various vessel types have not borne that assumption out.

A study of BWE aboard oil-tankers, utilizing Rhodamine dye and 1 $\mu$  fluorescent microspheres, showed that though empty-refill is more efficient than flow-through in removing inert particles, efficiency of biotic removal varies significantly among voyages and taxa (2). Even with BWE dilution efficiency >99%, "The decline in the abundance of each of several indicator taxa after open ocean exchanges contrasted with a less effective reduction (i.e., 54%-58%) in the total number of source port taxa" (3). A study of ballast exchange aboard a container vessel found that although tracer dye dilution efficiency was greater than 90%, much of the entrained phyto- and zooplankton were retained (4). Following mid-ocean empty-refill ballasting in a coal carrier, the plankton assemblage represented less than 2% of the density but nearly 40% of the taxa initially ballasted (5). Open-ocean empty-refill ballasting in 14 newly-built container vessels, resulted in 15 harmful diatoms and dinoflagellate species being found in non-reballasted tanks, whereas eight species were found in reballasted tank, though their abundance was 87% lower than in non-reballasted tanks (6).

In older vessels biotic efficacy of BWE is nearly halved, with only 48% removal of diatoms and dinoflagellates (7). BWE within a regional sea is even less effective: the diversity of diatoms and dinoflagellates increased in 69% and 85% of cases, and abundance increased in 31% and 85% of cases, following BWE (8), and whereas the abundance of zooplankton did not change, its diversity increased following exchange (9). Taking into account the results of recent research, it is clear that "[I]n some cases the process of exchange may present an even worse scenario than discharging the residual originally ballasted organisms" (10).

Ballast-associated sediments have been long implicated in marine bio-invasions (11). Some vessels accumulate tens of tonnes of sediments that contain their own biota (12; 13). The transport of viable toxic dinoflagellate cysts in ballast sediments is of great concern: 65% of 343 cargo vessels surveyed in Australia carried sediments in their ballast tanks, of which half as many contained dinoflagellate cysts (14). Cysts have also been recorded in ballast tank sediments of vessels arriving in Canada, New Zealand, U.K. and U.S.A (15). Heterotrophic protist communities, some of great diversity, were also identified in all sediment samples collected from container vessel ballast tanks (16). It has been established that BWE "may not be quite so effective with benthic taxa, unless the sediments deposited in the tanks are removed at the same time as the water is exchanged" (17). In addition, it has been postulated that at least part of the biota that avoids dilution during BWE remains in the residual water and sediment, and that BWE may provide the retained organisms with fresh supplies of oxygen and food.

BWE is believed to be most effective when the salinity differential is greatest. Yet, living rotifers and cyclopoid calanoid copepods were found in eight of the 24 sampled vessels entering the Great Lakes and originating in fresh or brackish water ports that reported saltwater BWE (18). It has been demonstrated that marine protists are capable of surviving over four weeks in fresh water, and suffer no ill effects when restored to seawater (19). As protists form a major component of marine microbial food webs and may have significant impacts on total food web structure their survival may be instrumental in supporting complex ballast-entrained food webs.

Very few studies have directly measured the efficacy of BWE, and those few were biased by the taxa sampled and vessel type. All but three studies were carried out aboard bulk carriers that tend to exchange all or most their ballast in one operation, rather than on container vessels which have a complex ballast history. Most studies sampled only plankton, though many successful invaders are benthic species. Yet, even those studies raised questions as to the reliability of BWE as an effective control measure: "[I]t is widely agreed that the current exchange practice, with the limitations of current ship design, is inadequate" (20).

Given these reservations the IMO Ballast Water Working Group agreed that "Ballast Water Exchange should be regarded as an interim measure only and that the aim is to produce safe and more effective alternative ballast water treatment options that will replace Ballast Water Exchange" (MEPC 46/3 2000).

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## Black Sea Conference Convened



*The design of the GloBallast Programme is based on the use of initial Demonstration Sites located in Pilot Countries, followed by replication of activities in each region as the programme develops. Being common for all regions this objective has a higher priority for those that, due to economic, geographic, oceanographic and/or ecological conditions, are more vulnerable to the introduction and spread of harmful species.*

*In view of this plus the fact that regional networks for cooperation are already in place for the Black Sea (Odessa Demonstration Site, Ukraine) and the ROPME Sea Area (Khark Island Demonstration Site, Islamic Republic of Iran), GloBallast regional initiatives are being launched in these two enclosed seas first. Accordingly, the 1<sup>st</sup> Black Sea Conference on Ballast Water Management and Control was held in Odessa, Ukraine from 10 to 12 October 2001.*

The Conference was organized by the GloBallast Programme and the Government of Ukraine and was attended by all Black Sea littoral States (Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine) plus observers from regional governmental and non-governmental organizations.

The objectives of the Conference were to:

- enhance regional awareness and cooperation in the field of ballast water management and control;
- consider and endorse a draft Regional Action Plan; and
- agree on the machinery for implementation and coordination of regional activities.

The Conference was attended by the Secretary-General of IMO, Mr William A. O'Neil, who stated that regional cooperation is crucial for the success of any measures to minimize the transfer of harmful aquatic organisms in ballast water. He also stated that the participation of high-level representatives of the six Black Sea Countries and the Istanbul Commission encouraged him to believe that regional efforts in the Black Sea will be a success.

The Secretary-General also assured the Conference that the International Maritime Organization is committed to supporting the development and implementation of a standardized global ballast water management regime and continues to take the lead in addressing this challenge.

The opening of the Conference was followed by technical presentations by representatives of the GloBallast Programme and the regional scientific community, which provided comprehensive information on programme activities, and a review of the research and development aspects of ballast water management and control in the region.

The Black Sea region presents a most unusual environmental problem. Of all the world's inland seas, such as the White Sea, the Baltic Sea and the Mediterranean Sea, the Black Sea is the most isolated from the world's oceans. Its only link with other seas is with the Mediterranean, through the narrow channels of the Bosphorus Strait, the Sea of Marmara and the Dardanelles. Relative to its size, this is a most tenuous link.

Almost a third of Europe and huge areas of Asia drain into the Black Sea and more than 160 million people live in the overall Black Sea catchment area. The Black Sea coastal zone is densely populated. In the summer season, the permanent population of around 16 million swells to around 20 million with the influx of tourists.

During the last 30 years, the Black Sea has been transformed by the harmful effects of modern industry, agriculture and fishing. As if this was not enough, it has also been impacted by introduced marine species. Among the most severely affected regions of the world, the Black Sea countries have already suffered huge losses from a number of marine bio-invasions, including the notorious *Mnemiopsis* jellyfish from North America. *Mnemiopsis* was first recorded in the Black Sea in 1982, introduced via ships ballast water. By 1988 it had reached plague proportions contributing substantially to the near collapse of Black Sea fisheries, through depletion of plankton stocks.

The Black Sea is considered to have a low 'immunity' to marine bio-invasions. The enclosed nature of the Black Sea means that regional co-operation is essential in any efforts to prevent and control introduced species.



*Delegates at the 1<sup>st</sup> Black Sea Conference on Ballast Water Management and Control*

The Conference included national status reports by the Black Sea countries. One of the most important agenda items was consideration of a Regional Action Plan (RAP), developed jointly by the Black Sea countries and GloBallast. The objectives are:

- to provide a framework for specific regional activities under GloBallast;
- to facilitate the preparatory process in the region for the introduction of the new IMO legal instrument on ballast water management and control; and
- to enhance regional cooperation utilizing existing regional bodies established under the Istanbul Commission and the Black Sea Environment Programme.

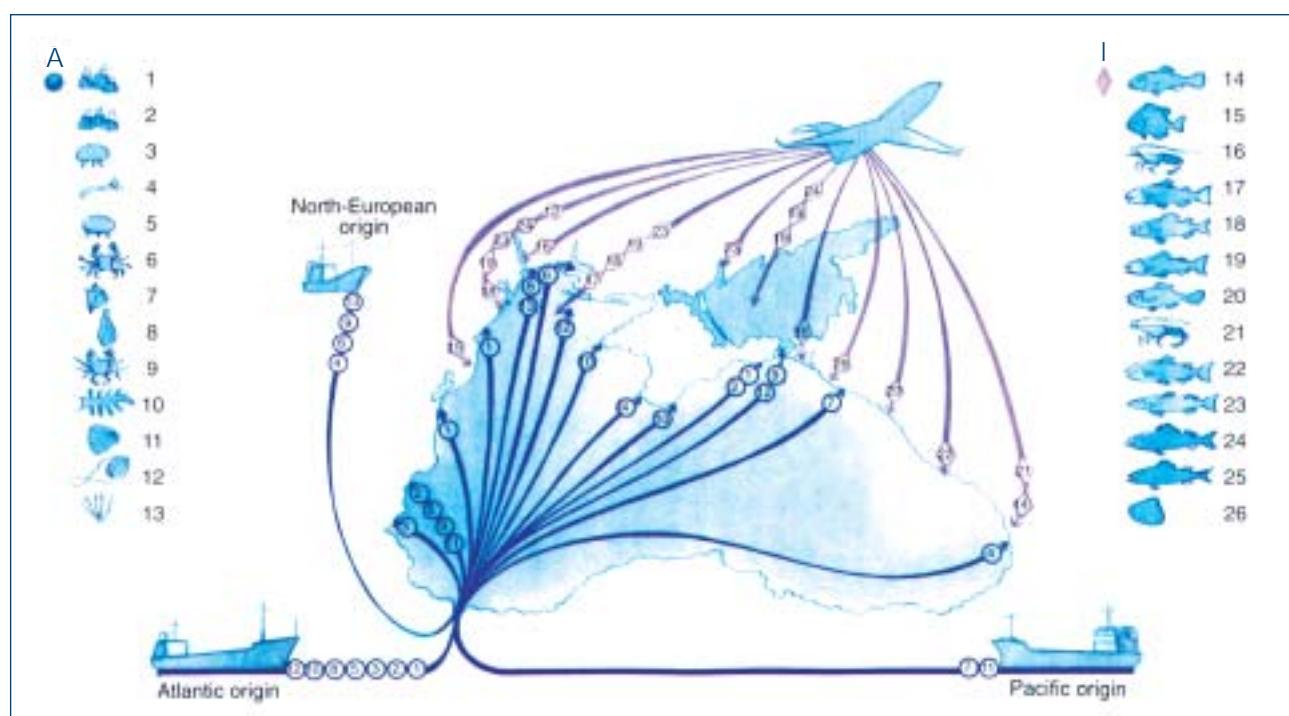
The RAP lists principal actions to be undertaken by administrations, defines cooperative arrangements and outlines possible funding options.

The Conference unanimously adopted a Resolution in which the Black Sea littoral States:

- approved the RAP;
- requested the Istanbul Commission to coordinate activities under the RAP;
- called for countries to attach priority to the implementation of the appropriate IMO instruments on ballast water; and
- requested GEF, UNDP and IMO to secure continuation of the GloBallast Programme within the timeframe needed to ensure seamless introduction of the forthcoming international legal instrument.

The GloBallast PCU is now working with stakeholders to assist with securing funding for the RAP. It is hoped that the Istanbul Commission and the Black Sea countries will build on the sound foundation achieved by the Conference and take up the challenge of implementing the outcomes.

The GloBallast Programme is deeply grateful for the assistance of Ukraine for making this event a success. The Conference report is available on <http://globallast.imo.org – Regional Activities>



Known biological introductions in the Black Sea (source: Zaitzev & Mamaev 1997)

#### Key:



**Accidental introductions (A):** 1. *Balanus improvisus*. 2. *Balanus eburneus*. 3. *Blackfordia virginica*. 4. *Mercierella enigmatica*. 5. *Bourgainvillia megas* (1933). 6. *Rhithropanopeus harrisi tridentata* (1983). 7. *Rapana thomasiiana*. 8. *Mya arenaria*. 9. *Callinectes sapidus*. 10. *Doridella obscura*. 11. *Cunearca corneal*. 12. *Mnemiopsis leidyi*. 13. *Desmarestia viridis*.



**Intentional introductions (I):** 14. *Gambusia affinis* (1925). 15. *Lepomis gibbosum* (1930). 16. *Pandallus kessleri* (1959). 17. *Plecoglossus altivelis* (1963). 18. *Roccus saxatilis* (1965). 19. *Salmo gairdneri* (1965). 20. *Oryzias latipes* (1970s). 21. *Penaeus japonicus* (1970s). 22. *Oncorhynchus keta* (1972). 23. *Mugil soiuy* (1972). 24. *Dicentrarchus labrax* (1977). 25. *Lateolabrax japonicus* (1978). 26. *Crassostrea gigas* (1980).

## Baltic Battles Ballast Water Bugs

*Like their colleagues in the Black Sea, the countries of the Baltic Sea have also joined forces to develop a cooperative plan to protect their marine resources from the threat of harmful aquatic organisms and pathogens transferred in ships' ballast water.*

*IMO, through its Technical Cooperation Fund and the GloBallast Programme, is assisting Baltic countries to halt this onward march of marine bio-invasions. With support from the Estonian Ministry of Environment, and following closely on the heels of the Black Sea Conference in Odessa, GloBallast convened the Baltic Regional Workshop on Ballast Water Management in Tallinn, Estonia, from 22 to 24 October 2001.*



*Baltic workshop delegates*

Maritime and environmental experts from Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden, the Helsinki Commission (HELCOM), the European Commission (EC), the Global Environment Facility (GEF) and other organizations gathered for the workshop.

The workshop objectives were:

- To integrate the Baltic Sea Region in the GloBallast programme.
- To undertake initial awareness raising about invasive marine species, the ballast water problem and IMO ballast water activities amongst key stakeholders in the Region.
- To establish the current status of invasive marine species and ballast water management arrangements in the Baltic Sea countries.
- To identify and plan some practical projects for potential funding, that will catalyse concerted action to improve the management of ballast water and invasive marine species in these countries, and enhance sub-regional and regional cooperation.

The Estonian Minister for the Environment, Mr Heiki Kranich, gave an opening address, affirming Estonia's commitment to implementing IMO ballast water management requirements and to regional cooperation.

The workshop proceeded according to a three-day programme. The first day commenced with background presentations by the GloBallast Technical Adviser, covering the nature of the ballast water problem and marine bio-invasions and the IMO response to the problem, including the IMO Guidelines, the new Ballast Water Convention and the GloBallast Programme.

The programme also included Country Status Reports and the presentation of Project Proposals from Estonia, Latvia, Lithuania, Poland and Russia and brief, oral reports from the Finnish and Swedish delegates. The country status reports showed that all Baltic Sea countries have suffered from marine bio-invasions, all are undergoing expansions of their port facilities and significant increases in shipping activity, and to date none, including Finland, Germany and Sweden, have acted to implement the IMO Ballast Water Guidelines.

There were also presentations from the GEF Baltic Sea Regional Project, the European Commission and HELCOM, which outlined the scope for regional cooperation and prospects for funding of project proposals.

A field trip was undertaken to Muuga Port, the main commercial/industrial port within the Port of Tallinn. Port officials provided a presentation on their strategic development plans. Ongoing port development will see significant increases in trade and therefore significant increases in ballast water discharges and the risk of marine bio-invasions. Of note was a commitment from the Port Board of Directors to provide funds for ballast water management activities.

The workshop was concluded by a discussion session to agree priorities for action and discuss recommendations for regional cooperation.

During workshop discussions, all countries unanimously agreed that the problem of ballast water and marine bio-invasions must be addressed in the Baltic Sea on a regional basis involving cooperation between all countries in the region. The reasons given for this position were:

- The Baltic is an enclosed sea and the marine and coastal environments of all Baltic Sea countries are inextricably linked.
- Shipping is an international industry and must cross jurisdictional lines to conduct trade.
- Action by an individual country would therefore be of limited effectiveness.
- There is a strong history of effective regional cooperation in the Baltic on maritime and marine resource management matters.

It was unanimously agreed that regional cooperation on ballast water control and management should be developed and coordinated through existing regional structures and mechanisms. HELCOM and the GEF Baltic Sea Regional Project were identified as the most suitable entities.

Finally, the workshop adopted a Resolution with the following major recommendations:

- within the framework of HELCOM, Contracting Parties should agree as a matter of priority:
  - to develop a Regional Strategy and Action Plan for Ballast Water Control and Management in the Baltic Sea Region,
  - to implement IMO Resolution A.868(20) within waters under their jurisdiction,
  - to support the rapid adoption and entry into force of the new international legal instrument on ballast water, being developed by IMO, and
  - to develop cooperative activities with adjacent regions that may be species donors to the Baltic Sea, specifically the Black, the Caspian and the North Seas;
- that HELCOM, the Contracting Parties, the GEF Baltic Sea Regional Project, EC, GloBallast, UNDP, IMO and others consider funding and/or otherwise supporting the implementation of technical cooperation projects developed by the Workshop;
- that GEF, UNDP and IMO secure continuation of the GloBallast Programme within the timeframe needed to ensure a seamless introduction of the forthcoming international legal instrument on ballast water.

Overall, the workshop was proclaimed as a major success by all involved. Most delegations stated that the exercise of developing a Country Status Report had played an important role in bringing various government and industry sectors together to discuss ballast water and marine bio-invasion issues in each country for the first time. This had highlighted the lack of action to date and the need for action. The workshop and the in-country preparations thereby played an important role in raising awareness and catalysing concerted action both within each country and regionally.

The GloBallast Programme Coordination Unit is now working with stakeholders in the region in order to assist with securing funding for technical projects. It is hoped that HELCOM and the Baltic Sea countries will build on the sound foundation achieved by the workshop and take up the challenge of implementing the workshop Resolution and its recommendations.

The GloBallast Programme is deeply grateful for the assistance of the Estonian Government, and in particular Ms Liina Eek-Piirsoo of the Ministry of Environment, for the excellent support provided in convening the workshop. The full workshop report is available on <http://globallast.imo.org> – Regional Activities.



*The Baltic Sea and its catchment (Source: HELCOM).*

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### ~ ~ ~ NEWSFLASH! ~ ~ ~

#### Check these sites out!

Database on Alien Species  
in the Baltic Sea Area

[www.ku.lt/nemo/mainnemo.htm](http://www.ku.lt/nemo/mainnemo.htm)

Regional Biological  
Invasions Center

[www.zin.ru/projects/invasions/](http://www.zin.ru/projects/invasions/)



## Brazil Samples Ships in Ports

*The Brazilian Ministry of Health, through the National Agency of Sanitary Surveillance (ANVISA), has decreed a Resolution to regulate sanitary surveillance of travellers, ships, ports and terminals. Inobservance or disobedience to what is set in this Resolution constitutes an infringement of Brazilian national law. The new regulations include a number of elements relating to ballast water, as outlined in this article.*



Sepetiba Container Terminal

The Brazilian Ministry of Environment acts as the Lead Agency within Brazil for the GloBallast Programme, and works closely with ANVISA, the Navy and other stakeholders to implement a range of activities under the programme, focussing on the Demonstration Site at Sepetiba.

Even before its inclusion as one of the six GloBallast Pilot Countries, Brazil was extremely active in the field of ballast water control and management. The Brazilian Navy coordinates national input to the IMO process through its Permanent Representative to IMO in London, and the Brazilian delegation has been extremely active in the IMO Ballast Water Working Group since before 1996. At MEPC 44 in March 2000, the dilution method developed by the Brazilian State Oil Company PETROBRAS was considered as one reference method for ballast water exchange at sea.

The new ANVISA Resolution RDC 217 became effective in November 2001 and the discharge of ballast water loaded in a geographical area considered a risk to public health (potential presence of pathogenic agents) into Brazilian waters is subject to prior authorisation.

Another requirement of the ANVISA regulations is that the IMO Ballast Water Reporting Form (BWRF) shall be completed and submitted by the ship's master or the applicant for Free Pratique (quarantine clearance) in Brazilian ports.

Information given which does not correspond to what is verified by inspection constitutes an infringement. The regulation provides for substantiation by ballast water sampling and physico-chemical or biological analysis, and fraud on the BWRF constitutes an offence.

The IMO Ballast Water Guidelines A.868 (20) have been translated and distributed to all 27 Sanitary Inspection Coordinators in the Brazilian States and also to the respective port agencies. There are currently 44 ANVISA sanitary control bases at established ports and aquatic terminals.

ANVISA has been requesting ships claiming Free Pratique to complete the BWRF since June 2000, initially on an experimental and voluntary basis.

Analysis of 153 forms gathered at the GloBallast Demonstration Site at Sepetiba, for the period between June 2000 and January 2001, provided the following statistics:

- 67% of ships submitted the form.
- 41% of the forms were complete.
- 61% completed the section regarding ballast water history.
- 43% completed the columns regarding ballast water exchange.
- 39% completed the columns regarding ballast water discharge.
- 77% declared carrying ballast water on board.
- 69% declared having the IMO Guidelines on board.
- 78% declared having a ballast water management plan.
- 48% declared having implemented the ballast water management plan.
- 24% listed a Brazilian port as last port.
- 28% listed another Brazilian port as next port.

Given that ANVISA's mandate is focussed on health rather than environmental protection, and as very little scientific assessment has been conducted world-wide on the public health dimension of ballast water, ANVISA has established an informal correspondence group. The group was formed to meet a commitment made at MEPC 46 and to contribute to the forthcoming convention. An email address has been established (ballast.wg@anvisa.gov.br).

A research project is also underway. In the first phase, 9 major Brazilian ports are being targeted for ship-board ballast water sampling, among them the ports of Santos and Paranaguá, and the GloBallast Demonstration Site at Sepetiba.

The largest Brazilian port Santos, received 3,249 ships in the year 2000, coming from a variety of ports worldwide. In 1999 an outbreak of cholera occurred in the city of Paranaguá. After the evaluation of possible vectors there were indications that it might have come from ballast water discharge at the port. The other ports included in the project are Belem, Fortaleza, Suape, Salvador, Ponta do Ubú and Rio Grande.



Brazilian ports covered by the ANVISA sampling programme

Under this project, training courses have been held where ANVISA officers received theoretical guidance on the theme as well as practical training in ship-board ballast water sampling. Technical support and training is being provided by the Brazilian Navy's Admiral Paulo Moreira Institute of Marine Studies in Arraial do Cabo.

Physico-chemical and microbiological analysis will be carried out for 100 ballast water samples. Each port will receive the necessary ballast water sampling equipment. In order to standardise the methodology used, it was decided that a single laboratory from the university of São Paulo should be responsible for analyses, including for:

- marine bacteria,
- bacteria from the *Vibrionaceae* family,
- *Vibrio cholerae*,
- fecal coliforms,
- *Escherichia coli*,
- *Clostridium perfringens*,
- phagos F-specific, and
- physico-chemical parameters (temperature, salinity, pH, conductivity and turbidity).

The State University of Santa Cruz will characterize the plankton present in the samples.



Ballast water sampling by ANVISA Officers

Results of the study will be reported and submitted to the 47<sup>th</sup> meeting of MEPC in March 2002 and in future issues of Ballast Water News.

Brazil needs to prepare itself for compliance with the new Ballast Water Convention currently being elaborated at IMO. The actions taken by Government institutions will help to progress the ballast water regulatory process and provide adequate conditions for the enforcement of these measures. However, domestic pressures for the adoption of a unilateral approach and regulatory regimes for ballast water management similar to those implemented in Australia, California and the United States, are beginning to be felt.

In the meantime, Resolution RDC 217 allows the Sanitary Authority, in conjunction with the environment agencies and the Maritime Authority, greater control of ballast water in Brazil.

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#### Acknowledgements

The author thanks the GloBallast Programme Coordination Unit for their support for this work.

Thanks are also due to Daniel Lins Menucci, Claudio Land, Flávio Fernandes, José Augusto Massena, Maria Célia Villac, Maria Helena Rolim, Marestela Schnaider, Robson Calixto, Silvio Jablonski, Aline Rodrigues and Sousa Wagner Moreira.

## New Report Released



The Pew Oceans Commission, an independent group of US political leaders conducting national dialogue on the policies needed to restore and protect living marine resources, has released a new report on marine invaders.

Entitled *Introduced Species in US Coastal Waters: Environmental Impacts and Management Priorities*, the report is well presented for a general audience, contains clear, easy-to-digest facts and figures, tables, maps and diagrams; and reviews the current situation in the US with regard to marine bio-invasions and their impacts; the dispersal of introduced species; prevention, reduction and control measures and recommendations for action.

The report can be ordered in hard copy from the Pew Oceans Commission and downloaded from their website [www.pewoceans.org](http://www.pewoceans.org).

## Legal Project Nears Completion

*The 1<sup>st</sup> International Workshop on the Legal Aspects of Ballast Water Management and Control took place on 15 & 16<sup>th</sup> November 2001 at the World Maritime University in Malmö, Sweden. The Workshop marked the start of the final phase of the GloBallast Legislative Review Project that began in February 2001.*

*The Workshop played an important role in bringing together the legal team from the six GloBallast Pilot Countries and providing a forum for the exchange of research, shared problems, ideas, differences and a great deal of debate.*



*Legal debate at the Malmö workshop*

In Ballast Water News No. 5, *Legal Project Underway*, the Lead Legal Consultant Dr. M. McConnell, outlined the significance and purpose of the Project in the overall GloBallast Programme.

Through this Project, Local Legal Consultants were hired in each Pilot Country to carry out extensive reviews of their national legal and administrative systems relating to the ballast water issue. These provided a basis for proposals for the legal changes needed in each country to effectively implement the IMO Ballast Water Guidelines (A.868(20)) and to lay a legal foundation for rapid implementation of the future IMO Ballast Water Convention.

The review results, including draft regulations, were presented by each country. Their proposals were compared in order to identify common elements and develop recommendations for best implementation practices. Legal approaches adopted in several other countries that have already implemented the IMO Guidelines were also considered. Model legislation can now be developed for countries to implement the Guidelines and the future Convention.

A number of key issues emerged from the presentations. One of the main problems that all the Consultants had struggled with related to the

international and domestic legal characterisation of the problem – that is - whether the transfer of harmful aquatic organisms and pathogens through ballast water constitutes marine pollution or some other form of ecosystem harm or both. Although this sounds like an academic issue, it has important practical implications for domestic implementation arrangements as well as international law regarding enforcement rights and obligations.

There was extended discussion about the challenge of effective regulatory design in a rapidly changing environment. Some factors identified as posing difficulties included; the nature of a legal mechanism to address a source of marine ecosystem degradation that differs from traditional polluting substances, such as oil; the need for extensive scientific research to determine any harm; the fact that ecosystem harm may not be identified for years and even then may not be attributable to any one source (for compensation purposes); the current lack of a viable and fully effective solution and the need to also deal with ships in the coasting trade.

The fact that the international legal response, the proposed IMO Convention, is also evolving in its approach was seen as posing a special challenge for national regulatory design. The complex concerns of countries that are situated in closely linked marine ecosystems such as the Black and Caspian Seas or the Gulf were also discussed at length. Commentary within the Workshop indicated that several countries expect ballast water regulations to be adopted in the near future, because of a pressing need to prevent any further environmental degradation. The participants also considered the view that in some cases it was deemed more appropriate that legislation wait to directly implement the future Convention.

The participants identified a number of principles to guide national regulatory design. Important ideas, many relating to sustainable development objectives, were considered including, the precautionary approach, polluter pays, coastal, flag and port State responsibilities, differences between countries in terms of economic, administrative and scientific resources and capacity, transparency, integrated coastal management and the need to take into account international trade rules to avoid discriminatory practices - to name but a few.

The Workshop ended with many wishing for even more time to work together to debate these questions further. The final report for the Project, which will include the legal reviews from the six Pilot Countries plus model ballast water legislation and regulations, is currently under preparation.

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## Singapore Conference Successful

On 1<sup>st</sup> and 2<sup>nd</sup> November, the Singapore Environmental Technology Institute and Maritime and Ports Authority, in conjunction with GloBallast and the Universities of Strathclyde and Newcastle, convened the *International Conference on Ballast Water Management* in Singapore. Approximately 100 delegates attended and twenty six papers were presented on a broad range of subjects, including international developments and regulations; risk assessment; emerging technologies; ballast water sampling and monitoring and better management practices.

The conference was considered a success in terms of information exchange and networking, which is seen as being vital in the global response to the ballast water 'problem'. Singapore expressed an interest in hosting similar conferences in future, which gained support from delegates.

## APEC Takes Action

From 12 to 15 November the APEC (Asia-Pacific Economic Cooperation) workshop on *Regional Risk Management Framework for the Control and Prevention of Introduced Marine Pests* was held in Hobart, Tasmania

APEC comprises the major economies of the Pacific Rim and thus represents an extremely powerful regional grouping through which cooperative initiatives and programmes can be developed and implemented.

While the workshop considered the issue of Introduced Marine Pests (IMPs) in its broadest sense, it was a success from the perspective of GloBallast. Most workshop delegates stated that prior to the workshop they had limited awareness of the ballast water issue and IMO initiatives. Regional awareness was thus greatly increased.

All countries agreed that the problem of IMPs must be addressed on a regional basis involving cooperation between all economies. It was also agreed that within the broader scope of the IMP issue, regional cooperation on ballast water control and management should be developed and coordinated through existing regional structures, such as the GloBallast Programme.

It was agreed that all regional activities on ballast water management should be consistent and coordinated with the IMO regime, and should seek to implement the IMO Ballast Water Guidelines (A.868(20)) and to support rapid adoption and entry into force of the new IMO Convention.

A *Regional Risk Management Framework for the Control and Prevention of Introduced Marine Pests in APEC Economies*, is now being developed. This will be submitted to the APEC Marine Resources Conservation; Fisheries and Transport Working Groups, and to the Ministerial-Level APEC Oceans Meeting to be held in Seoul, in April 2002.

Finally, as a result of the workshop, there is a possibility of financial and technical cooperation with APEC for undertaking activities in the Asia-Pacific region. The GloBallast PCU is working with relevant officials to develop project proposals.

## References for Page 3

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## Progress Report

### Activities Undertaken October - December 2001:

- ✓ Attended and presented at 41<sup>st</sup> meeting of SIGTTO, Bracknell, 2-4 Oct.
- ✓ 1<sup>st</sup> Black Sea Regional Conference on Ballast Water Management & Control held in Odessa, Ukraine, 10-12 Oct.
- ✓ Ballast water training provided at annual PACPOL Workshop, Tahiti, 8-12 Oct.
- ✓ Baltic Regional Workshop on Ballast Water Management held in Tallinn, Estonia, 22-24 Oct.
- ✓ Support mission undertaken to Brazil.
- ✓ South American regional activities initiated through ROCRAM meeting, Ecuador, 22-23 Oct.
- ✓ International Conference on Ballast Water Management held in Singapore, 1-2 Nov.
- ✓ Attended and presented at APEC Workshop on Risk Management Frameworks for Introduced Marine Pests, Hobart, Australia, 12-15 Nov.
- ✓ Legal workshop held at WMU, Sweden, 14-16 Nov.
- ✓ Ballast water risk assessments ready to commence subject to IMO green light.
- ✓ Port surveys conducted in Brazil and India.
- ✓ Planning undertaken for 3rd Global Task Force meeting in Goa, India.
- ✓ 7<sup>th</sup> issue of Ballast Water News produced.

### Activities Planned January - March 2002:

- Hold 3<sup>rd</sup> Global Task Force meeting in Goa, India, 16-18 Jan.
- Commence Ballast Water Risk Assessments for 6 Demonstration Sites (subject to IMO green light).
- Complete review of Global Information Clearing House function and initiate improvements as recommended.
- Complete Legislative Review Project.
- Commence planning for TV documentary.
- Lecture at World Maritime University, Malmö, Sweden, 25 Jan.
- Attend and present at Nordic Ballast Water Summit, Oslo, Norway 28-29 Jan.
- Attend and present at 11th International Conference on Aquatic Invasive Species, Alexandria, USA 25-28 Feb.
- Hold Regional Seminar on Ballast Water Control and Management in the Gulf Area, Dubai, UAE, 25-28 Feb.
- Attend/assist 47th meeting of MEPC 4-8 March.
- Lecture at Netherlands Institute for Sea Research, 12 & 18 March.
- Hold Train-X Workshop in Montevideo, Uruguay, 18-20 March.
- Produce 8<sup>th</sup> issue of Ballast Water News.



## More Information?

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