Agenda Item 4 **Matters connected with HELCOM Recommendations under HELCOM MONAS**

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Submitted by: Secretariat

DRAFT HELCOM RECOMMENDATION ON EXTREME NATURAL EVENTS IN THE BALTIC SEA AREA AND HELCOM MANUAL FOR REPORTING EARLY WARNINGS ON ABNORMAL EVENTS

This document contains

1. Draft HELCOM Recommendation on extreme natural events in the Baltic Sea area and
2. Draft HELCOM Manual for Reporting Early Warnings on Abnormal Events.

At HELCOM MONAS 6/2003 (Minutes of the Meeting, paragraphs 6.51 (LD 42) and 6.52 (LD 43)), the Project Manager, Mr. Hans Dahlin, Sweden, informed that information is still missing in the HELCOM Manual for Reporting Early Warnings on Abnormal Events, and the meeting urged the Contracting Parties to provide the missing contact addresses to Mr. Dahlin by 28 November 2003 and MON-PRO to consider the Manual further.

HELCOM MONAS 6/2003 (paragraphs 4.1 (LD 5)) also decided to forward the draft HELCOM Recommendation on extreme natural events in the Baltic Sea area to HELCOM MON-PRO to consider whether it is in line with the revision of monitoring programmes.

Denmark, Germany and Russia have provided neither descriptions nor contact addresses of organizations involved in BEWERS. Poland has provided contact addresses for invasive alien species reporting only.

HELCOM MON-PRO Workshop 1/2004 (Outcome, paragraphs 3.3 and 3.4) considered, among other draft HELCOM Recommendations, the draft HELCOM Recommendation on extreme natural events in the Baltic Sea area. The Meeting was doubtful about its value in the present form, especially since the BEWERS Guidelines are still incomplete. The meeting requested the Secretariat to submit the BEWERS Manual to the Baltic Sea Ecosystem Health Group of the Baltic Sea Regional Project, Component 1 in order to be considered how the reporting and collection of extreme natural events could be incorporated into the development of the Multiple Marine Ecological Disturbances (MMED) concept.

The Meeting is invited to consider and to decide how to proceed with finalization of the attached draft HELCOM Recommendation and the Manual.

DRAFT HELCOM Recommendation 25/XX[1)]

Adopted XX March 2004
having regard to Article 20, Paragraph 1 b)
of the Helsinki Convention

EXTREME NATURAL EVENTS IN THE BALTIC SEA AREA

THE COMMISSION,

NOTING with concern the frequent exceptional blooms of algae in the Baltic Sea Area,

NOTING ALSO the occurrence of other natural extreme events influencing living in and the environment of the Baltic Sea Area,

NOTING FURTHER the climate change and an expected increase of extreme events,

RECALLING Recommendation 6/14 concerning establishing of a pollution reporting system for pollution incidents,

RECALLING ALSO the experienced urgent need for better knowledge and information exchange during extreme events required by the governmental system and the public,

BEING CONVINCED that procedures for early warnings would help to reduce or eliminate the harmful effect of extreme events,

RECOGNIZING that algal blooms can produce toxins that are harmful for man and animals through direct contact or by eating fish or shellfish,

RECOGNIZING ALSO that algal toxins can have a detrimental effect on the recruitment of fish by effecting early life stages,

RECOGNIZING FURTHER that physical extremes as flooding rivers, high sea level or waves can cause damage to the environment and constructions,

NOTING that improved means of communication have given better tools for fast and efficient exchange of warnings, data and information,

NOTING, HOWEVER, that en early warning and information exchange system requires a fixed and harmonised system with up-dated contact addresses, being operational around the clock,

DESIRING to protect people and animals,

DESIRING ALSO to protect the economic activities related to marine fish farming, recreation and tourism,

RECOMMENDS that the Contracting Parties to the Helsinki Convention should:

a) establish an authorised system for rapid exchange of early warnings, data and information;

b) use the BEWERS (Baltic Early Warning Event Reporting System) Manual for the harmonised exchange of information on abnormal events in the Baltic Sea Area.

RECOMMENDS FURTHER that the Contracting Parties should report on their national action taken in accordance with this HELCOM Recommendation to relevant subsidiary body of HELCOM.

[1)] This Recommendation supersedes HELCOM Recommendation 14/1.

BEWERS

Manual for Reporting Early Warnings on Abnormal Events

Baltic Early Warning Event Report System

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1 Introduction

Exceptional algal blooms are sporadic natural events in the sea and in lakes. Some of these blooms develop poisonous substances that can effect marine organisms. Also humans and animals on land can be seriously affected by direct contact or by eating fish and shellfish. This has been known for centuries and many countries have been running "mussel watch" programmes to protect people from getting poisoned. The global aquaculture business has also been aware of the problem and research on how to mitigate the detrimental blooms exists in many places around the world.

In 1988 a large bloom of *Chrysochromulina Polylepis* hit Scandinavian waters. Plants, shellfish, wild fish and farmed fish were killed in large areas of Kattegat, Skagerrak and along the Norwegian coast. The event shocked both the Governments and the public. This resulted in a call for better information and understanding of harmful algal blooms. Related activities within HELCOM led to Recommendation 10/1:

RECOMMENDS that the Contracting Parties to the Helsinki Convention should:

a) utilise the early warning system established according to HELCOM Recommendation 6/14 also for early warning of abnormal environmental situations;

b) use appropriate methods for detecting and monitoring algal blooms;

c) consider a special study programme concerning risks to human bathers;

d) intensify research to improve knowledge on algal blooms,

Although extensive exceptional blooms occurred, very few reports were submitted. This was mainly due to insufficient knowledge on what to report. The HELCOM Environmental Committee in 1995 (EC 6/15), guided by a request from the Combating Committee, initiated a workshop on a Harmonised International Early Warning Reporting System for algal blooms. After a HELCOM Scientific Workshop on the 1997 flood event in Poland and Germany it was agreed that the Reporting System should be expanded to cover all abnormal natural events with possible negative impact on the Baltic Sea. EC MON 3/98 recommended that a project proposal should be developed based on the preparatory work done by the workshops.

A HELCOM Project was established and started year 2000 with the following tasks:

1. Produce general guidelines for event monitoring.
2. Produce a general reporting form and guidelines.
3. Co-ordinate, on the Baltic scale, national efforts on event monitoring systems, the production of reporting forms and guidelines, the setting up of expert groups and standby resources for *ad hoc* investigations.
4. Establish a system of national focal points and operational links between these.

The project group adopted the working name BEWERS which stands for Baltic Early Warning Event Reporting System.

The project has had four formal meetings and a final workshop. All work has been focused on producing the General Guideline where all tasks for the group have been incorporated. The structure of the Guideline is simple:

1. To describe the event to be reported.
2. To visualise the event to be reported.
3. To describe a common reporting format.
4. To list whom to contact in each country.

This Draft Guideline constitutes the final report of the project group.

Norrköping 2003-10-10

Hans Dahlin,

Project manager

2 Contact system

2.1 Description of Denmark's organisations involved in BEWERS

2.1.1 National list of authorised bodies to give and receive information

2.1.1.1 BEWERS national focal points of information in Denmark

2.1.1.2 Specific information on reporting items

(To be submitted by Denmark)

2.2 Description of Estonian organisations involved in BEWERS

2.2.1 National list of authorised bodies to give and receive information

2.2.1.1 BEWERS National Points of Information in Estonia

	Emergencies (24 hrs)
Name	Rescue Board
Address	Raua 2, 10124 Tallinn Estonia
Phone	+ 372 6282000
Fax	+ 372 6282099
Email	rescue@rescue.ee
Home Page	http://www.rescue.ee/page.php?id=247

	Inquiries (office hrs)
Name	Ministry of the environment
Address	Toompuiestee 24, 15172 Tallinn Estonia
Phone	+ 372 6262 802
Fax	+ 372 6262 801
Email	min@ekm.envir.ee
Home Page	http://www.envir.ee/

2.2.1.2 Specific information on reporting items

	Flood events
Name	Estonian Meteorological and Hydrological Institute
Address	Rävala 8, 10143 Tallinn Estonia
Phone	+ 372 64 61 563
Fax	+ 372 64 54 277
Email	emhi@emhi.ee
Home Page	http://www.emhi.ee/

	Hydrodynamic events
Name	Marine Systems Institute
Address	Akadeemia tee 21, 12618 Tallinn Estonia
Phone	+ 372 62 04 302
Fax	+ 372 62 04 301
Email	elken@phys.sea.ee
Home Page	http://www.msi.ttu.ee/

	Invasive Alian Species
Name	Estonian Marine Institute
Address	Mäealuse 10A, 126 18 Tallinn Estonia
Phone	+ 372 626 7410
Fax	+ 372 626 7417
Email	meri@sea.ee
Home Page	http://www.sea.ee/

	Algal blooms
Name	Estonian Marine Institute
Address	Mäealuse 10A, 126 18 Tallinn Estonia
Phone	+ 372 626 7410
Fax	+ 372 626 7417
Email	meri@sea.ee
Home Page	http://www.sea.ee/

	Mass mortality of Animals and/or plants
Name	Estonian Marine Institute
Address	Mäealuse 10A, 126 18 Tallinn Estonia
Phone	+ 372 626 7410
Fax	+ 372 626 7417
Email	meri@sea.ee
Home Page	http://www.sea.ee/

	Oxygen Deficiency
Name	Estonian Marine Institute
Address	Mäealuse 10A, 126 18 Tallinn Estonia
Phone	+ 372 626 7410
Fax	+ 372 626 7417
Email	meri@sea.ee
Home Page	http://www.sea.ee/

	Pollution Incidents
Name	Environmental Inspectorate
Address	Kopli 76, 10416 Tallinn Estonia
Phone	+ 372 660 3333
Fax	+ 372 696 2237
Email	valve@kki.ee
Home Page	http://www.kki.ee

	Pollution Incidents
Name	Board of Border Guard
Address	Toompea 1, 15183 Tallinn Estonia
Phone	+ 372 693 6002
Fax	+ 372 693 6012
Email	piirivalve@pv.ee
Home Page	http://www.pv.ee

2.3 Description of Finnish organisations involved in BEWERS

2.3.1 Finnish Institute of Marine Research FIMR

The Finnish Institute of Marine Research (FIMR) is a source of marine scientific information for both practical needs and as a basis for decision making. The most recent results can be implemented in various applications. For example, wave models and the measurement of water levels in real time promote safety at sea and serve the needs of construction activities on the coast and at sea.

Research activity is mainly focused on the basic properties of the Baltic Sea, although the Polar Seas are also studied. In addition to top quality basic research, FIMR studies currents, substance balances, ecology, and models of important processes in the Baltic Sea etc.

Monitoring the state of the Baltic Sea gives information about past changes and the processes that caused them. This is valuable information for modelling future forecasts.

As befits its name, the Finnish Institute of Marine Research studies marine dynamics in general and the interaction between sea and atmosphere. Internal marine processes the basic properties of oceans and the changes in the global climate and environment are also researched.

2.3.2 The Finnish Environmental Institute SYKE

The Finnish Environment Institute (SYKE) is the national environmental research and development centre of the environmental administration. Research and development in the SYKE deals with changes in the environment, cause and effect relationships, means of resolving environmental problems and effects of policy measures. SYKE is the national environmental information centre and provides expert services and takes care of certain national and international statutory tasks.

SYKE organises and develops the environmental emergency response in Finland and the operational pollution combating at sea. Other tasks include hydrological monitoring and information service, forecasting based on hydrological models as well as coordination of the monitoring of coastal waters including water quality and phytoplankton. Visual algal observations at 66 fixed coastal stations are part of the algal situation (weekly) reporting system in Finland. Operational satellite based systems produce surface temperature and surface accumulating algal bloom maps. Forecasts of algal blooms for the Baltic Sea and the Gulf of Finland are made based on hydrological ecosystem models.

2.3.3 The Frontier Guard of Finland

The Frontier Guard is responsible for Finland's internal security, subordinate to the Ministry of the Interior. The main functions of the Frontier Guard are guarding of the land borders and the territorial waters, passport control at the border crossing points, ports and airports, as well as performing of rescue operations, especially at sea. In the past few years, the functions and structure of the Frontier Guard have been reorganised to respond to the changes in the immediate surroundings.

2.3.4 National list of authorised bodies to give and receive information

2.3.4.1 BEWERS national focal points of information in Finland

	Emergencies (24 hrs)
Name	Maritime Rescue Coordination Centre (MRCC TURKU)
Address	Archipelago Sea Coast Guard District, P.O. Box 16, FIN-20101 TURKU
Phone	+358 204 1001 (24 hours) +358 204 1000 (alarm, 24 hours)
Fax	+358 2 250 0950 (24 hours)
Email	
Home Page	

	Inquiries (office hrs)
Name	Finnish Environment Institute (SYKE)
Address	P.O. Box 140, FIN-00251 HELSINKI
Phone	+358 9 403 000 (office hours)
Fax	+358 9 4030 0478
Email	
Home Page	http://www.ymparisto.fi/eng/welcome.html

2.3.4.2 Specific information on reporting items

	Flood events
Name	Finnish Environment Institute (SYKE)
Address	P.O. Box 140, FIN-00251 HELSINKI
Phone	+358 9 403 000 (office hours)
Fax	+358 9 4030 0478
Email	
Home Page	http://www.ymparisto.fi/eng/welcome.html

	Hydrodynamic events
Name	Finnish Instititute of Marine Research
Address	P.O. Box HELSINKI, FINLAND
Phone	+358 9 613 941
Fax	+358 9 6139 4494
Email	Info@fimr.fi
Home Page	http://www.fimr.fi

	Invasive Alian Species
Name	Finnish Instititute of Marine Research
Address	P.O. Box HELSINKI, FINLAND
Phone	+358 9 613 941
Fax	+358 9 6139 4494
Email	Info@fimr.fi
Home Page	http://www.fimr.fi

	Algal blooms
Name	Finnish Instititute of Marine Research
Address	P.O. Box HELSINKI, FINLAND
Phone	+358 9 613 941
Fax	+358 9 6139 4494
Email	algaline@fimr.fi
Home Page	http://www.itameriportaali.fi

	Algal blooms
Name	Finnish Environment Institute (SYKE)
Address	P.O. Box 140, FIN-00251 HELSINKI
Phone	+358 9 403 000 (office hours)
Fax	+358 9 4030 0478
Email	
Home Page	http://www.ymparisto.fi/eng/welcome.html

	Mass mortality of Animals and/or plants
Name	Finnish Environment Institute (SYKE)
Address	P.O. Box 140, FIN-00251 HELSINKI
Phone	+358 9 403 000 (office hours)
Fax	+358 9 4030 0478 (office hours)
Email	
Home Page	http://www.ymparisto.fi/eng/welcome.html

	Oxygen Deficiency
Name	Finnish Environment Institute (SYKE)
Address	P.O. Box 140, FIN-00251 HELSINKI
Phone	+358 9 403 000 (office hours)
Fax	+358 9 4030 0478 (office hours)
Email	
Home Page	http://www.ymparisto.fi/eng/welcome.html

	Oxygen Deficiency
Name	Finnish Instititute of Marine Research
Address	P.O. Box HELSINKI, FINLAND
Phone	+358 9 613 941
Fax	+358 9 6139 4494
Email	Info@fimr.fi
Home Page	http://www.fimr.fi

	Pollution Incidents
Name	Finnish Environment Institute (SYKE)
Address	P.O. Box 140, FIN-00251 HELSINKI
Phone	+358 9 403 000 (office hours)
Fax	+358 9 4030 0478 (office hours)
Email	
Home Page	http://www.ymparisto.fi/eng/welcome.html

2.4 Description of German organisations involved in BEWERS

2.4.1 National list of authorised bodies to give and receive information

2.4.1.1 BEWERS national focal points of information in Germany

2.4.1.2 Specific information on reporting items

(To be submitted by Germany)

2.5 Description of Latvian organisations involved in BEWERS

2.5.1 Marine Environment Board

Marine Environment Board is a state institution, subordinated to the Ministry of Environment, which according to its competence implements the state policy in the field of marine environment protection and use of marine natural resources.

The Board ensures marine and fisheries inspection, 24 hours emergency contact point and aerial surveillance in the port areas, territorial waters and exclusive economical zone of the Republic of Latvia. Divisions of the Board are located near the all-biggest ports of Latvia – Riga, Ventspils and Liepaja as well as to several smaller ports.

Besides the inspection, the Board issues the permits for dredging and dumping of dredged material into the sea, licenses and journals for coastal and open-sea fishing, approves oil spill contingency plans and projects for construction of industrial objects on the sea cost and ports as well as participates in elaboration of legal acts, state investment and marine monitoring programs and international joint projects.

More information on Marine Environment Board at http://www.jvp.gov.lv

2.5.2 Latvian Hydrometeorological Agency

Latvian Hydrometeorological Agency is a state institution, subordinated to the Ministry of Environment, that carries out meteorological, hydrological and environmental quality observations and provides information, forecasts, warnings on dangerous phenomena and natural disasters to national and municipal institutions as well as the media and any physical or legal person.

The Agency ensures the functioning of the specialized global telecommunication network in Latvia according to international requirements and represents the country at the World Meteorological Organization (WMO).

The meteorological observation network comprises 22 observation stations and 60 posts, hydrological observations are performed at 64 sites near Latvia's rivers, lakes and water reservoirs observing water level, water flow, water temperature, ice phenomena and thickness, 10 sites located in the coastal zone of the Baltic Sea Proper and the Gulf of Riga provide information on sea water level, water temperature, sea wave and ice conditions. Measurement data loggers provide water level and temperature data in the real-time mode.

More information on Latvian Hydrometeorological Agency at http://www.meteo.lv/

2.5.3 Institute of Aquatic Ecology

Institute of Aquatic Ecology (IAE) is an institute of the University of Latvia. IAE fulfills the national marine monitoring program and the staff of IAE is also widely involved in various national and international research projects.

The national marine monitoring program includes physico-chemical and hydrobiological observations and measurements in the Gulf of Riga and Latvian part of the Baltic Proper. Station net with several high frequency stations allows obtaining the real-time information on the environmental situation. The status of environment and the data are reported to the national authorities and international organizations – ICES, EIONET, and HELCOM.

More information on IAE at http://www.hydroecology.lv

2.5.4 National list of authorised bodies to give and receive information

2.5.4.1 BEWERS national focal points of information in Latvia

	Emergencies (24 hrs)
Name	Marine Environment Board
Address	Voleru st. 2, Riga LV-1007, Latvia
Telephone	+371 7469 664; +371 9544 526 (24 h)
Fax	+371 7465 888
E-mail	juras.parvalde@jvp.gov.lv
Home page	http://www.jvp.gov.lv

2.5.4.2 Specific information on reporting items

	Flood events, Hydrodynamic events
Name	State Hydrometeorological Agency
Address	Maskavas st.165, Riga LV-1019, Latvia
Telephone	+371 7144 390; +371 7032 600
Fax	+371 7145 154
E-mail	lhma@meteo.lv
Home page	http://www.meteo.lv

	Invasive alien species, Algal blooms, Mass mortality of animals and/or plants, Oxygen deficiency
Name	Institute of Aquatic Ecology, University of Latvia
Address	Daugavgrivas st.8, Riga LV-1048, Latvia
Telephone	+371 7602 301
Fax	+371 7601 995
E-mail	anda@monit.lu.lv; iveta@monit.lu.lv
Home page	http://www.hydroecology.lv

2.6 Description of Lithuanian organisations involved in BEWERS

The Ministry of Environment of the Republic of Lithuania issued the order No. 248 of 2003-05-20 "On actions in case of special ecological and other extreme situations and accidents, as well as on consequence elimination management" [*Dėl veiksmų ypatingųjų ekologinių ir kitų ekstremalių situacijų bei avarijų atvejais ir jų padarinių likvidavimo valdymo*] which nominates Ministry departments responsible for the actions in the cases mentioned above. The State Environmental Protection Inspection was nominated as coordinating and governing body for all abnormal events. This structure includes, among others, a reporting system on the Baltic Sea. Two Ministry Departments, the Centre of Marine Research (CMR) and Klaipeda Regional Environmental Protection Department (KRD), both based in Klaipeda, are responsible for monitoring and reporting all abnormal events in the Lithuanian sector of Baltic Sea, Kuršių Marios Lagoon and Klaipeda harbor area to the national focal point.

2.6.1 The State Environmental Protection Inspection

The State Environmental Protection Inspection (SEPI) is a subordinate institution of the Ministry of Environment which, within the limits of its competence, organizes, coordinates, exercises and supervises the control over the state environmental protection and natural resource use in the Republic of Lithuania.

SEPI controls and coordinates the activity of regional environment protection departments, as well as other subordinate institutions and officials of the Ministry of Environment in charge of environment protection and control over natural resource use. SEPI examines the results of this activity and suggests the ways to improve it. SEPI also gathers, systemises and analyses the information on environment pollution and other types of influence exercised by economy entities with a major impact on the environment.

The State Environmental Protection Inspection operates 24 hours a day. Ministry departments responsible for the actions in the cases of abnormal events and other groups for managing extreme situations, accidents and liquidating their consequences can be reached at tel./fax: +370 5 273 29 95.

2.6.2 Centre of Marine Research

The Centre of Marine Research (CMR) is the main governmental institution in Lithuania responsible for the marine environmental monitoring. CMR was established in 1992 on the basis of the former Klaipeda Hydrometeorological Observatory. It belongs to the Ministry of Environment of Republic of Lithuania. The main activities of CMR include ecological monitoring in the Nemunas river mouth, the Kuršių Marios Lagoon (Curonian Lagoon), and the Baltic Sea. CMR's monitoring area in the Baltic Sea comprises coastal and open regions of the Lithuanian waters and includes 3 HELCOM international stations situated in the Eastern Gotland Basin, in the South Baltic Proper, and in the Gulf of Gdansk. There are 4 main departments in the CMR: Oceanology, Hydrochemistry, Hydrobiology, and Ecotoxicology. They evaluate changes and trends of physical, chemical and biological parameters in the Lithuanian waters and compile data in an annual report on the environment conditions to the Ministry of Environment, as well as inform different public authorities. CMR is also responsible for monitoring extreme situations (fish decay, oil spills, algae blooms) and investigating the influence of dumping on the environment.

2.6.3 Klaipeda Regional Environment Protection Department

Klaipeda Regional Environment Protection Department (KRD) is a governmental institution, which, within the limits of its competence, organises and exercises state control over environment protection and the use of natural resources in Klaipeda region. The Ministry of Environment established KRD. Its major goals are to secure a safe and clean environment, as well as a rational use of natural resources in the region, and to protect the characteristic regional landscape, ecosystems, nature objects, and biodiversity. KRD is in charge of organising and supervising the ways in which the city and regional agencies, as well as other departmental inspections and services exercise state control over

environment protection and the use of natural resources. KRD also checks whether the permissible norm of pollutant remission or dumping is adhered to. It exercises state and laboratory control over the pollution of atmospheric air, soils and other environment components, regulates the emission of pollutants to the environment by different entities of economy, examines the quality of research into the components of environment, analyses the condition of environment protection in the region, and supervises the implementation of international agreements on environmental issues in the region on commission from the Ministry of Environment.

KRD performs operational observations in Klaipeda harbor area and along the coast; if necessary the department officials have a possibility to investigate the Lithuanian sector of the Baltic Sea from a helicopter.

2.6.4 National list of authorised bodies to give and receive information

2.6.4.1 BEWERS national focal points of information in Lithuania

National focal point:	**Emergencies (24 hrs)**
Name	State Environmental Protection Inspection
Address	A. Juozapavičiaus str. 9 Vilnius LT 2600 Lithuania
Telephone	+ 370 5 273 29 95
Fax	+ 370 5 272 27 66
E-mail	vaai@gamta.lt
Home Page	http://vaai.am.lt/VI/

	Inquiries (office hrs)
Name	State Environmental Protection Inspection
Address	A. Juozapavičiaus str. 9 Vilnius LT 2600 Lithuania
Telephone	+ 370 5 273 29 95
Fax	+ 370 5 272 27 66
E-mail	vaai@gamta.lt
Home Page	http://vaai.am.lt/VI/

2.6.4.2 Specific information on reporting items

	Flood Events
Name	Centre of Marine Research
Address	Taikos, 26 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 410450
Fax	+ 370 46 410460
E-mail	CMR@klaipeda.omnitel.net
Home Page	http://www1.omnitel.net/juriniai_tyrimai/

	Hydrodynamic Events
Name	Centre of Marine Research
Address	Taikos, 26 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 410450
Fax	+ 370 46 410460
E-mail	CMR@klaipeda.omnitel.net
Home Page	http://www1.omnitel.net/juriniai_tyrimai/

	Invasive Alien Species
Name	Centre of Marine Research
Address	Taikos, 26 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 410450
Fax	+ 370 46 410460
E-mail	CMR@klaipeda.omnitel.net
Home Page	http://www1.omnitel.net/juriniai_tyrimai/

	Algal Blooms
Name	Centre of Marine Research
Address	Taikos, 26 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 410450
Fax	+ 370 46 410460
E-mail	CMR@klaipeda.omnitel.net
Home Page	http://www1.omnitel.net/juriniai_tyrimai/

	Mass Mortality of Animals and/or Plants
Name	Centre of Marine Research
Address	Taikos, 26 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 410450
Fax	+ 370 46 410460
E-mail	CMR@klaipeda.omnitel.net
Home Page	http://www1.omnitel.net/juriniai_tyrimai/

	Oxygen Deficiency
Name	Centre of Marine Research
Address	Taikos, 26 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 410450
Fax	+ 370 46 410460
E-mail	CMR@klaipeda.omnitel.net
Home Page	http://www1.omnitel.net/juriniai_tyrimai/

	Pollution Incidents
Name	Klaipėda Regional Environmental Protection Department
Address	Birutės, 16 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 255059
Fax	+ 370 46 217106
E-mail	rastinė@krd.gamta.lt
Home Page	http://krd.gamta.lt/

	Illegal Dumping of Waste and Other Harmful Substances
Name	Klaipėda Regional Environmental Protection Department
Address	Birutės, 16 Klaipeda LT 5802 Lithuania
Telephone	+ 370 46 255059
Fax	+ 370 46 217106
E-mail	rastinė@krd.gamta.lt
Home Page	http://krd.gamta.lt/

2.7 Description of Poland's organisations involved in BEWERS

2.7.1 National list of authorised bodies to give and receive information

2.7.1.1 BEWERS national focal points of information in Poland

(To be complemented by Poland)

2.7.1.2 Specific information on reporting items

	Invasive Alien Species
Name	Agricultural University of Szczecin
Address	Krolewicza Kazinierza 4 71-550 Szczecin Poland
Telephone	+ 48 91 423-10-61
Fax	
E-mail	pgruszka@fish.ar.szczecin.pl
Home Page	

	Invasive Alien Species
Name	Hel Marine Station of the University of Gdansk
Address	Morska 2 84-150 Hel Poland
Telephone	+ 48 58 6750-836
Fax	
E-mail	sekhel@univ.gda.pl
Home Page	

(To be complemented by Poland)

2.8 Description of Russian organisations involved in BEWERS

2.8.1 National list of authorised bodies to give and receive information

2.8.1.1 BEWERS national focal points of information in Russia

2.8.1.2 Specific information on reporting items

(To be submitted by Russia)

2.9 Description of Swedish organisations involved in BEWERS

2.9.1 The Swedish Coast Guard

The Swedish Coast Guard performs surveillance, supervision and monitoring at sea. Its tasks include monitoring the movement of people and freight at sea along the Swedish part of the EU's external borders, controlling entry into the country and surveillance of maritime traffic as well as supervision of maritime safety. In addition, the Coast Guard is responsible for fisheries inspection, with authority both at sea and in port when catches are landed. The Coast Guard is also responsible for environmental emergency services at sea, while its further activities include rescue operations at sea, airborne search operations and environmental surveillance.

The Swedish Coast Guard has approximately 600 employees stationed at a central office in Karlskrona, four regional operation centres, 25 coastal stations and one coastal air station.

The Coast Guard possesses maritime resources that enable a strong presence at sea and sustained operations in the outer reach of the archipelagos. Moreover, the Coast Guard is constantly prepared, 24 hours a day, year round.

2.9.2 SMHI

SMHI, The Swedish Meteorological and Hydrological Institute, is a government agency and the national authority for oceanography, meteorology and hydrology. The institutes core activities focus on public requirements for forecasting, warning, environmental monitoring, research and international co-operation.

One of SMHI's main objectives is to provide a secure base for planning and making decisions about weather, atmospheric, inland water and sea conditions. These services are used by Swedish society and public authorities as well as by institutions and Swedish and international business.

SMHI runs daily operational meteorological, hydrological and oceanographic forecast models and the forecasts are disseminated to the public and national and international clients. Warnings and emergency service have highest priority.

The Oceanographic Laboratory, located in Gothenburg, monitors the Baltic Sea, Kattegat and Skagerrak, produces status, changes and trend descriptions of physical, chemical and some biological parameters, and reports data and other information to international organisations and conventions.

International co-operation is a necessary ingredient to get cost-effective monitoring cruises, real-time data, data use and reporting. SMHI is a National Oceanographic Data Centre within the IOC's IODE network and within ICES, HELCOM, OSPAR and EU-MAST, and also actively participates in most major organisations of interest for meteorology, hydrology, oceanography and related environmental items.

2.9.3 Marine Centres

The Swedish government founded the three marine centres in 1989 in order to co-ordinate, support and provide information about marine research, environmental monitoring and education. They are situated at the Universities of Umeå, Stockholm and Gothenburg, and reside under the Department of Education.

2.9.3.1 Umeå Marine Science Centre

The Umeå Marine Science Centre (UMF) is open to researchers from all over the world that would like to do research in the Gulf of Bothnia. UMF is also responsible for environmental monitoring as well as for spreading information about research and research findings.

UMF is part of the University of Umeå, and is governed by a board consisting of representatives from the Swedish Government, the Swedish National Science Research Council, the National Swedish Environment Protection Board, and Umeå University.

UMF conducts environmental monitoring at the request of government agencies. They execute parts of the national environmental monitoring programme for the Gulf of Bothnia. This is done at the request of the Swedish Environmental Protection Agency. They evaluate and compile data in an annual report of the environmental status in the Gulf of Bothnia. The centre co-operates with county administrations along the coast in running regional monitoring programmes and conducts approximately 20 environmental monitoring expeditions each year.

2.9.3.2 Stockholm Marine Research Centre

The Stockholm Marine Research Centre (SMF) is located at the faculty of natural sciences at Stockholm University. SMF's area of responsibility comprises the Baltic Proper, and stretches from the Åland Sea in the north to the Sound in the south.

The most important goal of SMF is to comprehend and improve the marine environment, to co-ordinate, facilitate and reinforce inter-disciplinary research and to improve the exchange of information between scientists and society.

Researchers and marine scientists in Sweden outside the area of responsibility may, on equal terms, use the SMF resources in their research within the Baltic Proper.

SMF also co-operates with marine specialists at the Swedish Environment Protection Agency and the Information Office for the Baltic Proper, as well as regional authorities and the Coastal Marine Protection Agencies.

SMF runs a marine field station (Askö laboratory) where marine research and education is conducted. Since the 1970s it has been an important reference area for national and international environmental monitoring programmes. The field station is a national resource, and is open to anyone wishing to pursue an interest in marine research, marine university studies or scientific meetings with a marine focus.

2.9.3.3 Gothenburg University Marine Research Centre

The Gothenburg University Marine Research Centre (GMF) belongs to Gothenburg University. It is managed by a board comprising representatives from the Department of Education, the Swedish Environmental Protection Agency, the Swedish Natural Science Research Council and the University of Gothenburg. A Director is responsible for the day-to-day running of the centre and a council operates as an advisory body.

The geographical area covered by Gothenburg University Marine Research Centre includes the Sound, Kattegat and Skagerrak from Limhamn (near Malmö) to the Norwegian border. Gothenburg Marine Research Centre runs two marine field stations (Kristineberg's marine research centre and Tjärnö marine biological laboratory) and plays an important role for research and education within marine science and for supplying information to the public. The stations are used by researchers and students from Gothenburg and Lund Universities and by Swedish and overseas guest researchers and course participants.

2.9.4 Information Offices

In Sweden there are three Information Offices: the Information Office for the Gulf of Bothnia, the Information Office for the Baltic Proper and the Information Office for the Swedish West Coast, situated at the county administrative boards in Umeå, Stockholm and Gothenburg respectively. The primary aim for the Information Offices is to inform about large-scale events in the marine environment. In case of an emergency at sea, for instance algae blooms or mass mortalities, the information offices are required to provide correct information to authorities, media and others interested in the marine environment. In order to effectively obtain a steady flow of information to and from the information offices there is an extensive network comprising of other authorities, associations and organisations. SMHI, the Swedish Coast Guard and the Marine Centres are the more important partners as providers of data from the sea but also as sources of knowledge regarding important issues in the marine environment.

2.9.5 National list of authorised bodies to give and receive information

2.9.5.1 BEWERS national focal points of information in Sweden

	Emergencies (24 hrs)
Name	Swedish Coast Guard Headquarters
Address	Box 536 SE-371 23 Karlskrona Sweden
Telephone	+ 46 455 35 35 35
Fax	+ 46 455 812 75
E-mail	kcl@coastguard.se
Home Page	www.kustbevakningen.se

	Inquiries (office hrs)
Name	Swedish Coast Guard Headquarters
Address	Box 536 SE-371 23 Karlskrona Sweden
Telephone	+ 46 455 35 34 00
Fax	+ 46 455 105 21
E-mail	kcl@coastguard.se
Home Page	www.kustbevakningen.se

2.9.5.2 Specific information on reporting items

	Flood Events
Name	SMHI-Swedish Meteorological and Hydrological Institute (main office)
Address	Folkborgsvägen 1 SE-601 76 Norrköping Sweden
Telephone	+ 46 11 495 80 00
Fax	+ 46 11 495 80 01
E-mail	smhi@smhi.se
Home Page	www.smhi.se

	Hydrodynamic Events
Name	SMHI-Swedish Meteorological and Hydrological Institute (main office)
Address	Folkborgsvägen 1 SE-601 76 Norrköping Sweden
Telephone	+ 46 11 495 80 00
Fax	+ 46 11 495 80 01
E-mail	smhi@smhi.se
Home Page	www.smhi.se

	Invasive Alien Species
Name	Stockholm Marine Research Centre
Address	Stockholm University SE-106 91 Stockholm Sweden
Telephone	+ 46 8 16 37 18
Fax	+ 46 8 16 16 20
E-mail	smf@smf.su.se
Home Page	www.smf.su.se/english/, www.smf.su.se (in Swedish)

	Algal Blooms – The Gulf of Bothnia
Name	Information Office for the Gulf of Bothnia
Address	Länsstyrelsen i Västerbottens län Storgatan 71 B SE-901 86 Umeå Sweden
Telephone	+ 46 90 10 72 55
Fax	+46 9010 73 41
E-mail	icbv@ac.lst.se
Home Page	www.ac.lst.se/naturochmiljo/bottniskaviken-icbv/

	Algal Blooms – The Baltic Proper
Name	Information Office for the Baltic Proper
Address	Länsstyrelsen i Stockholms län Box 22067 SE-104 22 Stockholm Sweden
Telephone	+ 46 8 785 51 18 + 46 8 785 54 04
Fax	+ 46 8 651 57 50
E-mail	infocbaltic@ab.lst.se
Home Page	www2.ab.lst.se/infobalt/index.htm

	Algal Blooms – The Swedish West Coast
Name	Information Office for the Swedish West Coast
Address	Länsstyrelsen i Västra Götaland SE-403 40 Göteborg Sweden
Telephone	+ 46 31 60 50 00
Fax	+ 46 31 774 27 63
E-mail	lanstyrelsen@o.lst.se
Home Page	

	Mass Mortality of Animals and/or Plants
Name	Information Office for the Baltic Proper
Address	Länsstyrelsen i Stockholms län Box 22067 SE-104 22 Stockholm Sweden
Telephone	+ 46 8 785 51 18 + 46 8 785 54 04
Fax	+ 46 8 651 57 50
E-mail	infocbaltic@ab.lst.se
Home Page	www2.ab.lst.se/infobalt/index.htm

	Oxygen Deficiency
Name	SMHI-Swedish Meteorological and Hydrological Institute (main office)
Address	Folkborgsvägen 1 SE-601 76 Norrköping Sweden
Telephone	+ 46 11 495 80 00
Fax	+ 46 11 495 80 01
E-mail	smhi@smhi.se
Home Page	www.smhi.se

	Pollution Incidents
Name	Swedish Coast Guard Headquarters
Address	Box 536 SE-371 23 Karlskrona Sweden
Telephone	+ 46 455 35 35 35
Fax	+ 46 455 812 75
E-mail	kcl@coastguard.se
Home Page	http://www.kustbevakningen.se/

	Illegal Dumping of Waste and Other Harmful Substances
Name	Swedish Coast Guard Headquarters
Address	Box 536 SE-371 23 Karlskrona Sweden
Telephone	+ 46 455 35 35 35
Fax	+ 46 455 812 75
E-mail	kcl@coastguard.se
Home Page	http://www.kustbevakningen.se/

3 General description of reporting items

3.1 General Description of Flood Events

Seasonal fluctuations in water levels and discharges as well as riverbank flooding are natural features of running waters. Extreme weather events with the resulting large volume water flows can, however, cause enormous damage to lives and property, especially where flood plains are occupied and flooding interferes with human land-use activities. Floods can in a general sense be described as situations of extreme water run-off during which human lives, property and infrastructure are threatened. Floods are the most common natural disasters in Europe and, in terms of economic damage, the most costly ones.

Flooding and its impacts are often influenced by a combination of natural factors and human interference. Climate change can cause a change of precipitation patterns, which can lead to changes in the distribution of extreme rainfall events and a higher frequency of heavy precipitation. Other main driving forces that induce or intensify floods and their impacts include land sealing, changes in catchment and flood-plain land use, population growth, urbanisation and increasing settlement, roads and railways, and hydraulic engineering measures.

The main concern of the HELCOM Contracting Parties in relation to flooding is its effect on the coastal waters and the Baltic Sea.

The flooding of the Oder and Vistula rivers was a dramatic event in the Baltic drainage area in 1997. In close co-operation, Germany, Poland and Sweden combined efforts to monitor possible changes in the Baltic Sea. These monitoring results showed that the impact of the additional nutrient and contaminant inputs on the Baltic Sea was only local. Long-term effects on the overall Baltic ecosystems were not to be expected.

3.1.1 Reporting Formats for Flood Events

There will be no special format to report these events – *use the general reporting form*. It is important that responsible authorities inform HELCOM Contracting Parties at a very early stage when a flooding event occurs. If possible, quantitative information on the amount of water pollutants reaching the sea should be given.

3.2 General Description of Hydrodynamic Events

3.2.1 General description of Saltwater inflow (intrusion)

The Baltic Sea is physically dominated by the freshwater input by rivers and precipitation on the one hand, and by the limited inflow of water of high salinity over the shallow entrances facing the North Sea on the other. Occasional but very important inflows (intrusions) of saline, oxygen-rich water, from the North Sea are the exception from the predominant input of freshwater. A major inflow of considerable volume consisting of oxygen-rich water with high salinity can replace the water in the deepest basins. These inflows only take place under specific weather conditions. Unfortunately, these occasions are rare.

Deep-water renewal processes in the Baltic Sea force substantial amounts of seawater from the Kattegat through the Danish Straits and the Sound into the Western Baltic. From there, it slowly moves as a thin bottom layer into the central Baltic basins, replacing aged water masses there.

3.2.2 Reporting Formats for Inflow Events

There is need to spread information about inflow events. Information of large inflow events is of interest for the media, public, and fisheries. Direct information on inflow events is needed to trigger extra monitoring and research on the Baltic Sea.

Denmark, Germany and Sweden monitor the inflow area in real time. Contact points on inflow events should inform and be informed at earliest possible stage when the inflow occurs.

The public can obtain information on inflows from the BOOS web page, where the links to inflow related pages of responsible organisations are maintained.

The start of the inflow should be reported and when possible volume, salinity and temperature *using the general reporting form.*

3.2.3 General Description of Extreme sea levels

The most important factors controlling the sea level in the Baltic Sea are air pressure, wind, and water flow through the Danish Straits and the ice conditions in winter. The tide has an effect of only a few centimetres in the Baltic Sea.

The wind affects sea levels by piling up water into certain parts of the Baltic Sea. This piling up is especially evident at the ends of bays. Thus, the most pronounced extreme sea level values are obtained in these regions. The wind may have a very local effect.

High air pressure pushes the sea level down.

The currents inwards and outwards through the Danish Straits and the Sound cause a change in the total amount of water in the Baltic Sea, and therefore affect the sea level. The water flow through the Danish Belts and the Sound is caused mainly by sea level differences between the Baltic Sea and the North Sea, as well as wind conditions over the Straits.

3.2.4 Reporting formats for Extreme Sea Levels

There is need to provide warnings for sea level events. Many areas in the Baltic region may be flooded during these events. Information on extreme sea level is of interest for safety of coastal regions.

Contact authorities should report forecasts on extreme sea level and relevant sea level observations *using the general reporting form*.

3.3 General Description of Invasive Alien Species

Biological invasions consist of natural range expansions and human-mediated introductions. An introduced (also known as alien, exotic, non-indigenous, non-native) species is any micro-organism, plant or animal species intentionally or accidentally transported and released by man into an environment outside its native geographical range of habitat. However, it is often impossible to demonstrate whether a species is native or introduced.

In recent decades, the importance of ship transportation in the spread of invasive species has increased tremendously. Vessels provide survival and transportation habitats for a large variety of organisms, from viruses and micro-organisms to various plants and animals, due to their transport of ballast water, sediments in tanks and hull fouling. Other unintentional introductions are accidental releases from private, public and research aquariums; transport of parasites and other unwanted organisms with target aquaculture objects; and penetration of alien species via canals etc.

3.4 General description of Algal Blooms

Planktonic algae are an important part of the ecosystem and algal blooms are a natural phenomenon in the sea. Algae production forms the base of aquatic food chains and the algae strongly affect the turnover of for example phosphorus, nitrogen and silicon in the environment.

Algal blooms in the Baltic Sea have been observed since the end of the 1800s. Despite this, almost every year the media describes algal blooms as if they were something sensational. This is due to the fact that there is a lack of knowledge among the general public about how to deal with algal blooms.

Algal blooms are defined as massive occurrences of phytoplankton (microscopic algae from plants) or cyanobacteria which in fact is not an algae but a bacteria. Algal blooms may change the colour and

turbidity of the water column and/or give rise to dense accumulations of algae at the surface. Harmful algal blooms occur nowadays just about every year in the Baltic Sea. Widespread, dense blooms damage marine ecosystems and affect recreational and economic use of marine resources. Algal blooms can be toxic and are therefore not only a nuisance but also a real health risk.

Environmental changes and introductions of alien species alter the conditions so that species that were earlier unknown today can cause algal blooms. This has resulted in areas being affected where there have not previously been any toxic algae or algal blooms.

Typical seasonal variations in environmental conditions and algae production can be found in most sea areas, i.e. the algae populations come and go. Algal blooms depend on the right physical, chemical and biological combinations, which enable a massive increase. Some of the controlling factors are for example light, temperature and nutrients. However, the exact reasons are not known.

3.4.1 Toxic blooms

Some species of algae produce toxins, for instance liver and nerve toxins, which can cause illness or death in livestock or pets that drink of the water. People have reported incidents of skin irritation from swimming in waters with toxic algae. In addition, drinking water containing toxic algae can cause vomiting, diarrhoea, muscle pains and nausea.

Toxic algal blooms may contribute to the death of invertebrates, fish and mammals or lead to humans becoming ill through eating fish or shellfish containing algal toxins. This leads to considerable economic damage; for example the mussel industry is badly affected during periods of constantly recurring algal blooms, leading to long periods of reduced sales. Fish farms can also experience economic losses associated with fish deaths due to algal blooms, since the fish cannot escape from the algae-infested water, or in some cases fish eggs do not develop so that there will be no newly hatched fish.

3.4.2 Other problems associated with blooms

Large production of algae can seriously lower the water quality. Large amounts of algae make the water murky and lower the oxygen levels in the water below, making it unfavourable for animals living in the water. Drifting algae can get caught in fishing nets; block water filters or is washed up onto beaches where they form stinking areas of rotting algae. Algal blooms can lead to a loss of income for the tourist industry if they cover near shore waters or are washed ashore in large amounts, causing tourists to choose other resorts.

3.4.3 Phenomena that may be mistaken for algal blooms

3.4.3.1 Pollen

Several tree species release large amounts of pollen. As they are brought together by wind and waves they may resemble algal blooms. Accumulations of pollen may form dense streaks in the water. They may also occur as a light turbidity in the water or as fine lumps at the surface. The pollen is often concentrated on the windward side of islands and may be forced together by currents and winds to streaks at the surface. At the time of the year when most pollen appears, the risk for problematic algal blooms is low and the possibility that accumulations seen consists of anything else but pollen is small.

3.4.3.2 Humic substances

When large amounts of humic substances or particles are transported to the sea with the run-off from land it may cause changes in the colour of the water column.

3.4.3.3 Milt

Spawning fish, *e.g.* herring, may stain the water column at the release of large amounts of milt during the spawning act. The areas affected may, in some circumstances, be considerable.

3.4.3.4 Macro algae

Due to water turbulence attached macro algae, in some occasions, are transported away from their original environment. The drifting algae may occur as streaks in the water column, mats on the surface and/or on beaches.

3.4.3.5 Bacteria

Bacteria exist in a large range of colours. When they mass-occur they may stain the water in a colour specific for the bacteria in question.

3.4.3.6 Bioluminescence

Bioluminescence refers to light produced and emitted by organisms themselves, and is known in marine species of instance bacteria and invertebrates and some fish. The phenomenon most often occurs in shallow-living marine species. Some species only bioluminescent when disturbed.

3.4.3.7 Iridescence

Iridescence is the appearance of rainbowlike colours due to the interference of light. Some organisms emit or reflect a lustrous play of colours covering the spectrum, like a rainbow. An example of iridescence is when colour is the appearance of light reflected from an oil film on the surface of water.

3.4.3.8 Oily film from fish

An oil-like film may occur on the surface in connection with fish farms, shoal and cleaning.

3.4.4 Reporting format

3.4.4.1 Purpose of reporting

This manual forms the basis of reporting algae and other visible phenomena in the Baltic Sea, Skagerrak and Kattegat to HELCOM's project BEWERS (Baltic Early Warning Event Reporting System). One of the aims of BEWERS is to obtain real-time data from algal blooms. This is important since algal blooms occur and disappear at short notice, and might have detrimental effects on human and animals. The data is used to locate the phenomena, if possible characterise them by means of the different items in the reporting system, and quickly provide correct information to authorities, the media and the general public; in particular to inform them about any risks associated with the water.

3.4.5 Reporting

In order to simplify the reporting process of meteorological observations an international agreement has been reached to use numeric codes - SYNOP codes - which have been accepted by WMO (World Meteorological Organization). These codes form the basis of this manual, since it is important that the reports are as short as possible, formulated so that they can be understood independently of language differences to simplify information exchange. This manual will support the reporting of algal phenomena and contains instructions and recommendations on how observations of algal blooms can be summarised into messages using numeric codes. This does not require the reporter to be competent in the field of algae and algal problems. However it is very important that the algal bloom observations are carried out carefully and reported according to the instructions. The reliability of the algal bloom information and prognoses mainly depends on how carefully they are reported. Due to the fact that algal blooms occur and disappear at short notice it is important that the presence of an algal bloom is reported in real-time and that the public is informed quickly.

A harmonised reporting system and real-time observation will contribute to:

a) improving the flow of information to the public

b) giving the chance to fish and mussel farmers to move their aquaculture to alga free areas

c) preventing fish and shellfish that have been affected by toxic algae from reaching the potential consumers

d) preventing livestock and pets from being exposed to waters affected by toxic algae, which otherwise can be harmful or fatal

e) evaluation of the risk of swimming in algae-contaminated waters, so that information can reach the general public at short notice

f) improving the existing system for algal bloom warnings

g) locating algal blooms and other related phenomena

h) improving the algal bloom statistics

i) improving the knowledge of algal blooms and other related phenomena

j) confirming and validating satellite observations

k) extending satellite interpretations into coastal areas

l) increasing the knowledge of fish farmers so that they do not take up large fish catchment during algal bloom years, when the eggs and fry are destroyed.

m) increasing the chances of taking the right measures in the right place at the right time

3.4.6 Code structure

The code is build up of a number of sections:

a) contains identification information regarding the observer, such as phone number, date, and time of day

b) contains information about the lat-long coordinates (degree, minutes, seconds) and size of the observation

c) contains information about the type, colour and smell of the observation

d) contains information about the effects on animals and humans in connection with the algal bloom

Reporting should take place in the following order:

1. Enter the identification data
2. Enter the date of the observation
3. Enter the hour the observation was made
4. Estimate altitude of observation above (or below) the phenomenon
5. Estimate the latitude for the central point of the observation in whole degrees, minutes and seconds
6. Estimate the longitude for the central point of the observation in whole degrees, minutes and seconds
7. Estimate the extension of the phenomenon at its widest point
8. Determine the characteristics of the area in which the phenomenon has been observed
9. Determine the colour of the phenomenon
10. Determine the structure of the algal bloom accumulation
11. Determine what other phenomenon has been observed
12. Determine the smell of the phenomenon

A slash (/) can be used instead of the numbers if parts of the code cannot be filled in for some reason.

3.4.7 Sending in a report

The reports should be sent to regional and/or national focal points. The row of numeric codes can be reported by a GSM text message, telephone, fax or email. Today's observers are using SYNOP-messages to report weather observations. There is a future opportunity to add the observations of algal blooms as an additional group on the reporting sheet for synoptic weather observations. The reporting system is designed to work in a web based system for Internet users. The numerical codes will be automatically translated and stored in a database. For preparing the code report *use the form in Appendix C.*

3.4.8 Symbol specification algal bloom reporting format

The general format is:

CcCcCcTTTTTTTTTTMMDDGG LaLaLaLaLa LoLoLoLoLoOEPAWaPhPhSphCCBcBcSDeEf

Where the different groups stand for:

Identification, CcCcCcTTTTTTTTTT, country code, telephone number

Date, MMDD, month, day

Time of observation, GG, time in hours (GMT)

Position of observation, LaLaLaLaLa, latitude

Position of observation, LoLoLoLoLo, longitude

If there is a observation, O, observation

Extent of observation, E, extent

Place of observation, P, point (height in metres relative to the sea surface)

Area were the observation was made, A, area

Water area where the observation was made, Wa, Water area

Observed Phenomenon, PhPh, phenomenon

Observed Special phenomena, Sph, special phenomenon

Colour of the observation, CC, BcBc, colour, bicolour

Smell of the observation, S, Smell

Dead animals, De, Dead

Effects on humans, Ef, Effects

3.5 Columns

1-CcCcCcTTTTTTTTTT	Identification characters for the observer	
2-MMDD	Month and date the observation was made	
3-GG	Hour the observation was made (GMT)	
4-LaLaLaLaLa	Latitude of centre of observation, whole degrees, minutes and tenths	
5-LoLoLoLoLo	Longitude of centre of observation, whole degrees, minutes and tenths	
6-O	The amount of algae observed	
		O =
	There is no	0
	There is a small amount	1
	There is a moderate amount	2
	There is a huge amount	3
7-E	The estimated maximum extent of the phenomenon	
		E =
	0-50 m	0
	50-100 m	1
	100-200 m	2
	200-300 m	3
	300-600 m	4
	600-1000 m	5
	1000-1500 m	6
	1500-2000 m	7
	2000m or more	8
	∞	9
8-P	Observation altitude above sea level	
		P =
	Below –50 m	0
	(-50 m)- (-20 m)	1
	(-20 m)- (- 5 m)	2
	(-5 m)-0 m	3
	0 m-5 m	4
	5 m-20 m	5
	20 m-100 m	6
	100 m-500 m	7
	Higher than 500m	8

9-A	Type of area where the observation was made	
		A =
	Open sea	0
	In a bay/inlet	1
	Along a beach	2
	On a beach	3
10-Wa	Where in the water the observation was made	
		Wa =
	At the surface	0
	Under the water surface	1
	On the bottom	2
	In the entire water column	3
11-PhPh	The structure of the observed algal bloom	
		Ph =
	Night obs. (structure uncertain)	0
	Oily surface	1
	Flakes	2
	Mats, on beach	3
	Mats, at the surface	4
	Mats, bottom	5
	Threads	6
	Streaks	7
	Coloured	8
	Foam/spray	9
	Front	10
	Windrose	11
	Film	12
	Clouds	13
	Clouds, under surface	14
	Layers	15
	Don’t know	/

12-Sph	Other observed phenomenon	
		Sph =
	No special phenomena	0
	Pollen	1
	Drifting macro algae	2
	Bacteria	3
	Bioluminescence	4
	Iridescence/Rainbow phenomena	5
	Humic substances	6
	Oily film from fish shoal, -cleaning, -farming	7
	Milt	8
	Other special phenomena	9
13-C	Colour of phenomena	C =
	Colourless, night obs.	0
	Green	1

14-Bc	Bicolour of phenomena	Bc =
	No Bc	0
	Light green	1
	Green/blue	2
	Dark green	3
	Olive	4
	Soft green	5
	Pastel green	6
	Green/yellow	7
	Light green/yellow	8
	Green/grey	9

	Light green/grey		10
	Yellow	2	
	No Bc		0
	Yellow/grey		1
	Light yellow/grey		2
	Yellow/green		3
	Light yellow/green		4
	Yellow/orange		5
	Pastel yellow		6
	Brown	3	
	No Bc		0
	Brown/red		1
	Red	4	
	No Bc		0
	Wine		1
	Red/brown		2
	White	5	
	No Bc		0
	Bone white		1
	Grey	6	
	No Bc		0
	Grey/green		1
	Light grey/green		2

	Grey/yellow	3
	Light grey/yellow	4
	Black	7
	Lilac	8
	Orange	9
	No Bc	0
	Apricot	1
	Orange/yellow	2

15-S Smell of the phenomenon

	S =
No smell	0
Soil	1
Fish	2
Rotten	3
Chemical	4
Unknown	/

16-De Observations of dead animals in connection with the algal bloom

	Ef =
No dead	0
Dead invertebrates	1
Dead fish	2
Dead birds	3
Dead mammals	4
Unknown	/

17-Ef	Effects on humans after contact with algal bloom	
		Ef =
	No effect	0
	Headache	1
	Muscles pain	2
	Nausea	3
	Stomach pain/vomiting	4
	Diarrhoea	5
	Scratches	6
	Skin irritation	7
	Pain in eyes or ears	8
	Unknown	/

3.5.1 Samples

3.5.2 Photographs

3.6 General Description of Mass Mortality among Animals and/or Plants

Mass mortality among animals and plants may show up in many different ways and it is therefore difficult to present a general description that is precise enough to cover all kinds of mass mortalities that may occur.

3.6.1 General features

Triggered by some agent (substance) or event, which causes mortalities to organisms, a mass mortality event is noticed by the appearance of large numbers of dead animals or plants in areas of varying sizes. They may be restricted to one group of animals/plants only, while other cases may involve all living organisms in an area. Mass mortalities may be triggered by oxygen deficiency, toxic substances originating both from natural phenomena and from human interference, meteorological/hydrological events or naturally occurring diseases.

3.6.2 Invertebrates

Mass mortality among marine or limnic invertebrates is often not noticed as easily as mass mortality among higher organisms. Most of the invertebrates live attached to plants, firm substrata or in sediments. When mass mortality occurs they remain hidden below the water surface unless they float to the surface and therefore much such mortality pass unnoticed.

In connection with transition from oxygenated (more than 2 ml/l) to oxygen deficient bottom water in the deeper areas of the Baltic Proper all soft bottom invertebrates die, unless they are able to move to areas with enough oxygen. These mass mortalities pass almost unnoticed but have significant effects on the composition of biological assemblages on the deeper bottoms and may also have negative effects on the food composition of demersal and pelagic fish species. The benthic animal communities need very long time spans to recover and a precondition is the return of oxygenated water. Often the communities are composed of very different species assemblages a long time after the return of oxygenated water.

3.6.3 Fish

Mass mortalities in fish may occur when the oxygen levels suddenly drop below what is necessary for fish survival. Mortalities may also be caused by intoxication from naturally produced toxins (algal blooms), infestation by mass-occurring parasites, diseases or by chemical spills from human activities. The mortalities are often observed when lots of dead fish float belly-up at the sea surface.

3.6.4 Birds

In many places in Sweden gulls and a number of other bird species have been dying in late spring early summer at their breeding grounds during the turn of the last century and the early years of the 21st century. The birds affected first show signs of losing muscular control and eventually die. In places the numbers of affected birds are substantial.

Mass mortality among birds may also take place in connection with oil spills at sea or near coasts.

3.6.5 Mammals

Mass mortalities among mammals are often related to diseases or chemical intoxication. For example, the massive seal deaths that took place in the North Sea and Kattegatt, Skagerrak area in 1988 and 2002 when a virus disease affecting non-immune individuals killed approximately half of the harbour seal population.

3.6.6 Plants

3.6.7 Reporting formats for Mass Mortality among Animals and/or Plants

The general reporting form should be used to inform contacts in HELCOM Contracting Parties. The report should consist of date, location and description, possibly with illustrations.

3.7 General Description of Oxygen Deficiency

Oxygen depletion and low levels of oxygen (hypoxia) in the deep basins of the Baltic Sea is a natural phenomenon in an area that extends from the southern Baltic Sea to the Gulf of Finland. Eutrophication, however, makes the situation worse and increases the area affected by oxygen deficiency. A recent sign of eutrophication is the occurrence of hypoxia (situation of very low oxygen concentration) in shallow coastal basins where the stratification is not permanent.

Lowest oxygen levels are expected at the end of the summer, between August and October, when detritus from biological activity in the surface waters has settled to the bottom and is decomposed by bacteria. This process consumes oxygen.

Dissolved oxygen in the seawater is fundamental for the life of higher living organisms. The tolerance of benthic macrofauna to oxygen deficiency varies between species, but in general the oxygen concentration of 2 ml/l is considered critical for the succession of communities. In anoxia (no oxygen), hydrogen sulphide is formed which is toxic for macrofauna.

The combined effects of restricted water exchange and decomposition of organic matter, which settles from the upper layers, cause oxygen deficiency.

The area affected by hypoxia, here defined as oxygen concentrations < 2 ml/l, and anoxia covers occasionally about one fourth of the total area of the Baltic Sea. Long-term changes in the extent and severity of oxygen deficiency are caused both by climate related and anthropogenic factors. The East Gotland Basin is the worst affected basin, with between 30 and 40 % of the total basin volume suffering reduced oxygen levels, and almost 30 % having acute hydrogen sulphide toxicity between 1998 and 2001.

Climatic factors regulate both fresh and salt water input to the Baltic Sea. Irregular inflows of saline North Sea water bring oxygen even to the deepest parts. The inflow of water of high salinity together with the run-off of fresh water affects the strength of stratification, which limits the vertical transport of oxygen.

3.7.1 Reporting Formats for Oxygen deficiency

The contact points for oxygen deficiency should inform and be informed on its occurrence by communication *using the general reporting form*. The items reported for oxygen deficiency should be location and extents of areas with hypoxia and anoxia conditions, oxygen concentrations.

3.8 General description of Pollution Incidents

According to the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki convention 1992):

Pollution means introduction by man, directly or indirectly, of substances or energy into sea areas, including estuaries, in quantities higher than the natural load. The introductions are liable to create hazards to human health, to harm living resources and marine ecosystems, to cause hindrance to legitimate uses of the sea including fishing, to impair the quality for use of sea water, and to lead to a reduction of amenities.

Pollution incident means an occurrence or series of occurrences having the same origin, which results, or may result, in a discharge of oil or other harmful substances. It poses or may pose a threat to the marine environment of the Baltic Sea or to the coastline or related interests of one or more Contracting Parties, and which requires emergency actions or other immediate response.

3.8.1 Reporting Formats for Pollution Incidents

Whenever a pollution incident in the territory of a Contracting Party is likely to cause pollution to the marine environment of the Baltic Sea Area outside its territory and adjacent maritime area in which it exercises sovereign rights and jurisdiction according to international law, this Contracting Party shall notify without delay such Contracting Parties whose interests are affected or likely to be affected (Paragraph 1 of Article 13 of the Helsinki Convention 1992).

Reporting procedures are included in the HELCOM Manual on Co-operation in Combating Marine Pollution (Part II) (to be found on the HELCOM website).

3.9 General Description of Illegal dumping of waste and other harmful substances

3.9.1 Definitions

According to the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki convention 1992):

Dumping means:

- any deliberate disposal at sea or into the seabed of wastes or other matter of from ships, other manmade structures at sea or aircraft;
- any deliberate disposal at sea of ships, other man-made structures at sea or aircraft.

Dumping does not include:

- the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of ships, other man-made structures at sea or aircraft and their equipment, other than wastes or other matter transported by or to ships, other man-made structures at sea or aircraft, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such ships, structures or aircraft;
- placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of the present Convention.

Harmful substance means any substance, which, if introduced into the sea, is liable to cause pollution.

3.9.2 Prevention of dumping

The Helsinki convention 1992 (Article 11, Paragraph 1) states that, the Contracting Parties shall, subject to exemptions set forth in paragraphs 2 and 4 of this Article, prohibit dumping in the Baltic Sea Area.

Exemptions are concerning:

- Dumping of dredged material with a special permit issued by the appropriate national authority in accordance with the provisions of Annex V of the Convention (Article 11, Paragraph 2) ;
- Dumping when the complete destruction or total loss (Article 11, Paragraph 4) at sea threatens the safety of human life or of a ship or aircraft.

3.9.3 Reporting Formats for Illegal dumping of waste and other harmful substances

Reporting procedures are included in the HELCOM Manual on Co-operation in Combating Marine Pollution (Part II), which can be found on the HELCOM website.

3.10 General Description of Other Events of Importance

Other events of importance might be:

1. Pollen
2. Bacteria
3. Bioluminescence
4. Iridescence/Rainbow phenomena
5. Humic substances
6. Oily film from fish-cleaning/farming
7. Milt
8. Other events which cannot be defined

3.10.1 Reporting of Other Events of Importance

The other events of importance should be reported *using the algal bloom reporting form*.

4 Updating procedures

4.1 Contact addresses

Changes in contact addresses have to be reported to all National Focal Points immediately.

4.2 Manual

An annual revision of the Manual shall use the same procedure as for the Combine Manual.

5 Data requirements and availability

The Data Exchange Policy of the Intergovernmental Oceanographic Commission of UNESCO shall be applied for the data exchanged within the BEWERS System. The data shall be regarded as essential for application to the preservation of life, beneficial public use and protection of the ocean environment, the forecasting of weather and the operational forecasting of the marine environment.

5.1 IOC Oceanographic Data Exchange Policy (Annex to Resolution XXII-6)

5.1.1 Preamble

The timely, free and unrestricted international exchange of oceanographic data is essential for the efficient acquisition, integration and use of ocean observations gathered by the countries of the world for a wide variety of purposes including the prediction of weather and climate, the operational forecasting of the marine environment, the preservation of life, the mitigation of human-induced changes in the marine and coastal environment, as well as for the advancement of scientific understanding that makes this possible.

Recognising the vital importance of these purposes to all humankind and the role of IOC and its programmes in this regard, the Member States of the Intergovernmental Oceanographic Commission agree that the following clauses shall frame the IOC policy for the international exchange of oceanographic data and its associated metadata.

5.1.2 Clause 1

Member States shall provide timely, free and unrestricted access to all data, associated metadata and products generated under the auspices of IOC programmes.

5.1.3 Clause 2

Member States are encouraged to provide timely, free and unrestricted access to relevant data and associated metadata from non-IOC programmes that are essential for application to the preservation of life, beneficial public use and protection of the ocean environment, the forecasting of weather, the operational forecasting of the marine environment, the monitoring and modelling of climate and sustainable development in the marine environment.

5.1.4 Clause 3

Member States are encouraged to provide timely, free and unrestricted access to oceanographic data and associated metadata, as referred to in Clauses 1 and 2 above, for non-commercial use by the research and education communities, provided that any products or results of such use shall be published in the open literature without delay or restriction.

5.1.5 Clause 4

With the objective of encouraging the participation of governmental and non-governmental marine data-gathering bodies in international oceanographic data exchange and maximising the contribution of oceanographic data from all sources, this Policy acknowledges the right of Member States and data originators to determine the terms of such exchange, in a manner consistent with international conventions, where applicable.

5.1.6 Clause 5

Member States shall, to the best practicable degree, use data centres linked to IODE's NODC and WDC network as long-term repositories for oceanographic data and associated metadata. IOC programmes will co-operate with data contributors to ensure that data can be accepted into the appropriate systems and can meet quality requirements.

5.1.7 Clause 6

Member States shall enhance the capacity in developing countries to obtain and manage oceanographic data and information and assist them to benefit fully from the exchange of oceanographic data, associated metadata and products. This shall be achieved through the non-discriminatory transfer of technology and knowledge using appropriate means, including IOC's Training Education and Mutual Assistance (TEMA) programme and through other relevant IOC programmes.

5.1.8 Definitions

Free and unrestricted means non-discriminatory and without charge. "Without charge", in the context of this resolution means at no more than the cost of reproduction and delivery, without charge for the data and products themselves.

Data consists of oceanographic observation data, derived data and gridded fields.

Metadata is "data about data" describing the content, quality, condition, and other characteristics of data.

Non-commercial means not conducted for profit, cost-recovery or re-sale.

Timely in this context means the distribution of data and/or products sufficiently rapidly to be of value for a given application.

Product means a value-added enhancement of data applied to a particular application.

6 Appendix A: HELCOM General Reporting Form

General Reporting Form

For HELCOM Early Warning System

To HELCOM Contact Addresses for Early Warning on:	***[item]***
Identification of reporting body:	***[code] or [name and address]***
Description of alert:	
Facts:	***[data, maps] may be put in annexes as necessary***

7 Appendix B: Reporting Formats for Invasive Alien Species

The following reporting forms are for non-professionals and specialists respectively.

EXCEPTIONAL EVENT REPORTING FORM (for general public)

Address:

From: To:

Data and time of observation	
Place and size of observation	
What has been observed?	• Coloration of the sea: blue-green, red, brown, green, yellow, white, other_ _ _ _ _ _ _ • Dead animals: crayfish, shellfish, fish, birds, seals, other_ _ _ _ _ _ _ • Mass appearance of unknown plants or animals • Unusual fouling of fishery gears, hydrotechnical constructions
Description of observations	
Is this the first time you see this phenomenon/-a?	
Observation made from:	Shore, ship, plane, other _ _ _ _
Sea state	Calm Windy Stormy

EXCEPTIONAL EVENT REPORTING FORM (for specialists)

Data and time of observation	
Place and size of observation (area affected)	
Invasive alien species name	Identified as:_ Likely species or taxa (if not identified) _
Is this species included into the online BMB/HELCOM Baltic Sea Alien Species Database http://www.ku.lt/nemo/mainnemo.htm?	Yes…No
Abundance and biomass of the species (ind./m^2, g/m^3, etc., as appropriate)	(on, or ?)
Effect caused or believed to be able to cause	Human health_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Environment_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Economy_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
Are there any visible features that may be used for the identification of this event by non-specialists?	• Coloration of the sea: blue-green, red, brown, green, yellow, white, other_ _ _ _ _ _ • Dead animals: crayfish, shellfish, fish, birds, seals, other_ _ _ _ _ _ _ • Mass appearance of unknown plants or animals • Unusual fouling of fishery gears, hydrotechnical constructions
Hydrometeorological conditions	• At the time of event • During previous days (weeks)
Hydrochemical parameters	

8 Appendix C: Reporting Formats for Algal Blooms and other phenomenon

9 Appendix D: Links

9.1 HELCOM

A lot of information can be found on HELCOM's homepage at http://www.helcom.fi

9.2 Alien Species

Presently, the Baltic Sea area is known to host about one hundred aquatic alien species. Detailed information on their year of introduction in the Baltic Sea, area of origin, vector, possible impact and other information is available online at the BMB/HELCOM Baltic Sea Alien Species Database http://www.ku.lt/nemo/mainnemo.htm.

9.3 Algal Blooms

There are a number of systems suitable on which the reporting of algal blooms can be based. The system could, for instance be based on the Alg@line system. Another example is SMHI's BAWS system.

- Alg@line constantly monitors phytoplankton and related parameters in the Baltic Sea. Reports are published at least once a week during March-September. The system was developed by the Finnish Institute for Marine Research and has been extended in co-operation with several institutes.

  http://www4.fimr.fi/project/algaline/

  BAWS, Baltic Algae Watch System, is a system developed and operated by SMHI in co-operation with the Swedish Information Offices. This Webb-based service contributes to the monitoring of algal blooms in the Baltic Sea by putting together information from various sources.

  http://www.smhi.se/

  http://www.smhi.se/weather/baws_ext/syd/ov_syd_eng.htm

  http://www.smhi.se/sgn0102/nodc/reports/alg/algsit.pdf (AlgAware)

- The Swedish Information Office system. Three information offices placed at county administrations in Umeå, Stockholm and Gothenburg report on large-scale events in the Bothnian Bay, the Baltic proper and the Kattegat – Skagerrak areas respectively.

  http://www2.ab.lst.se/infobalt/infooff.htm

Other examples of possible reporting systems can be found at:

Federal Maritime and Hydrographic Agency of Germany and its Marine Environment Reporting System MURSYS

National Environmental Research Institute, Denmark (DMU) In Danish: Alger i danske havområder

http://www.dmu.dk/1_om_dmu/2_Afdelinger/3_hav/Alger/aktuelt.asp

Estonian Marine Institute, University of Tartu

More information on Marine Environment Board of Latvia http://www.jvp.gov.lv

More information on Latvian Hydrometeorological Agency at **http://www.meteo.lv/**

More information on IAE at http://www.hydroecology.lv

It would be desirable for the institutions/organisations involved in BEWERS to agree on using one consistent system. The various systems should at least be comparable with each other.