Global **Ballast Water** Management Programme

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Baltic Regional Workshop
on Ballast Water Management

TALLINN, ESTONIA, 22-24 OCT 2001

Workshop Report

Ed. Steve Raaymakers

GEF UNDP IMO

A cooperative initiative of the Global Environment Facility,
United Nations Development Programme and International Maritime Organization.

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Baltic Regional Workshop on Ballast Water Management

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Workshop Report

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The Global Ballast Water Management Programme (GloBallast) is a cooperative initiative of the Global Environment Facility (GEF), United Nations Development Programme (UNDP) and International Maritime Organization (IMO) to assist developing countries to reduce the transfer of harmful organisms in ships' ballast water.

The GloBallast Monograph Series is published to disseminate information about and results from the programme, as part of the programme's global information clearing-house functions.

The opinions expressed in this document are not necessarily those of GEF, UNDP or IMO.

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The workshop could not have been a success without the active and enthusiastic participation of all delegates from the Baltic region countries and regional organisations.

The workshop was funded by the IMO Technical Cooperation Fund (Project PR504) and the GEF/UNDP/IMO Global Ballast Water Management Programme (GloBallast). The workshop was initiated, organized and convened by Steve Raaymakers, Technical Adviser with the GloBallast Programme Coordination Unit at IMO, with internal support from Mr Wojciech Szulczynski of the IMO Technical Cooperation Division and Christine Gregory of the GloBallast Programme Coordination Unit. This report was prepared by Steve Raaymakers.

Delegates Photograph

Workshop Resolution

Baltic Regional Workshop on Ballast Water Management

RESOLUTION

Adopted on 24 October 2001

The *Baltic Regional Workshop on Ballast Water Management*, held in Tallinn, Estonia from 22 to 24 October 2001 and attended by representatives from Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden and the Russian Federation as well as by representatives from the US Government, the Baltic Marine Environment Protection Commission (HELCOM), the European Commission, the Global Environment Facility (GEF) Baltic Sea Regional Project, the International Maritime Organization (IMO) and the shipping and ports industries;

WELCOMING the ongoing activities of the GEF/UNDP/IMO Global Ballast Water Management Programme (GloBallast) and in particular its regional component;

RECALLING that the 1992 United Nations Conference on Environment and Development (UNCED), in its Agenda 21, requested countries to consider the adoption of appropriate measures to prevent the spread of non-indigenous organisms, and further to the appeal, in its Declaration on Environment and Development, that States apply the precautionary approach according to their capabilities;

RECALLING ALSO that Article 196 of the United Nations Convention on the Law of the Sea (UNCLOS) provides, *inter alia*, that "States shall take all necessary measures to prevent, reduce and control . . . the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto";

RECALLING FURTHER the objectives of the Convention on Biological Diversity (CBD) and that the transfer and introduction of harmful aquatic organisms and pathogens through ships' ballast water threatens the conservation and sustainable use of biological diversity, as well as decision IV/5 of the Conference of the Parties to the CBD concerning the conservation and sustainable use of marine and coastal ecosystems;

RECALLING FURTHER resolution A.868 (20) of the Assembly of the IMO by which it was recognized that the uncontrolled discharge of ballast water and sediments from ships has led to the transfer of harmful aquatic organisms and pathogens, causing injury to public health and damage to property and the environment;

NOTING the determination of the Contracting Parties to the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (the Contracting Parties) to take all necessary actions, individually or collectively, in order to minimize and keep under control the pollution of the Baltic Sea environment, including pollution from ships;

NOTING ALSO that the Contracting Parties have agreed joint and binding decisions on the implementation of measures to preserve and protect the Baltic Sea marine environment from sea-based pollution sources as well as to conserve natural habitats and biodiversity, with the overall goal to ensure the sustainable use of natural resources;

RECOGNISING the recent and ongoing significant increase in shipping activity in the Baltic Sea and the associated risks of new invasions of harmful species, including potentially the North American comb jelly *Mnemiopsis,* which has caused significant economic damage to Black Sea fisheries;

RECOGNISING ALSO the necessity of close cooperation between the countries of the Region and with adjacent regions;

.1 RECOMMENDS that, within the framework of HELCOM, the Contracting Parties agree as a matter of priority;

.1.1 to develop a Regional Strategy and Action Plan for Ballast Water Control and Management in the Baltic Sea Region;

.1.2. to implement IMO Resolution A.868(20) within waters under their jurisdiction, and to support the rapid adoption and entry into force of the new international legal instrument for the control and management of ships' ballast water and sediments, being developed by the Marine Environment Protection Committee (MEPC) of IMO;

.2 RECOMMENDS ALSO that HELCOM and the Contracting Parties develop cooperative activities with adjacent regions that may be species donors to the Baltic Sea Region, specifically the Black Sea, the Caspian Sea and the North Sea, through the Istanbul Commission/Black Sea Environment Programme, Caspian Environment Programme and OSPAR Convention Secretariats respectively;

.3 RECOMMENDS FURTHER that HELCOM, the Contracting Parties, the GEF Baltic Sea Regional Project, the European Commission, GloBallast, UNDP, IMO and others consider funding and/or otherwise supporting the implementation of technical cooperation projects developed and agreed by the Workshop, as outlined in the Workshop Report;

.4 RECOMMENDS FURTHER 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 for the control and management of ships' ballast water and sediments in the Baltic Sea Region.

Tallinn, Estonia

24 October 2001.

Contents

1 Introduction & Background

The International Maritime Organization (IMO), with funding provided by the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP), has initiated the Global Ballast Water Management Programme (GloBallast).

The programme is aimed at reducing the transfer of harmful marine species in ships' ballast water, by assisting developing countries to implement existing IMO voluntary guidelines on ballast water management (IMO Assembly Resolution A.868(20)), and to prepare for the new international convention on ballast water management currently being developed by IMO member countries.

The programme aims to achieve this by providing technical assistance, capacity building and institutional strengthening to remove barriers to effective ballast water management arrangements in developing countries, through six initial demonstration sites. These six sites are Sepetiba (Brazil); Dalian (China); Mumbai (India); Kharg Island (Iran); Saldanha (South Africa) and Odessa (Ukraine). The initial demonstration sites are intended to be representative of the six main developing regions of the world; South America, East Asia, South Asia, Arab Countries/Persian Gulf, Africa and Eastern Europe respectively. As the programme proceeds it is intended to replicate these initial demonstration sites throughout each region.

The GloBallast demonstration site for Eastern Europe is located in Odessa, on the Black Sea. This site is geographically remote from the Eastern European countries whose coastlines abut the Baltic Sea (Estonia, Latvia, Lithuania, Poland and Baltic Russia).

In May 2001 the Global Invasive Species Programme (GISP), a coalition of various organizations working to reduce impacts from all forms of invasive species (both aquatic and terrestrial), convened a regional Baltic/Nordic invasive species workshop in Copenhagen. The workshop was supported by the Governments of Denmark and the United States. It sought to form partnerships between all Baltic and Nordic countries with a view to developing a regional strategy to address invasive species. This was the first of seven similar workshops being convened by GISP in various regions around the world.

A presentation on the GloBallast programme was given at the Copenhagen GISP workshop and considerable interest was expressed by several of the Baltic countries. In particular, they were interested in how they might benefit more from being part of the Eastern European region covered by the GloBallast demonstration site in Odessa.

Some delegates from Baltic countries stressed that significant capacity exists in their countries to address invasive marine species and ballast water management, however there is a lack of political awareness and governmental action on the problem. They felt that some practical projects that demonstrate concerted action would be the best way to raise political awareness and galvanise domestic investment in a management response.

It was proposed that a regional workshop focusing specifically on ballast water management would be a useful starting point to identify and plan some potential practical projects for possible funding. GloBallast responded to this need by organizing the Baltic Regional Workshop on Ballast Water Management, in Tallinn, Estonia, from 22 to 24 October 2001. The workshop was organized and held with significant support and assistance from the Government of the Republic of Estonia, in particular the Estonian Ministry of Environment and the Estonian Maritime Administration.

2 Workshop Objectives

The workshop objectives were as follows:

- To integrate the Baltic Sea Region into the Eastern European Region of the GloBallast programme.
- To undertake initial awareness raising about invasive marine species, the ballast water problem, IMO ballast water activities and the GloBallast programme amongst key stakeholders in the Baltic Sea 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 in the Baltic Sea Region, that will catalyse concerted action to improve the management of ballast water and invasive marine species in the region, and enhance sub-regional and regional cooperation.

3 Workshop Participants

The workshop was attended by:

- five delegates from each of Estonia, Latvia, Lithuania, Poland and Russia, being one senior representative from each country's maritime administration, environment administration, port authority, marine science community and shipping industry,
- five additional delegates from the host country (Estonia),
- one delegate from each of the following:
  - maritime administrations of Finland, Germany and Sweden,
  - Helsinki Commission (HELCOM),
  - European Commission,
  - GEF Baltic Sea Regional Project,
  - US State Department (US Embassy in Tallinn), and
- the GEF/UNDP/IMO GloBallast Technical Adviser (workshop convener).

A complete participants list is provided in Appendix I.

4 Workshop Proceedings

The workshop proceeded according to a three-day programme (Appendix II). 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 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 on the issue.

The remainder of the first day was used for the presentation of Country Status Reports from Estonia, Latvia, Lithuania, Poland and Russia. The Country Status Reports are contained in Appendix III. The Finnish and Swedish delegates also gave brief, oral reports.

During the morning of the second day, 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 afternoon of the second day was used to break into three sectoral groups (representing the shipping and ports, government and marine science sectors), to identify needs and priorities and to discuss recommendations for regional cooperation in ballast water management.

The morning of the third day was used for the presentation of Project Proposals from Estonia, Latvia, Lithuania, Poland and Russia. The Project Proposals are contained in Appendix IV.

The afternoon of the third day was used for 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.

The workshop was concluded by a discussion session to agree priorities for action and the Workshop Resolution was unanimously adopted.

5 Workshop Outputs & Outcomes

General

The Outputs and Outcomes of the Workshop include:

- A Workshop Resolution calling for a Regional Strategy and Action Plan for Ballast Water Control and Management to be developed as a matter of priority within the framework of HELCOM, and calling on HELCOM member States to implement the IMO Ballast Water Guidelines (A.869(20)) within their jurisdictions, and to support rapid adoption and entry into force of the new international legal instrument for the control and management of ships' ballast water and sediments, being developed by the Marine Environment Protection Committee (MEPC) of IMO.
- A Country Status Report (Appendix III) from Estonia, Latvia, Lithuania, Poland and Russia outlining:
  - Coastal and marine environments.
  - Status of marine bio-invasions.
  - Existing institutional arrangements for ballast water management.
  - Shipping and port data, including ballast water discharges and uptake.
- Project Proposals (Appendix IV)) from Estonia, Latvia, Lithuania, Poland and Russia for consideration for potential funding by various donors.
- Identification of opportunities for sub-regional and regional cooperation.

- Foundations for a Regional Strategy and Action Plan fro Ballast Water Control and Management.
- Identification of prospects for funding.
- Increased awareness of the problem of ballast water and marine bio-invasions, both amongst workshop delegates and the broader community.

Summary of Country Status Reports

The Country Status Reports (Appendix III) showed that all Baltic Region countries have suffered from marine-bio-invasions, all are undergoing expansions of their port facilities and are seeing significant increases in shipping activity, and to date none, including Finland, Germany and Sweden, have acted to implement the IMO Ballast Water Guidelines.

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 for the first time to discuss ballast water and marine bio-invasion issues, and had highlighted the lack of action to date and the need for action. The workshop and the in-country preparations for the workshop thereby played an important role in raising awareness and catalysing concerted action in each Baltic country.

Summary of Project Proposals

The following Project Proposals were presented at the workshop:

Estonia:	(1) Ballast Water Risk Assessment for Port Areas. (2) Field Sampling of Selected Introduced Marine Species in Port Areas.
Latvia:	(1) Elaboration of Regulations for Ballast Water Control and Management. (2) Ballast Water Sampling System for Eastern Baltic Countries.
Lithuania:	(1) Strengthening Institutional Arrangements to Implement IMO Guidelines.
Poland:	(1) Feasibility Study for Implementation of IMO Guidelines. (2) Ballast Water Risk Assessment for Southern Baltic Area.
Russia:	(1) Research & Development of Ballast Water Treatment Techniques. (2) Regional Ballast Water Information System.

The Project Proposals are included in Appendix IV as presented by the countries at the workshop. The GloBallast PCU is of the view that all proposals have merit and provide an excellent basis for the development of a broader regional strategy and action plan that incorporates elements of all of these proposals. They all require detailed technical review and improvement before consideration for potential funding by donors. Areas that need to be addressed for all project proposals include:

- The budgets seem somewhat high and need substantial justification and detailed breakdown.
- The budgets should explicitly incorporate and reflect resourcing and support-in-kind provided from national sources.
- The time frame for some projects could be reduced.
- Where possible, standard, international methodologies should be adopted, as used by the GloBallast Programme in other regions, especially in relation to risk assessment, port biological surveys, ballast water sampling and model legislation/regulations.

Ideally, all projects should be combined as elements of a single, integrated Regional Strategy and Action Plan, as outlined in sections 5.4 below. The regional approach could include implementation of certain projects in individual ports/countries initially, on a pilot/demonstration basis. This would be followed by replication in other ports/countries in the Baltic, as per the approach used by GloBallast in other regions.

Opportunities 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 ships routinely 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, and should link wherever possible with existing marine resource management and environmental protection activities. HELCOM and the GEF Baltic Sea Regional Project were identified as the most suitable entities.
It was agreed that a Regional Strategy and Action Plan for Ballast Water Control and Management should be developed as a matter of priority within the framework of HELCOM.

It was agreed that based on the Project Proposals, sector group discussions and the approach taken by GloBallast in other regions, the Regional Strategy and Action Plan should include the following elements:

- Institutional and funding arrangements for its administration and implementation.
- Communication and awareness-raising activities.
- Port, national and regional ballast water risk assessments.
- Port, national and regional surveys and monitoring for introduced marine species, linked to national and regional databases and an early warning system.
- Port, national and regional ballast water sampling.
- A regional ballast water information system.
- Development and implementation of legislation and regulations, consistent with the IMO Guideline sand the emerging Convention.
- Port, national and regional compliance monitoring and enforcement systems and procedures.
- Research and development of alternative ballast water treatment technologies.

A presentation by the HELCOM Secretariat stated that the HELCOM Sea-based Pollution Group (HELCOM SEA) was responsible for shipping matters and along with the Nature Conservation and Coastal Zone Management Group (HELCOM HABITAT) would be the appropriate vehicle for addressing ballast water control and management and marine bio-invasions.

It was advised that it would be necessary for HELCOM member States to raise the issue within HELCOM meetings through the normal procedures in order to have it incorporated as a priority in the HELCOM workplan. Workshop delegates agreed that they would raise this with relevant officials in their countries. The GloBallast Programme agreed to support this effort by sending the Workshop Report with an appropriate covering letter to the HELCOM Secretariat and to the IMO Focal Points in all Baltic Sea countries.

It was suggested by some delegates that it would be most useful for the GloBallast Programme to give a presentation to relevant HELCOM meetings. The GloBallast Technical Adviser stated that this could be arranged if an appropriate invitation was received through the proper channels.

It was agreed that all regional activities on ballast water control and management should be consistent and coordinated with the international IMO regime, and should seek to implement the IMO Ballast Water Guidelines (A.869(20)) and to support rapid adoption and entry into force of the new international legal instrument being developed by IMO.

It was suggested by some delegates that in addition to regional cooperation it was necessary to also cooperate with adjacent regions, in particular the Black, Caspian and North Seas, which are immediate species-donor regions for the Baltic Sea. The GloBallast Programme agreed to support this effort by sending the Workshop Report with an appropriate covering letter to the relevant regional secretariats (Istanbul Commission/Black Sea Environment Programme, Caspian Environment Programme and OSPAR).

The Nordic Council of Ministers will be holding the Nordic Ballast Water Summit in Oslo on 28 and 29 January 2002. The Resolution from the Tallinn Workshop, and the call for a Regional Strategy and Action Plan for Ballast Water Control and Management, should be considered at that summit.

Prospects for Funding

It was agreed that funding is necessary in order to further develop the outcomes and outputs of the workshop, to initiate some of the Project Proposals and to commence development and implementation of the Regional Strategy and Action Plan.

As it was agreed that such regional activities should be undertaken within existing regional frameworks, HELCOM and the GEF Baltic Sea Regional Project were identified as potential sources of funding. Countries were advised that this would require a re-alignment of priorities, which would require representations from countries through the official channels. Countries were urged to do this.

The representative from the European Commission Directorate General for Research gave a presentation on funding opportunities for Newly Associated States (NAS), which includes Estonia, Latvia, Lithuania and Poland. She stated that several million Euro could be available for regional activities. GloBallast agreed to work with workshop participants to develop and submit a significant funding proposal to the European Commission.

During informal discussions, the representative from the US Embassy in Tallinn stated that the US may be interested to fund ballast water activities in the Eastern Baltic States and these countries, led by Estonia, are liasing directly with the US State Department to develop a project proposal. The GloBallast PCU is involved to ensure coordination with broader regional and global activities.

A paper from the Swedish International Development Cooperation Agency (SIDA) was circulated at the workshop, outlining the SIDA DemoEast programme. Under this programme, SEK9 million is allocated for projects in the eastern Baltic States, Poland and Baltic Russia in which 50% of the costs of equipment and a training programme can be covered, if the main part of the equipment is manufactured in Sweden.

The GloBallast Programme itself, in particular its future regional focus, plus the IMO Technical Cooperation Fund, were also identified as potential sources of additional funding. The GloBallast

PCU undertook to follow-up on these sources, considering that GloBallast and IMO had funded the workshop in order to initiate the process, and the need for alternative sources to be secured.

Finally, the Governments of Denmark, Finland, Germany, Norway and Sweden were identified as potential sources of support. The Nordic Council of Ministers Ballast Water Summit in Oslo in January 2002 should be used as a further opportunity to seek this support.

Increased Awareness

As a result of the workshop Media Release (Appendix V) TV interviews) were conducted with senior Estonian marine scientist Dr Henn Ojaveer and the GloBallast Technical Adviser. These were aired during the main news at 6pm and 9pm on Estonian State Television. Radio interviews were aired on Estonian State and commercial radio, and articles appeared in the Tallinn newspaper and Loydds List.

Many workshop delegates expressed that there own awareness of the issues had been greatly increased as a direct result of the workshop, and many requested additional supplies of the GloBallast awareness materials to be sent to them for use in their countries.

6 Conclusions

It can clearly be concluded that the Baltic Regional Workshop on Ballast Water Management was a success in achieving all of its stated objectives.

The foundation is now laid for the development of a Regional Strategy and Action Plan for Ballast Water Control and Management, consistent with the IMO Guidelines and the emerging Convention.

Concerted action by all of the countries surrounding the Baltic Sea is now required in order to turn the workshop outputs and outcome and in particular the Workshop Resolution, into reality.

7 Further Information

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Appendix II:
Workshop Programme

Monday 22 October

0900: Registration

Session One: Introduction & Background

0930: IMO Introduction to the Workshop	Steve Raaymakers, IMO
0945: The Ballast Water Problem	" "
1020: Opening Statement	Mr. Heiki Kranich, Minister of Environment, Estonia
1030: Tea/coffee	
1100: The IMO Response to the problem	Steve Raaymakers, IMO
-	The IMO Guidelines
-	The IMO Convention
-	The GloBallast Programme
1230: Lunch	

Session Two: Country Status Reports

1330: Estonian Status Report	Country Rep.
1400: Latvian Status Report	Country Rep.
1430: Lithuanian Status Report	Country Rep.
1500: Tea/Coffee	
1530: Polish Status Report	Country Rep.
1600: Baltic Russia Status Report	Country Rep.
1630: Group discussion	All
1700: Close Day One	
1730: Social function	

Tuesday 23 October

AM: Site visit to port.
PM: Sectoral workshop discussion groups.

Wednesday 24 October

Session Three: Project Proposals

0900: Background and Requirements for Proposals	Steve Raaymakers, IMO
0930: Estonian Project Proposals	Country Rep.
1000: Latvian Project Proposals	Country Rep.

1030: Tea/coffee

1100: Lithuanian Project Proposals	Country Rep.
1130: Polish Project Proposals	Country Rep.
1200: Baltic Russia Project Proposals	Country Rep.

1230: Lunch

Session Four: Regional Programmes and Opportunities

1330: The GEF Baltic Sea Regional Project	Dr Jan Thulin, GEF/ICES
1345: Opportunities in EU Marine Research	Ms PiiaTuomisto, European Commission
1400: Aquatic Alien Species - Work within HELCOM	Ms Anne Christine Brusendorff, Helsinki Commission

Session Five: Group Discussion

1415: Group discussion on priorities for action, scope for sub-regional/regional cooperation and prospects for funding.

1500: Tea/Coffee

1530: Continue group discussion (as above)
- Conclusions and recommendations

1700: Close

Appendix III:
Country Status Reports

Estonia Country Status Report

Contact person: Henn Ojaveer

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Estonian Coastal & Marine Environments

Climate. Climatically, Estonia belongs to the mixed-forest sub-region of the Atlantic continental region of the temperate zone. Here cyclonic activity from the Atlantic Ocean and continental impact of Eurasia are the main actors in climate genesis. Because of that, the west-east gradient is greater in the main meteorological elements than the north-south one.

Local climate differences are mainly due to proximity of the Baltic Sea that warms up the coastal zone in winter and cools it down in spring. The topography, especially heights in the SE of the country play an important role in distribution and precipitation and duration of snow-cover. As a result, summers are moderately warm (15-16 ºC) and winters mild (-3 to -5 ºC) in Estonia.

Since precipitation exceeds evaporation approximately twofold, the climate is excessively damp. The mean annual precipitation is ca 550-650 mm, ranging from 500 mm on islands and 750 mm in the uplands (Tarand 1998).

Predominant winds. In winter, the monthly mean wind speed reches 7-8.5 m/s on islands and the western coast whereas it remains between 4-5 m/s in the inland areas. As spring approaches, the frequency of higher wind speed decreases and weaker winds, 3-6 m/s for coastal areas and 2-4 m/s in inland are typical. In summer the monthly mean wind speed is the lowest. On the west-Estonian Archipelago the mean wind speed does not exceed 6 m/s and in the inland parts it is up to 3-3.5 m/s. In autumn, a very rapid increase in the mean wind speed is characteristic. In coastal regions strong and stormy winds often blow 5-6 days per month (in summer 1-2 days). Monthly wind speed attains its maximum (6-8 m/s) in the western Estonia.

An important wind characteristic is the number of calm days and duration of periods with low wind speed. On the western coast the number of calm days is 5-10. On the southern coast of the Gulf of Finland the number of calm days increases from west to east, from 20 to 65 days, respectively. The number of calm days is the highest in southern Estonia – up to 90 days per year.

In winter and early spring, southerly and south-westerly winds prevail. In the eastern Estonia, southerlies dominate whereas in western Estonia winds from the western sector are more frequent. In spring, domination of different wind directions gradually declines; still, winds from the western sector are more frequent. In summer, winds blowing from the northern sector are more usual. In early autumn, westerlies are more frequent with this pattern changing gradually towards domination of south-westerlies and southerlies (Kull 1999).

Air temperature. Long-term (1966-1998) monthly mean temperatures vary within the range of 1.9 ^{o}C in westernmost parts of the west-Estonian islands in January to 17.4 ^{o}C in NE Gulf of Riga in July. In winter, the temperature differences within the country reach the highest value of ca. 5 ^{o}C: from –

1.9 °C on western islands to –6.8 °C in eastern Gulf of Finland. Towards the warm season, these differences disappear: air temperature is in most coastal areas in April 3.5 °C and in July 16.5 °C. Monthly means are negative during December-March by reaching minimum values in February (-6.7 °C at the SE coast of the Gulf of Finland). From May to September, monthly mean temperatures are above 10 °C, in July and August above 15 °C. The highest annual mean was recorded in west-Estonian islands (6.5 °C) and lowest in the NE Estonia (4.5 °C) (Jaagus 1999).

Sea temperature. The main feature of the temperature regime of the sea is the existence of strong annual component, especially in the surface layers. Late spring-early summer, the seasonal thermocline is formed ca at 10m. During summer and early autumn, the thermocline descends to depths of 20-25 m. The temperature gradient within the thermocline is usually 1-2 ºC, but occasionally could be as high as 6 C per 1m Water temperature of the upper water layers usually exceeds 15 ºC, in deeper layers it fluctuates from 2 o 6 ºC. Higher summer temperatures (18-20 °C) occur in the eastern Gulf of Riga and Gulf of Finland with an absolute maximum of 24-26°C occurring during late July - early August.

In the cold season, the average water temperature is largely dependent upon air temperatures (long-term average for he Gulf of Riga 0.0 ºC). The maximum amplitude of water temperature changes on the surface amounted to 23 ºC, the average for the upper layer was 17 ºC and with the increase of the depth the index declines to 6-7 ºC.

Another important characteristic of the temperature regime is convective mixing of the water column down to 50-60 m twice a year - in the spring and autumn (see also p. 7) (for review see Berzinsh 1995, Ojaveer 1997).

Salinity. Water salinity differs considerably in the regional scale, from almost 0‰ in river mouths, at the surface and small bays to 7.7 % and over 11‰ in Irbe Sound in the Gulf of Riga and at the bottom of the entrance area of the Gulf of Finland, respectively. In addition, strong horizontal and vertical salinity gradients, with mean values of 1-2‰ at the surface, 4-5‰ at 20 m, and > 7 ‰ at depths greater than 50 m occur in the Gulf of Finland and open Baltic Proper (e.g., HELCOM 1996, Mikhailov 1997, Alenius et al. 1997).

Annual salinity regime has been thoroughly studied in the Gulf of Riga. Salinity is highest during cold months. In the spring, together with the increasing freshwater influx and formation of a seasonal thermocline, salinity of the upper water layer decreases, especially in eastern basin. In spring and summer, salinity also starts to increase in the deeper layers, especially in the western basin, due to the influx of saline waters through the sounds. Average annual salinity of the basin varied considerably during the period of 1920s-1990s from 5.2‰ in the late 1920s to 6.4‰ in 1977. The main source of salinity variations is river discharge to the Gulf of Riga and this influence is realized *via* salinity variations in the Baltic Sea water (Berzinsh 1995). In contrast, clear seasonal pattern of salinity changes is not evident in the Gulf of Finland (Alenius et al. 1997).

Tidal range. Not relevant.

Main hydrodynamic patterns. Primary halocline at depths of 60-80 m divides water into two layers in deeper basins, Gulf of Finland and the Baltic Proper. Anoxic conditions occur frequently below the halocline, especially during the periods of absence of large inflows of the North Sea water. Other marine areas (Gulf of Riga and west-Estonian Archipelago sea) lack of halocline.

The seasonal development of vertical stratification is rather uniform in Estonian coastal waters. During the warm season, the upper layers are warmed up and the seasonal thermocline is formed at depths of 10-25m. In deeper regions, ‘cold winter water’ is to found between the seasonal thermocline and the permanent halocline. Nutrients accumulated in layers below the halocline are carried to upper layers during the winter homothermium that reaches to a depths of 50-60 m.

Wind forcing is the main factor inducing variable circulation, incl large- and meso-scale circulation, Kelvin waves and upwelling. In addition, an important role have the buoyancy forces caused by

differences in densities of different water masses and notably also geographic factor (i.e. bottom topography). Cyclonic (anticlockwise) residual circulation dominate (Alenius et al. 1997, Ojaveer and Elken 1997).

Main coastal and marine habitat types. Estonian coastal waters consists of four major sub-regions which all have characteristic physical, chemical and biological features (e.g., Ojaveer and Elken 1997).

The Estonian coastline of the Gulf of Finland is relatively uniform, exposed, without major gulfs or archipelagos and has a comparatively steep coastal slope. The main environmental factors determining the development of coastal benthic biotopes are substrata, depth and salinity.

The Gulf of Riga is fairly isolated from the Baltic Proper and hence has a peculiar salinity and nutrient regime. Due to the shallowness of the area the basin lacks a permanent halocline (also see above). The nitrogen content of the Gulf is about 2-3 times higher than the values in the Baltic Proper. The substrate is very diverse in structure and origin. The prevailing seabed type is an accumulation bottom. The coastline of the Gulf is mainly exposed and hard bottoms prevail in the eastern part while a system of shallow enclosed bays with soft accumulation bottoms occur in the northern part. Substrate, salinity, depth and eutrophication level affects most the biotopes in the area.

The inner sea of the west-Estonian Archipelago has a surface area of approximately 2,000 km^2 and an average depth of 5 m. Almost whole benthic biotopes are within the photic zone, hence, biological production in the area remarkable. The soft bottom biotopes are the most prevalent in the area.

The Baltic Proper is characterised by lower nutrient levels and higher water transparency, hence the vegetated areas reach deeper as compared to above-mentioned three sub areas. The bottom is mainly composed by hard substrata in the shallow sub-littoral and soft bottom in deeper sites.

Main coastal and marine biodiversity values. Organisms of three different origin inhabit Estonian waters of the Baltic Sea: marine species, species of freshwater origin and glacial relicts. Marine species inhabit generally more open waters and their distribution is mainly restricted by salinity conditions, freshwater species dominate in coastal areas and glacial relicts are mostly confined in environment characterised with cold water and enough oxygen during the year round. The last is the most sensitive group of species (e.g., the mysid *Mysis relicta*, copepod *Limnocalanus macrurus*, foyurhorned sculpin *Myoxocephalus quadricornis*) as the environment they inhabit is confined to deeper areas especially Gulf of Riga and Gulf of Finland, but also Baltic Proper.

In several rivers discharging to the Gulf of Finland, natural salmon reproduction takes place. Also, the local salmon stocks are subjected to artificial enhancement exercises where population origin is taken into account.

Several protected areas (e.g., Vilsandi national park, Matsalu nature reserve area) situate in the west-Estonian Archipelago area. In the northern Gulf of Riga, two MPA-s have been created. In addition, these areas, especially the Gulf of Riga, are important reproduction areas for seals.

Main fisheries resources (including aquaculture). The main commercial species are clupeids – the Baltic herring and sprat. Estonian herring catches originate from different herring populations: Gulf of

Riga, Gulf of Finland and the Northern Baltic Proper amounting to over 40 th. tonnes. In recent years, importance of sprat fishery has increased, due to improvement of stock conditions (catches exceed 30 th. tons). Other more important marine commercial fish are flatfish and cod. Of coastal fisheries, perch, pikeperch, vimba, and whitebream and roach are more important. Annual catches by species being usually below 300 tons.

Of recently intensified aquaculture activities at sea (the Gulf of Finland), annual production of rainbow trout (only for human consumption) is in the range of 100 tons. For enhancement of natural fishery resources, young (0-group or YOY) salmon, sea trout and whitefish are released each year into the wild.

In addition to traditional fishery resources, Estonia is exploiting unique loose-lying *Furcellaria fastigiata* community in the west-Estonian Archipelago sea, where circular current system is keeping the algae together. The annual harvest is in the range of 1000 tons.

Main coastal and marine tourism areas. At present there are eleven quest ports in Estonia for marine tourism purposes that meet international standards. In addition to that, five quays and eighteen piers are available for boat entries (Eidast 2001). Besides that, visitors can land at a number of other port sites. During the period of 1993-2001, 45 port sites were available. During this period, the number of boat entries has increased threefold from over 3000 to more than 9700 (Annex 1).

By regions, the most popular are two ports in Tallinn, with the total number of annual boat entries of over 3500 in the last 5 years, and west-Estonian Archipelago area with altogether ca. 20 smaller or bigger ports (Annex 2; H. Hallika, Estonian Marine Tourism Association, pers. comm.). Tallinn and Parnu (NE Gulf of Riga) are the most important sites with sandy beaches by attracting large numbers of tourists in summer.

Petroleum and mineral resources and their exploitation. None.

Status of Marine Bio- Invasions in Estonia

Code:

1. Species name.
2. Native range/where it was introduced from.
3. How introduced (which pathway/vector)?
4. When first recorded in the country and by whom?
5. Current range/distribution in the country.
6. Current known impacts (ecological, economic and human health).
7. Current management and control activities in the country.

1. ***Acartia tonsa***, Copepoda.
2. Atlantic and Pacific coasts of North and South America, Indian Ocean. Inhabits coastal areas from tropics to temperate regions.
3. Ballast waters (Leppäkoski 1984, Jansson 1994).
4. First found in the Baltic Sea in the Gulf of Gdansk in 1925, later in the Gulf of Riga in 1926 and in the Gulf of Finland in 1934 (Smirnov 1935, Berzins 1940).
5. Status largely unknown. In general, Acartia is generally not identified to the species level in the Baltic Sea.
6. Unknown.
7. None.

1. ***Balanus improvisus***, Crustacea.
2. North-America east coast.
3. Probably via ballast water or attached to ships.
4. Mid 19th century (Leppäkoski, 1984).
5. Very common on the hard substrate around the whole Estonian coastal areas.

6. Grazing effect on phytoplankton, fouling organism on boats and ships.

7. None.

1. ***Cercopagis pengoi***, Cladocera.

2. Ponto-Caspian region.

3. Ballast water.

4. Gulf of Finland in 1992, first recorded by Ojaveer et al. (2000).

5. Distributed in all sub-basins around the Estonian coast: Gulf of Riga, Gulf of Finland, Baltic Proper and the west-Estonian Archipelago. Especially abundant in the sheltered NE Gulf of Riga (Ojaveer et al. 2000).

6. Concomitant to the invasion of the predatory C. pengoi into the Gulf of Riga, abundance of the small-sized cladoceran Bosmina coregoni maritima has significantly decreased (Figure 1), probably as a result of direct predation. Also, this invasion has caused remarkable changes in diet composition of several commercial (herring Clupea harengus membras, smelt Osmerus eperlanus) and non-commercial fish species (sticklebacks Gasterosteus aculeatus and Pungitius pungitius, bleak Alburnus alburnus, Table 1) (Ojaveer et al. 2000).

7. None.

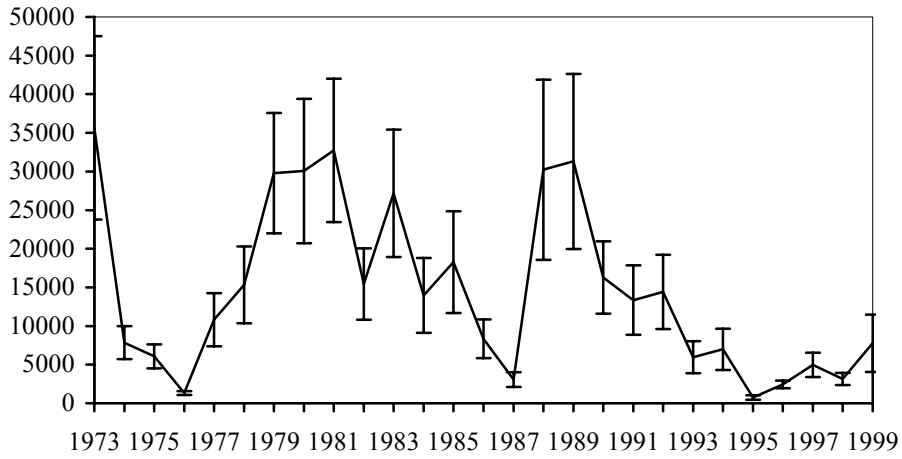

Figure 1. Long-term abundance of *Bosmina coregoni maritima* (ind. m^{-3}) in the northeastern Gulf of Riga 1973-1999.

Table 1. Long-term mean contribution (%, wet weight) of *Cercopagis pengoi* in fish diet and Ivlev's electivity index (with S.E. and n) for most abundant pelagic fish in their main feeding areas of the Gulf of Riga during the main feeding period (June-September) in 1994-1998. Each sample consisted of 20 fish.

Fish	%			Electivity		
	mean	S.E	n	mean	S.E.	n
Herring *Clupea harengus membras*						
Adult	6.3	3.0	51	-0.10	0.17	34
0-group	0.1	0.1	20	-1.00	0	6
Smelt *Osmerus eperlanus*						
Adult	6.3	4.4	25	-0.84	0.16	12
Juvenile	3.7	2.7	30	-0.43	0.23	13
Sticklebacks *Gasterosteus aculeatus*	6.1	2.6	27	-0.47	0.19	18
Bleak *Alburnus alburnus*	68.5	20.4	5			

1. ***Cordylophora caspia***, Hydrozoa.
2. Ponto-Caspian region.
3. Fouling on riverboats.
4. 19th century (Jansson, 1994).
5. Common on the hard substrate around the whole Estonian coastal areas at low saline areas.
6. Unknown.
7. None.

1. ***Eriocheir sinensis***, Crustacea.
2. Chinese east coast.
3. Ballast waters.
4. In 1933 by A. Järvekülg, 1997.
5. Rare in the whole Estonian coastal range.
6. Unknown.
7. None.

1. ***Dreissena polymorpha***, Bivalvia.
2. Ponto-Caspian region.
3. Probably via canals as attached to riverboats.
4. Mid 19th century (Schrenk, 1948).
5. Very common in the Gulf of Riga (biomasses may exceed 1 kg per m2), rare in the Eastern Gulf of Finland (Figure 2, Table 2).
6. Through the grazing of phytoplankton the bivalve has a major impact of pelagic communities.
7. None.

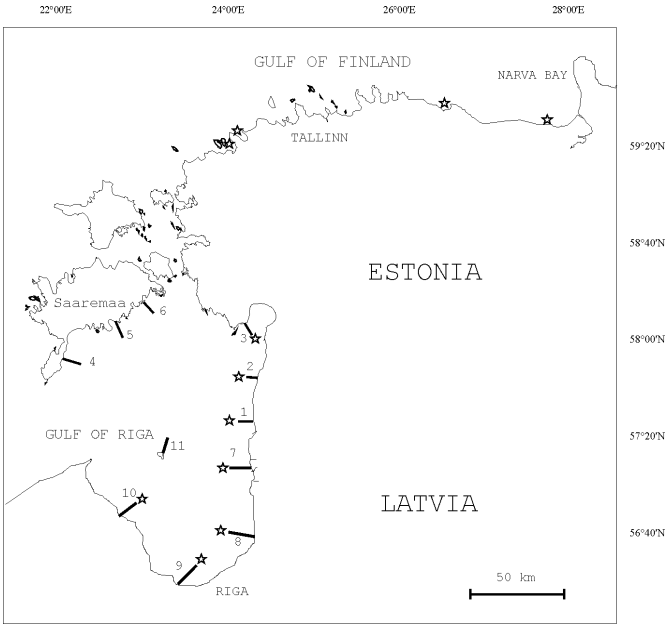

Figure 2. Stars represent the locations where *Dreissena polymorpha* has been found in 1995-2001.

Table 2. Abundance, biomass (± standard error) and grazing values of zebra mussel populations in the Gulf of Riga in 1995-96. For the location of transects see Figure 2.

Transect	Depth	Abundance (ind × m^{-2})	Biomass (g × m^{-2})	Population grazing in spring (l × h^{-1} × m^{-2})
1	2.5	32±0	0.41±0.05	0.008
2	1.5	42±28	6.35±6.13	0.095
	2.1	63	12.78	0.192
3	5.0	21±21	4.97±4.97	0.139
4		-	-	
5		-	-	
6		-	-	
7	2.6	10±10	4.59±4.59	0.092
	6.0	32±32	12.62±12.62	0.568
8	4.5	125	31.88	0.925
	5.0	163	36.80	1.030
	6.0	8400	1463.18	65.843
	7.0	5400	574.46	31.595
	8.0	705	88.75	5.858
	9.5	1125	99.84	8.986
9	3.0	1376±1008	51.15±33.79	1.023
	6.0	533±347	11.04±7.81	0.497
10	6.0	85±11	1.88±0.46	0.085
11		-	-	

1. **Maeotias inexpectata**.Hydrozoa
2. Ponto-Caspian region.
3. Unknown.
4. West-Estonian Archipelago, in 1999, recorded by Väinölä and Oulasvirta, 1999.

5. Unknown.
6. Unknown.
7. None.

1. ***Marenzelleria viridis***, Polychaeta.
2. Atlantic coast of North-America.
3. Ballast water into the Baltic Sea.
4. In 1994 by J. Kotta..
5. Very common in the Gulf of Riga, the West Estonian Archipelago Sea, the Baltic Proper, the Gulf of Finland (easternmost location where established 27ºE, Figure 3).
6. New function in the benthic communities (deep sediment burrower) which is likely to change the species composition of meiofauna but also facilitate the expansion of distribution of some macrofaunal species. Owing to interspecific competition the abundances of native polychaete Hediste diversicolor and the amphipod Monoporeia affinis have declined.
7. None.

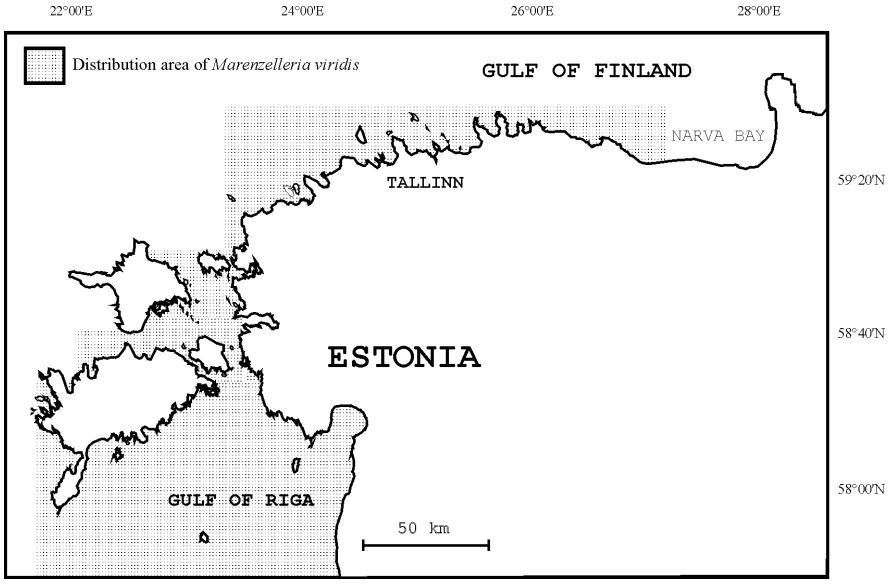

Figure 3. Distribution area of Marenzelleria viridis in 2001.

1. ***Mya arenaria***, Bivalvia.
2. North-America east coast.
3. Attached by solid ballast or ship hull.
4. 11-12th century (Petersen et al. 1992).
5. Very common on the soft substrate around the whole Estonian coastal areas at salinities higher than 4 psu.

6. Grazing effect on phytoplankton.
7. None.

1. ***Potamopyrgus antipodarum***, Gastropoda.
2. New Zeland.
3. Ballast water.
4. 19th century (Leppäkoski, 1984).
5. Common on the various substrate especially in vegetated areas around the whole Estonian coastal areas. Owing to increasing eutrophication level and the mass development of filamentous algae its density has risen manyfold in recent years.
6. Grazing effect on microphytobenths.
7. None.

In addition, Carp *(Cyprinus carpio)* was introduced to Estonia in the 18th century (Mikelsaar 1984). During the 1940s-1960s, various sturgeon stocks were released into the Gulf of Riga for the enhancement of commercial fish stocks. Sturgeon released include sterlet (*Acipenser ruthenus*), beluga (*Huso huso*), Siberian sterlet (*Acipenser ruthenus*), Siberian sturgeon (*A. baeri*), and Russian sturgeon (*A. guldenstadti*). In addition, Siberian salmon (*Oncorhynchus keta*) and humpback salmon (*O. gorbusha*) were released in the 1970s (Mikelsaar 1984, Ojaveer 1995).

Institutional Arrangements in Estonia

1. Is there a Lead Agency for ballast water management matters in your country?

No.

2. List other organizations and stakeholders with an interest in ballast water management.

Maritime Administration

Ministry of Environment

Marine Institute

Port of Tallinn.

3. Is there legislation/regulations governing ballast water management in your country?

No.

4. Are the IMO ballast water management guidelines (A.868(20)) implemented in your country?

No.

5. Are ships entering the country's ports required to complete and submit the IMO Ballast Water Reporting Form?

No.

6. Are there any other ballast water management requirements in your country?

No.

Shipping & Ports in Estonia

1. ***Imports*** since 1995:

Import **Quantities**. Name of Port: **Port of Tallinn**

	Import *Quantities* (tonnes)											
	Crude oil	Oil products	Iron ore, scrap-met.	Other ores	Coal, coke, peat	Fertilisers	Cement, Road Metal	Grains	Wood chips	Containers	General cargo	Other
2001		83	5	8	1	14	62	60	2	176	120	1159
2000		180	10	-	5	5	135	938	1	289	309	2176
1999		357	17	-	31	14	296	1992	-	265	637	1800
1998		571	5	-	89	13	241	487	-	342	765	1777
1997		726	39	-	84	15	48	504	-	359	825	1573
1996		675	-	99	125	15	35	1102	1	306	487	1246
1995		519	44	133	326	3	113	411	1	144	585	930

Import **Sources**. Name of Port: **Port of Tallinn** (data not available)

	Import *Sources* (For each year, please insert **name** of main port(s) from which each cargo type is **imported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001												
2000												
1999												
1998												
1997												
1996												
1995												

2. ***Exports*** since 1995:

Export **Quantities**. Name of Port: **Port of Tallinn**, common unit: t. tonnes

	Export *Quantities* (tonnes)											
	Crude oil	Oil products	Iron ore, scrap met	Other ores	Coal, coke, peat	Fertilisers	Cement, Road Metal	Grains	Wood	Containers	General cargo	Other
2001	2049	8313	232	1	327	1056	27	9	501	217	449	976
2000	3533	14099	543	43	560	1735	96	9	1048	466	1171	1879
1999	2429	11718	724	-	186	1438	66	67	1066	364	1275	1536
1998	674	9855	865	-	286	682	8	849	1020	220	1210	1337
1997	237	7132	718	-	228	535	-	535	1015	189	1134	1176
1996	-	5118	503	-	401	621	13	360	1015	143	872	923
1995	-	2887	334	123	1303	752	47	1025	1012	248	1322	770

Export **Destinations.** Name of Port: **Port of Tallinn** (data not available)

	Export *Destinations* (For each year, please insert **name** of main port(s) to which each cargo type is **exported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001												
2000												
1999												
1998												
1997												
1996												
1995												

3. ***Number*** vessels handled since 1995.

Name of Port: **Port of Tallinn**

Number vessels handled since 1995
(For each year, please enter **number** of vessels)

	Tankers					Bulk carriers				
	<30,000	30,000-79,999	80,000-149,999	150,000-199,000	≥200,000	10,000-24,999	25,000-64,999	65,000-149,999	150,000-199,000	≥200,000
2001 (1-6)	310	114	2	-	1	31	13	-	-	-
2000	608	177	3	-	1	65	39	-	-	-
1999	602	128	-	-	-	73	62	-	-	-
1998	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1996	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1995	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001 (1-6)	238	2771	1456	208
2000	453	6548	2000	457
1999	495	6270	2081	151
1998	298	4588	2586	53
1997	211	3883	2348	45
1996	244	3770	1579	70
1995	238	3323	2526	110

4. ***Total volume*** of ballast ***discharged*** in the port each year. **Unknown.**

5. ***Main locations*** where this ballast water is ***imported from***. **Unknown.**

6. ***Total volume*** of ballast water ***uplifted*** in the port each year. **Unknown.**

7. ***Main locations*** where this ballast water is ***exported to***. **Unknown.**

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Latvia Country Status Report

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Latvian Coastal and Marine Environments

General. The Latvian marine area consists of two parts, which although connected with the Irbe Strait are quite different by geomorphological features and hydrologic properties. At first, the part of Baltic Proper is considerably deeper than the Gulf of Riga. Therefore the Baltic part does not cover with ice even in very cold winters like the Gulf. Second, each basin has different types of water mixing. In the Baltic Proper the water column is divided in to several layers by thermocline, halocline and secondary thermocline while in the Gulf of Riga only thermocline occurs during the warm part of the year. So in the Baltic only the upper layer is mixed when thermocline is destroyed by water cooling, but the lower layers are not significantly influenced. In the Gulf of Riga the whole water column is mixed thoroughly from October till April.

Third, freshwater input is also considerably different in both areas. At the coast of the Baltic proper no big rivers fall into the sea while four biggest Latvian rivers inflow in the Gulf of Riga. Thus the riverine water constitutes up to 7% of total volume of the Gulf. The freshwater flow determines higher concentration of nutrients and organic matter in the Gulf and lower salinity compared to the Baltic Proper.

The environmental observations in the Latvian part of the Baltic Sea are performed on regular basis since the early 1920-ies. So the presented report is the compilation of the available literature and field data. At present time the marine monitoring is fulfilled by Institute of Aquatic Ecology, the meteorological aspects are covered by Latvian Hydrometeorological Agency and fishery surveys are conducted by Latvian Fisheries Research Institute.

Climate. The climate in the Latvian marine areas is transitional from the marine to continental. The border of the climate types changes during the year. Therefore in autumn the climate is less severe due to the impact of the sea which serves as the battery of the heat but in the spring warming of the water is slower than in the other parts of the sea.

Predominant winds. Typically, the dominant wind direction in all seasons of the year is western. In winter and autumn north-western winds are mostly observed. Although in spring the dominant direction is hard to estimate, the western and northern winds are recorded more often. In summer western winds are stated as 50-60% of the total observations. The highest wind speed occurs during the cold period of the year – from November till March.

Air temperature. The average air temperature in winter varies between – 5 and –11°C, however softer winter occur often with temperature around 0°C for long periods. The average summer temperature is 14-18°C.

Water temperature. The water temperature in Latvian marine areas has a strong seasonal pattern. During winter water temperature is between 0.5 and 2.5°C. In very severe winters the Gulf of Riga is covered with ice (last time in 1996). The gradual increase of water temperature starts at the end of March and in May it reaches approx. 10-13°C. During summer, water warms up to 17-19°C and at the coastal zone temperature often exceeds 20°C. At the beginning of September the cooling restarts and the stable winter values are reached at the end of December.

Salinity. Spatial and temporal distribution of salinity in the Latvian marine are greatly influenced by the considerable freshwater input. Therefore also salinity follows certain seasonal order. In winter salinity distribution is homogeneous and the values are 5-7 PSU in the upper layer and 6-8 PSU in the deeper layers. During spring flood period salinity decreases below 5 PSU and in the coastal areas it drops below 3 PSU. In summer the salinity often is lower than 5 PSU at the coastal regions but mostly varies around 5.5 PSU in the Gulf of Riga. In the Baltic Proper salinity is always higher – 6.5 – 7 PSU.

Tidal range. No obvious tides occur in the Latvian marine areas. The change of the seawater level is caused by the direction change of the wind and is not related to any diel fluctuations.

Main hydrodynamic patterns. The main hydrodynamic patterns are following: near the coast of the Baltic Proper the main direction of current is the southern-northern. In the Gulf of Riga the current turns counter-clockwise, although the general patterns are considerably corrected by the wind speed and direction.

Main coastal and marine habitat types. The Latvian seacoast consists of sandy dunes and beaches. Also the sea bottom till 12 – 20 m depth consists of sand and gravel. Deeper areas represent muddy bottoms. In separate places both the coast and the sea bottom are covered by boulders and smaller stones. The bottom vegetation is mostly concentrated there.

Main coastal and marine biodiversity values. As the Baltic Sea in general, the Latvian areas are poor in species diversity, due to the low amount of organisms adapted for the life in brackish water environment. The number of planktonic and benthic species are approx. 2 times higher at the coastal regions where the freshwater species occur.

Four regions of the total area are nominated as Baltic Sea Protected Areas in the HELCOM framework. All those regions completely or partially coincide with the internationally Important Bird Areas, where several protected bird species overwinter.

Three species of seals have also been observed, however the Latvian part serves more as a migratory and feeding area for the animals.

Main fisheries resources (including aquaculture). The main species of industrial fishery are the Baltic herring and sprat (30% and 50% of the total catch, respectively). Besides also the cod, salmon, flounder and turbot should be mentioned. The marine aquaculture in Latvia almost does not exist. But around 80 000 young wild salmon (smolts) leave ten Latvian salmon rivers each year. Moreover, Latvian wild salmon are not affected by the dangerous M-74 syndrome causing severe losses to wild salmon spawning in other Baltic regions. River Salaca is considered to be the largest still existing salmon river of the whole eastern Baltic.

Main coastal and marine tourism areas. The southern part of the Gulf of Riga is a traditional recreation area. It carries high numbers of summer houses and numerous health resorts. The coast of the Baltic Proper is less populated but has become more popular recently as a tourist attraction. A special walking tourism route “Amber Path” is arranged there.

The marine tourism in Latvia is determined by cruises with private yachts and small cutters though.

Petroleum and Mineral resources These include iron-manganese concretions, sand, gravel, boulders and some titan compounds. The economic significance of the mineral resources still is small due to the sparse investigations or low industrial value. Also the transportation is more complicated, e.g. in

sand and gravel excavations. Recently indications on petroleum existence have been found in Latvian marine territory, however no exploitation has started.

Status of Marine Bio-invasions in Latvia

Only the two species introduced during last 15 years are considered due to better information coverage.

Species One: Benthic polychaete worm *Marenzelleria viridis*

Native range: Natural distribution area is Atlantic coast of the Northern America.

How introduced? Shipping.

When first recorded in the country and by whom? In 1988 few first individuals of *M. viridis* were recorded in the Gulf of Riga by the Institute of Biology.

Current range/distribution in the country: *M. viridis* concentrates mostly in 20-30 m depth on soft bottoms of southern and eastern Gulf, as well as in Irbe Strait.

Current known impacts: Invasion of *M. viridis* in the Gulf of Riga co-accord with more than threefold decrease in abundance of the former zoobenthos dominant: crustacean *Monoporeia affinis*. Still the direct influence of *M. viridis* on its possible habitat and food competitors: local worm and crustacean species is not yet proved.

Current management and control activities in the country: The species abundance is controlled by the means of national marine monitoring.

Species Two: Predatory cladoceran (= water flea) *Cercopagis pengoi*.

Native range: Natural distribution area is in Caspian and Black Sea basins.

How introduced? Most probably - shipping.

When first recorded in the country and by whom? In 1992 few first individuals of *C.pengoi* were recorded in the Gulf of Riga by the Marine Monitoring Centre.

Current range/distribution in the country: During summer – in all Latvian marine area.

Current known impacts: *C. pengoi* is becoming an important food object for the plankton-feeding fish. From the ecological point, establishing of this predatory plankton organism can restructure pelagic food web, causing far-reaching impact on the whole plankton community. Competing of *C. pengoi* with plankton feeding fish is possible as well. The specimens are often found attached to each other with its characteristic long tails and thus the clews of the organisms are clogging the fishing nets. However, so far it causes mostly inconveniences for fishermen and no economic effect.

Current management and control activities in the country. The species abundance is controlled by the means of national marine monitoring.

Institutional Arrangements in Latvia

1. Is there a Lead Agency for ballast water management matters in your country?

Maritime Department of Ministry of Transport
Director A. Krastiņš
Gogola iela 3, Riga, LV-1743,
Latvia
Tel (+371)7028198
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and

Maritime Administration of Latvia
Executive, Director A.Zeltins
Trijadibas iela 5, Riga, LV-1048
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Tel (+371) 7062 101
Fax (+371) 7860082.

2. List other organizations and stakeholders with an interest in ballast water management.

Marine Environment Board, Ministry of Environment Protection and Regional Development

Port authorities

Latvian Shipping Company as an owner of 38 tankers (although all vessels are under foreign flags)

3. Is there legislation/regulations governing ballast water management in your country?

There is no specific legislation governing ballast water management in our country. The "Maritime Code" of Latvia, adopted in 1994, states that MARPOL 73/78 is mandatory in territorial waters of Latvia. Therefore discharge of ballast waters in territorial waters of Latvia is conducted in accordance with requirements of the convention, but implementation of Resolution A.868(20) is not covered.

4. Are the IMO ballast water management guidelines (A.868(20)) implemented in your country?

IMO Resolution A.868(20) is not implemented in Latvia. The largest shipping company in Latvia and within the Baltic states is Latvian Shipping Company (LSC). The LSC fleet includes 33 product carriers, 3 chemical tankers, 2 LPG carriers, 12 reefers and one ro-ro vessel with total deadweight of 1,000,000 t. All LSC ships are under foreign flags and are provided with Ballast Water Management (BWM) plans and following other requirements of Resolution A. 868(20).

Ports and Shipping in Latvia

("-" = information not available)

Freeport of Ventspils

1. ***Imports*** since 1995:

Import **Quantities**. Name of Port: **Freeport of Ventspils**

	Import *Quantities* (For each year, please insert **quantity** and **units** of each cargo type – e.g. tonnes, m^3, etc)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	21.0	-	-	-	-	-	-	-	-	-	405.0
1999	-	126	-	-	-	-	-	35	-	-	-	581.0
1998	-	143.0	-	-	-	-	-	-	-	-	-	321.0
1997	-	31.3	-	-	-	-	-	-	-	-	-	252.0
1996	-	297.0	28.0	-	-	-	-	59.0	-	-	-	303.0
1995	-	344.0	27.0	-	-	-	-	-	-	-	-	37.0

Import forms approximately 0.5 % of the export quantities.

Import **Sources**. Name of Port: **Freeport of Ventspils**

	Import *Sources* (For each year, please insert **name** of main port(s) from which each cargo type is **imported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

2. ***Exports*** since 1995:

Export **Quantities**. Name of Port: **Freeport of Ventspils**

	Export *Quantities* ((thousand of tons)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	0	26371.1	0	0	399.9	5883.9	0	-	11.3	-	2090.8	-
1999	0	24327.0	0	0	26.1	6545.2	0	34.5	9.0	-	3195.2	-
1998	0	26164.2	0	0	-	5766.9	0	-	1.0	-	4115.9	-
1997	0	27046.9	0	0	-	5879.8	0	-	-	-	3843.8	-
1996	0	27291.2	0	0	-	5329.2	0	-	-	-	3124.2	-
1995	0	21099.1	0	0	-	5846.8	0	-	-	-	2677.2	-

Export **Destinations.** Name of Port: **Freeport of Ventspils**

	Export *Destinations* (For each year, please insert **name** of main port(s) to which each cargo type is **exported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	European ports	-	-	-	Ports of China, Brazil, India etc.	-	-	Ports of Sweden	-	European ports	-
1999	-	″	-	-	-	″	-	-	″	-	″	-
1998	-	″	-	-	-	″	-	-	″	-	″	-
1997	-	″	-	-	-	″	-	-	″	-	″	-
1996	-	″	-	-	-	″	-	-	″	-	″	-
1995	-	″	-	-	-	″	-	-	″	-	″	-

3. ***Number*** vessels handled since 1995.

Name of Port: **Freeport of Ventspils**

Number vessels handled since 1995
(For each year, please enter **number** of vessels)

	Tankers					Bulk carriers				
	<30,000	30,000-79,999	80,000-149,999	150,000-199,000	≥200,000	10,000-24,999	25,000-64,999	65,000-149,999	150,000-199,000	≥200,000
2001	205	142	119	0	0	349	89	0	0	0
2000	184	184	159	0	0	572	99	0	0	0
1999	156	167	153	0	0	638	101	0	0	0
1998	231	164	191	0	0	645	122	0	0	0
1997	232	185	186	0	0	558	113	0	0	0
1996	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001	-	46	200	-
2000	-	189	92	-
1999	0	-	300	18
1998	0	-	300	48
1997	0	-	606	90
1996	-	-	-	-
1995	-	-	-	-

4. ***Total volume*** of ballast ***discharged*** in the port each year:
Total volume of ballast water discharged to port reception facilities is approximately 200,000 cub.m per year (2000 year-237 013 cub.m; 1999 – 348 348 cub.m; 1998 – 331 757 cub.m; 1997 – 333 544 cub.m; 1996 –447 742 cub.m; 1995 – 690 736 cub.m;); Volume of clean/ segregated ballast water discharges in port waters not available.

5. ***Main locations*** where this ballast water is ***imported from***:
Information not available.

6. ***Total volume*** of ballast water ***uplifted*** in the port each year:
Information not available.

7. ***Main locations*** where this ballast water is ***exported to***:
Information not available.

Freeport of Riga

1. ***Imports*** since 1995:

Import **Quantities**. Name of Port: **Freeport of Riga**

	Import *Quantities* (thousand of tons)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 8 months	0	41,0	0	0	0	0	0	19,9	1,4	358,1	209,0	454,9
2000	0	121,5	0	0	0	0	0	134,8	2,3	477,9	472,7	492,5
1999	0	589,4	0	0	0	0	0	185,3	2,9	436,0	862,0	678,9
1998	0	583,0	0	0	0	0	0	63,0	7,1	709,0	676,5	726,4
1997	0	753,0	0	0	0	0	0	113,0	0	853,0	648,0	920,9
1996	0	322,3	0	0	0	0	0	153,3	0	884,0	596,9	159,9
1995	0	366,0	0	0	0	0	0	79,6	4,7	794,3	591,0	135,4

Import **Sources**. Name of Port: **Freeport of Riga**

	Import *Sources* (For each year, please insert **name** of main port(s) from which each cargo type is **imported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

Import sources are not available in the Freeport of Riga Authority.

2. ***Exports*** since 1995:

Export **Quantities**. Name of Port: **Freeport of Riga**

	Export *Quantities* (thousand of tons)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 8 months	0	2569,0	40,7	0	526,9	962,4	10,0	1,4	2895,8	271,4	492,8	1321,4
2000	0	2709,9	15,8	0	0	1558,9	30,3	7,5	4150,6	333,1	1895,4	948,5
1999	0	1587,5	0	0	0	1108,2	106,1	12,4	3458,9	355,6	1912,3	710,1
1998	0	1414,0	0	0	0	1145,1	160,5	72,0	3578,1	496,0	2866,9	817,7
1997	0	1364,0	0	0	11,0	813,4	145,9	97,0	2754,2	421,0	2116,8	592,7
1996	91,6	569,6	0	0	147,6	386,0	103,6	5,9	1596,3	507,8	1423,9	476,1
1995	0	120,7	5,4	0	414,5	437,7	79,2	63,5	2009,6	441,2	1548,3	362,4

Export **Destinations.** Name of Port: **Freeport of Riga**

	Export *Destinations* (For each year, please insert **name** of main port(s) to which each cargo type is **exported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

Export destinations are not available in the Freeport of Riga Authority.

3. ***Number*** vessels handled since 1995.

Name of Port: **Freeport of Riga**

	Number vessels handled since 1995 (For each year, please enter **number** of vessels)									
	Tankers					Bulk carriers				
	<30,000	30,000-79,999	80,000-149,999	150,000-199,000	≥200,000	10,000-24,999	25,000-64,999	65,000-149,999	150,000-199,000	≥200,000
2001	432	1	-	-	-	66	13	-	-	-
2000	479	2	-	-	-	95	14	-	-	-
1999	412	0	-	-	-	73	11	-	-	-
1998	427	0	-	-	-	33	10	-	-	-
1997	477	0	-	-	-	5	2	-	-	-
1996	207	0	-	-	-	3	0	-	-	-
1995	9	0	-	-	-	0	0	-	-	-

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001	338	76	1570	293
2000	380	135	2503	498
1999	395	273	2345	477
1998	426	278	2658	641
1997	295	229	2337	735
1996	213	146	1745	647
1995	1	2	26	49

4. ***Total volume*** of ballast ***discharged*** in the port each year:
Total volume of dirty ballast water discharged to port reception facilities is approximately 18,000 tons per year. Volume of clean/segregated ballast water discharges in port waters not available.

5. ***Main locations*** where this ballast water is ***imported from***:
Information not available.

6. ***Total volume*** of ballast water ***uplifted*** in the port each year:
Information not available.

7. ***Main locations*** where this ballast water is ***exported to***:
Information not available.

Port of Liepāja

1. ***Imports*** since 1995:

Import **Quantities**. Name of Port: **Port of Liepāja**

	Import *Quantities* (thousand of tons)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 (9 months)	0	0	0	0	0	3.7	24.4	8.8	0	9.6	310.1	37.7
2000	0	2.5	0	0	0	3.6	31.5	2.6	0	20.8	347.9	56.7
1999	0	7.1	0	0	0	14	57.4	1.3	0	15.3	281.6	72.6
1998	0	0	0	0	0	17.5	40.2	4.4	0	24.6	401.1	89.1
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

Import **Sources**. Name of Port: **Port of Liepāja**

	Import *Sources*											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

Import sources are not available.

2. ***Exports*** since 1995:

Export **Quantities**. Name of Port: **Port of Liepāja**

	Export *Quantities* (thousand of tons)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 (9 months)	5.2	431.7	0	0	0	108.7	27.1	45.1	145.7	7.5	1285.5	779.3
2000	5.1	387.8	0	0	0	112.3	29.3	44.1	137.7	29.3	1724.5	835
1999	0	238	0	0	0	38.6	4.7	4.8	67.12	46.6	1448.8	521.2
1998	0	79.2	0	0	0	17	7.6	23.3	52.3	34.8	1544.8	261.6
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

Export **Destinations.** Name of Port: **Port of Liepāja**

	Export *Destinations*											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 (9 months)	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

Export destinations are not available .

3. ***Number*** vessels handled since 1995.

Name of Port: **Port of Liepāja**

	Number vessels handled since 1995 (For each year, please enter **number** of vessels)									
	Tankers					Bulk carriers				
	<30,000	30,000-79,999	80,000-149,999	150,000-199,000	≥200,000	10,000-24,999	25,000-64,999	65,000-149,999	150,000-199,000	≥200,000
2001 (9 months)	104	0	0	0	0	0	0	0	0	0
2000	131	0	0	0	0	0	0	0	0	0
1999	107	0	0	0	0	0	0	0	0	0
1998	79	0	0	0	0	0	0	0	0	0
1997	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001 (9 months)	0	140	700	191
2000	0	251	907	213
1999	0	262	864	186
1998	0	271	850	120
1997	-	-	-	-
1996	-	-	-	-
1995	-	-	-	-

4.Total volume of ballast ***discharged*** in the port each year:
Information about total volume of dirty ballast water discharged in port reception facilities not available. Volume of clean/ segregated ballast water discharges in port waters not available.

5. ***Main locations*** where this ballast water is ***imported from***:
Information not available.

6. ***Total volume*** of ballast water ***uplifted*** in the port each year:
Information not available.

7. ***Main locations*** where this ballast water is ***exported to***:
Information not available.

Lithuania Country Status Report

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Coastal & Marine Environments

Climate. The climate is of intermediate character (between temperate marine and temperate continental) with rather mild winters and moderate summers.

The Lithuanian zone of the Baltic Sea is situated in the south-eastern part of the Baltic Proper. The shoreline, from the Russian (Kaliningrad) border on the Curonian spit (Kursiu nerija) to the Latvian border on the mainland, is 92 km long. The aquatic part comprises the Baltic Sea and the Curonian Lagoon (Kursiu marios) waters, while the terrestrial part of the coastal zone includes the Curonian spit (52 km within the Lithuanian part) and the mainland area.

Predominant winds. Predominant winds are of westerly directions (43% of all winds observed). The windiest months are October, November and December (in average 5-6 days with the wind speed, exceeding 15 m/s); the winds of 30 m/s speed occur one time per 5 years. The strongest and longest hurricanes have affected the Lithuanian coast during the recent two decades with the extreme windflaw reaching 50 m/s (the waves height was up to 7 m).

Air temperature. The mean annual air temperature in the area is +7°C. The coldest month is February, with –3°C being the long-term mean (–38°C in minimum). August is the warmest month: +18°C is the long-term mean (+33°C in maximum). From March till November the temperatures exceed 0°C and from May to September they are usually higher than +10°C.

Sea temperature. The mean annual water temperature in the coastal area is +8.4°C (–0.3°C minimum, the maximum is +24.9°C). The average annual temperature range is ca. 21°C; showing a typical boreal seasonal pattern with the maximum in July - first decade of August. The summer thermocline is formed at the depth of 20-30 m. Almost the entire coastal zone is influenced by the warm water layer. In winter, fast ice along the shoreline is normal phenomenon; its width varies from 20-30 m to several hundred meters, with a thickness from 10-15 to 40-50 cm, depending on the severity of the winter. No fast ice was observed during few recent years due to mild winters.

In the Curonian Lagoon, the range of temperature fluctuations is greater than in the adjacent Baltic Sea coastal area, but generally, it shows the same boreal pattern. Difference in water temperature between the two water bodies may reach 8 °C. There is no temperature stratification of water column. Wind driven movements of water masses cause rapid irregular temperature fluctuations in the Klaipeda port area (outlet of the Curonian Lagoon). Klaipeda port is free of stable ice cover all year round (as is the adjacent Baltic Sea coastal zone), while the Lagoon is usually covered by the ice from December untill March.

Salinity. The offshore waters show the typical for the Baltic Proper stratification pattern with the upper layer (mean salinity 7-8 PSU) separated by the permanent halocline at 70-80 m depth from the

more saline subhalocline water layer. In the coastal area, major hydrological features are determined by the interaction between the south-eastern Baltic offshore waters and the runoff of the mostly freshwater Curonian Lagoon. Often the frontal zone between the sea and lagoon water is very narrow (20-40 m), and as a result of differences in watercolour and transparency, it may be easily observed. The mixed waters are of lowered salinity; depending on hydrometeorological situation, they may stretch several tens of km, mostly in the northern direction.

Tidal range. No regular tides occur in the area. Occasional wind driven sea level fluctuations may reach 221 cm.

Main hydrodynamic patterns. The permanent influence of winds, waves and water currents produces a very active environment so that there is no oxygen deficiency and the oxygen based gradients in the distribution of marine life in the coastal area, as occurs in the offshore deeper areas.

Being a transition zone between the Curonian Lagoon and the Baltic Sea, the Klaipeda port area is characterised by the intensive water exchange. The water is constantly moving either towards the Sea (80 % of cases) or to the Lagoon. The speed of currents in the Straight usually varies in a range 0.4 - 0.7 m/s, with extremes, reaching 2.0 m/s; however, in the harbour inlets, the hydrodynamic is weaker, and sometimes stagnation conditions may occur.

Main coastal and marine habitat types. The mainland sub-marine coastal slope, extending from the shore down to 25-30 m is characterised by the most diverse bottom types. Its uppermost part, 0 - 4(6) m, is covered by quartz sand, movable during storms. Along the mainland, the morainic bench (pebble-gravel deposits with large boulders) lies beneath the sand stripe, extending down to 25-30 m. Here, the sandy and stony bottoms alternate each other on a small scale within tens - hundred meters, making the sea bottom very patchy and creating diverse habitats for marine life. Along the Curonian Spit the bottom sediments are much more monotonous, sand prevails throughout the whole area.

In the Curonian Lagoon, the main underwater habitat is a soft bottom of silt and fine sand. Hard substrates suitable for attachment of large sessile animals are of biogenic origin (living congregations and shell deposits of the zebra mussel *Dreissena polymorpha*, an alien invasive species).

Main coastal and marine biodiversity values. Aquatic biodiversity of the south-eastern Baltic coast and the Curonian lagoon comprises several hundreds of marine, brackish and freshwater species:

	SE Baltic coastal zone	Common species	Curonian Lagoon
Phytoplankton	422	343	438
Macrophytes	38	~20	~130
Macrofauna	~60	10	~90
Fish	31	26	53

There are 3 marine and coastal protected areas, which cover both terrestrial and aquatic environment: 1) the Curonian Spit National Park; 2) the Seaside Regional Park, on the mainland coast between Klaipeda and Palanga; 3) the Nemunas River Delta Regional park.

Main fisheries resources (including aquaculture). No aquaculture is developed in the region. Main fishery resources are: Baltic herring, sprat and cod, following by flatfish, salmon and other commercial fish species. The total fish catches comprise about 8-10 thousand ton per year. In the Lithuanian part of the Curonian Lagoon the main commercial species are: roach, bream, smelt, pikeperch and perch; total fish catches comprise 0,7-0,8 thousand ton per year.

Main coastal and marine tourism areas. The coastal zone is the main tourism area in Lithuania, comprising large health resorts in Sventoji – Palanga area (ca. 15 along the seashore), on the Curonian Spit around the settlements of Nida, Pervalka, Preila and Juodkrante and the recreational zone of Klaipeda (ca. 7 km).

Petroleum and mineral resources and their exploitation. None.

Status of Marine Bio- invasions in Lithuania

Species[1]	Native Range	Vector	1st Recorded	Current Range/Distribution	Known Impacts
Prorocentrum minimum	North America East Coast	Shipping[2]	1992 (Olenina, 1992; Haidu 2000)	Common in coastal waters	Potentially toxic algae blooms
Balanus improvisus	Ponto-Caspian	Shipping	1840s (Gislen 1950; Gasiunas, 1959)	Common in coastal waters	Fouling of vessels
Cercopagis pengoi	Ponto-Caspian	Shipping[2]	1999 (Olenina, 1999; Gasiunaite, Diziulis, 2001)	Common in summer plnakton	Fouling of fishing nets
Chaetogammarus ischnus	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Common in coastal waters	Changes in trophic web
Chaetogammarus warpachowskyi	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Common in coastal waters	Changes in trophic web
Cordylophora caspia	Ponto-Caspian	Shipping	1800s (Nikolajev 1951)	Common in coastal waters	Habitat change
Corophium curvispinum	Ponto-Caspian	Shipping	1920-30s (Nikolajev 1951)	Common in coastal waters	Not studied
Dreissena plymorpha	Ponto-Caspian	Shipping	1800s (Schlesch 1937; Nikolajev 1951)	Very common in coastal waters	Multiple ecological effects
Eriocheir sinensis	East China Seas	Shipping[2]	1950s, probably earlier (Nikolajev 1951)	Rare, both in the coastal zone and the Curonian lagoon	Destroys fish in fishing gear
Hemimysis anomala	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Common in coastal waters	Changes in trophic web
Limnomysis benedeni	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Common in coastal waters	Changes in trophic web
Lithoglyphus naticoides	Ponto-Caspian	Shipping	1903 (Schlesch 1937; Gasiunas, 1959)	Rare in the Curonain lagoon	Not studied
Marenzelleria cf. viridis	North America East Coast	Shipping[2]	1989 (Olenin, Chubarova, 1994)	Common in the sea and the Curonian lagoon	Multiple ecological effects
Mya arenaria	North America East Coast	Stocking	13th century (Hessland 1946; Leppakoski 1984; Petersen et al. 1992)	Common in the sea	Multiple ecological effects
Obessogammarus crassus	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Rare in the Curonian lagoon	Changes in trophic web
Onchorynchus mykiss	Pacific North-East	Stocking	1890 Leppakoski 1984	Reproduces in several small rivers in Finland and Sweden	
Paramysis lacutris	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Common in coastal waters	Changes in trophic web
Pontogammarus robustoides	Ponto-Caspian	Stocking	1962 (Gasiunas 1964)	Common in coastal waters	Changes in trophic web
Potamopyrgus antipodarum	New Zealand	Shipping	Probably 19s (Nikolaev 1951; Leppakoski 1984	Common in coastal waters	Not studied

[1] only species with established permanent populations are mentioned;
[2] result of secondary spread within the Baltic Sea.

Institutional Arrangements in Lithuania

1. Is there a Lead Agency for ballast water management matters in your country?

The Lead Agency in Lithuania for ballast water management is Ministry of Environment (information is above).

2. List other organizations and stakeholders with an interest in ballast water management.

Ministry of Health

Ministry of Transport and Communications

Klaipeda University

3. Is there legislation/regulations governing ballast water management in your country?

The Law on the Protection of Marine Environment, adopted in 1997, provides in brief that Ministry of Environment together with Ministry of Health are responsible to define exact procedures and adopt rules which is to minimise the transfer of harmfull aquatic organisms and pathogens.

4. Are the IMO ballast water management guidelines (A.868(20)) implemented in your country?

No

5. Are ships entering the country's ports required to complete and submit the IMO Ballast Water Reporting Form?

No

6. Are there any other ballast water management requirements in your country?

No

Shipping & Ports in Lithuania

1. *Imports* since 1995:

Import **Quantities**. Name of Port: **Klaipėda**

	Import *Quantities* tonnes											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001/6 months		2 000	0	0	0	10 000	0	39 000	0	139 000	1 289 000	562 000
2000	0	50 000	0	0	0	17 000	0	663 000	0	181 000	2 101 000	896 000
1999	0	26 000	0	0	0	50 000	0	4 000	0	129 000	1 752 000	749 000
1998	0	25 000	0	0	0	17 000	0	39 000	0	174 000	2 186 000	352 000
1997	0	50 000	0	0	0	17 000	0	193 000	0	191 000	2 857 000	375 000
1996	0	n.a.	0	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1995	0	n.a.	0	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Import **Sources**. Name of Port: **Klaipėda**

	Import *Sources* (For each year, please insert **name** of main port(s) from which each cargo type is **imported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001/6 months	-	Venezuela	-	-	-	Finland, Russia	-	Grmany, Denmark, UK	-	Germany, G.Britain, Holland, Belgium	All the world	All the world
2000	-	Venezuela	-	-	-	Finland, Russia	-	Grmany, Denmark, UK	-	Germany, G.Britain, Holland, Belgium	All the world	All the world
1999	-	n.a.	-	-	-	Finland, Russia		Grmany, Denmark, UK	-	Germany, G.Britain, Holland, Belgium	All the world	All the world
1998	-	n.a.	-	-	-	Finland, Russia		Grmany, Denmark, UK	-	Germany, G.Britain, Holland, Belgium	All the world	All the world
1997	-	n.a.	-	-	-	Finland, Russia		Grmany, Denmark, UK	-	Germany, G.Britain, Holland, Belgium	All the world	All the world
1996	-	n.a.	-	-	-	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.
1995	-	n.a.	-	-	-	n.a.	n.a.	n.a.	-		n.a.	n.a.

2. ***Exports*** since 1995:

Export **Quantities**. Name of Port: **Klaipėda**

	Export ***Quantities*** tonnes											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001/6 months	0	2 912 000	0	0	0	1 209 000	51 000	1 000	0	105 000	2 278 000	273 000
2000	0	5 147 000	0	0	0	2 885 000	234 000	0	0	213 000	6 813 000	196 000
1999	0	3 931 000	0	0	0	2 772 000	338 000	14	0	138	4 642 000	425 000
1998	0	2 275 000	0	0	0	2 299 000	303 000	19	0	104	6 876 000	394 000
1997	0	3 484 000	0	0	0	1 687 000	339 000	9	0	97	6 442 000	376 000
1996	0	n.a.	0	0	0	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.
1995	0	n.a.	0	0	0	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.

Export **Destinations.** Name of Port: **Klaipėda**

	Export *Destinations* (For each year, please insert **name** of main port(s) to which each cargo type is **exported**)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertilisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001/6 months	-	Holland, Finland, Germany, France,	-	-	-	UK, Belgium, Germany, Poland, USA, France	Norway, Sweeden, Belgium	Holland	-	Germany, UK, Holland, Belgium	All the world	All the world
2000	-	Holland, Finland, Germany, France,	-	-	-	UK, Belgium, Germany, Poland, USA, France	Norway, Sweeden, Belgium	Holland	-	Germany, UK, Holland, Belgium	All the world	All the world
1999	-	Holland, Finland, Germany, France,	-	-	-	UK, Belgium, Germany, Poland, USA, France	Norway, Sweeden, Belgium	Holland	-	Germany, UK, Holland, Belgium	All the world	All the world
1998	-	Holland, Finland, Germany, France,	-	-	-	UK, Belgium, Germany, Poland, USA, France	Norway, Sweeden, Belgium	Holland	-	Germany, UK, Holland, Belgium	All the world	All the world
1997	-	Holland, Finland, Germany, France,	-	-	-	UK, Belgium, Germany, Poland, USA, France	Norway, Sweeden, Belgium	Holland	-	Germany, UK, Holland, Belgium	All the world	All the world
1996	-	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-	-

3. ***Number*** vessels handled since 1995.

Name of Port: **Klaipėda**

Number vessels handled since 1995
(For each year, please enter **number** of vessels)

	Tankers					Bulk carriers				
	<30,000 GT	30,000-79,999	80,000-149,999	150,000-199,000	≥200,000	10,000-24,999	25,000-64,999	65,000-149,999	150,000-199,000	≥200,000
2001/6m.										
2000	482	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1999	323	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1998	158	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1997	150	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1996	202	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1995	113	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001/6m.				2971
2000	n.a.	15	3194	4044
1999	n.a.	15	2557	4345
1998	n.a.	15	3213	4927
1997	n.a.	8	3556	4097
1996	n.a.	13	3505	3652
1995	n.a.	27	3597	3307

4. ***Total volume*** of ballast ***discharged*** in the port each year: 2 to 4 mln ton (very approximate calculation)

5. ***Main locations*** where this ballast water is ***imported from***: Baltic Sea and North Sea, Atlantic coast of Europe

6. ***Total volume*** of ballast water ***uplifted*** in the port each year: NA

7. ***Main locations*** where this ballast water is ***exported to***: Baltic Sea and North Sea, Atlantic coast of Europe.

Poland Country Status Report

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Coastal and Marine Environments

Climate. In the Western and Southern Baltic under strong influence of the Atlantic Ocean prevails marine and moderate, periodically warm climate. As the result of colliding masses of polar - marine and polar – continental and sometimes tropic or arctic air, weather conditions are highly variable, particularly in the winter.

Predominant winds. Domination of S-SW-W fraction with respective distribution 16,1-18,4 %; 13,2-26,8%; 15,1-22,7% depending on different parts of Polish coast.

Air temperature. Winter: max 15°C min –20°C. Summer: max: 36°C Min: 5°C.

Sea temperature. Surface in coastal zone: Winter: min –0.3° Summer: max 20.6° The cold winter water below the thermocline shows temperatures from 4 - 5°. Water temperature in the near bottom layer osicillates between 4.5 and 10° during the year.

Salinity. In the Baltic Sea a boundary layer is formed between the upper water layer which consists of low salinity water , and the deeper more saline water. Generally, the total water exchange during one year is usually large enough to maintain the vertical density stratification. Yearly fluctuations of salinity along Polish coast are rather small. Lower values of salinity are noted during periods of higher inflows of fresh water (rivers, rains, ice melting) in spring time. Mean annual water salinity along the Polish coasts ranges from 7 to 7,7 ‰.

Tidal range. Sea level variabilities are caused mainly by strong winds. Tidal phenomenon has minor role. The mean annual sea level fell within the range 505 cm (Świnoujście) to 515 Gdańsk. The maximal water level in 1998 was measured at Świnoujście 601 cm. The minimal water level in Świnoujście 440 cm.

Main hydrodynamic patterns. Surface currents along Polish coast are directed eastward or westward, depending on the general anemobaric conditions. In general, currents in the coastal zone are of much greater speed than in open sea region. The strongest currents are measured around the Hel Peninsula.

Main coastal and marine habitat types.

Coastal:

Sandy coasts: Major part of the Polish coast (80%)

Dunes:	Major parts of the Polish coast, moving dunes in Slowinski National Park in the central part of the Polish coast, near Leba.
Moraine coasts:	20% of the Polish coast. The highest and the best known moraine cliffs are on Wolin Island and Cape Rozewie.
Fladas:	Vistula lagoon, some coastal lakes ,e.g.,Leba Lake.
Bodden	Szczecin Lagoon
Large spits of sand and/or gravel separating a lagoon from the sea:	Hel Peninsula, Vistula Spit, Leba sand bar
Riverine areas under backwater influences by the sea:	Dziwna, Rega, Reda.
Estuaries/ river mouths:	Oder lagoon, Vistula Lagoon, some coastal lakesmouth areas.

Marine:

Along Polish coast predominates a low sandy shore. The predominance of sandy sediments, covering nearly the entire bottom of the coastal zone, and up to depth of 70-80 m in the open waters is a characteristic feature of bottom morphology. In this zone, both in the photic sublittoral and deeper sublittoral areas covered with gravel and sporadically with stones or boulders can be found. Sandy bottom biotopes dominated by macrophyte vegetation occur only in the sheltered Puck Bay. Some small areas of macrophytes can be found also on the Slupsk Bank and the Gulf of Gdańsk.

Main coastal and marine biodiversity values. The most valuable parts of the Polish coast are protected as two national parks, two landscape parks, several areas of protected landscape and several nature reserves.

In the Slovinski National Park complexes of mobile dunes, coastal lakes and adjacent mires are protected; The Woliński National Park protects various forests on Pleistocene upland on Wolin Island, cliffs and a fragment of the Swina Delta. The Coastal Landscape Parks comprises of The Hel Peninsula, cliff, dune, marshy coast and Puck Bay. The Landscape Park of the Vistula Bar protects a part of the bar enclosing the Vistula Lagoon.

Main fisheries resources (including aquaculture): Main exploited species are herring, sprat, flatfishes and cod. Total annual catch: approx 120,000 t.

Main coastal and marine tourism areas. The whole Polish coast is an area of tourism with sandy beaches as a main attraction.

Petroleum and mineral resources and their exploitation Poland has minor oil resources. Oil production in 1997 averaged only 6,400 barrels per day (b/d), while consumption of crude and petroleum products averaged approximately 322,000 b/d, the balance of which was met by imports.

The state offshore exploration firm is Petrobaltic. Presently Poland is concentrated on exploitation Of B-3 oil deposit situated 400 NM North of cap Rozewie. Two oil rigs of „Jack-up „ type, the calm buoy and the oil tanker is involved in the process.

Status of Marine Bio-invasions in Poland

Vistula lagoon

Total number of alien species found: 21

Number of established alien species: 15

Number of alien species according to major taxonomic groups:
Crustacea: 5
Hydrozoa: 1
Mollusca: 4
Pisces: 10
Polychaeta: 1

Number of alien species according to area of origin:
Asia, Siberia (inland waters): 5
China Seas: 1
North America: 4
Pacific: 2
Ponto-Caspian: 9

Number of alien species according to eco-functional groups:
Benthic deposit feeders: 4
Benthic omnivors: 2
Benthic suspension feeders: 4
Fish bentophagous: 1
Fish planktivorous: 3
Fish predacious: 6
Zooplankton predators: 1

Number of alien species according to introduction vectors:
Ornamental: 1
Shipping: 12
Stocking: 8

Ecological impact: Under investigation.

Economical impact: Not established

Vistula lagoon

Alien species name	First observed	Taxon	Ecofunctional group	Origin	Vector of introduction
Acipenser baeri	1962**	Pisces	Fish predacious	Asia, Siberia (inland waters)	Stocking
Acipenser gueldenstaedti	1962**	Pisces	Fish predacious	Ponto-Caspian	Stocking
Acipenser ruthenus	1948**	Pisces	Fish predacious	Ponto-Caspian	Stocking
Aristichthys nobilis	0	Pisces	Fish planktivorous	Asia, Siberia (inland waters)	Stocking
Balanus improvisus	1844	Crustacea	Benthic suspension feeders	North America	Shipping
Cercopagis pengoi	1992	Crustacea	Zooplankton predators	Ponto-Caspian	Shipping
Cordylophora caspia	1803**	Hydrozoa	Benthic suspension feeders	Ponto-Caspian	Shipping
Coregonus peled	1965	Pisces	Fish planktivorous	Asia, Siberia (inland waters)	Stocking
Corophium curvispinum	1920**	Crustacea	Benthic deposit feeders	Ponto-Caspian	Shipping
Cyprinus carpio	1400**	Pisces	Fish bentophagous	Ponto-Caspian	Stocking
Dreissena polymorpha	1803**	Mollusca	Benthic suspension feeders	Ponto-Caspian	Shipping
Eriocheir sinensis	1926	Crustacea	Benthic omnivors	China Seas	Shipping
Hypophthalmichthys molitrix	0	Pisces	Fish planktivorous	Asia, Siberia (inland waters)	Stocking
Lithoglyphus naticoides	1903**	Mollusca	Benthic deposit feeders	Ponto-Caspian	Shipping
Marenzelleria cf. viridis	1985**	Polychaeta	Benthic deposit feeders	North America	Shipping
Mya arenaria	1245**	Mollusca	Benthic suspension feeders	North America	Shipping
Neogobius melanostomus	1990**	Pisces	Fish predacious	Ponto-Caspian	Shipping
Oncorhynchus mykiss	1890	Pisces	Fish predacious	Pacific	Stocking
Percottus glehni	1916**	Pisces	Fish predacious	Asia, Siberia (inland waters)	Ornamental
Potamopyrgus antipodarum	1887	Mollusca	Benthic deposit feeders	Pacific	Shipping
Rhithropanopeus harrisii	1948	Crustacea	Benthic omnivors	North America	Shipping
Cordylophora caspia	1803**	Hydrozoa	Benthic suspension feeders	Ponto-Caspian	Shipping

Odra lagoon

Number of established alien species: 15

Number of alien species according to major taxonomic groups:
Crustacea: 8
Hydrozoa: 1
Mollusca: 3
Oligochaeta: 1
Pisces: 1
Polychaeta: 1

Number of alien species according to area of origin:
China Seas: 1
Indo-Pacific: 2
North America: 8
Pacific: 1

Ponto-Caspian: 4

Number of alien species according to co-functional groups:
Benthic deposit feeders: 4
Benthic omnivors: 3
Benthic suspension feeders: 4
Fish bentophagous: 1
Nekto-benthic invertebrates: 2
Zooplankton suspension feeders: 1

Number of alien species according to ntroduction vectors:
Ornamental: 1
Shipping: 12
Stocking: 2

Ecological impact: Not established

Economical impact: Not established

Odra Lagoon

Alien species name	First observed	Taxon	Ecofunctional group	Origin	Vector of introduction
Acartia tonsa	1925	Crustacea	Zooplankton suspension feeders	Indo-Pacific North America	Shipping
Balanus improvisus	1844	Crustacea	Benthic suspension feeders	North America	Shipping
Branchiura sowerbyi	1976**	Oligochaeta	Benthic deposit feeders	Indo-Pacific	Shipping
Cordylophora caspia	1803**	Hydrozoa	Benthic suspension feeders	Ponto-Caspian	Shipping
Corophium curvispinum	1920**	Crustacea	Benthic deposit feeders	Ponto-Caspian	Shipping
Dreissena polymorpha	1803**	Mollusca	Benthic suspension feeders	Ponto-Caspian	Shipping
Eriocheir sinensis	1926	Crustacea	Benthic omnivors	China Seas	Shipping
Gammarus tigrinus	1975**	Crustacea	Nekto-benthic invertebrates	North America	Shipping
Acartia tonsa	1925	Crustacea	Zooplankton suspension feeders	Indo-Pacific North America	Shipping
Balanus improvisus	1844	Crustacea	Benthic suspension feeders	North America	Shipping
Branchiura sowerbyi	1976**	Oligochaeta	Benthic deposit feeders	Indo-Pacific	Shipping
Cordylophora caspia	1803**	Hydrozoa	Benthic suspension feeders	Ponto-Caspian	Shipping
Corophium curvispinum	1920**	Crustacea	Benthic deposit feeders	Ponto-Caspian	Shipping
Acartia tonsa	1925	Crustacea	Zooplankton suspension feeders	Indo-Pacific North America	Shipping
Balanus improvisus	1844	Crustacea	Benthic suspension feeders	North America	Shipping
Branchiura sowerbyi	1976**	Oligochaeta	Benthic deposit feeders	Indo-Pacific	Shipping

Institutional Arrangements in Poland

1. Is there a Lead Agency for ballast water management matters in your country?

Matters of ballast water management in Poland belong to Ministry of Transport and Maritime Economy.

2. List other organizations and stakeholders with an interest in ballast water management.

Ministry of Environment,

Szczecin-Świnoujście Marine Port Authority S..A.

Gdynia Marine Port Authority S.A.

Gdańsk Port Authority S.A.

Shipping industry,(Szczecin, Gdańsk, Gdynia shipyards),

Polish Register of Shipping S.A.,

Ship Design and Research Center

Marine Biology Research Center,

Universities in Gdańsk and Szczecin.

3. Is there legislation/regulations governing ballast water management in your country?

No

4. Are the IMO ballast water management guidelines (A.868(20)) implemented in your country?

No. Guidelines are used informally by shipping industry in the scope of constructions of new buildings.

5. Are ships entering the country's ports required to complete and submit the IMO Ballast Water Reporting Form?

No

6. Are there any other ballast water management requirements in your country?

No

Shipping & Ports in Poland

1 Imports since 1995:

Import **Quantities** : Name of Port **: Gdansk.**

	Import *Quantities* (For each year, please insert quantity and units of each cargo type – e.g. tonnes, m^3 etc.)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertilisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 I-VIII	603	186	30	-	142	323	-	203	-	4822 tek	1067	1080
2000	1883	74	74	-	26	445	-	267	-	5630 tek	1443	1734
1999	2046	749	183	-	126	418	-	141	-	1105 tek	1210	1690
1998	3266	632	298	-	237	527	-	209	-		933	1700
1997	3345	971	397	-	49	473	-	202	-		1602	2052
1996	3627	804	192	1	4	394	-	250	-		1804	1856
1995	4274	725		-	-	307	-	52	-		1641	2989

Import **Sources.** Name of Port: **Gdansk.**

	Import *Sources* (For each year, please insert name of main port(s) from which each cargo type is exported)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertilisers	Cement	Grain	Wood chips	Containers	General cargo	Other
2001	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1999	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1996	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1995	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A = Not Available/Not Known.

Import **Quantities**: Name of Port: **Szczecin**

	Import *Quantities* (For each year, please insert quantity and units of each cargo type – eg. tonnes, m^3 etc.)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertilisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000		73,3	1.907,2	357,9	133,7	12,6	-	509,7	15,1		516,2	830,8
1999		1,2	1.574,7	274,1	402,2	33,8	-	297,5	19,5		471,4	869,5
1998		-	2.017,0	278,0	312,0	19,0	-	370,0	17,0		344,2	955,0
1997		-	2.312,0	216,0	248,0	30,0	-	482,0	16,0		359,2	663,0
1996		-	2.600,8	383,7	116,5	4,0	-	899,0	15,8		408,9	669,2
1995		-	2.669,9	388,7	16,0	7,0	-	288,6	22,7		311,5	591,6

Import **Sources**. Name of Port: **Szczecin**

	Import *Sources* (For each year, please insert name of main port(s) from which each cargo type is imported)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertilisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000			Brazil RPA	RPA France				Netherlands Germany				Russia Sweden
1999			Brazil RPS	Belgium Norway				Netherlands Canada				Russia Sweden
1998			Brazil RPA	Sweden Norway				Germany Netherlands				Russia Sweden
1997			RPA Brazil	Norway Belgium				Brazil France				Russia Scotland
1996			Brazil RPA	Norway RPA				Brazil France				Scotland Norway
1995			RPA, Brazil	Norway, Brazil				Brazil Germany				Sweden Scotland

Import **Quantities**: Name of Port : **Świnoulscie**

	Import *Quantities* (For each year, please insert quantity and units of each cargo type – eg tonnes, m^3 etc.)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 I-VIII		3,5	1414864,4	1018,0	21290,1			15556,4				93384,8
2000		10,2	1878690,6		-			14507,5			461,6	156609,9
1999		45,2	1304269,6		14907,1						55,6	174551,0
1998		99,7	1612766,4		20102,5			843,8			1224,0	179789,3
1997		80,8	1852247,0		9081,2			20271,6			408,4	204566,8
1996		26,8	1945227,9					32479,2			1412,2	240602,5
1995		1,7	2149610,0	22289,4				19990,0				45638,3

Import **Sources**: Name of Port: **Świnoulscie**

	Import *Sources* (For each year, please insert name of main port(s) from which each cargo type is imported)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertiliser	Cement	Grains	Wood chips	Containers	General cargo	Other
2001		Fredericia	Sepetiba, Porto de Maderin	Fangebeng	Munga Oxelound			Montreal Vera Cruz				Murmańsk, Kandalaksha, Aguaba
2000		Tallin	Saldanha, Port Elizabeth, Sepetibo					Rosario San Nicolas			Hanoi	Murmańsk, Sfax, Casablanca, Glensanda
1999		Brofjorden	Saldanha, Tubarao Sepetiba, Guaiba		Maputo						Klajpeda	Murmańsk .Sfax Glensanda
1998		Antwerpia	Saldaña, Tubarao, Vitoria Sepetiba, Guaiba		Maputo			Montevideo			Venspils	Murmańsk
1997		Brofjorden, Kalindborg	Saldanha, Tubarau		Saldanha			Rosario, Maderia			Antwerp	Murmańsk
1996		Brofjorden, Getheborg	Saldanha, Sepetiba Belfast, Messina					Santos, Rosario, Paranagua			Moirana	Agaba Murmańsk Casablanca
1995			Saldanha, ,Sepetiba, Tubarao, Narwik, Santana	Port Elizabeth				Rosario				Murmańsk Casablanca Quebec

Import **Quantities**. Name of Port: **Gdynia**

	Import *Quantities* (For each year, please insert **quantity** and **units** of each cargo type – e.g. tonnes, m^3, etc)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	127,5	47,5	-	4,6	123,7	-	-	470,0	-	71 797	1378,7	390,8
2000	85,2	42,5	-	11,3	174,1	-	-	490,1	-	92 277	1950,4	453,1
1999	196,5	30,4	-	3,7	234,8	-	-	252,9	4,3	95 161	2005,9	200,6
1998	407,0	58,2	51,7	2,5	100,0	-	-	375,0	7,0	106 158	2200,0	254,0
1997	732,8	55,5	92,5	-	273,1	-	-	756,2	1,1	90 584	1950,9	278,9
1996	647,0	46,1	96,3	10,7	119,0	-	-	1593,0	2,0	78 659	1619,0	251,0
1995	357,0	50,7	77,0	-	-	-	-	345,0	-	71 896	1566,0	268,0

Import **Sources**. Name of Port: **Gdynia**

	Import *Sources* (For each year, please insert **name** of main port(s) from which each cargo type is **imported**)					
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers
2001	Sweden, Norway Finland Netherlands	Antwerp Rotterdam	-		Russia Estonia	-
2000	As above.	As above.	-		As above.	-
1999	As above.	As above.	-		As above.	-
1998	As above.	As above.	Antwerp Rotterdam Hamburg		As above.	-
1997	As above.	As above.	As above.		As above.	-
1996	As above.	As above.	As above.		As above.	-
1995	As above.	As above.	As above.		-	-
	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	Netherlands, Belgium, Germany, USA, Brazil, Argentina	-	Hamburg Antwerp	Lithuania, Finland Denmark, Egypt, Germany, Israel Argentina	Brazil, Spain Sweden, Belgium Netherlands Germany, USA
2000	-	As above.	-		As above	As above
1999	-	As above.	Russia Estonia		As above	As above
1998	-	As above.	As above.		As above.	As above
1997	-	As above.	As above.		As above.	As above.
1996	-	As above.	As above.		As above.	As above.
1995	-	As above.	As above.		As above.	As above.

2 *Exports* since 1995:

Export **Quantities**. Name of Port: **Gdansk**

	Export **Quantities** (For each year, please insert quantity and units of each cargo type – eg tonnes, m^3 etc.)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 I-VIII	3488	1308	-	-	3968	92	-	1	-	7708tek	1067	1080
2000	2339	1461	-	-	5883	233	-	-	-	9295tek	1443	1734
1999	2774	1181	-	-	6969	619	-	32	-	1785tek	1210	1690
1998	2540	1276	-	-	7204	942	-	5	-	-	933	1700
1997	-	900	-	-	6581	741	-	50	-	-	1602	2052
1996	-	600	-	-	6120	745	-	50	-	-	1804	1856
1995	-	442	-	-	7108	596	-	86	-	-	1641	2989

Export **Destinations**. Name of Port: **Gdansk.**

	Export **Destinations** (For each year, please insert name of main port(s) to which each cargo type is exported)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1999	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1998	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1996	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1995	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Export **Quantities**. Name of Port: **Szczecin**

	Export **Quantities** (For each year, please insert quantity and units of each cargo type – e.g. tonnes, m^3 etc.)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000		-	-	71,8	8.089,9	104,6	23,9	247,2	31,4		2.229,6	551,1
1999		5,0	-	90,8	9.082,4	16,2	7,3	536,3	33,8		1.950,8	407,9
1998		-	-	112,0	8.333,0	86,0	12,0	178,0	32,0		1.665,4	539,0
1997		-	-	106,0	8.042,0	51,0	41,0	78,0	26,0		2.342,8	655,0
1996		-	-	90,3	8.064,7	36,0	33,0	82,7	22,0		2.244,1	667,1
1995		-	-	62,4	8.146,4	3,0	100,0	344,3	33,3		1.780,5	915,1

Export **Destinations**. Name of Port: **Szczecin**

	Export **Destinations** (For each year, please insert name of main port(s) to which each cargo type is exported)											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000					Denmark Netherlands Germany	Germany Denmark	Germany Netherlands		GB		USA GB	
1999					GB, Germany Denmark	Germany Finland	Germany		As above.		As above.	
1998					Denmark Netherlands Germany	Germany Denmark France	Netherlands		As above.		As above.	
1997					As above.	As above.	Netherlands Norway		As above.		As above.	
1996					As above.	As above.	Netherlands Germany		As above.		USA Thailand	
1995					GB, Germany Denmark	Germany	Denmark Netherlands		GB Sweden		GB USA	

Export **Quantities**. Name of Port: **Świnoujcie**

	Export **Quantities**											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001 I-VIII		152,9			2617939,1			1830,7			16730,7	
2000		322,6			4058579,4						22934,5	
1999		343,1			4647434,4			82439,4			71997,3	
1998		86,0			4470548,3						31750,1	
1997		311,9		4002,5	4195479,3						175273,5	5002,1
1996		276,0			3995181,3						119824,3	15057,0
1995		375,2			3764335,7			14443,0				

Export **Destinations**. Name of Port: **Świnoujcie**

	Export **Destinations**											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001		Copenhagen			Amsterdam Rostock Esbjerg			Pireus			Port Sudan Belawan Antwerp	
2000		Copenhagen			Copenhagen Bremen Rostock						New Orleans Tampico Muderin	
1999		Copenhagen			Bremen Ijmuiden Hamburg			Shanghai Port Said Port Sudan			Belawan Antwerp Mesina	
1998		Copenhagen			Rotterdam Esbjerg Tilbury						Antwerp Mesina Manila	
1997		Copenhagen		New Haven	Helsinki Rostock Naantali						Taihung Mesina Klajpeda	Genoa
1996		Copenhagen			Rostock Copenhagen Pori						Kaosiung Singapore, Bangkok	Safi
1995		Copenhagen			Bremen Naantali Copenhagen			Port Sudan Vera Cruz				

Export **Quantities**. Name of Port: **Gdynia**

	Export *Quantities*											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Fertlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-	-	-	-	914,0	9,5	-	59,1	9,8	71. 779	1. 358,3	70,0
2000	-	-	-	-	1573,7	162,0	-	20,0	2,7	95. 995	2. 174,1	156,6
1999	-	-	-	1,0	1840,7	198,4	-	360,0	1,1	95. 447	1. 839,6	175,1
1998	-	-	-	3,0	1811,0	217,8	-	59,0	-	107. 208	1. 983,0	315,0
1997	-	2,3	-	-	1592,9	351,7	-	66,6	-	86. 708	2. 572,9	527,5
1996	-	2,2	-	-	1700,	422,8	-	24,0	-	77, 396	2. 012,0	582,0
1995	-	2,5	-	-	2154,0	314,9	-	181,0	-	68. 544	2. 097,0	588,0

Export **Destinations**. Name of Port: **Gdynia**

	Export **Destinations**											
	Crude oil	Oil products	Iron ore	Other ores	Coal	Festlisers	Cement	Grains	Wood chips	Containers	General cargo	Other
2001	-				Sweden, Netherlands Spain, Finland	Brazil, USA, Belgium, Great Britain	-	Netherlands Lithuania, Denmark	Maroco, Finland	Hamburg, Antwerp,	Israel, Egypt, China, India	Brazil, Spain, Sweden, Germany, Netherlands, USA.
2000	-				As above.	As above.	-	As above.	As above.	As above.	As above.	As above.
1999	-			Antwerp	As above.	As above.	-	As above.	As above.	As above.	As above.	As above.
1998	-			As above.	As above.	As above.	-	As above.		As above.	As above.	As above.
1997	-	As above.			As above.	As above.	-	As above.		As above.	As above.	As above.
1996	-	As above.			As above.	As above.	-	As above.		As above.	As above.	As above.
1995	-	As above.			As above.	As above.	-	As above.		As above.	As above.	As above.

3. *Number vessels handled* since 1995.

Name of Port : **Gdansk**

	Number vessels handled since 1995													
	<30.000	30.000-79.999	80.000-149.999	150.000-199.000	> 200.000	10.000-24.999	25.000-64.999	65.000-149.000	150.000-199.000	> 200.000	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001 I-VIII	305	92	36	0		27	66	40			136	305	719	236
2000	485	102	43	1		40	106	56			216	422	971	319
1999	531	88	49	2		38	79	76	1		83	233	951	322
1998	669	85	49	1		51	109	71	1		14	226	1057	247
1997	633	89	22	6		93	185	47	2		10	223	832	175
1996														
1995														

Name of Port : **Gdynia**

	Number vessels handled since 1995									
	Tankers					Bulk carriers				
	<30,000 [BRT]	30,000-79,999 [BRT]	80,000-149,999	150,000-199,000	≥200,000	10,000-24,999 [BRT]	25,000-64,999	65,000-149,999	150,000-199,000	≥200,000
2001	1869	22	-	-	-	513	15	2	1	-
2000	2844	31	-	-	-	674	32	5	2	-
1999	2652	30	-	-	-	621	38	6	1	-
1998	2772	37	-	-	-	663	54	3	1	-
1997	2426	54	-	-	-	622	78	15	3	-
1996	1975	35	-	-	-	575	44	10	2	-
1995	1917	49	-	-	-	534	61	17	1	-

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001	421	67	607	843
2000	493	72	1044	1328
1999	609	62	904	1142
1998	608	64	944	1264
1997	500	50	691	1308
1996	340	34	439	1244
1995	287	64	443	901

Name of Port : **Świnoujcie**

	Number vessels handled since 1995									
	<30.000	30.000-79.999	80.000-149.999	150.000-199.000	> 200.000	10.000-24.999	25.000-64.999	65.000-149.000	150.000-199.000	> 200.000
2001	54					64	50			
2000	93					101	79			
1999	115					101	81			
1998	40					126	81			
1997	123					179	73			
1996	111					186	54			
1995	120					175	62			

	Container Vessels	Passenger Ships	General Cargo	Other Vessels
2001			17	10
2000		6297	21	19
1999		5520	23	13
1998		3957	16	2
1997		4527	38	4
1996		2650	37	7
1995		2179	13	6

4. *Total volume* of ballast *discharged* in the port each year: N/A

5. *Main locations* where this ballast water is *imported* from: N/A

6. *Total volume* of ballast water *uplifted* in the port each year: N/A

7. *Main locations* where this ballast water is *exported to*: N/A

N/A = Not Available/Not Known.

Baltic Russia Country Status Report

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Baltic Russian Coastal & Marine Environments

General. The Russian Baltic coastline consists of two distinct components, the St.Petersburg administrative/economical unit on the Gulf of Finland and the Kaliningrad administrative/economical unit between Lithuania and Poland.

St. Petersburg is one of the largest cities in the Baltic region having a population of around 5 million.

In St.Petersburg the electric power stations, machine-building and metal-working industries contribute the main part of marine pollution. In 2000 the volume of discharge of sewage in the surface water was 1336,6 million cub.meter and on this index St.Petersburg keeps second place of the Russian Federation. St. Petersburg influences the quality of the land and underground waters as well as the ecological situation in the area of Finnish Gulf. The paper industry, metallurgical plants, chemical and military industries are the main sources of environmental pollution in area.

The coastline of the Kaliningrad area is 147 kilometres and includes Vistula (Baltic) and Kuronian spits, west and north coast of Cambian peninsula. Kuronian spit is unique formation stretched for 98 kilometres, of which 48 kilometres are in the Kaliningrad area of Russia, and the remainder in Lithuania. The Vistula spit is 65 kilometres long, of which 35 kilometres are in the Kaliningrad area of Russia, where it is named as Baltic spit.

A 23 mile-long approach channel links Kaliningrad to the Baltic Sea, and 315 small rivers flow from the territory of Kaliningrad with common length 5000 kilometres. In addition, 948 reclamation channels have been built. The main sources of the pollution are four pulp and paper plants; two of which discharge their wastes to the river Pregol (Vistula spit) and two of which to the river Neman (Kuronian spit). In 2000 the volume of discharge of the sewage in the surface water was 134,1 million cub.meters.

Climate. The climate of the eastern Gulf of Finland is the moderate with surplus moistening.

Predominant Winds. Circulation process in the north-east region of the Baltic Sea is defined by influence from the Atlantic Ocean.

Air temperature. Air temperature ranges from -6 to -3 ^{O}C in February to +17 to +18^{O}C in July.

Sea temperature. During January - March water temperature is close to 0 ^{o}C, and rapidly increases after the ice-break in April-May, reaching 10 ^{o}C in May. Summer sea temperatures of 18-20 ^{o}C occur in late July - early August, with the absolute maximum up to 24-26 ^{o}C. Temperature drops below 10 ^{o}C in the period between September 20th and October 5th . Period with temperatures above 10 ^{o}C lasts around 120 days.

Salinity. Salinity regime in the eastern Gulf of Finland is under strong influence of the Neva River, the major tributary to the Baltic Sea. Water in Neva Bay is completely fresh, with the conductivity at all depths ranging between 0.13-0.24 mS/cm at 25 ^{o}C (salinity 0.06-0.11 ppt). In the outer estuary, the surface water is more saline, reaching 3.6 ppt in summer. During spring and summer the outer estuary is characterised by strong vertical gradients in the salinity, with mean values of 1-2 ppt at the surface, 4-5 ppt at 20 m, and >7 ppt at depths >50 m. Surface water salinity in the Neva Estuary gradually increases towards the open Gulf of Finland up to 6.5 ppt.

Tidal range. The tide of Gulf of Finland has irregular daily and twelve-hour character, 10-12 cm.

Main hydrodynamic patterns. Not provided.

Main coastal and marine habitat types. Not provided.

Main coastal and marine biodiversity values. A large number of Protected Areas are located in the eastern Gulf of Finland. These areas include 3 Ramsar Sites (wetland areas of international significance), one strict nature reserve, which cover 9 islands in the eastern Gulf of Finland, 6 regional complex sanctuaries and 5 complex natural monuments.

Main fisheries resources (including aquaculture). Not provided.

Main coastal and marine tourism areas. In the St Petersburg area, there is a resort district on the northern coast of Neva Bay (Figure 3). In the Kaliningrad area, the Kuronian spit has holiday hotels and recreation usage.

Petroleum and mineral resources and their exploitation. Not provided.

Status of Marine Bio-invasions in Baltic Russia

During many years the regularly investigations in the problems of invasive marine species are carried out by the Institute of Oceanography and the Institute of Zoology, Russian Academy of Science, Research Institute of the Azov Sea Fishery Problems and others.

Studies of biodiversity of the Neva Estuary coastal waters, conducted from 1995 to 2000, have shown that, with the present shipping activity, the Neva Estuary area has been invaded by several alien species with a high potential for negatively affecting local communities and ecosystems. These species include the Ponto-Caspian zebra mussel *Dreissena polymorpha* Pallas, the Ponto-Caspian predatory fishhook spiny waterflea *Cercopagis pengoi*, the North-American polychaete *Marenzelleria viridis* and the Asian Chinese mitten crab *Eriocheir sinensis*. Species of Siberian origin such as the Baikalian amphipod *Gmelinoides fasciatus* and the Amur sleeper (fish) *Perccottus glenii* Dybows. were introduced intentionally in some lakes in the Gulf of Finland basin. At present, these two alien species can also be considered as a serious threat for the Neva Estuary biodiversity. The recent invader *G. fasciatus* already replaced the native amphipod *Gammarus lacustris* Sars in the Neva Bay as well as in other large aquatic ecosystems in the Gulf of Finland area. At present, *G. fasciatus* has established dense populations in the littoral zone in the Neva Bay and inner estuary, where it co-exists with the alien amphipod of Ponto-Caspian origin *Pontogammarus robustoides*.

Invasions of the Ponto-Caspian species *Dreissena polymorpha* and *Cercopagis pengoi* are likely to have the most profound effect on the Neva Estuary's coastal ecosystems. *Dreissena* was first found in the Neva Estuary in the late 1980s, and by 1998, it was found well-established in littoral communities in the inner estuary, reaching densities of up to 150 individuals m^{-2} and biomasses of 350 g m^{-2} (in wet weight). At present, *Dreissena* is a dominating species (in terms of biomass) in hard-bottom littoral communities in the inner estuary at depths of 1.5–5.0 m and may significantly affect environmental quality in near-shore waters, specifically via recycling of nutrients and contributing to decaying organic material on beaches after storm events. A detailed study of *Dreissena* distribution, conducted in 2000, has revealed that, in some locations along the shore of the Resort District of St. Petersburg (Fig. 3), densities of *Dreissena* exceed 1,000 individuals m^{-2} and biomasses of 1,000 g m^{-2} (in wet

weight). *Dreissena* is also an abundant species on the hard bottoms along the southern shore of the outer estuary and imposes a potential danger for functioning of water intake pipes of the nuclear power station located in this area (Fig. 3).

The Ponto-Caspian predatory crustacean *Cercopagis pengoi* was found in the Baltic Sea area in 1992, a likely result of the discharge of ballast water. In the same year, it was found in the open Gulf of Finland. In 1995, *C. pengoi* was registered in coastal Finnish waters as a biofouler of fishing nets and in zooplankton samples from the inner Neva Estuary; since then, *C. pengoi* has become an abundant zooplankton species in both inner and outer estuary. The *C. pengoi* population established in the Neva Estuary shows a remarkable reproductive strategy, producing a large number of resting eggs during the summer months. It has been suggested that this large pool of resting eggs in the Neva Estuary population has enabled *C. pengoi* to achieve fast population growth in new environments, creating an increasing risk of *Cercopagis* being dispersed by ships' ballast water.

The recent invasion of the estuary by *C. pengoi* may have important consequences for the economy. Similarly to Finland, *C. pengoi* was noted to form a paste, fouling fishing nets and trawls. Economic losses by only one fishing company, located at the northern shore of the outer estuary in Primorsk (Fig. 3), from 1996 to 2000 exceeded US$50,000. These losses were connected to the at least two-fold decline in fish catches in the coastal zone of the Neva Estuary due to the biofouling of fishing equipment.

Invasions according to taxanomic groups

Cnidaria:

Cordylophora caspia Pallas
Area of origin – Ponto-Caspian
First found in 1979 in water intakes of the Leningrad Nuclear Power Station (Antsulevich, Chivilev, 1992). At present common in littoral habitats in the EGF (Orlova et al., 1999). Biology and role in communities is generally unknown.

Annelida/Polychaeta :

Marenzelleria viridis (Verrill)
Area of origin - North America
First found in EGF in 1996 (Lyakhin *et al.* 1997). At present common, specifically in Koporsky Bay (Panov et al. 1999). Data on the role in communities are not available.

Mollusca:

Dreissena polymorpha Pallas
Area of origin - Ponto-Caspian
First found in the EGF in late 1980th (Antsulevich, Lebardin, 1990), and by 1998 it found well established in littoral communities in the coastal zone of the EGF, reaching densities up to 150 ind/m^2 and biomass 350 g/m^2 (Orlova et al. 1999). Potentially harmful for water intake constructions of Leningrad Nuclear Power Station.

Potamopyrgus antipodarum (Gray)
Area of origin - New Zealand
Common in littoral zone in the EGF. In some locations is very abundant, in Koporskaya Bay in sites influenced by warm water discharges from the power station up to 10000 ind./m2 (Orlova et al. 1999).

Arthropoda/Crustacea:

Balanus improvisus Darwin
Area of origin - North America
First found in the EGF in 1991 (Antsulevich, Chivilev, 1992). Mainly restricted to more saline parts of the EGF (Luga and Koporskaya bays).

Gmelinoides fasciatus (Stebbing)
Area of origin - Siberia, Lake Baikal basin.
First found in freshwater part of the Neva Estuary (Neva Bay) in 1996, and later in 1999 in the adjacent littoral habitats in the EGF, as a result of secondary introduction from Lake Ladoga (Panov 1996, Panov et al. 1999, Orlova et al. 1999). Replaced native amphipod *Gammarus lacustris Sars* in the Neva Estuary, as well as in large lakes in the Gulf of Finland basin (Panov et al. 2000).

Pontogammarus robustoides (G.O.Sars)
Area of origin - Ponto-Caspian
First found in freshwater part of the Neva Estuary (Neva Bay) in 1999 (Orlova et al. 1999).
Vector of invasion unknown (southern lagoons in Baltic or invasion via Volga-Baltic water way).

Eriocheir sinensis (Milne-Edwards)
Area of origin - SE Asia
Regular records of adults from fishing nets along northern shore of the EGF, also records from in the rivers (Alimov et al. 1998).

Zooplancton:

Acartia tonsa Dana
Area of origin - North America
First found in the EGF in 1934 (Smirnov 1935).
At present abundant in zooplankton, in some periods reaches 40-50% of total abundance of copepods (Silina 1997).

Institutional Arrangements in Baltic Russia

The Ministry of Natural Resources of the Russian Federation (formerly the State Committee on Environment Protection of the Russian Federation) is the federal body responsible for state ecological control and management of natural resources. In accordance with a Government Decree the Ministry of Transport of the Russian Federation is the federal body carrying out the state policy and management in the transport sector.

The Maritime Administration of the Ministry of Transport is responsible for promoting shipping and its safety, developing land infrastructure to support shipping and for other issues of maritime transport, the implementation of all obligations of the Russian Federation in the framework of the International Maritime Organisation (IMO) and co-ordinating the activities of other Federal bodies regarding maritime activities.

Within the Ministry of Transport the State Marine Pollution Control, Salvage & Rescue Administration (MPCSA) guides and controls the activities of the maritime organisations concerning the implementation of international agreements in the marine environment protection.

Russia is a Party to MARPOL and takes part in the elaboration of the instruments of IMO concerning the control and management of ships' ballast water. Resolution MEPC 50(31) concerning the minimize the transfer of harmful aquatic organisms and pathogens was included in the Russian Regulation for Recording of Operations with Oil, Oil Wastes and Other Hazardous Substances Which are Produced on the Ships (РД 31.04.17-97). The regulation of discharge of the ballast water is

also included in the Regulation on Prevention of Pollution from Ships (РД 31.04.23-94). Guidelines for fisheries vessels have also been developed based on the IMO Guidelines A.868(20).

The discharge ballast water in all Russian Baltic Sea Ports is also regulated by By-Laws of the Sea Ports themselves. The Baltic Maritime Inspection which is under the Ministry of Natural Resources together with the Sea Port Authority of St.Petersburg is updating the port By-Laws including such issues as list of unwanted non-native organisms and designation of area where new ballast water could be taken. The Ballast Water Control Form was introduced in St.Petersburg region in 2000 by the Baltic Maritime Inspection, and now this form is filled in during inspection of tankers.

At the order of the Ministry of Transport the Central Marine Research and Design Institute (CNIIMF) has carried out research on ballast water treatment systems, including the use of ozone. In addition, the Russian Maritime Register of Shipping had been ordered to investigate the issue of stability of ships during ballast water exchange. The investigation was carried out using the theory of risk, formal safety assessment and mathematical modeling and provided the following during water ballast exchange at the sea;

- estimation of changing effort on calm water estimation of draught and stability of ships
- estimation of strengthening of the ships' hull
- recommendation on operation arrangements and management of human factors

Shipping & Ports in Baltic Russia

Currently, St.Petersburg, Kaliningrad and Vyborg are the biggest Russian ports in the Baltic Sea Area. In 2000 the number of vessels calling at the Russian Baltic Ports increased as well as the volume of oil exported. Figure One show the number of ship calls (upper figures) and the total turnover (lower figures) of the ports in question.

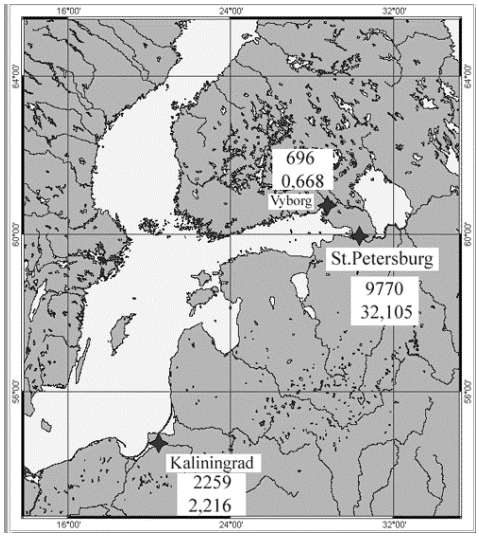

Figure One. Shipping through main Russian ports on the Baltic.

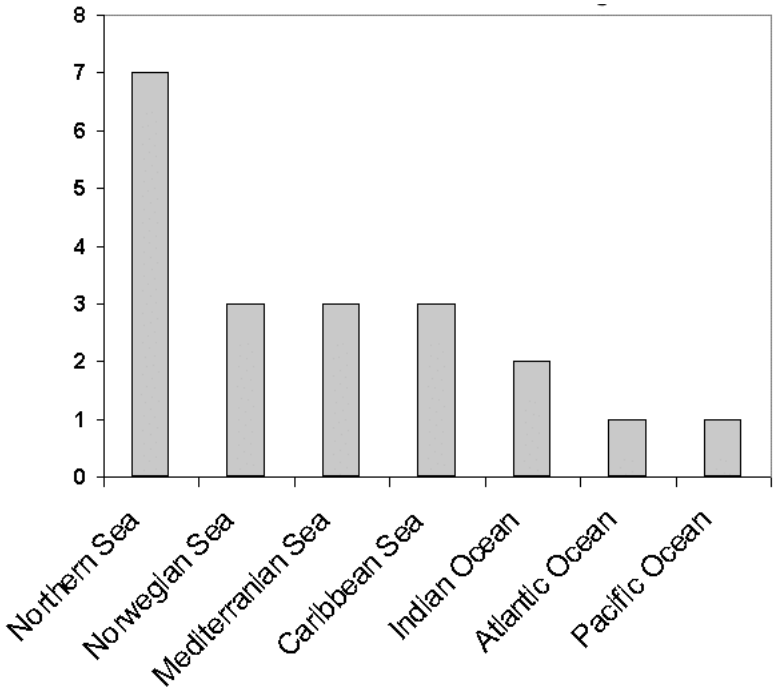

Figure Two. Tanker statistics for the Port of St Petersburg in 2000.

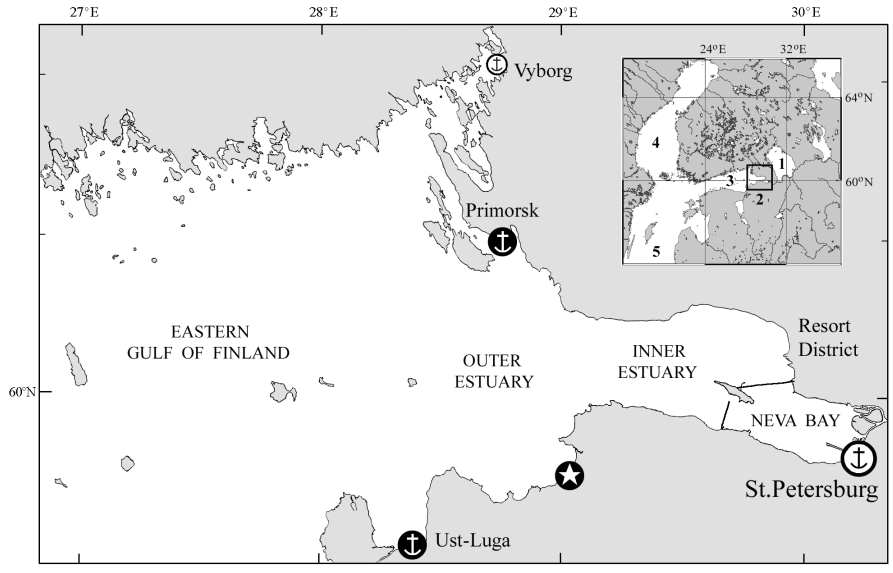

Figure Three. The Neva Estuary and adjacent areas of the eastern Gulf of Finland. Anchors in open circles indicate main ports, anchors in filled circles indicate ports under construction, asterisk in filled circle indicate nuclear power station. Figures on the inserted map indicate: *1* Lake Ladoga, *2* Neva Estuary, *3* Gulf of Finland, *4* Gulf of Bothnia, *5* Baltic Proper.

Oil handled in the Port of St.Petersburg in 1999 equated to 5,897 million tons and in 2000 to 6,633 million tons. An analysis of one hot-spot of the outer roads of Kronshtadt shows;

- total number of tankers – 62
- total number of previous ports of call –150, previous seas – Mediterranean (3), Northern (7),
- Norwegian (3), Caribbean (3), Atlantic (1), Pacific (1) and Indian (2) oceans
- intermediate ports of call – South Africa, Saudi Arabia (Red Sea), Cuba (Caribbean Sea), USA (Orleans, Charleston, Wilmington, Yorktown, Houston).

Foreign flags accounted for almost 50% of all port calls in the Russian Baltic Ports. These include Cyprus, Malta, Norway, Panama as well as Russia, namely, Novorossiysk.

Appendix IV:
Country Project Proposals

NB:
These Project proposals are included as presented by the countries at the workshop, as the basis for discussions only. The GloBallast PCU is of the view that they all require detailed review and improvement before consideration for potential funding by donors. Areas that need to be addressed for all project proposals include:

- The budgets seem somewhat high and need substantial justification and detailed breakdown.
- The budgets above should explicitly incorporate and reflect resourcing and support-in-kind provided from national sources.
- The time-frame for some projects could be reduced.
- Where possible, standard, international methodologies should be adopted, as used by the GloBallast Programme in other regions, especially in relation to risk assessment, port biological surveys and model legislation/regulations.

Ideally, all projects should be combined as elements of a single, integrated Regional Strategy and Action Plan, as outlined in sections 5.3 to 5.5 of the main report.

Estonia Project Proposal 1

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Project Title: Risk Assessment of Estonian Port Areas

(National project with potential to be expanded as a regional project)

Aims and Objectives:

The aim of the proposed project is to start collection of ballast water related data from incoming ships, including source of origin and amounts of ballast waters discharged. Currently this information is not available.

After the source areas of ballast water are determined, collection of marine environmental data will be started.

The final aim is making a risk assessment of bioinvasions by most important port areas.

Benefits of the Project:

These could be listed as follows:

1. Standardised documentation of data on incoming vessels and ballast water by ports.
2. Identification of the most risky ports in terms of new invasions where port monitoring should be carried out.
3. Legislative proposals to government (the Ministry of Environment and the Ministry of Transport and Communications) for mandatory submission of ballast water related data of incoming vessels.

Outputs of the Project:

1. Standardised database on incoming vessels and ballast waters discharged (sources, amounts) by ports.
2. Progress reports (one per year) and annual reports on development of the project.
3. Final report after completion of the study.

Timeframe:

Overall duration of the project is 3 years. During the first year, Muuga port studies will be undertaken: collection of ballast water related data and environmental data for source regions. Efforts for mandatory submission of IMO Ballast Water Reporting Form. Second and third year – risk assessment for Muuga port and undertaking similar studies for other Estonian ports.

Methods to be used to carry out the project.

The project could be sub-divided into 3 parts.

1. Collection and documentation of the data for the Port of Muuga. This is the largest harbour in the Tallinn port system.
2. On the basis of the Muuga harbour experience, similar survey will be carried out for all important ports of the country: the remaining three harbours within the Port of Tallinn system, port of Pärnu, port of Kunda.
3. in parallel, legislative actions for mandatory submission of the IMO Ballast Water Reporting Form and creation of central data depository will be undertaken.

The IMO Ballast Water Reporting Form will be used. The risk assessment will be carried out by applying GloBallast experience from other regions.

Main players and their roles and responsibilities.

Liina Eek-Piirsoo, Ministry of Environment – legislative proposals

Henn Ojaveer – risk assessment, supervision of students

Tarmo Ots, Estonian Maritime Board – communication with ports, legislative proposals

NNN - person on full-time basis – ballast water data collection and management

Total funding required: *US$ 130 000*

Detailed budget breakdown (USD$):

Salaries – 77 000

Stipends – 8 000

Travel (ICES/IMO/IOC SG meetings) – 4 000

Equipment (2 computers) – 5 000

Consumables – 7 000

Unexpected costs – 5 600

VAT (18%) – 22 500

Details of resourcing and support-in-kind that will be provided by the country:

Infrastructure of all institutions involved will be available for implementation of the project. The main players within the project are employed on full-time basis from other sources than this project.

Additional salary money is foreseen for them in the proposal. Based on preliminary discussions, support from the Port of Tallinn to the proposed project could be expected. Also, preliminary discussions with the administration of the Muuga Port gave us confidence for their interest in future cooperation.

Estonia Project Proposal 2

Contact Person: Henn Ojaveer

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Organization: Estonian Marine Institute

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Address: Viljandi Road 18b, 11216 Tallinn, Estonia.

Project Title: Field Sampling of Selected Invasive Alien Species and Port Areas

(National project with potential to be expanded as a regional project)

(PCU Comment – it is the preference of GloBallast than any such survey should not be for selected species but should commence with broad-based port baseline surveys using the standard CRIMP port sampling protocols adopted by GloBallast, as adapted to each port's situation, under a coordinated regional and global port survey system).

Aims and objectives of the project:

The aims of the proposed project are:

1. Continuous recording of the status of already existing selected marine bioinvasions and estimating their ecological and economic impacts (if appropriate). The following species will be studied: the polychaete *Marenzelleria viridis*, the cladoceran *Cercopagis pengoi*, the copepod *Acartia tonsa*, the zebra mussel *Dreissena polymorpha* and the hydrozoa *Maeotias inexpectat.*
2. Biological surveys in port areas (Port of Tallinn and Port of Pärnu). Until now, detailed and comprehensive surveys in port areas were not carried out.

The project will serve as an extension to already existing programs and directed to obtaining additional and specific data which otherwise were not gathered. Duplication and overlapping is avoided.

(PCU comment – see comment above)

Benefits of the Project:

These could be listed as follows:

1. Continuous accumulation of updated knowledge on the status of the already existing invasions (e.g., species distribution, population dynamics) which is useful for decision makers;
2. By surveying of port areas, rapid information of other countries on any new invasions through Estonian ports.
3. Documentation of ecological impacts caused by marine bioinvasions.

Outputs of the Project:

Survey and annual reports; papers published in scientific journals. Updated information will be submitted to the existing regional (Klaipeda) database and is useful for the HELCOM Baltic Sea periodic assessments. Presentation of the results of the study in respective ports and in other relevant authorities.

Timeframe:

Duration of the project is 5 years. The project cannot be divided into sub-periods as sampling, sample analysis and data analysis will be carried out routinely. Benthic field studies include four expeditions annually, pelagic ecosystem surveys require in some sites weekly sampling - continuation of already existing data series.

Methods to be used to carry out the project.:

HELCOM guidelines will be followed for sampling and sample analysis.

(PCU comment – GloBallast is not aware that HELCOM has standard guidelines for sampling/monitoring introduced marine species, although it does have such guidelines for more general biological monitoring. GloBallast prefers that international port survey protocols be used)

Main players and their roles and responsibilities:

Henn Ojaveer, Ph. D – coordination, reporting, pelagic ecosystem

Mart Simm, Ph. D – zoo- and meroplankton, field sampling

Jonne Kotta, Ph. D – benthic ecosystem,

Helen Orav, Ph. D student – benthic ecosystem, field sampling

Total funding required: US$ 250 000

Detailed budget breakdown (USD$):

Salaries and stipends – 80 000

Field works (incl. ship hire) – 60 000

Consumables – 20 000

Computer software – 4 000

Institutional overhead (20%) – 41 000

VAT (18%) – 45 000

Details of resourcing and support-in-kind that will be provided by the country:

Infrastructure of the Estonian Marine Institute is available for implementation of the project. Laboratory facilities and field work equipment for the investigations proposed are available at the institute, except ship for pelagic samplings. The main players within the project are employed on full-time basis from other sources than this project (total salary ca US 250 000 according to the present salary standards). Additional salary money is foreseen for them in the project.

Latvia Project Proposal 1

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Project Title: Elaboration of Regulations of the Cabinet of Ministers for the Control and Management of Ships' Ballast Water.

Aims and Objectives of the Project:

Aim: Minimise the transfer of harmful aquatic organisms and pathogens in the territorial waters of the Republic of Latvia.

Objectives: Elaboration of Regulations and a plan for the implementation of Regulations to implement the IMO Resolution A.868(20) in Latvian legislation.

The Baltic Regional Workshop on Ballast Water Management held in October 2001 in Tallinn has motivated us to evaluate the situation in ballast water management matters and in national legislation.

We are motivated to detect the problems we have to solve in order to develop national by-laws, as well as to implement IMO Resolution A.868(20) *Guidelines for the control and management of ship's ballast water to minimise the transfer of harmful aquatic organisms and pathogens*. The theme of this project supports the idea of the *International convention for the control and management of ship's ballast water and sediments* being developed by IMO MEPC, which is planned to be adopted in 2003.

If the project is recognised and funded, the incorporation of the IMO Resolution A.868 (20) into national legislation will proceed effectively. Namely, a relevant national by-law will be drafted, which will lead us towards implementation of this Resolution.

We consider both our projects - the regional project "Port biological surveys and ballast water sampling" and the country project "Legislation and regulations", will be supporting each other and leading to proper implementation of IMO Resolution A.868 (20).

Benefits of the Project:

1. Implementation of IMO Resolution A.868(20) in legislation of the Republic of Latvia.
2. Workable legal mechanism in place for controlling and managing ships' ballast water in Latvia in order to minimise transfer of harmful aquatic organisms and pathogens in the territorial waters of Latvia.

Outputs of the Project:

1. Draft Regulations for the control and management of ships' ballast water elaborated.

2. Plan of implementation of Regulations elaborated.

Timeframe:

No	Type of activities	No of working days	2002. – 2003.														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Organisation of working group	14	x														
2.	Methodology Meeting in Riga	2	x														
3.	Data collection for elaboration of the Draft Regulations	100		x	x	x	x	x	x								
4.	Study abroad to investigate practices and application of new legislation	25				x	x										
5.	Study units to investigate practices and future application of legislation in Latvia	10					x										
6.	Internal consultation	5						x									
7.	External preliminary Audit	5						x									
8.	Seminar of the working group for initial report	2						x									
9.	Elaboration of the Plan for implementation of Regulations: - investigation of necessary technologies of ballast water treatment; - investigation of necessary investments; - institutional and personnel development for ballast water control.	120							x	x	x	x	x	x			
10.	Internal consultation	5										x					
11.	External Audit of the plan for implementation of Regulations	5										x					
12.	Seminar of the working group for Second Report	2										x					
13.	Drafting of the Project	30													x		
14.	First Evaluation Meeting of the Project Report	2														x	
15.	Project optimisation	15														x	
16.	External Audit of the Project	5														x	
17.	Second Evaluation Meeting of the Project Report	2															x
18.	Final Report of elaborated Draft Regulations and Plan for implementation of Regulations	2															x
19.	Approval of the Final Report	2															x
	Summary:	353															

Methods to be used to carry out the Project:

The project is based on three stages:

1. Investigation and data analyses.
2. Elaboration of the Draft Regulations.
3. Elaboration of the Plan for implementation of Draft Regulations.

Investigations in Latvia:

- Existing legislation.
- On board practices by Ballast Water Management plan.
- Ballast water discharge in open sea, volume, origination.
- Intensity of the ballast waters discharge , volume, origination and practical activities in the ports.
- Domestic biota systems stability and its interactions state.
- Recommendation of the IMO Resolution's A.868(20) reasonable application for Latvia.
- Financial and organisational consequences of implementation of new by-laws.

Investigations abroad:

- Existing legislation.
- On board practices by Ballast Water Management plan.
- Ballast water discharge in open sea, volume, origination.
- Intensity of the ballast waters discharge, volume, origination and practical activities in the ports.
- Environmental biota's state in the countries, where management of ships; ballast waters is implemented.
- Methods of application of the IMO Resolution's A.868(20).

Main players and their roles and responsibilities:

Maritime Department of Ministry of Transport will be responsible for:

- Reporting of situation concerning legal acts in the field of ballast water management.

Maritime Administration of Latvia will be responsible for:

- Elaboration of requirements concerning procedures for ships that carries ballast water.
- Cost estimation to ensure the fulfilment of the Plan for implementation of the Regulations.
- Elaboration of the Plan for implementation of Regulations.

Marine Environment Board will be responsible for:

- Elaboration of requirements concerning control of ballast water in the ports of Latvia.
- Cost estimation for control of ballast water management in ports.

Latvian Port Authorities will be responsible for:

- Reporting of actual situation concerning intensity of ballast water discharge in ports of Latvia.
- Cooperation in planning of necessary technologies cost estimations.

Institute of Aquatic Ecology of the University of Latvia will be responsible for:

- Research domestic biota systems stability and its interactions state.
- Identification of areas where the discharging of ballast waters is acceptable within the territorial waters of Latvia.
- Cooperation in planning of necessary technologies .

Total funding required:

Donor funding: US$61 330

National co-financing: US$6 815

Total US$64 900

Detailed budget breakdown:

General

No	Budget Item	Price p/unit	No of units	Total
1.	Study visits	3000	3	9000
2.	Translations and Interpretation	1000		1000
3.	Meetings, Workshops	1000	6	6000
4.	Internal Consultation Fees	2000		2000
5.	External Consultation Fees	10 000	2	20 000
6.	Audit	2000	2	4000
7.	Publicity	500		500
			TOTAL:	42 500

Personnel

No	Authority	Position in the Project	Activity	Daily rate	No of days	Total
1.	Maritime Administration	Project manager	Project administration, drafting of the Project Report	100	68	6800
2.	Maritime Administration	expert	Analyses of existent legislation concerning ballast waters in Latvia and in the other countries, Resolution application of IMO.	80	60	4600
3.	Maritime Administration	expert	Statistics of the ballast waters discharge in other countries -open sea and ports, volume, origination	80	60	4600
4.	Maritime Department	expert	Data collection on future application of legislation in Latvia and countries where management of ships ballast waters is implemented	80	20	1600
5.	Marine Environment Board	expert	Data collection of Baltic sea environmental and marine accidents, ballast water discharge in open sea	80	20	1600
6.	Institute of Aquatic Ecology	expert	Baltic sea and Riga Gulf biota systems stability and its interactions.	80	20	1600
7.	Institute of Aquatic Ecology	expert	Research on Maritime environment biota's situation in the foreign countries, results of implementation of ships ballast waters management	80	10	800
8.	Port Authorities	expert	Statistics of the ballast waters discharges in Latvian ports, volume, origination	80	10	800
			TOTAL:		268	22 400

Latvia Project Proposal 2

Contact Person: Dr. Andris Andrushaitis

Position: Director

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Project Title: Creation of ballast water biological control system in the Eastern Baltic countries.

This is proposed as a regional project to be harmonised with other Eastern Baltic countries. Following is the Latvian part of the planned project.

Aims and Objectives of the Project:

Aim: To prepare a stable basis for the establishment of a biological control/monitoring system of the incoming ballast waters in the Eastern Baltic ports.

Objectives: To test and chose the most appropriate ballast water sampling methods.
To create a basis for the monitoring network, involving the employees of regional environment boards and ports into sampling.
To create an on-line database on analysed samples, linked with existing database NEMO and HELCOM Baltic Early Warning Reporting System.

Benefits of the Project:

- The decision of the most adequate ballast water sampling methods will ensure complete information on arriving biological organisms and thus allow to assess the possible risk and the treatment method of the ballast water.
- The involvement of employees of regional environment boards and ports into the sampling procedures will guarantee an operative obtaining of the samples.
- The exchange of the information using the on-line database will give an updated view on taxonomic composition of the incoming ballast water and provide a support for further scientific and applied research.

Outputs of the Project:

- Two status reports and a final report.
- Presentation of the final report in the ports.
- Press release.
- Internet database on the results of analysed samples.

Timeframe:

The total time of the project is 6 months. The project can be started during January-February 2002.

Activity / Months	1	2	3	4	5	6
Choosing of the sampling period according to the shipping schedules						
Purchase of the sampling equipment						
Collection of the background information on the sampling methods						
First status report						
Sampling in the ports and analysis of the samples						
Second status report						
Creation of the on-line data base						
The final report of the project						
Press release and the presentation of the final report						

Methods to be used to carry out the project.

Considering the sampling of the ballast water as the most important task of the project, the methods will be used according to the type of the vessel. Pumps are planned for the sounding pipes and nets – for the manholes where accessible.

The analysis of the samples will be fulfilled according to plankton treatment methods following HELCOM recommendations and local quality assurance requirements.

(PCU comment – GloBallast is not aware that HELCOM has standard guidelines for ballast water sampling. GloBallast prefers that international ballast water sampling methods be used)

Main players and their roles and responsibilities.

Latvia

Institute of Aquatic Ecology, University of Latvia – collection of background information, purchase of equipment, sampling, analysis, preparation of the reports, press release and presentation of the report.

Latvian Fisheries Research Institute – collection of background information, taxonomical expertise, consulting.

Estonia

Estonian Marine Institute (University of Tartu) will be responsible for the ballast water sampling in Estonian ports, analysis of these samples and reviewing the relationships between ballast water movement and the invasion of exotic marine organisms in Estonian coastal sea.

The proposed study parametes are ballast water information (origin, amount, duration between ballasting and deballasting) hydrography (temperature, salinity, oxygen, total phosphorus, nitrogen), phytoplankton (taxonomic composition, abundance, biomass), zooplankton (taxonomic composition, abundance, biomass) and benthic invertebrates (taxonomic composition, abundance, biomass). Sediment samples will be also examined for organic content, the resting stages of phytoplankton (e.g. toxic species) and zooplankton. The sediment analysis needs to be included to the project being possible hosts for the retention and ultimate dispersion over long periods of time, of toxic dinoflagellate cycts and other undesirable organisms.

Lithuania , Poland & Russia

To be developed.

Total funding required:

Latvia

The total funding required for the fulfilment of the project in Latvia is **US$22 632**

Estonia

The total funding required for the fulfilment of the project in Estonia is **US$15 183**

Detail budget breakdown (USD$)

Latvia

Labour costs – planned for 45 samples, i.e. 15 samples in 3 ports.

Parameter	Sampling costs (4 persons employed)	Persons employed for data handling and reporting	Costs for data handling and reporting	Total labour costs
Bacterioplankton	290	1	400	690
Phytoplankton	290	2	800	1090
Zooplankton	290	2	800	1090
Supportive hydrological data	290	1	200	490
Local consulting and taxonomical expertise				1500
International coordination, consulting and expertise				7500
Net labour costs				12360
Overhead recovered on labour (20%)				2472
Gross labour costs				14832

Costs other than labour

Travel expenses, per diem and accommodation for field group	800
Pump for sampling	3000
Two nets for qualitative and quantitative sampling	3000
Traps and other supportive devices	800
Reagents	200
Total	7800

Grand total	22 632

Estonia

Items	sampling	Man-months	handling and reporting	Total
hydrography	290	1	670	960
phytoplankton	290	2	1340	1630
zooplankton	290	2	1340	1630
zoobenthos	290	1	670	960
travel expenses				800
nets, traps etc.				3000
Overhead				2570
Taxes				3633
GRAND TOTAL				**15183**

Details of resourcing and support-in-kind that will be provided by the countries.

Latvia

The *Institute of Aquatic Ecology* will ensure manpower resources, provide the laboratory equipment and computer service for the analysis of samples and data handling. The use of Institute's historical data will be unlimited, if necessary.

The *Latvian Fisheries Research Institute* will provide taxonomical expertise on higher aquatic organisms and involve the historical data in the description of background situation.

The *Ministry of Environment Protection and Regional Develop*ment together with *Latvian Maritime Administration* are expected to arrange the management of the ballast waters including biological control as one of the main components.

Estonia

The *Estonian Marine Institute* will ensure manpower resources, provide the laboratory equipment and computer service for the analysis of samples and data handling.

Lithuania Project Proposal

Contact person: Tadas Navickas

Position: Chief Specialist for Marine Environment Protection

Organization: Ministry of Environment

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Address: Jakšto 4/9, 2000 Vilnius, Lithuania

Project Title. Towards implementation of the IMO ballast water guidelines: strengthening institutional and government arrangements in Lithuania

Aims and Objectives of the project:

- To develop the inter-institutional administrative mechanism to support implementation of the IMO ballast water guidelines on the national level.
- To define institutional responsibilities and authorities of all stakeholders involved in the process of ballast water management.
- To implement provisions of the Article 20 of the "Law on Protection of Marine Environment" of the Republic of Lithuania.

Benefits of the Project:

- Risk of the harmful introductions through the Lithuanian ports will be minimised
- Experience on the IMO Guidelines A.868 (20) implementation in the Baltic Sea Region will be gained.

Outputs of the Project:

- Transposition of the provisions of the IMO Guidelines A.868 (20) to the Lithuanian legislation.
- Development of the institutional administrative capacities to support ballast water management on the national level.
- Establishment of ballast water control and monitoring system in the Lithuanian ports.

Timeframe:

Up to 12 months

Main players and their roles and responsibilities:

Ministry of Environment

Ministry of Health

Ministry of Transport

Port authorities

Shipping Companies

Scientific Institutions

Total funding required: USD$200 – 300 000.

Detailed budget breakdown (USD$):

To be defined later.

Details of resourcing and support-in-kind that will be provided by the country(ies):

In-kind contribution: basic infrastructure and information support. Potential co-financing of this Project by Lithuania is up to 10%.

Poland Project Proposal 1

Contact person: Eugeniusz Kondracki

Position: Chief Expert on Sea Environment Protection

Organization: Department of Maritime and Inland Waters Administration, Ministry of Transport and Maritime Economy.

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Address: Chałubińskiego 4/6, 00-928 Warsaw , POLAND

Project Title: Feasibility Study on Implementation of the IMO Ballast Water Guidelines (A.868(20)

Aims and Objectives of the Project:

Aims: To create technical, organizational, economical, and legal solutions for implementing the IMO ballast water guidelines (A.868(20)),

Objectives: Background and history of the problem.
Study of the environment protection needs in the Baltic Sea region (present and future).
Proposals for legal regulations to implement IMO Guidelines in short time.
Principles to calculate the cost of implementation.
Proposals for technical solutions (standards, sampling etc.).

Benefits of the Project:

Background for developing legal regulations and full implementation of the IMO Guidelines and in future arguments for access to IMO Convention concerning ballast water management.

Outputs of the Project:

Report of feasibility study on implementation of the IMO ballast water guidelines (A.868(20)),

Timeframe:

24 months

Methods to be used to carry out the project:

Data gathering and assessment

Main players and their roles and responsibilities:

To be described later.

Total funding required: Approx. US$32 000.

Detailed budget breakdown (US$):

To be described later

Details of resourcing and support-in-kind that will be provided by the country(ies):

Poland does not have possibilities to finance this project. Ministry of Transport and Maritime Economy will look for a co financing of this project in Poland.

Poland Project Proposal 2

Contact person: Eugeniusz Kondracki

Position: Chief Expert on Sea Environment Protection

Organization: Department of Maritime and Inland Waters Administration, Ministry of Transport and Maritime Economy.

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Address: Chałubińskiego 4/6, 00-928 Warsaw , Poland

Project Title: Ballast Water Risk Assessment for the Southern Baltic Sub-Region.

Aims and objectives of the project:

Up to now Southern Baltic Sub-Region has not been subjected to systematic examination and assessment in respect of the risk created by alien species from ballast waters. Reports on the appearance of new species is evidence of the necessity to undertake studies in this field.

Objectives of the project are:

- Collection of the full data necessary for ballast water risk assessment.
- Assessment of the risk of introducing into waters of southern area of the Baltic Sea alien species occurring in ballast waters.
- Assessment of the risk of transferring native species from the Southern Baltic Sea to other sea areas.
- Initial estimation of economical losses.

The assessment will be performed on basis of the actual state of biosphere and sea transport.

Benefits of the project:

- Assessment of the ballast water risk for marine environment of the Southern Baltic Sea.
- The project's results will be used as a background in legislative procedure of implementation of the IMO Guidelines A.868 (20) as well as of the future convention.

Outputs of the project:

Report including the ballast water risk assessment for southern regions of the Baltic Sea.

Timeframe:

24 months

Methods to be used to carry out the project:

Method of assessment of risk induced for marine environment by ballast waters discharge will be based on models of the environmental risk assessment published in literature.

For purposes of this project it is considered to make use of a model taking into account following factors having influence on the risk:

- Shipping traffic statistics (shipping routes from areas of matching climate, salinity, release of ballast water, duration of ship voyages etc).
- Habitat characteristics (salinity, pollution, eutrophication etc).
- Community structure (number of native and non-indigenous species).
- Potential for secondary introductions.

Main players and their roles and responsibilities:

Ministry of Transport and Maritime Economy as a coordinator.

Total funding required: US$35 000.

Detailed budget breakdown (US$)

1.	Review of scientific publications relating to methods of ballast water risk assessment. Discussion on methods:	6 000
2.	Consultation (including travel abroad) on the methodology of risk assessment:	5 000
3.	Collection of input data for ballast waters risk assessment:	5 000
4.	Analysis of data and working out the assessment of risk:	20 000
5.	Final report comprising results of assessment and proposal of ballast water's treatment:	4 000
6.	Other (translation of literature publications into Polish and of report of the project's results into English, giving an opinion on execution of the project by experts):	2 000

Details of resourcing and support-in-kind will be provided by the country:

Poland is not able to finance execution of the project at the moment.

Baltic Russia Project Proposal 1

Contact person: Mr. Vladimir Karev (Dr. Gennady Semanov)

Position: Director

Organization: State Marine Pollution Control, Salvage & Rescue Administration, Ministry of Transport of the Russian Federation

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Project Title: Ballast Water Treatment Technique.

Aims and Objectives of the project:

Development of technique for treatment ballast water on board ships.

Benefits of the Project:

Reduce the cost for implementation of requirements of new international convention.

Outputs of the Project:

Propose to use living organism decaying substances for treatment of ballast water.

Timeframe:

2002 - 2003

Methods to be used to carry out the project:

Laboratory investigation and field test of developed technique

Main players and their roles and responsibilities:

Specialists in biology and ship industry, Central Marine Research and Design Institute (CNIIMF).

Total funding required: US$100 000

Detailed budget breakdown (US$):

US$75 000 for investigation and development of equipment, US$25 000 for field test.

Details of resourcing and support-in-kind that will be provided by the country(ies):

Manpower, laboratory, co-financing.

Baltic Russia Project Proposal 2

Contact person: Mr. Vladimir Karev

Position: Director

Organization: State Marine Pollution Control, Salvage & Rescue Administration, Ministry of Transport of the Russian Federation

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Project Title: Development of a Regional Information System on Ballast Water.

Aims and Objectives:

Aim: To join information concerning the problems of ballast water, including information on aquatic invasive species, procedures in other Baltic Sea Ports; results of scientific research and design investigation of the treatment of ballast water and methods of ballast water sampling.

Objectives: To establish the principles of statistic data.

To adopt to unified approach to the analysis of necessary information.

To adopt to standard methods of ballast water sampling.

To elaborate common criteria of 'clean' ballast water.

To define sensitive areas.

Benefits of the Project:

To use background information of the experiences of Baltic Sea States.

Outputs of the Project:

Procedures of control and management of ship's ballast water to minimize of harmful aquatic organisms.

Timeframe:

One year

Methods to be used to carry out the project:

Mathematical statistic models, biological methods etc.

Main players and their roles and responsibilities:

The Maritime Administrations, scientific research institutes, port authorities

Total funding required: Approx. US$100 000-150 000.

Detailed budget breakdown (USD$):

If any donors are interested in this Project Proposal detailed budget will be detailed

Details of resourcing and support-in-kind that will be provided by the country:

Results of scientific and design investigations, manpower, regional information system which is elaborated by the Institute of Zoology, Russian Academy of Science, co-financing of the Project.

Appendix V:
Media Release

Global **Ballast Water** Management Programme

MEDIA RELEASE

Baltic Countries Battle Marine Invaders

Monday 22 October 2001

The countries of the Baltic Sea joined forces today in a cooperative plan to protect their marine resources from the threat of **invasive marine species**. The United Nations agency responsible for maritime matters, the International Maritime Organization (IMO), says that invasive marine species are one of the four **greatest threats to the world's oceans.**

The problem stems from the carriage of harmful marine organisms and pathogens in **ships' ballast water**. Ballast water is carried by ships to provide balance and stability when they are empty of cargo.

It is estimated that 10 to 12 billion tonnes of ballast water are carried around the world by ships each year. Thousands of tonnes are discharged into Baltic ports. While ballast water is essential to the safe operation of ships, it also poses a serious environmental threat, in that around 4,500 species of marine microbes, plants and animals may be carried globally in ballast water at any one time. When discharged into new environments, these species may become invasive and severely disrupt the native ecology and have serious impacts on the economy and human health.

It is estimated that a foreign marine species is introduced to a new environment somewhere in the world every nine weeks. The global economic impacts of invasive marine species have not been quantified but are likely to be in the order of tens of billions of US dollars a year.

The IMO, through its Global Ballast Water Management Programme, is assisting Baltic countries to halt this onward march of marine bio-invasions. With support from the Estonian Ministry of Environment, IMO is convening the Baltic Sub-Regional Workshop on Ballast Water Management in Tallinn, Estonia, from 22 to 24 October 2001.

Maritime and environmental experts from Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden, the Helsinki Commission, the European Commission, the Global Environment Facility and other organizations have gathered for the workshop. They will be seeking to build a regional alliance, and develop cooperative programmes to save the Baltic Sea from the ecological and economic onslaught of harmful aquatic organisms.

The Workshop will be held at the Estonian Ministry of Environment, Conference Room, Toompuiestee 24, Tallinn, commencing at 0900 on Monday 22 October. Members of the media are invited to attend.

Further information:

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More Information?

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