

HELCOM core indicators as the base of the HELCOM assessment system

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Project Manager CORESET II
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HELCOM



Baltic Marine Environment Protection Commission

Contracting Parties:

- Estonia
- Latvia
- Lithuania
- Poland
- Germany
- Denmark
- Sweden
- Finland
- Russia
- European Union

Monitoring and Assessment in the HELCOM community

1979 - Monitoring of physical, chemical and biological variables of the open sea started

1984 - monitoring of radioactive substances in the Baltic Sea started

1998 - Monitoring of inputs of nutrients and hazardous substances

Monitoring and Assessment in the HELCOM community

Helsinki Convention resigned in 1992

- Obligation to conduct also monitoring of the coastal waters and to report the data to the Commission
- Cooperative Monitoring in the Baltic Marine Environment - **COMBINE** - was instituted to integrate the national programmes into a common structure

Monitoring and Assessment in the HELCOM community

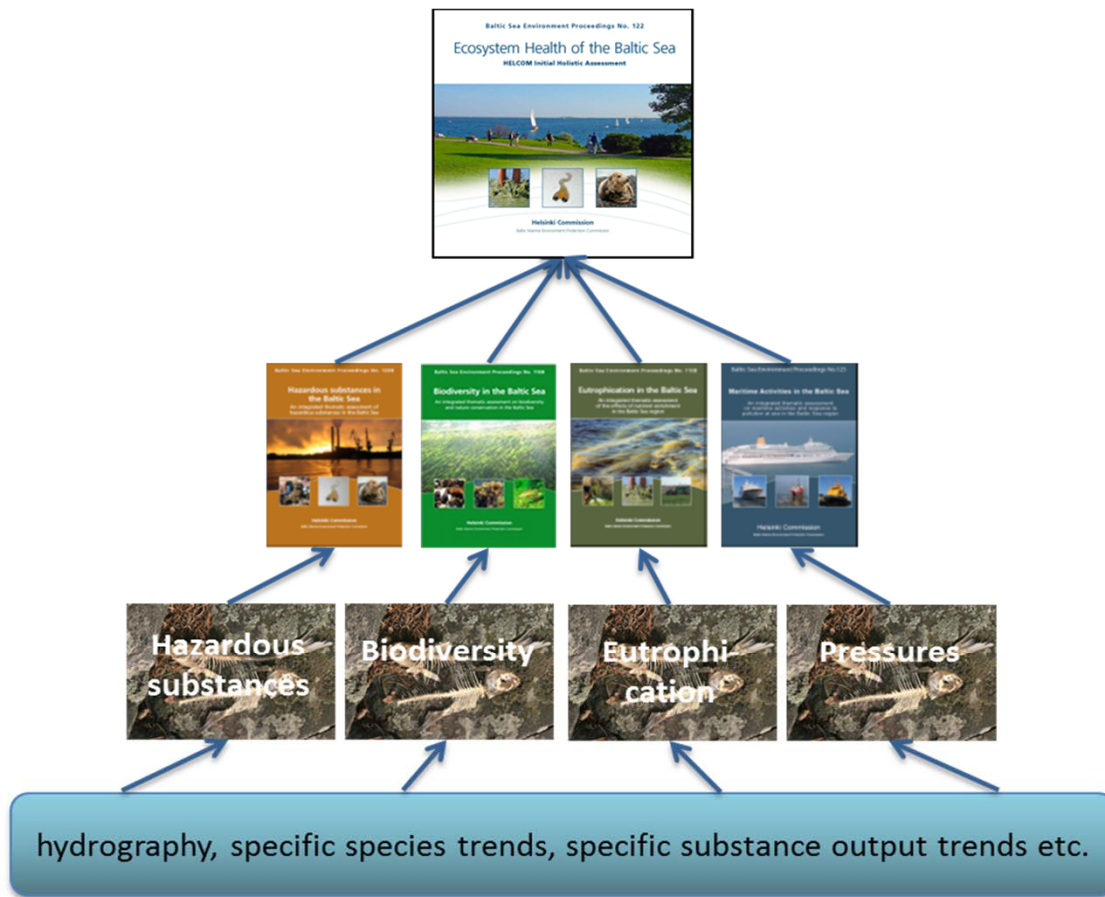
Baltic Sea Action Plan (BSAP) adopted in 2007

- Ecosystem approach
- 4 thematic goals, 20 ecological objectives
- Goal to reach Good Environmental Status by 2021

EU Marine Strategy Framework Directive (MSFD) in 2008

- Ecosystem approach
- 11 Descriptors, 29 criteria and number of indicators
- Goal to reach Good Environmental Status by 2020

HELCOM Monitoring and Assessment Strategy (2013)



Holistic Assessments

- periodical
- using assessment tools

Thematic Assessments

- periodical
- using assessment tools

Core indicators

- updated regularly
- measure distance to GES

Supplementary Indicators & Supporting parameters

- Updated as needed
- Linked to specific core indicators

HELCOM core indicators

- Commonly agreed by all 10 Contracting Parties
- Science based
- Designed to meet the legislative needs of the Baltic Sea Action Plan (BSAP) and for those Contracting Parties that are also EU Member States the EU Marine Strategy Framework Directive (MSFD), where relevant linkages made to other legislative targets such as CBD Aichi targets
- Operational core indicators are updated regularly by CPs and are based on CPs monitoring data. Depending on the indicator, data can be hosted at the HELCOM Secretariat, ICES or national databases

HELCOM core indicators

- State core indicators measure progress towards GES, pressure core indicators measure progress towards an environmental target
- All indicators to use HELCOM Assessment Units
 1. Baltic Sea
 2. Sub-basins
 3. Sub-basins and coastal areas
 4. Sub-basins and coastal areas split into WFD-areas

HELCOM core indicators

	Commonly agreed	Measures progress towards GES or environmental target
Core indicator	Yes	Yes
Pre-core indicator	Partially	
Candidate indicator	No	
Supplementary indicator	Yes, among relevant CPs	Yes
Supporting parameter	Yes	No

HELCOM core indicators structure

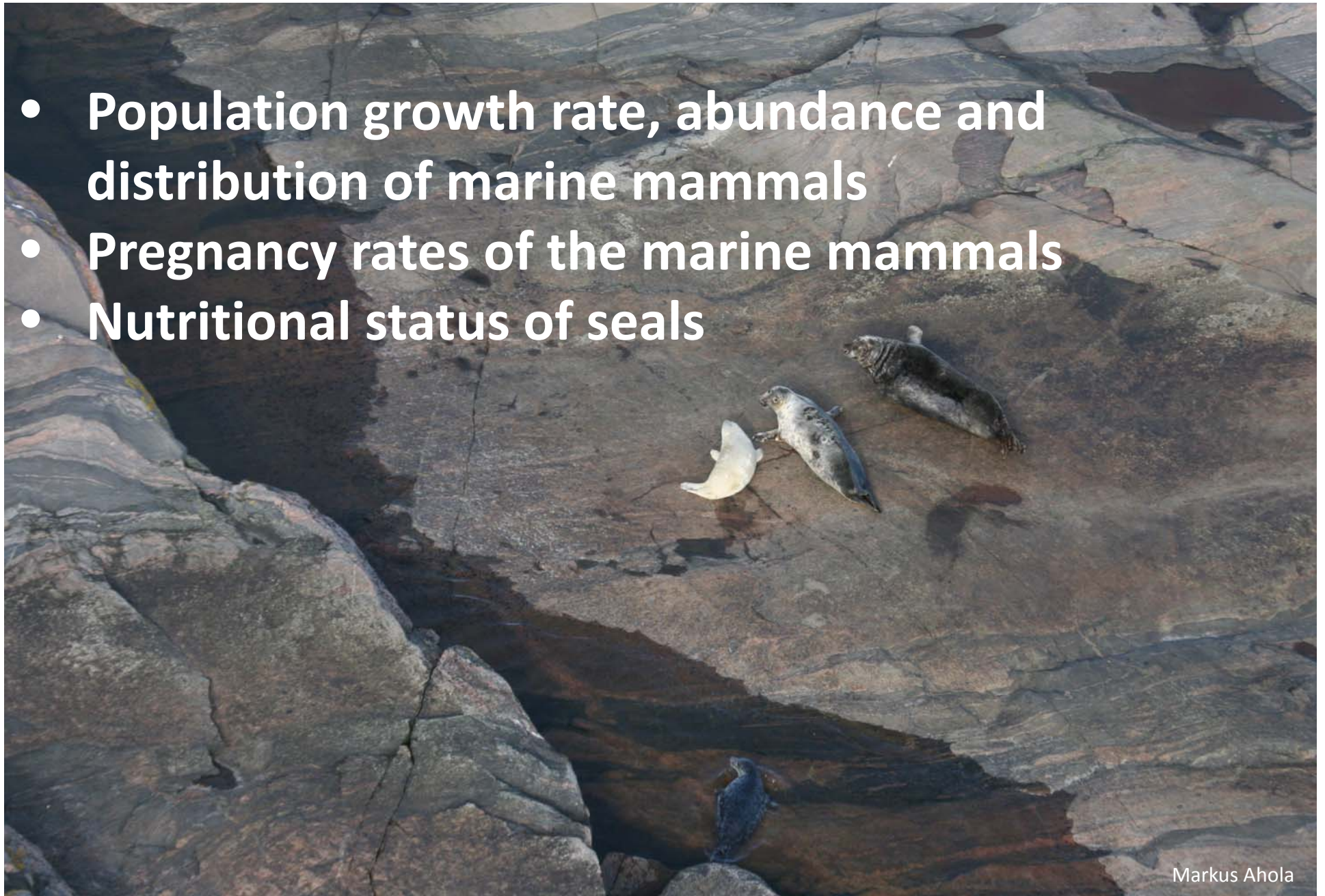
Main page (layman audience)

- Main findings
 - Summary of results and concept
 - Spatial information (GES / non-GES)

Sub-pages (expert audience)

- Results
- Indicator concept
- Monitoring requirements
- Description of data and confidence
- Publications and archive

- Population growth rate, abundance and distribution of marine mammals
- Pregnancy rates of the marine mammals
- Nutritional status of seals




Markus Ahola

- White-tailed eagle productivity



Björn Helander

- 
- A photograph of a duck splashing in water. The duck is in the center-right of the frame, with its wings spread wide. It is creating a large splash of water in the foreground. The water is dark and has ripples. The background is a soft, out-of-focus landscape.
- Abundance of waterbirds in the wintering season
 - Abundance of waterbirds in the breeding season
 - Number of drowned mammals and waterbirds in fishing gears

Jannica Haldin

- 
- Abundance of key fish species
 - Abundance of fish key functional groups
 - Proportion of large fish (LFI) in the community

David Andersson



- Abundance of sea trout spawners and parr
- Abundance of salmon spawners and smolt

Esa Lehtinen



- Zooplankton mean size and total abundance

- Trends in arrival of new non-indigenous species



M.Appelberg

- 
- **State of the soft-bottom macrofauna communities**
 - **Population structure of long-lived macrozoobenthic species**
 - **Red-listed benthic biotopes**

Metsähallitus/
Essi Keskinen

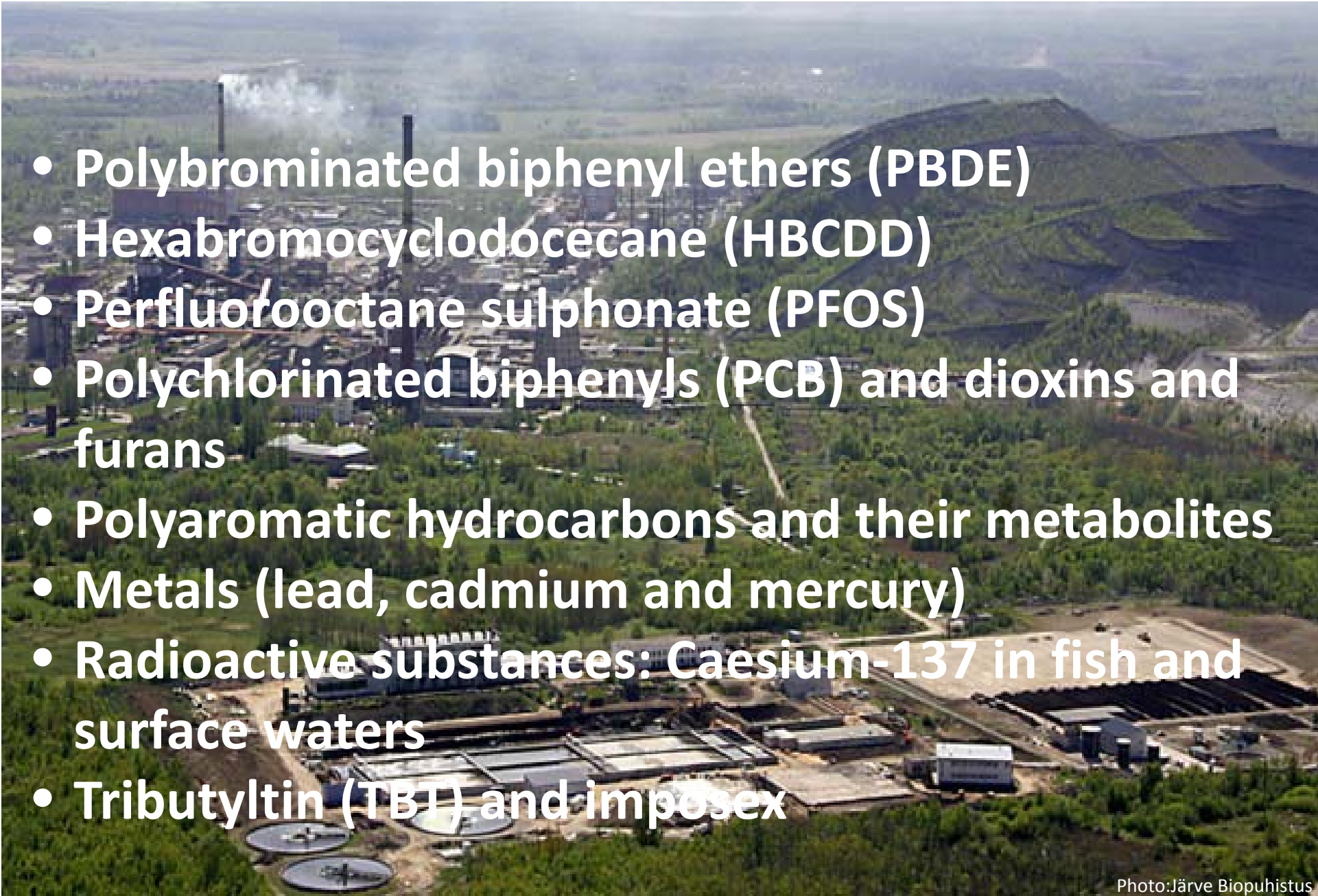
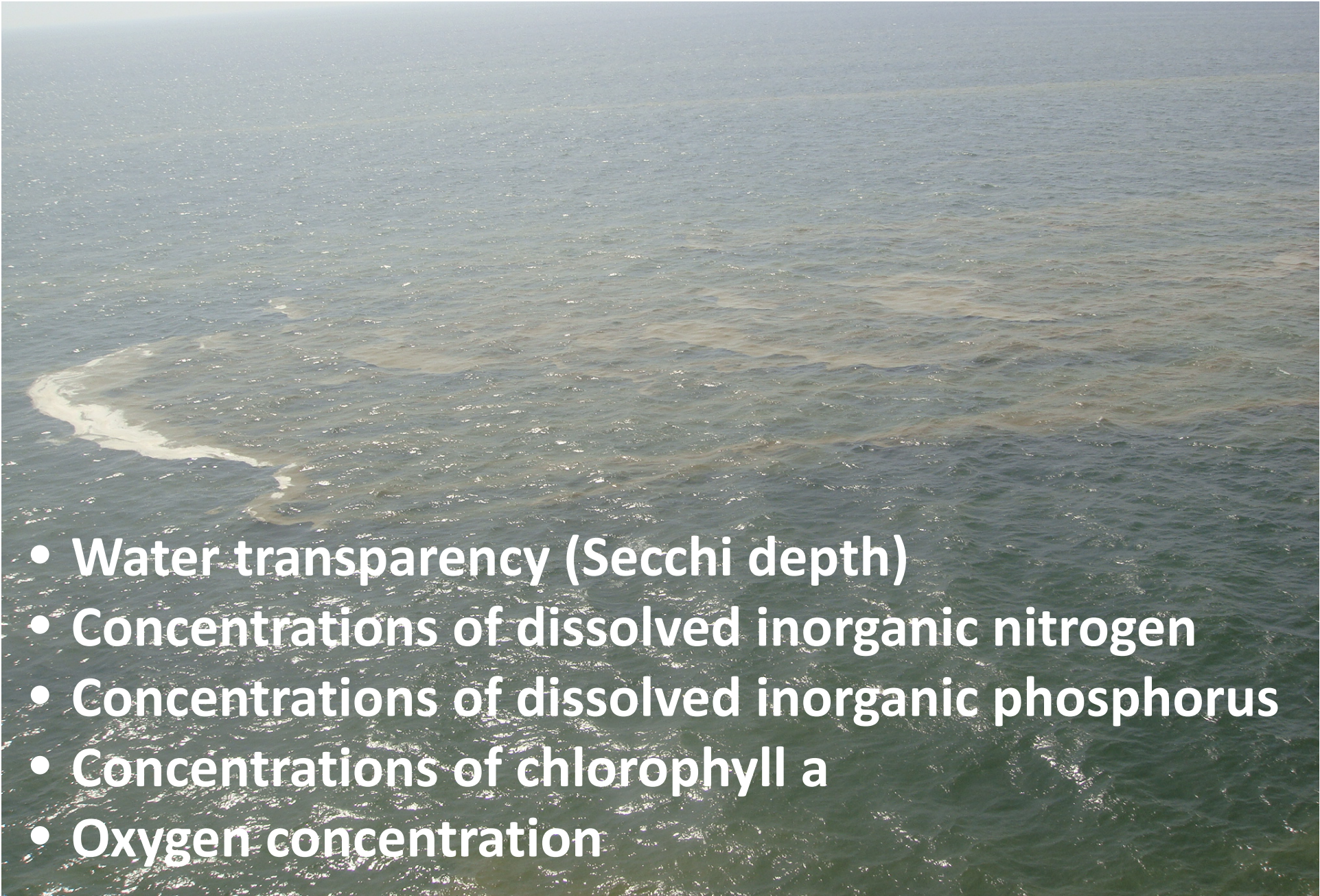
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- Polybrominated biphenyl ethers (PBDE)
 - Hexabromocyclododecane (HBCDD)
 - Perfluorooctane sulphonate (PFOS)
 - Polychlorinated biphenyls (PCB) and dioxins and furans
 - Polyaromatic hydrocarbons and their metabolites
 - Metals (lead, cadmium and mercury)
 - Radioactive substances: Caesium-137 in fish and surface waters
 - Tributyltin (TBT) and imposex

Photo: Järve Biopuhistus

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- Water transparency (Secchi depth)
 - Concentrations of dissolved inorganic nitrogen
 - Concentrations of dissolved inorganic phosphorus
 - Concentrations of chlorophyll a
 - Oxygen concentration

Pre-core indicators

- Number of waterbirds being oiled annually
- Lower depth distribution limit of macrophyte species
- Cumulative impact on benthic habitats
- Distribution, extent and pattern of benthic biotopes
- Pharmaceuticals: Diclofenac, EEA2 (+E1, E2, E3 + in vitro yeast essay)
- Lysosomal Membrane Stability – a toxic stress indicator
- Fish Disease Index – a fish stress indicator
- Micronucleus test – a genotoxicity indicator
- Reproductive disorders: Malformed eelpout and amphipod embryos

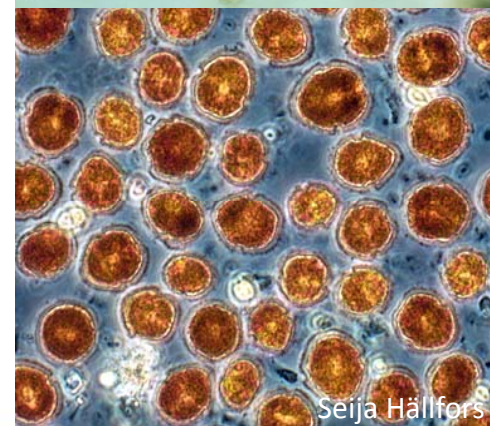
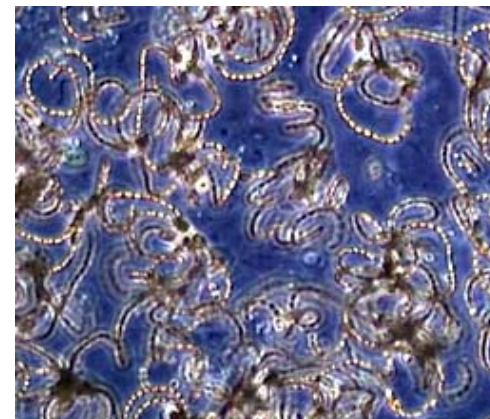


David Andersson

Candidate indicators

a selection from the living non-endorsed list

- Ratio of diatoms and dinoflagellates
- Seasonal succession of functional phytoplankton groups
- Phytoplankton species assemblage clusters based on environmental factors
- Phytoplankton taxonomic diversity
- Proportion of cyanobacteria in summer phytoplankton biomass
- Cyanobacteria biomass index
- Zooplankton species diversity
- Distribution of offshore fish populations and communities
- Distribution of seabirds
- Mean maximum length (MML) of the fish community
- Biomass ratio of opportunistic and perennial macroalgae
- State of hard-bottom communities
- PCB and dioxins for safe fish to eat
- Alkylphenols (nonylphenol and octylphenol)
- Vitellogenin induction
- EROD/CYP1A (Ethoxyresorufin-O-deethylase) induction
- **Actual inputs of nitrogen and phosphorous to the basins**
- **Beach litter**
- **Litter on the seafloor**
- **Microplastics in the watercolumn**
- **Low and mid frequency impulsive sounds**
- **Ambient noise**
- **Dredging and dumping of dredge materials**



Seija Hällfors

Monitoring and Assessment in the HELCOM community

HELCOM Monitoring Manual

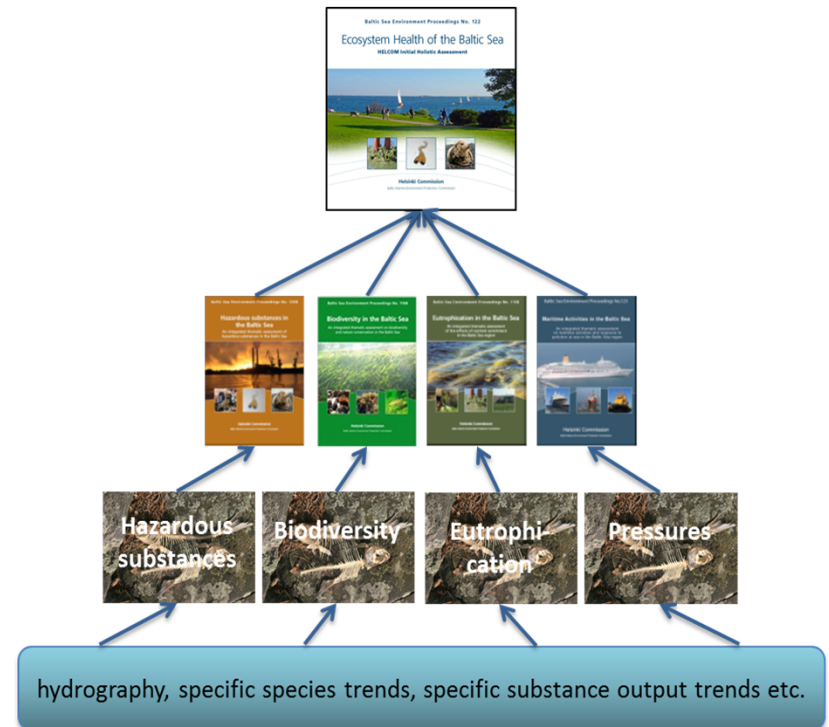
- to be published in October 2014
- Built around the coordinated data needs of the core indicators
- Provided as a means to ensure coordination and coherence for CPs in their reportin on EU MSFD Article 11

Next indicator steps...

- Operationalizing the core indicators in the ongoing projects CORESET II and EUTRO-OPER, meaning strengthening the concepts, setting up data-management etc.
- HELCOM CORESET II – OSPAR ICG-COBAM back-to-back meeting with joint meeting day in autumn 2014
- Temporal and spatial scale of the response of indicators to be further specified, also the response time to anthropogenic pressures
- Adequacy of monitoring to be further specified for all indicators, some indicators do not require monitoring by all CPs
- Data reporting, processing and hosting to be developed towards 'semi-automation', using HELCOM Map and Data Service, ICES etc.
- Publish core indicators on-line mid-2015

Next steps...

- Planned HOLAS II project
 - Holistic assessment of the Baltic Sea through DPSIR
 - Based on the core indicators
 - To be completed by 2018





Baltic Marine Environment Protection Commission