



## REPORT OF HELCOM WORKSHOP AND TRAINING COURSE ON PHYTOPLANKTON

Leibniz Institute for Marine Research, Warnemünde, Germany

25-29 April 2016

HELCOM Phytoplankton Expert Group (PEG)

### **Message to HELCOM:**

- The main focus of the HELCOM PEG is to improve the quality of phytoplankton monitoring in the Baltic Sea area and to harmonize sampling, analytical methods and analytical skills. Good quality phytoplankton data is crucial for any evaluation of phytoplankton trends in the Baltic Sea and is our main contribution to Baltic phytoplankton indicator development.
- PEG welcomes the attendance of representatives of HELCOM secretariat and ICES database center at the meeting.
- The group agreed that the development of the three phytoplankton indicators should be finalized by 17 October 2016 by the lead and co-lead countries, which are all members of PEG. The indicators included are “Phytoplankton community composition as a food web indicator”, “Seasonal succession of dominating phytoplankton groups” and “Diatom-dinoflagellate index”.
- PEG updated the monitoring manual for phytoplankton and it will be adapted to the new template
- The project proposal for 2017–2019 has been revised.
- PEG has delivered data to the EUTRO-OPER for the indicator “Cyanobacterial surface accumulations”.
- PEG continues to update the environmental fact sheet “Cyanobacteria biomass”.
- In cooperation with the German Marine Monitoring Programme of the North and Baltic Sea (Ms. Petra Schilling at the Federal Environment Agency and Mr. Claus-Dieter Dürselen at AquaEcology in Germany) PEG plans participation in the ringtest on Baltic Sea and North Sea phytoplankton identification during spring/summer 2016. The ringtest will be free of charge for all PEG members.

### **Opening of the workshop**

The chair of the HELCOM Phytoplankton Expert Group (PEG), Ms. Iveta Jurgensone from the Latvian Institute of Aquatic Ecology, opened the meeting. The host Mr. Norbert Wasmund from Leibniz-Institute for Baltic Sea Research Warnemünde welcomed the participants and gave some practical information. The list of participants is attached as Annex 1.

### **Adopting the agenda and election of the rapporteur**

The agenda for the meeting was adopted by the participants without substantial changes. Mr. Andres Jaanus from the Estonian Marine Institute was elected as rapporteur. The agenda is added as Annex 2.

### **Information about last year's activities**

Ms. Iveta Jurgensone gave information about activities between the meetings 2015 and 2016. An extract of her presentation is given in Annex 3.

### **Training course on dinoflagellates**

Ms. Mona Hoppenrath from the research institute Senckenberg am Meer, DZMB, Wilhelmshaven, Germany, gave a lecture on identification, cell structure, life cycle, evolutionary history and taxonomy of dinoflagellates. The presentations were distributed to the participants during the meeting as pdf-files. Ms. Mona Hoppenrath also introduced the book "Marine benthic dinoflagellates – unveiling their worldwide biodiversity".

After the lectures there was a session with microscope analysis of dinoflagellate species in the Baltic Sea samples brought by participants. Ms. Hoppenrath made an offer to collect some Lugol fixed samples for further identification in SEM (Scanning Electron Microscope).

### **Image gallery on the Nordic microalgae website**

Ms. Janina Kownacka from the National Marine Fisheries Research Institute, Poland, presented a list of dinoflagellate species documented in the Nordic microalgae PEG gallery (38 taxa on 94 images). For some taxa there is a need for updating the names or adding valid synonyms. No new images of dinoflagellates were available among participants to add to the gallery.

### **Updating of the Biovolume file**

Ms. Iveta Jurgensone led the work on updating the biovolume file. The work was based on the last version of the file PEG\_BVOL2016 with updated synonyms, new size classes and species (proposed by PEG members before the meeting) and other corrections and questions that need to be addressed during the meeting. For intersessional work, PEG members were split into 5 groups responsible for corrections in the separate divisions as agreed last year: 1) Ms. Janina Kownacka, Ms. Irina Olenina, Ms. Iveta Jurgensone – cyanobacteria; 2) Ms. Marie Johansen, Ms. Heidi Hällfors – dinoflagellates; 3) Ms. Susanne Busch, Ms.

Chatarina Karlsson and Ms. Helena Högländer – diatoms; 4) Ms. Irina Olenina, Ms. Janina Kownacka, Ms. Iveta Jurgensone – green algae; 5) Ms. Iveta Jurgensone, Ms. Janina Kownacka, Ms. Irina Olenina – euglenophytes; 6) the rest Ms. Sławomira Gromisz.

Ms Iveta Jugensone sent out the updated file to PEG members on 21<sup>th</sup> of April 2016. The work on the file followed the same holding points as agreed upon by earlier PEG meetings. Work on the different sheets were carried out simultaneously: Ms. Iveta Jurgensone made changes in the sheet “Biovolume file”, Ms. Chatarina Karlsson and Ms. Siv Huseby from Umeå Marine Science Center, Umeå University, Sweden, put changes in the “Change log” and in the “Not accepted” sheets, respectively. Ms. Heidi Hällfors, SYKE, Finland, took note of problematic taxa to be sent to the WoRMS for forwarding to AlgaeBase.

Species names which are not listed in WoRMS but in AlgaeBase, will be introduced to WoRMS in a short time. Until then no AphiaID can be added, so we will have to get back to these species next year and leave them as they are for now. In other cases, when valid names are different in Algaebase and WoRMS – we will have to wait until Algaebase and WoRMS use the same valid name for these species. Some taxa have two different AphiaID codes in WoRMS.

Ms. Heidi Hällfors gave a short presentation on historical changes in the nomenclature of the genus *Biecheleria*.

In the genus *Ceratium*, old synonyms will be kept valid until the revision of all species belonging to this genus is completed in the Algaebase and WoRMS databases.

SMHI proposed to add extra columns for genus and ranks (corresponding to identification level or taxonomic tree) to the BVOL file. The group was still on the opinion that the basic structure should not be changed, the users can modify it according to everyone needs. An extra column for genus will be added to the BVOL file before the submission to the ICES. The proposal will be addressed to ICES data center.

Before the PEG\_BVOL2016 file is finalized and sent to ICES:

- class, order and genus/species names should be set to alphabetic order within a division
- all lines in “Species” column should be checked so there is no extra empty space after the name

For next year’s updating the PEG\_BVOL2016 file will be checked against WoRMS at the SMHI by the end of January 2017. The results of the comparison will be distributed to the PEG group. Corrections and additions of new species, size classes etc to the PEG\_BVOL2017 file should be sent to Ms. Iveta Jurgensone until the mid of March 2017.

For the revision of PEG\_BVOL2017 file:

- 1) To revise size range descriptions of diatoms (column Q);
- 2) Check the first third of the biovolume file (Cyanobacteria, Cryptophytes and Dinoflagellates) for synonym changes and updated higher taxonomy.

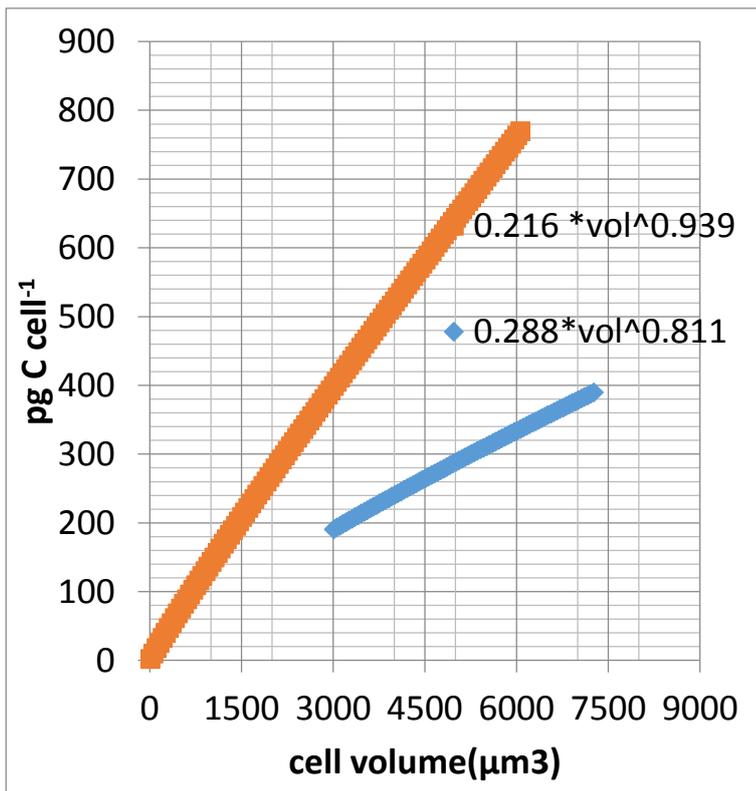
### **Updating the HELCOM COMBINE manual**

Before the meeting, Finland had submitted some comments regarding the COMBINE manual based on their more detailed national monitoring manual. Ms. Heidi Hällfors from SYKE explained the background of the suggestions. In general, PEG was on the opinion that taking into account all deviations from the basic (HELCOM recommended) guidelines and making part of them mandatory will lead to conflicts.

PEG decided to discard the text proposal and keep the original text regarding: 1) phytoplankton sampling depths (chapter 2); 2) the use of specific magnifications for certain species and the description of counting efforts (2.3.2) and 3) units to express volume (3.2).

The group agreed that a more detailed guidance for counting filaments and colonies is needed and should be added to section 2.3.2. (with a reference EN-15204:2006 and an addition of a clarifying image on how to count filaments and colonies in squares/field of vision). PEG also accepted a formulation change in the chapter 3.1 with the addition of the sentence “Abundance results are given as counting units per liter, not cells per liter. This means that abundance results are not directly usable since one species can be counted as single cells or as different sized colonies, for example (e.g. cyanobacteria are counted in colonies/units with different numbers of cells).

Mr. Hans Jakobsen from Aarhus University noted that for carbon content calculations of large diatom cells (biovolume >3000  $\mu\text{m}^3$ ), specific formula should be used (chapter 3.3 in the manual). For cells smaller than 3000  $\mu\text{m}^3$ , the general formula is valid. Accordingly to the key reference for the method (Menden-Deuer & Lessard 2000), there are no statistical difference between flagellates and diatoms for cells less than 3000  $\mu\text{m}^3$ , when using two set of equations under estimate diatom carbon with a factor close to two for most of the diatoms encountered in the marine environment. Furthermore, Hans Jakobsen also argued that the transition between a cell at 2999 and 3001 create a misleading discontinuity.



Corrections in the PEG\_BVOL file will not be made before thorough discussions in future PEG meetings.

The meeting decided that Ms. Heidi Hällfors requests a Word version of the new manual format from the HELCOM Secretariat, incorporates the old text and the accepted changes into the document, and edits the document into the new format according to the template provided by the HELCOM Secretariat. Thereafter the document is circulated for improvements and comments among the PEG members and submitted to

the HELCOM Secretariat in mid of 2016. At the last meet of State and conservation the aim of finalizing the review and update of monitoring guidelines was shifted until end of 2017. It is therefore sufficient that the updated guidelines are submitted to State and Conservation 5-2016 which starts 7 November. Document submission deadline is 17 October 2016. (Information received from Ms. Ulla Li Zweifel, HELCOM Secretariat, in email correspondence with Ms. Heidi Hällfors and Ms. Iveta Jurgensone, 10.5.2016).

### **Information on ring test**

Joint phytoplankton counting ring test of HELCOM PEG and the German Marine Monitoring Program of the North and Baltic Sea (GMMP) was planned in autumn 2015, but postponed.

Ms. Jessica Saule gave a presentation on the aim and design of joint ring test. It is optional for PEG members if one wish to join only the Baltic Sea or both Baltic Sea and North Sea parts of the identification. The ring test is planned for May-June 2016, with the results sent latest 28 of June 2016 and will be free of charge for all PEG members. A preliminary request to potential participants was distributed during the meeting. The deadline for registration was 10 of May 2016. The report will be published in September 2016. For more information, contact Petra.schilling@uba.de.

### **Updating the Baltic Sea Environmental Fact Sheet “Cyanobacteria biomass”**

Mr. Norbert Wasmund presented the work about the HELCOM Baltic Sea Environmental Fact Sheet. PEG agreed to continue updating the fact sheet “Cyanobacteria biomass” in its present form. Mr. Norbert Wasmund will continue to lead the work. Data from 2015 should be sent to him by the end of June 2016.

Several of the PEG members were and are deeply involved in developing phytoplankton biodiversity indicators (CORESET II). These indicators are still under development. HELCOM has suggested developing the Cyanobacteria biomass fact sheet to a core indicator, but the group has received no new information on that during the last months. The combination of biomass and remote sensing data has given contradictory results for different years and will not be considered in the nearest future.

### **Discussion of the CEN standard**

Ms. Jeanette Göbel from the Environmental Protection Agency, Flintbek, Germany, gave a presentation on the latest developments with the CEN standard and future plans. The CEN standard should become national standard by June 2016 (that means in general: within half year after publication of the European standard it should become national standard.). National agencies of standardization should send their explanations in case this is not possible.

Until the end of 2016 PEG\_BVOL2016 file has to be compared with CEN standard guidance in order to find out relevant (PEG should agree upon the definition of “relevant”) differences concerning formulas, biovolumes and species names. This could be done by the German Federal Environmental Agency and distributed to the PEG. After that, a contact person from PEG collects comments and initiates e-mail discussion, which should be finalized by the next meeting in 2017 where the potential changes in our PEG\_BVOL file should be discussed.

### **HELCOM indicator work**

Ms. Lena Avellan from the HELCOM Secretariat gave an overview of HELCOM past and ongoing assessments, focusing particularly on HOLAS II. Core indicator evaluations have to be delivered in early 2017 (January-March) in order to be included in the holistic assessment. The final adaption of pre-core and candidate indicators is delegated to HELCOM HOD-51 meeting in December 2016. Seasonal succession, diatom-dinoflagellate ratio and phytoplankton community composition indicators could be available for HOLAS II (pre-core or candidates at the moment). Core indicators are also going to be developed beyond the scope of HOLAS II. HOLAS II includes data from the period 2011-2016 (2015 if recent data are not yet available). The Secretariat will inform the PEG when the updates for phytoplankton indicators have been uploaded to the HELCOM workspace. Submission deadline for updated assessment reports is 17 October 2016.

The lead country approach was agreed at HOD-48 in 2015. The Secretariat supports the work. PEG is the platform to reach an expert level consensus on the indicator proposals and to ensure updating the indicator. The main work in developing will be done by the lead countries with expert knowledge from co-leads until the indicator is operational. Indicators are based on common monitoring data when available. In the long-term, the source of data should be the ICES (HELCOM COMBINE) database. The database should serve the purposes of the indicators, data formats have to be adapted if needed.

The general discussions were followed by presentations on single indicators (see below).

### **Phytoplankton community composition as a food web indicator**

Ms. Sirpa Lehtinen from the Finnish Environment Institute presented the phytoplankton community composition indicator (candidate indicator at the moment) concept and analysis. This is particularly a food web indicator, responding at the same time to eutrophication, climate change and increased top-down pressure. Multi-step trend analysis from class to genus and species level is performed. Interpretation regarding to GES or sub-GES will be introduced on four levels.

The indicator needs harmonization of analysis methods between the institutions and adaption to HELCOM monitoring manual. Finnish open sea monitoring data have been used for testing. Further testing is planned in May 2016; expert conclusion should be formalized by the end of July 2016. A script is under development to automatize the analysis.

### **Seasonal succession indicator**

Mr. Andres Jaanus from the Estonian Marine Institute, University of Tartu, presented the progress on pre-core indicator "Seasonal succession of dominating phytoplankton groups". The indicator is structured around a reference status succession and acceptable deviations (so called reference growth curves) of wet weight biomass of different dominating phytoplankton groups. Strong deviations from the reference growth curves indicate impairment in the environmental status. The GES value has been preliminary set at  $EQR=0.67$ . It means that to reach good environmental status, at least 2/3 of observations should fall into the predefined reference envelopes (mean $\pm$ 1/2 standard deviations).

Data have been provided from 17 assessment units, but the indicator should be applicable for the whole Baltic Sea. A script is available to automatize the analysis.

The main problem seems to be how to define the reference period. Phytoplankton species composition and biomass data date back mainly to the 1990s (in some areas to the 1980s), but disturbances in environment were visible already in the 1960s, when regular observations started. One option is to define more stable periods in existing data series. It is still complicated in most of coastal areas with high interannual variability. An alternative would be to take all observations as reference and compare the results with those calculated for the assessment period. If further indicator development work does not lead to a stronger GES-boundary being defined, then it may be appropriate to consider developing the concept into a supporting parameter that describes trends instead of a core indicator.

### **Diatom-dinoflagellate index**

Mr. Norbert Wasmund, Leibniz-Institute for Baltic Sea Research, Germany presented the pre-core indicator "Diatom-dinoflagellate index". This trend indicator reflects whether diatoms and dinoflagellates form the spring blooms. This is relevant for the ecosystem (food web). As diatom dominance is typical in historical data, it is assumed that a high Dia/Dino index indicates GES. One of the main problems is low sampling frequency; some short-term blooms can be overlooked. The correct coverage of the diatom spring bloom may be checked on the basis of silicate consumption data.

### **ICES Data handling**

Mr. Hans Mose Jensen from the ICES presented data handling processes related to phytoplankton, especially to PEG biovolume list and COMBINE datasets and how it can support the indicator work. By the end of April 2016, there were 9171 phytoplankton samples in total in the COMBINE database. Only a little more than 1/3 of the COMBINE data are reported with a reference to the PEG biovolume list. To run reliable long-term analyses, the ICES database need to be continuously (yearly) updated.

National phytoplankton experts need more support from ICES data center for data managing even if they have data management support from their own institutes. ICES is planning to simplify data reporting format, the work started in May 2016. It is desired that the data could be sent in any format and the ICES data managers could modify it. Some PEG members pointed out that sending data with simplified data format does not give feedback information on the sources of errors (e. g. line no. in the database); this makes the correction of errors difficult and very time-consuming.

After the meeting, Mr. H. M. Jensen updated the COMBINE database phytoplankton data view and recommended to check everyone's own submissions. He also encouraged informing the data center if further changes are needed for indicator work.

### **Planning of next year meeting**

Next year meeting will be arranged in St. Petersburg, Russia, 3-7 April 2017.

During the meetings, at least one day has been needed for updating the Biovolume file. The group decided that in order to be able to update the file more thoroughly, it will be reviewed in three parts (thirds) so that the whole file will be handled during the three year project period. This modification was also considered necessary in order to allocate time for the indicator work. In 2017 cyanobacteria, dinoflagellates and cryptophytes will be revised (including synonyms and higher taxonomy). However, as before, proposed new taxa and size classes as well as any found errors will be considered for all taxonomic groups in all project

years. The updating of the biovolume file will continuously be done in the same working groups as previous years (see: Biovolume update above).

The training course will be on cyanobacteria, the teacher to be invited is still to be decided. PEG will also spend more time looking at our own samples.

Furthermore PEG plans to:

- Update the monitoring manual
- Discuss the results of the intercalibration from 2016
- Discuss the environmental fact sheet.
- Discuss and review phytoplankton indicators
- Get informed on CEN work
- Inform of recent literature, and if time allows, consider updating the literature list in the HELCOM Monitoring Manual concerning phytoplankton species composition, abundance and biomass.
- Have short presentations on national phytoplankton monitoring programs
- For the PEG gallery in Nordic Microalgae web-page images of all phytoplankton groups are expected (with focus to fill gaps where images are missing).

The first draft of the agenda for the 2017 meeting will be sent out to the PEG members in January 2017.

### **Discussion on the project proposal 2017-2019**

The group revised the project proposal commented earlier by the HELCOM Secretariat and made some minor changes mainly regarding the indicator work (Annex 4).

### **Excursion and conference dinner**

On Wednesday afternoon (27 April) the participants made an interesting excursion to Rostock old town, guided by Mr. Norbert Wasmund. On Thursday evening the group enjoyed a nice conference dinner at the restaurant "Kettenkasten" in Warnemünde harbor area. The excursion and dinner provided excellent opportunities for networking, team-building and discussions among the members of the group.

### **Other information**

ICES annual symposium will be held in autumn 2016 in Riga. PEG members (especially PhD students) are encouraged to participate in it. There will be a special session about phytoplankton (chaired by Ms. Marie Johansen, SMHI, Sweden).

The 17th Conference on Harmful Algae will take place in Santa Catarina, Brazil, 9–14 October 2016. Call for abstracts is open until 3 June 2016 ([www.icha2016.com](http://www.icha2016.com)).

ICES WG HABD meeting will take place in Helsinki 25–28 April 2017.

Ms. Heidi Hällfors introduced the book "Freshwater dinoflagellates of North America".

Ms. Chatarina Karlsson has distributed a paper about mixotrophy ("Defining Planktonic Protist Functional Groups on Mechanisms for Energy and Nutrient Acquisition; Incorporation of Diverse Mixotrophic Strategies". Mitra et al (2016). *Protist* Vol.167:106-120).

The PEG group agreed to use the PEG workspace at HELCOM as storage of important working documents as well as documents from the annual PEG meetings. All PEG members have to register at HELCOM meeting portal to get access to the working space (include "HELCOM PEG" when register).

Ms. Iveta Jurgensone will make a draft of the final report for the period 2014-2016 that will be sent to the PEG group for comments. The report will be presented at the State & Conservation meeting in autumn 2016.

### **Ending of the meeting**

Ms. Iveta Jurgensone thanked the organizers and the meeting participants before closing the meeting.

## LIST OF PARTICIPANTS (alphabetic order)

Name	Address	Telephone	E-mail
Lena Avellan	HELCOM Secretariat	+358 40 162 2054	<a href="mailto:Lena.Avellan@helcom.fi">Lena.Avellan@helcom.fi</a>
Susanne Busch	Leibniz-Inst. for Baltic Sea Research Seestr. 15 18119 Warnemünde GERMANY	+49 3815 197244	<a href="mailto:susanne.busch@io-warnemuende.de">susanne.busch@io-warnemuende.de</a>
Lars Edler	WEAQ Lab, Doktorsgatan 9D, SE-26252 Ängelholm, SWEDEN	+46 431 80854	<a href="mailto:lars.edler@telia.com">lars.edler@telia.com</a>
Annely Enke	Estonian Marine Institute University of Tartu Mäealuse 14 12618 Tallinn ESTONIA	+372 56 647252	<a href="mailto:annely.enke@ut.ee">annely.enke@ut.ee</a>
Jeanette Göbel	Environmental Protection Agency (LLUR), Hamburger Chaussee 25, D-24220 Flintbek, GERMANY	+49 4347 704444	<a href="mailto:Jeanette.Goebel@llur.landsh.de">Jeanette.Goebel@llur.landsh.de</a>
Gabriele Hanke	Landesamt für Umwelt, Naturschutz und Geologie, Mecklenburg-Vorpommern	+49 3831 696612	<a href="mailto:gabriele.hanke@lung.mv-regierung.de">gabriele.hanke@lung.mv-regierung.de</a>
Regina Hansen	Leibniz-Inst. for Baltic Sea Research Seestr. 15, 18119 Warnemünde, GERMANY	+49 3815 197240	<a href="mailto:regina.hansen@io-warnemuende.de">regina.hansen@io-warnemuende.de</a>
Siv Huseby	UMF/Umeå universitet Norrbyn 90571 Hörnefors SWEDEN	+46 90 7867967	<a href="mailto:siv.huseby@umu.se">siv.huseby@umu.se</a>
Heidi Hällfors	Finnish Environment Institute (SYKE) Marine Research Centre Erik Palménin Aukio 1 00560 Helsinki FINLAND	+358 295 251114	<a href="mailto:heidi.hallfors@ymparisto.fi">heidi.hallfors@ymparisto.fi</a>
Helena Högländer	Dept. of Ecology, Environment and Plant Sciences Stockholm University Svante Arrhenius väg 20 A SE – 10691 Stockholm SWEDEN	+46 8 6747551	<a href="mailto:helena.hoglander@su.se">helena.hoglander@su.se</a>
Andres Jaanus	Estonian Marine Institute University of Tartu Mäealuse 14 12618 Tallinn ESTONIA	+372 509 7792	<a href="mailto:andres@sea.ee">andres@sea.ee</a>
Hans Jakobsen	Aarhus University, Faculty of Science and Technology, Dept. of Bioscience, Danish Centre for Environment and Energy (DCE) Frederiksborgvej 399, PO Box 358, DK-4000 Roskilde DENMARK	+45 2257 4058	<a href="mailto:hhja@bios.au.dk">hhja@bios.au.dk</a>
Hans Mose Jensen	ICES, H. C. Andersens Blv. 4446 1553 Copenhagen V DENMARK	+45 3338 6736	<a href="mailto:hans.jensen@ices.dk">hans.jensen@ices.dk</a>
Marie Johansen	SMHI Oceanographic Unit Sven Källfelts gata 15 SE-426 71 Västra Frölunda, SWEDEN	+46 31 7518972	<a href="mailto:marie.johansen@smhi.se">marie.johansen@smhi.se</a>

Iveta Jurgensone Chair	Latvian Institute of Aquatic Ecology, Department of Marine Monitoring Voleru iela 4 Riga, LV-1004 LATVIA	+371 26446019	<a href="mailto:iveta.jurgensone@lhei.lv">iveta.jurgensone@lhei.lv</a>
Chatarina Karlsson	UMF/Umeå universitet Norrbyn 90571 Hörnefors SWEDEN	+46 90 7867985	<a href="mailto:chatarina.karlsson@umu.se">chatarina.karlsson@umu.se</a>
Janina Kownacka	National Marine Fisheries Research Institute, ul. Kollataja 1, 81-332 Gdynia, POLAND	+48 587356288	<a href="mailto:janina.kownacka@mir.gdynia.pl">janina.kownacka@mir.gdynia.pl</a>
Sirpa Lehtinen	Finnish Environment Institute (SYKE) Marine Research Centre Erik Palménin Aukio 1 00560 Helsinki FINLAND	+358 4001 48518	<a href="mailto:sirpa.lehtinen@ymparisto.fi">sirpa.lehtinen@ymparisto.fi</a>
Nicole Liebeke	Landesamt für Umwelt, Naturschutz und Geologie, Mecklenburg-Vorpommern	+49 3843 777411	<a href="mailto:nicole.liebeke@lung.mv-regierung.de">nicole.liebeke@lung.mv-regierung.de</a>
Inga Lips	Marine Systems Institute Tallinn University of Technology Akadeemia Rd. 15A 12618 Tallinn ESTONIA	+372 6204306	<a href="mailto:inga.lips@msi.ttu.ee">inga.lips@msi.ttu.ee</a>
Silke Lischka	Biologische Ozeanographie, GEOMAR Helmholtz Centrum für Ozeanforschung Kiel, Düsternbrooker Weg 20, D- 24105, Kiel GERMANY	+49 4316 004029	<a href="mailto:slischka@geomar.de">slischka@geomar.de</a>
Irina Olenina	Department of Marine Research of Environmental Protection Agency, Lithuania Taikos 26 LT-91141 Klaipeda LITHUANIA	+370 61205120	<a href="mailto:i.olenina@aaa.am.lt">i.olenina@aaa.am.lt</a>
Jessica Saule	Umweltbundesamt Qualitätssicherungsstelle des BLMP (FG II 2.5 - Labor für Wasseranalytik) Bismarckplatz 1, 14193 Berlin GERMANY		<a href="mailto:jessica.saule@uba.de">jessica.saule@uba.de</a>
Annegret Stuhr	Biologische Ozeanographie, GEOMAR Helmholtz Centrum für Ozeanforschung Kiel, Düsternbrooker Weg 20, D- 24105, Kiel GERMANY	+49 4316 004028	<a href="mailto:astuhr@geomar.de">astuhr@geomar.de</a>
Norbert Wasmund	Leibniz-Inst. for Baltic Sea Research Seestr. 15 18119 Warnemünde, GERMANY	+49 3815 197212	<a href="mailto:norbert.wasmund@io-warnemuende.de">norbert.wasmund@io-warnemuende.de</a>

**AGENDA****25.04.2016, Monday**

- 8.30-8.50 Opening of the Workshop (chair Iveta Jurgensone, Norbert Wasmund)  
8.50-9.00 Election of the rapporteur, adoption of agenda (Iveta Jurgensone)  
9.00-9.20 Information on last year's activities (Iveta Jurgensone)

*Training course*

- 9.20-10.30 Training course of dinoflagellates (Mona Hoppenrath)  
10.30-11.00 Coffee  
11.00-12.30 Training course of dinoflagellates (Mona Hoppenrath)  
12.30-13.30 Lunch  
13.30-15.30 Training course of dinoflagellates (Mona Hoppenrath)  
15.00-15.30 Coffee  
15.30-18.00 Analysis of own samples

**26.04.2016, Tuesday**

- 8.30-9.15 Image gallery: dinoflagellates (Janina Kownacka)  
9.15-11.00 Updating the HELCOM PEG taxa and biovolume file (Iveta Jurgensone + all)  
11.00-11.30 Coffee, introduction of marine research exhibition at the IOW  
11.30-13.00 Updating the HELCOM PEG taxa and biovolume file (Iveta Jurgensone + all)  
13.00-14.00 Lunch  
14.00-15.30 Updating the HELCOM PEG taxa and biovolume file (Iveta Jurgensone + all)  
15.30-16.00 Coffee  
16.00-20.10 Updating the HELCOM PEG taxa and biovolume file (Iveta Jurgensone + all)

**27.04.2016, Wednesday**

- 8.30-9.15 Updating the HELCOM PEG taxa and biovolume file (Marie Johansen, Hans Jakobsen + all)  
9.15-10.00 Updating the HELCOM COMBINE manual (Heidi Hällfors + all)  
10.00-10.15 Coffee  
10.15-10.30 Information about joint intercalibration (Jessica ...)  
10:30-10.45 Updating the Baltic Sea Environment Fact Sheet "Cyanobacteria biomass" (Norbert Wasmund)  
10.45-11.15 Latest information about the CEN work (Jeanette Göbel)  
11.15-11.45 Information about ongoing projects, interesting upcoming conferences, new publications etc,  
updating of the HELCOM PEG web page/working space on HELCOM (Iveta Jurgensone + all)  
11.30-12.00 Tasks for the next meeting (Iveta Jurgensone + all)  
12.00-13.00 Lunch  
13.00-18.30 Excursion to Rostock

**28.04.2016, Thursday***Indicator work*

- 8.30-10.30 Presentation by HELCOM Secretariat on new working arrangements and requests from HOD to  
PEG, including discussing new project description (Lena Avellan)  
10.30-11.00 Coffee  
11.00-12.00 Discussions on indicators (Lena Avellan, Lead-countries+all)  
12.00-13.00 Issues related to data, presentation by ICES representative (Hans Mose Jensen)

13.00-14.00 Lunch  
14.00-14.45 Phytoplankton community composition indicator (Sirpa Lehtinen)  
14.45-15.30 Seasonal succession of dominating groups indicator (Andres Jaanus)  
15.30-16.00 Coffee  
16.00-17.00 Diatom-dinoflagellate ratio indicator (Norbert Wasmund), overall discussion on indicators  
17.00-18.10 Discussion on the project proposal 2017-2019  
19.00- Conference dinner

**29.04.2016, Friday**

8.30-9.00 Discussion on the project proposal 2017-2019 (Iveta Jurgensone + all)  
9.00-10.00 Tasks for the next year and updating the meeting report (Iveta Jurgensone + all)  
10.00-10.15 Coffee  
10.15-11.00 Summing up and closing of the meeting (Iveta Jurgensone, Norbert Wasmund)

## **Intersessional activities (April 2015 – April 2016)**

### **1) Information from HELCOM STATE&CONSERVATION GROUP**

STATE&CONSERVATION 2-2015 meeting in 11-15 May, 2015:

- 4MA.10 The Meeting took note of the progress report of the Phytoplankton Expert Group (PEG), as presented by the project leader of PEG Iveta Jurgensone. The main focus of PEG is to improve the quality of phytoplankton monitoring in the Baltic Sea and to harmonize sampling, analytical methods and analytical skills.
- 4MA.11 The Meeting noted the information that monitoring guidelines currently included as Annex C-6 of the COMBINE manual for phytoplankton are up to date and that they will be reviewed annually as a regular task of the project.
- 4MA.12 The Meeting considered the project proposal for the continuation of the activities of PEG for 2017-2019, as presented by the project leader of PEG.
- 4MA.13 The Meeting took note that development of phytoplankton indicators is proposed to be taken forward as a separate activity in HELCOM while the PEG project is ready to make regular updates of the core indicator reports once the indicators are operational. Preliminary estimates of resources required to test the 3 HELCOM candidate phytoplankton indicators are at 3 man-months each.
- 4MA.14 The Meeting agreed to come back to the final project proposal for the continuation of PEG in the next meeting of the State and Conservation Group.
- The Meeting found it important to develop the indicator to the direction of including more than only bloom events, e.g. by adding cyanobacteria biomass information as a new parameter to the indicator. The Meeting welcomed the proposal of EUTRO-OPER and the PEG group to investigate the possibilities.

STATE & CONSERVATION 3-2015, 9-13 November, 2015:

#### **HELCOM indicators and assessments**

4J.9 The Meeting took note of the proposed food web indicator on phytoplankton composition submitted by Finland, which will be forwarded to the Phytoplankton Expert Group (PEG) for their consideration as a candidate indicator for further development (document 4J-3) and invited the Contracting Parties to provide comments to the proposed indicator to PEG.

STATE & CONSERVATION 4-2016, 11-15 April, 2016

#### **Revision of HELCOM monitoring:**

2MA.36 The Meeting took note that Finland will submit comments on the monitoring guidelines for phytoplankton species composition, abundance and biomass to the annual PEG meeting.

## Environmental monitoring and data

3MA.13 The Meeting took note of the clarification of required data and information to be extracted from the COMBINE database for phytoplankton indicator evaluation and that for this purpose ICES has produced a specific data view for HELCOM (document 3MA-3). The work has been carried out by the ICES Data Center and HELCOM Lead Country experts on phytoplankton indicators. The Meeting noted that the document will be further discussed at the upcoming annual meeting of the PEG-project (25-29 April 2016).

### 2) Update of biovolume file

- After the meeting all the changes in the biovolume file PEG\_BVOL2015 were agreed and the file was sent to ICES and accepted in 29 June, 2015.
- Mr Arnold Andreasson, SMHI Sweden, checked PEG Biovolume file against WoRMS. On 29 February 2016, PEG members received the list from Ms. Malin Mohlin with discrepancies between the PEG Biovolume file and WoRMS shown.
- Until the end of March, new species and size-class suggestions and changes for different taxonomic groups made by PEG members were sent to Ms. Iveta Jurgensone.
- The new updated PEG\_BVOL2016 version was sent to the PEG group on 21 April 2016.

### 3) Baltic Sea Environment Fact Sheet – Cyanobacteria biomass indicator

- The group agreed to continue the work and sent total biomass data of genera *Nodularia*, *Aphanizomenon* and *Dolichospermum* to Mr. Norbert Wasmund to the end of June 2015.
- Updated BSEFS was published on 18 September 2015 in the HELCOM website

### 4) Uploading images to PEG gallery

The agreed photos (cyanobacteria and green algae) of the PEG were uploaded to [www.nordicmicroalgae.org](http://www.nordicmicroalgae.org) by the originators.