

Del III

5. Sammenfatning og anbefalinger: Hav

For session III blev der udpeget en rapporteur (Camilla Trolle, Miljøstyrelsen) opsummerede præsentationerne og diskussionerne.

Saara Back from the Finlands Miljöcentral: “Water Framework Directive versus Marine Strategy directive”

The presentation focus on the following needs in the Nordic co-operation:

- A common understanding of the concepts – harmonising the understanding of content, bridging between the Water Framework Directive and other directives (UWWD, Nitrate directive, habitat, ICZM strategy) and conventions
- Clarify the role of the marine conventions (e.g. typology, departure of reference value, how to get reference values, how to harmonise etc). EMS will benefit from WFD (same approach, terminology). How can HELCOM/OSPAR assist to implement?
- Important to focus on the Baltic Sea, effect on the catchment
- Define the concept of programmes of measure (and management plans – how to harmonise)
- Physical and chemical features (do we have the necessary data?)
- Inventories of marine underwater habitat both coastal and off shore
- Description of biological communities (phytoplankton, zooplankton, invertebrates, mammals, fish, invasive species, other species under EU legislation - macro algae is missing compare to WFD!
- ecological classification needs qualitative descriptors, detailed criteria and standards
- definition of reference value, classification system
- Consideration of economic and social concerns in setting targets and integrate this system with WFD system.
- Chemical contamination in species for human consumption
- Monitoring programmes (standard methods for monitoring, avoiding duplication of efforts).

Due to overlap between the Water Framework Directive, WFD, and the EU marine strategy, EMS, the recommendations were:

1. Get a common understand on how to interpret the concepts, obtaining that the concepts for the WFD and the EMS are comparable (impossible to have different classifications etc.
2. Regarding the regionale conventions, then HELCOM/OPSAR do compile info and data to be used for BSAP (Baltic Sea Action Plan). The roles of the conventions must be determined later on
3. The overlap between the WFD and EMS, means that the same administrations will be involved, however it must be clarified how they should interact (12 nautic mile for chemical conditions).

Per Erik Iversens præsentation: ”Miljøgifte i nordiske havområder – bristanalyse”, havde som udgangspunkt: Generel kundskabsbehov med følgende deltemaer:

- kilder og tilførsler
- spredning af miljøgifte
- niveauer for alle typer miljøgifter
- effekter af miljøgifte fra individ til økosystems niveau
- de ”nye” miljøgifte

Anbefalingerne som følge af diskussionen efter præsentationer var følgende:

1. Drive videre igangværende arbejde i det nordiske i relation til konventionerne (og ikke modeller)
2. Synergieffekter mellem eutrofiering og miljøgifte (effekter, omsætning, spredning)
3. Ser på interaktionen mellem hav og luft, idet vi pt. differentiere mellem atmosfæriske og transporten i vand.

Omkring modellering på området er vi ikke kommet så langt som på luftsiden, i forbindelse med transportmekanismer, omsætning osv. Der er stor forskel på de forskellige stoffer og omsætningen er anderledes end for N/P. Der er et skift fra multimatrices til få substances i de nordiske lande i forhold til de traditionelle forurenende stoffer (Hg i sediment og fisk, kigger på trenden). Fokus bør være på forurenede stoffer på konventionslisten.

Det blev anbefalet at, de nordiske arbejdsgrupper bør gå sammen om finansiering til screening af miljøfremmede stoffer!

Stiig Markagers præsentation: ”Challenges in science and management of eutrophication” (eutrofiering i nordiske havområder – en bristanalyse) fokuserede på følgende forhold:

- Quantitative relationships between loading and effects (kvantitative sammenhæng mellem belastning og effekter)
 - Hvad betyder ændringer i belastningen i N og P (det er interessant for politikere). Reference til MARE-NEST projektet.
 - Secchi depth and nitrogen loading (calculated and empirical models for the Kattegatt)
- Bioavailability of nutrients (=biotilgængelighed af næringsstoffer)
 - External N-Load (Skagerrak og Østersøen er de dominerende kilder til N)
 - Inorganic N available for plancton (almost all atmospheric deposition is in this form)
 - Spørgsmål om Transfer between open area and coastal zone
- Eutrophication and marine resources
- EU directive
 - Al monitoring og management er rettet mod EU direktiver.

- Ecotoxocology and eutrophication = combined effects
 - Antifouling compound ZInkpyrition (antibegroningsmidler til både) forsøg viser at ved høje koncentrationer af N er der mindre toxicitet. Det viser, at hvis vi mindsker eutrofieringen vil nogle stoffer vise større toksicitet.

Anbefalinger fra den efterfølgende præsentation var:

- Vigtigt med de økonomiske konsekvenser/analyser (oftest opsplittet i marine science and økonomi – godt eksempel er MARE-modellen)
- Koblingen mellem marine ressourcer/eutrophication har ikke set på dette emne (How is marine areas recovering after heavy N loadings?) Vi bør kigge på koblingen mellem belastning og marine ressourcer - indtil 1950 har vi gødet økosystemet, samtidigt med at vi kunne få rigelig mængder fisk ud af økosystemet. Der var et breakpoint 1960, hvor landingen af fisk er gået ned på trods af at belastningen af N også er gået ned.
- Kobling mellem eutrofiering og hazardous substances. Der er behov for mere viden (antifouling komponenter, PAH).

National prioriterede havmiljøarbejde

Erik Syvertsens (Statens Forureningstilsyn) præsentation: "Helhetlig forvaltningsplan for Barentshavet, prosess og prioriteringer" omhandlede en forvaltningsplan for Lofoten.

Baggrund:

- dyr på toppen af næringskæderne med høje niveauer af miljøgifte
- øgning i olietranport,
- udbygning af olievirksomhed,
- øget turisme,
- stærk beskatning af fiske og skaldyrressourcer og
- begyndende klimaændringer.

Politisk tiltag:

- helhedsforvaltningsplaner for alle havområder
- fokus på økosystembaseret forvaltning baseret på miljøkvalitetsmål

Forvaltningsplan:

- arealplan,
- køreregler for næringer og aktiviteter,
- sameksistens,
- regelmæssig opdatering af planen,
- program for fyldning af kundskabshul,
- koordineret og tilpasset overvågning af planområdet)

Forvaltningsmål:

- biologisk mangfoldighed,
- samfundsøkonomi, forurening, miljørisiko

- samlede konsekvenser i dag (f.eks. ingen kendskab til effekter fra off-shore industri på det biologiske miljø)

Subgruppen tog præsentationen til efterretning, og diskussionen omkring medtagelse af klimaændringer i scenarier og forvaltningsplaner med udgangspunkt i Vandrammedirektet mundede ikke ud i egentlige anbefalinger.

Björn Sjöbergs (Västerhavets Vattenmyndighet) præsentation: ”En ny svensk vattenförvaltning” havde som udgangspunkt, at en forordning om forvaltning af kvaliteten på vandmiljø 2004 skabte forudsætninger for en ny vandforvaltning i Sverige. Ansvarsfordelingen fordeles på 4 forskellige myndighedsniveauer (Miljö och Samhällsbyggnadsdepartementet, Naturvårdsverket og Statens Geologiske Undersökning, Vattenmyndigheterna: Länsstyrelserna samt kommunerna). Problemer, som opstår, er følgende: Manglende datatilgængelighed, finansering, prispolitik, kommunalt planeringsansvar, formulering af kvalitetskrav etc.

Anbefalingerne, som følger af den efterfølgende diskussion er:

1. Processen omkring forvaltningsplanen viser at der er behov for interessent inddragelse (WFD requires Stakeholder involvement)
2. Fra forvaltningssiden skal der kunne udarbejdes en liste over prioriterede emner, så man kan arbejde mere effektivt (hvis der koordineres og udveksles erfaringer. Listen kunne f.eks. indeholde: i) modeller og ii) mangler kvalitetskriterier i modellerne.
3. Forum på nordisk hold. Hvordan har man gjort det i praksis i de forskellige lande? Der bør arrangeres en workshop med hovedtemaet omkring udveksling af erfaringer (f.eks. svarende til ”Forum Skagerrak”).

Tonny Niilonens (Danske Miljøstyrelse) præsentation: ”Nationale forvaltningsbehov”, dækker både Vandrammedirektivet, VRD, og NATURA 2000.

Hovedvægten i præsentation ligger på:

- Administration og forvaltning
- Forvaltningsbehov omkring miljøkvaliteten af havet
- Forvaltningsbehov omkring naturbevarelse.

Anbefalingerne som følge af diskussionen var:

- at vurdere sammenhængen mellem beskyttede områder (blå korridorer)
- at etablere et fælles arbejde omkring bæredygtig statusbevarelse (sustainable conservation status inhabitant species).

En plan for det nordiske samarbejde for havområdet:

Sverker Evans (Svenska Naturvårdsverket) fremlagte hurtigt en oversigt over prioriteringerne for Hav- og luftgruppen:

- Eutrofiering:
 - kobling mellem input koncentrationer og biologiske effekter, kritiske niveauer
 - turnover og biotilgængelighed af næringsstoffer

- operative hydrodynamiske modelsystemer
- Miljøfarlige stoffer (hazardous substances):
 - screening af POPS and metaller i NØ Atlanten og arktisk
- bæredygtig brug af de marine miljø:
 - Udvikling af vurderingskriterier og miljøklassifikationer systemer tilpasset nordiske forhold (BC, RC, EAC, EQS)

En meget kort diskussion (på grund af tidspress) omhandlede hvad vi mangler at gøre i nordisk regi. Forslagene var følgende:

- Hazardous substances - new POPs should also cover the whole concept of risk assessments (other conditions than the rest of Europe)
- A model covering the whole ecosystem is needed, when predicting the causes in the Baltic Sea to be used for scenarios. It is very important that these models are validated over a long period. We are decades behind before we can validate the hydrodynamic models and the ecological models).

6 Baggrundspapirer: hav

6.1 Per Erik Iversen (Statens Forureningstilsyn, Norge): Miljøgifter i nordiska havsområdene – en bristanalyse

Dette innlegget går på generelle kunnskapsbehov for miljøgifter i nordiske kyst - og havområder. Hva er vår (NMRs) målsetting for arbeidet med miljøgifter? Hva er de viktigste kunnskapsbehovene og hvilke utfordringer har vi for å kunne dekke disse? Hva kan gjøres på nordisk basis sett opp mot det som gjøres nasjonalt i de enkelte nordiske land og innen de havkonvensjonene landene tilhører? I tillegg må vårt nordiske arbeide koordineres mot det som skal gjøres innen vannrammedirektivet og på sikt under det europeiske marine direktiv - når det implementeres. *Momenter som kom under diskusjonene er tilføyd i kursiv.*

Bakgrunn:

Når det gjelder overordnede målsettinger for miljøgiftarbeidet inne Norden er det i ”En ny kurs for Norden” en hovedmålsetting som sier at ”..*naturfremmede stoffer som er skadelige for mennesket og naturen bør på sikt ikke forekomme*”. For at en slik målsetting skal nås må det gjøre tiltak for å redusere tilførslene av miljøgifter. I NMRs ”Miljøhandlingsprogram 2005 – 2008” er det nedfelt at vi skal ”..*bidra til at tilførslene av farlige stoffer til de nordiske havområder reduseres innen 2020, slik at innholdet av farlige stoffer ikke overskrider bakgrunnsnivåer for naturlige stoffe, og menneskeskapte stoffer skal reduseres til nær null.*”

Skal vi klare å nå disse målene må vi ha kunnskap om en rekke forhold og karakteristika omkring de ulike miljøgifter/miljøgiftgrupper. Det er en del generelle spørsmål som kan stilles og de for ”mest kjente” har vi vel relativt gode svar...

Hva er de ”farligste” miljøgiftene - som vi vet om ? Hvor mye finnes det av dem – kilder, tilførsler ? Hvor finnes de – i hvilke media/matrikser ? Hvordan spres de – luft, vann etc...? Hvilke egenskaper har de – PBT ? Hvordan virker de på individ/økosystemnivå ? Hvilke stoffer har vi kontroll på – forbud, restriksjoner, utslippbegrensninger. ? Hvilke vet vi lite om – ”nye stoffer” , screening ? Hvilke stoffer skal så prioriteres høyest? Hvor og hvordan skal tiltakene settes inn?

Generelle kunnskapsmangler:

Ved gjennomgang av kunnskapsmangler nedfelt i nyere OSPAR, HELCOM og nasjonale rapporter som tar opp dette, er det fem hovedområder som går igjen, og som til en stor grad dekker opp de fleste av spørsmålene nevnt ovenfor. Det er som følger;

Kunnskap om kilder og tilførsler;

Hvor finnes hvilke miljøgifter og i hvilke mengder? . Oppdaterte ”livsløpsanalyser” kan være aktuelt – for metaller tilstandsformer/spesiering mht. hva slippes ut (eks Hg, As).) Det trengs det bedre data over utslippmengder i form av; utslipp til luft (emissions) , direkte utslipp (discharges) og diffuse utslipp (losses). Eksempel ; Fra OSPAR/RID - Kobber (Cu) fra industri og elver har vi , men hva med ”utslipp ” fra for eks. båtskrog, merder (oppdrettsnøter) og sjønære deponier. Kommer dette med blir regnskapet et helt annet.

Kunnskap om spredning av miljøgifter;

Stoffenes egenskaper gir oss hint om deres spredningspotensiale. Det gjelder både den fysiske(luft, vannmasser..) spredning og den biologiske (gjennom næringskjeden). For våre kyst- og havområder er dette med biotilgjengelighet av sedimentbundne miljøgifter og potensialet for utlekking fra strandnære deponier aktuelt på det lokale plan. Opp mot dette står mer kunnskap om spredning av de enkelte stoffer med atmosfæriske luftstrømmer og havstrømmer. *Modellering av miljøgiftespredning er også aktuelt – se under.*

Kunnskap om nivåer av miljøgifter;

Det er relativt god dekning i kystområder via nasjonale program og konvensjonene når det gjelder ”gamle stoffer”. Dårligere dekning i de vestlige havområdene med unntak av områder med offshoreaktivitet. Datamengden er bedre på metaller enn på organiske miljøgifter. Det er dårlig med data på ”nye stoffer” (fra screening til trendovervåkingsprogram) – og derved særlige behov på disse. Det er viktig med hyppigere målinger for å få gode trenddata. Miljøgiftdata i vann – vannovervåking inn mot VRD. Databehov for bestemmelse av bakgrunnsverdier og vurderingskriterier (BC/EAC i OSPAR og EQS i EU/VRD).

En sammenlikning av nordiske vurderingskriterier og harmonisering av disse opp mot eksisterende og planlagte innen konvensjonene og EU er viktig Dette vi bli foreslått fra Hav & Luft gruppa som prioritert satsning for 2007.

Kunnskap om effekter av miljøgifter på økosystemene;

Grunnlaget for dette er bedre viten om stoffenes egenskaper – persistens, biotilgjengelighet og giftighet (PBT). Hvilke er det da viktigst å gå videre med i studier av deres effekt på enkeltindivider/biologisk effektovervåking (BEM) og på økosystemnivå.. Man bør ha bedre forståelse av korttids - og langtidseffekter. Det trengs mer kunnskap om samvirkende/kumulative effekter (additive, synergistiske, antagonistiske.) Hva med virkningen av enkelte stoffers nedbrytingsprodukter (metabolitter) ?

Kunnskap om ”nye stoffer”;

Først må man finne ut av hvilke ”nye stoffer” som kan ha potensielle negative effekter på miljøet. Dernest så er det å finne kildene, tilførselsveiene og hvor de eventuelt ender opp i naturen (målbare matrikser). Er det mulig å prøveta samt analysere på dem – hvis ikke må

ny metodikk utvikles. Så gjennomføres en screening og dersom nødvendig ender stoffet opp i et fast overvåkingsprogram. Resultater og videre satsning innen det svenske screeningprogrammet i ble presentert. Erfaringene med hva som fungerer best innen prosjektet bør det bygges videre på – også på nordisk basis. På sikt bør skriningen skiftes fra ”multimedia” gjennomgang til få gode matrikser – der det er mulig

Etter innlegget var det to temaer i tillegg til kommentarene på noen av de overstående fem som ble fremmet som viktige mht kunnskapsbehov på miljøgifter. Det var;

Miljøgifter – modellering:

Herunder spredningsmodeller for miljøgifter. Basis kan være det arbeidet som gjøres på eutrofisiden og ta lærdom fra atmosfærisk modellering. Det er også allerede utviklet en del modeller på miljøgiftsiden. Harmonisering av data mot (trend) modeller og omsetningsmodeller er også aspekter som trengs å belyses..?

Samvirkning miljøgifter og eutrofi:

Det er mangel på kunnskap om hvordan enkelte miljøgifter opptrer ved økt /avtakende eutrofiering. Et eksempel hvor data finnes er bunnstoffet Zinkpyriton hvor virkningen hemmes av økt eutrofiering (se innlegg på Eutrofi.)

Det ble også i plenum nevnt at det trengs ha mer nordisk innsats vedrørende risikovurderinger av miljøgifter. Dette må ses opp mot arbeidet som gjøres innen EU (REACH – kjemikaliegruppen).

Kunnskapsmangler på miljøgifter sett i relasjon til arbeidet innen OSPAR; HELCOM og EU – (vannrammedirektive/VRD og den marine strategi/ EMS).

De ovenfor beskrevne kunnskapsbehovene er dekkende for hva som gjelder innen de to konvensjonene de nordiske landene tilhører. Disse jobber også relativt godt sammen for å dekke behovene. Når det gjelder miljøgiftovervåking så er det hovedsakelig biota og sedimenter som det måles på i hav- og kystmiljøet i Norden. EUs VRD ønsker primært målinger i vannfasen, men kan akseptere biota (og kanskje sediment) for å delvis erstatte vannmålinger (compliance monitoring). VRD krever at det er overvåking av miljøgifter opp til 12 nautiske mil fra grunnlinja. Når det gjelder miljøgiftovervåking i EMS og et framtidig ”havdirektiv” er det foreløpig vagt, men man skal ha en generell oversikt over de ”problematisk miljøgiftene” i sedimenter, i hot spots og se på helseaspektet (fiskemat..).

Nordisk arbeid på miljøgifter i våre kyst- og havområder bør fortsatt konsentreres om at vi sammen bidrar inn mot våre konvensjoner og via dem arbeide for at mange års arbeid innen disse tilrettelegges og integreres i EUs miljøgiftarbeide.

6.2 Sverker Evans (Svenska Naturvårdsverket): Priority issues by the Sea & Air Group 2006

Nordic priority issues in the field of marine environmental management

The current priority issues by the Sea & Air Group are:

Eutrophication

- Operative hydrodynamic model systems
- Relations between inputs, concentrations and biological effects, in particular critical levels
- Turnover and bioavailability of nutrients

Hazardous substances

- Screening of POPs and metals in the North East Atlantic, the Baltic and the Arctic

Sustainable use of the marine environment

- Development of assessment criteria and environmental classification system appropriate for Nordic conditions (BC, RC, EAC, EcoQO, EQS)

In order to harmonise the Nordic marine environment protection work with the intentions of the European Marine Strategy, we need a common view on:

- Definition of Good Environmental Status, which must emerge at the regional level,
- Environmental targets that should correspond to the WFD and be based on typology and should use EcoQO:s, that are developed by the regional conventions,
- Consistency between the EMS, the WFD and the Habitats directive for bordering or overlapping sea areas,
- Better integration of monitoring programmes under the EMS and the WFD,
- Need of cooperation for understanding harmonisation and integration:
 1. Harmonising the understanding of the content
 2. Bridging with other directives + ICZM strategy (affects the catchment)
 3. Define the concept of programmes and measures
- Clarify the role of the marine conventions,
- Human health (is incorporated in the EMS but not in the WFD).

Environmental strategies also require *effect-oriented and cost-effective approaches*. Impact assessments, including detailed cost-benefit analysis of the measures proposed, will be required prior to the introduction of any new measure.

- Strategies have to be developed that take into account the relation between costs and environmental benefits;
- The development of concepts and tools for cost-effective strategies such as the development of models for actual sea areas must be promoted;
- Relations between loads and effects in the ecosystems and their relationships to environmental objectives should be developed as well as adequate assessment criteria which reflect the condition in the maritime area.

From an administration and management point of view, we need

- *Information and a relevant toolbox*, i.e., operationalisation of monitoring data (short-term), and basic research needs (long-term).

- *Analysis*, i.e. modelling, development of tools and systems for assessing environmental risks.
- *Presentation*, i.e. systems for handling of data, results, and GIS presentations.
- *Enforcement*, i.e. monitoring and control systems

7 Power point præsentationer

7.1 Sverker Evans (Svenska Naturvårdsverket): EU-Kommissionens havstrategi, vattendirektivet och arbetet i HELCOM och OSPARCOM, en analys med nordiska utgångspunkter.

The Nordic Council of Ministers (NMR) supports Nordic cooperation in order to underpin and speed implementation of international agreements.

The Council of Minister's Sea & Air Group submits joint material for political decisions in the field of air and sea pollution

Objectives:

Strengthen the Nordic influence in different international bodies.

Optimise Nordic research activities in order to reach a scientifically sound basis for cost-effective measures.

The Nordic Council of Ministers (NMR) supports Nordic cooperation in order to underpin and speed up ratification and implementation of international agreements. Cooperation between the Nordic ministers of the Environment is based on four-year Action plans. The Action plan 2005-2008 focuses on four areas; one of them is the marine environment. The Nordic cooperative work in the marine field aims at strengthening the sustainable use of the Nordic sea areas and to support the activities of the EU and the regional marine conventions. The task of *the Council of Minister's Sea & Air Group* is to submit joint material for political decisions in the field of air and sea pollution in order to strengthen the Nordic influence in different international bodies. The objective is thus to optimise the results of the research activities in the Nordic countries in order to reach a scientifically sound basis for cost-effective measures. The HELCOM and OSPAR conventions, the EU directives and the Nordic Environmental Action Plan comprise the basis for the Group's work. At present the Sea & Air Group focuses its effort to mainly three areas: transboundary air pollution, hazardous substances, and marine eutrophication.

- The EU directives
- The marine conventions
- The Nordic Environmental Action Plan

comprise the basis for the Sea & Air Group's work in the field of marine environment.

The HELCOM and OSPAR conventions, the EU directives and the Nordic Environmental Action Plan comprise the basis for the Group's work.



The European Commission's Marine Strategy package, which was published on 26 October 2005. The package consists of:

A Communication from the Commission to the Council and the European Parliament "Thematic Strategy on the Protection of the Marine Environment" COM (2005) 504 (the Marine Thematic Strategy); Set out an overall vision for the protection of the marine environment Describe why any approach to marine protection needs to recognise the differences in the character of the different marine areas in the EU Suggest an ecosystem-based approach, in line with the concept of sustainable development Recommend the identification of Marine Regions as being the most appropriate level to prepare implementation plans Explain how the EU marine strategy will interface with non-EU countries and with the international and regional conventions and commissions which already exist for the protection of European regional seas

A Proposal for a Directive of the European Parliament and of the Council "Establishing a Framework for Community Action in the field of Marine Environment Policy" COM (2005) 505 (the Marine Strategy Directive);

Scope and definitions

Environmental objectives –good environmental status- to be achieved within a defined time period

Derogations and exemptions to take account of situations where achievement of good environmental status would not be either feasible or practical

Establish Marine Regions as the management unit

Pressures, Impacts, Status and Trends

Decentralised approach - Implementation Plan to be developed by MS for each Marine Region

Cooperation through existing structure stemming from international agreements

Stakeholder involvement

Implementation measures affecting/requiring EU action to take the form of recommendations to the Commission

Implementation measures requiring action at international to take the form of recommendations to the Commission for coordinated EU approach

Iterative Approach – regular updates of the implementation plans

Reporting - INSPIRE compatible

A Commission staff working document "Annex to the Communication from the Commission to the Council and the European Parliament – Thematic Strategy on the Protection and Conservation of the Marine Environment and Proposal for a Council Directive of the European Parliament and of the Council establishing a Framework for Community Action in the field of Marine Environmental Policy" SEC (2005) 1290 (the Commission's Impact Assessment).



The Thematic Strategy on the Protection and Conservation of the Marine Environment aims to achieve good environmental status of the EU's marine waters by 2021 and to protect the resource base upon which marine-related economic and social activities depend. The Marine Strategy will constitute the environmental pillar of the **future maritime policy** the European Commission is working on, designed to achieve the full economic potential of oceans and seas in harmony with the marine environment.



The strategy also foresees a regional approach (North East Atlantic Sea, Baltic Sea) to the protection of the marine environment across European seas through the development of separate action plans. Regions may be further divided into subregions (e.g. Greater North Sea).



A regional marine strategy should successively be developed and implemented that contains:

1. A description of the specific region and an evaluation of its environmental status and the anthropogenic impacts. HELCOM is in possession of a comprehensive set of basic information. The EU member states are also actively generating important data in their realisation of the WFD.
2. Regional environmental Quality Objectives. There is an ongoing work within HELCOM for the open sea. Countries should make available their results related to the characterisation of their coastal areas.
3. A Monitoring and Assessment Programme. There is current work within both HELCOM and WFD.
4. An Action Plan in order to reach the Environmental Objective.
5. The Regional Marine Strategy should be adopted by the Parties concerned.

The first marine strategy shall be ready in 2016 and all actions should be carried through in 2018 at the latest. The plan should be submitted to the European Commission. Member countries should jointly secure that the regional marine strategies are co-ordinated and are invited to use existing structures within international agreements. Member States shall identify necessary actions in order to reach the environmental objective. The Action Plan should be available at the latest seven years after the adoption of the directive. Member States shall report how the actions will be implemented and how they will contribute to the fulfilment of the objective. The measures should be cost-effective.

Establishment of environmental targets

On the basis of the initial assessment made pursuant to Article 7(1), Member States shall, in respect of each Marine Region concerned, establish a comprehensive set of environmental targets and associated indicators for all of their European marine waters, taking into account the non-exhaustive list of characteristics set out in Annex III.

When devising those targets and indicators, Member States shall take into account the continuing application of existing environmental targets, set out at national, Community or international level in respect of the same waters.

Member States shall notify the environmental targets to the Commission no later than three months after their establishment.

COORDINATION AND COOPERATION

- ❑ MS should coordinate their activities within each region,
- ❑ Existing institutional structures already established should be used when appropriate (e.g. HELCOM, OSPAR)
- ❑ MS should aim at coordination with countries outside EU within each region, using international agreements.

A common framework for cooperation

The Commission is the guarantor of the coherence of actions by the Member States; they have to submit the details of their strategies at each stage of their formulation as well as their complete programmes of measures. This information is examined and then approved by the Commission that thus ensures compliance with the strategy and the coherence of the proposed measures.

Member States who are in the same marine region are required to coordinate their action. To this end the strategy recommends use of the cooperation mechanisms set up by existing international conventions. The international organisations established by these conventions provide their scientific and technical know-how and allow cooperation to be extended to third countries that are parties.

The Community approach also ensures coherence between the sectors and with other European policies, such as the Common fisheries policy or the future European maritime policy .

MEASURES

MS should:

- ❑ Develop action programmes in order to achieve good environmental status and sustainable development (2016)
- ❑ Entry into operation: technically feasible and cost-effective action programmes (2018).
- ❑ Specify how the actions should be implemented and how they will contribute to the environmental targets.
- ❑ Report to the Commission and MS concerned.

The Commission shall publish a first evaluation report on the implementation of this Directive within two years of receiving all programmes of measures and, in any case, by 2021 at the latest.

Water Framework Directive

- ❑ Key aim of achieving at least Good Ecological Status for all waters, including transitional and coastal waters by 2015.
- ❑ Ecological status is determined by its assessment against a defined set of biological, physico-chemical and hydromorphological quality elements.
- ❑ Requirement to undertake assessment of the risk of not meeting good status due to human pressures.

The objective of the Marine Strategy is to achieve good environmental status of Europe's marine environment by 2021. This date will coincide with the first review of River Basin Management Plans under the EU Water Framework Directive (WFD), allowing for synergies on the further implementation of both Directives.

OSPAR and HELCOM Maritime Areas



Geographical coverage

The Water Framework Directive covers waters up to one nautical mile seaward from the coastal base line for biological quality elements, including nutrients and oxygen, and 12 nautical miles for compliance with environmental quality standards for the 33 hazardous substances. HELCOM and OSPAR has a much broader geographical coverage (Baltic Sea, North-East Atlantic) and includes estuaries as well.

OSPAR Eutrophication Strategy

Target: Achieve, by the year 2010, a healthy marine environment where eutrophication does not occur.

Strategy: Develop programmes and measures to identify and characterise each part of the maritime area as a problem area/potential problem area/non-problem area with regard to eutrophication and to take measures to reduce or to eliminate the anthropogenic causes of eutrophication.

Samma tidsplan (2010) som Nordiska miljöhandlingsprogrammet Areas of the maritime area, for which actions are needed, will be identified by the Common Procedure for the Identification of the Eutrophication Status of the Maritime Area (the "Common Procedure") which will be used to characterise each part of the maritime area as a problem area or a potential problem area or a non-problem area with regard to eutrophication. In implementing the Common Procedure, the Commission will from time to time:

further develop and adopt common assessment criteria;
assess the results of its application by Contracting Parties.

The identification of the eutrophication status of their parts of the maritime area will be made by Contracting Parties.

Actions required will depend upon that classification as follows:

in the case of non-problem areas with regard to eutrophication, the status of the area with regard to eutrophication will be reassessed by applying the Common Procedure if there are grounds for concern that there has been a substantial increase in the anthropogenic nutrient load;

in the case of potential problem areas with regard to eutrophication, preventive measures should be taken in accordance with the Precautionary Principle.

Furthermore, there should be urgent implementation of monitoring and research in order to enable a full assessment of the eutrophication status of each area concerned within five years of its being characterised as a potential problem area with regard to eutrophication;

in the case of problem areas with regard to eutrophication: measures shall be taken to reduce or to eliminate the anthropogenic causes of eutrophication;

reports shall be provided on the implementation of such measures; assessments shall be made of the effectiveness of the implementation of the measures on the state of the marine ecosystem.

Actions should comprise an integrated target-oriented and source-oriented approach, as described in the following paragraphs.

The main elements of the target-orientated approach are as follows:

an evaluation from time to time of the situation in the maritime area that is expected following the implementation of agreed measures;
the completion of the pilot project for the North Sea on ecological quality objectives, involving the trial application of a set of agreed ecological quality objectives for a number of ecological quality issues and related elements, together with the development of further ecological quality objectives for other ecological quality issues and ecologically quality elements;

in the light of that pilot project and other work, evaluation of environmental quality against clear ecological objectives, both as a long-term system for the North Sea and in other OSPAR regions.

Such ecological quality objectives are intended to reflect the state of region-specific marine ecosystems in areas for which there are no grounds for concern that anthropogenic nutrient enrichment has caused eutrophication or may in future do so.

the setting of intermediate targets, in order to work towards attaining such objectives. Such targets should be combined with an indication of the size of further nutrient reductions required, estimated on the basis of an evaluation of the situation that is expected following the implementation of agreed measures, and possible means to achieve these reductions.

The source-oriented approach has the following main elements:

the implementation of any national or international measures as adopted by individual Contracting Parties for the reduction of nutrients in discharges/emissions from industry, sewage treatment plants, agriculture and other diffuse sources;

the promotion of good housekeeping in industry and sewage treatment and of good agricultural practice and ecological agriculture including proper use of the approach of aiming to strike a balance between the amounts of nutrients in the fertiliser applied and the requirements of the crop, and that proper attention is given to ammonia emissions;

in all areas from which nutrient inputs are likely, directly or indirectly, to contribute to inputs into problem areas with regard to eutrophication the following additional requirements:

the implementation by Contracting Parties concerned⁴ of:

PARCOM Recommendation 88/2 on the Reduction in Inputs of Nutrients to the Paris Convention Area;

PARCOM Recommendation 89/4 on a Coordinated Programme for the Reduction of Nutrients;

PARCOM Recommendation 92/7 on the Reduction of Nutrients Inputs from Agriculture into Areas where these Inputs are likely, directly or indirectly, to cause Pollution;

BAT specifically designed for nitrogen and phosphorus removal from urban and industrial sewage.

OSPAR Hazardous Substances Strategy

Target: Cessation of discharges, emissions and losses of hazardous substances by the year 2020.

Strategy: Develop programmes and measures to identify, prioritise, monitor and prevent and/or reduce and/or eliminate the emissions, discharges and losses of hazardous substances which reach, or could reach, the marine environment.

Samma tidsplan som det nordiska miljöhandlingsprogrammet. The Commission will develop programmes and measures to identify, prioritise, monitor and control (i.e., to prevent and/or reduce and/or eliminate) the emissions, discharges and losses of hazardous substances which reach, or could reach, the marine environment.

Two action approaches

Source-oriented approach

The implementation of any national or international measures for the reduction of discharges/emissions from point and diffuse sources (BAT, BEP)

Target-orientated approach

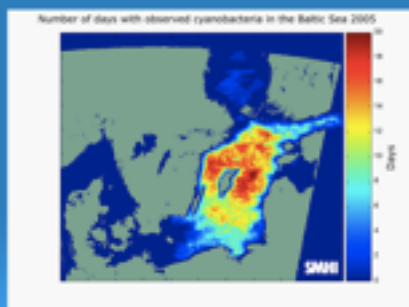
An evaluation of the situation in the maritime area that is expected following the implementation of agreed measures (Ecological Quality Objectives, interim targets)

Examples of EcoQOs for eutrophication

- ❑ Winter DIN and/or DIP should remain below elevated levels, defined as concentration > 50% above salinity related and/or region-specific natural background concentrations.
- ❑ Maximum and mean region-specific chlorophyll *a* concentrations during the growing season should remain below region-specific elevated levels, defined as concentrations > 50% above the spatial (offshore) and/or historical background concentration.
- ❑ Region/area-specific phytoplankton eutrophication indicator species should remain below respective nuisance and/or toxic elevated levels (and increased duration).

Examples of specific Ecological Quality Objectives for eutrophication agreed at the 5th North Sea Conference (Bergen Declaration 2002).

Associated indicators



Similarities and differences

Assessment methods:

The marine conventions generally focus on the relationships between pollutants and their biological effects using BC:s and EAC:s

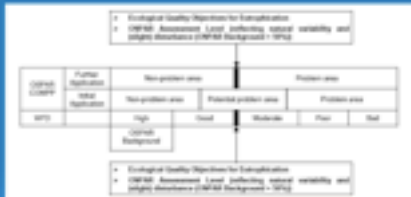
The Water Framework Directive provides for the classification of water types including estuaries and coastal waters, comprising the following five classes: high, good, moderate, poor and bad.

Bringing the elements together

The diagram illustrates the relationship between the classification under the Comprehensive Procedure and the integrated set of EcoQOs for eutrophication and the Water Framework directive. It shows a flowchart with the following components:

- Top Box:** Ecological Quality Objectives for Eutrophication
 - EcoQO Assessment Level reflecting spatial variability and weight disturbance (EcoQO Background - 10%)
- Flowchart:**
 - Left Column:**
 - Current Eutrophication
 - Future Eutrophication
 - WFD
 - Central Column:**
 - Non-problem area
 - Problem area
 - High
 - Good
 - Medium
 - Low
 - Very Low
 - Right Column:**
 - Problem area
 - Problem area
 - High
 - Good
 - Medium
 - Low
 - Very Low
- Bottom Box:** Ecological Quality Objectives for Eutrophication
 - EcoQO Assessment Level reflecting spatial variability and weight disturbance (EcoQO Background - 10%)

Relationship between the classification under the Comprehensive Procedure, the integrated set of EcoQOs for eutrophication and the Water Framework directive.



The Baltic Sea Action Plan
A new environmental strategy for the Baltic Sea region



The Baltic Sea Action Plan

Key issues :

- ❑ Eutrophication
- ❑ Hazardous substances
- ❑ Maritime activities
- ❑ Biodiversity

Setting targets:

- ❑ BSAP is to be based on *Ecological Objectives*
- ❑ Progress towards these targets will be assessed through *Indicators*

Programmes of measures:

- ❑ Proposal for cost-effective measures including a time-table for actions

As a response to the European Marine Strategy and its request to develop regional Action plans HELCOM has started the development of a Baltic Sea Action plan. The BSAP will be ready at a ministerial meeting in 2007. A Task force has started to outline the structure and content of the plan.

Ministers and high representatives of all the states surrounding the Baltic Sea, the Nordic countries, the Helsinki Commission, the EU Commission, the UK Presidency of the EU and the incoming Austrian EU Presidency as well as representatives of the Secretariat of the Council of the Baltic Sea States met in Haga on 23 November 2005 to have an informal discussion on action to improve the environmental situation in the Baltic Sea.

There was general agreement at the meeting that the state of the Baltic Sea requires strengthened action in order to tackle the major problems: eutrophication, hazardous substances, environmental impacts of shipping and threats to fish stocks.

It was also agreed that the Helsinki Commission (HELCOM) is the best environmental focal point dealing with the coordination of activities to improve the ecological status of the Baltic Sea.

Strengthen the HELCOM Baltic Sea Action Plan

The upcoming HELCOM Baltic Sea Action Plan should be the guiding instrument for further action. A special task force within HELCOM could be set up to intensify the work.

Make the Baltic Sea Action Plan a joint Pilot Project

The European Commission has presented a marine strategy package. It was proposed that the Baltic Sea should be a pilot project by implementing the Baltic Sea Action Plan with early delivery of joint and national strategies. EU-Russian cooperation could be further strengthened in Baltic Sea cooperation.

Implement the Ecosystem approach

Our seas have to be recognized as ecosystems with complex interaction between various impacts. Applying the ecosystem approach consequently means to integrate different policy sectors with the aim of achieving sustainable use and protection of the Baltic Sea.

Stop the eutrophication of the Baltic Sea

The load of nutrients, both phosphorus and nitrogen, has to be reduced in major sectors including agriculture and airborne emissions from transportation as well as sewage from shipping. Investments in wastewater treatment facilities should continue and be improved in order to achieve the optimal effect for the Baltic Sea as a whole. The ongoing work on national strategy plans and rural development programmes must ensure that development of the agricultural sector pays greater attention to the needs of the Baltic Sea.

Reduce hazardous substances

Further efforts must be made to minimise releases so that the content of such substances is reduced or where possible eliminated in the sea. All fish caught for consumption in the Baltic Sea Area should have non-elevated concentrations of hazardous substances.

Restore all fish stocks

The reductions in fish stocks in the Baltic Sea Area, and in cod in particular, have contributed to serious ecosystem problems. Management of fish species should be further coordinated from an ecosystem perspective.

Improve maritime safety and emergency capacity

The dense and increasing maritime traffic in the Baltic Sea and the associated risk of incidents leading to pollution by oil or other harmful substances constitutes a continuous threat to the marine environment. HELCOM adopted a Declaration on the Safety of Navigation and Emergency Capacity in the Baltic Sea Area in 2001; this declaration must be fully implemented and the need for additional measures within this framework should be further investigated and decided.

Increase focused research

Research needs to be further focused towards optimisation of measures. The ongoing BONUS programme has constructively worked in this direction and a commitment to the further continuation of the BONUS programme could be considered. Increasing basic and applied transsectoral aquatic science is a prerequisite for cost-effective measures. Networking between researchers needs to be encouraged.

What has the Sea & Air Group done so far?

Eutrophication

- ❑ An ongoing strategic venture to develop operative model systems related to marine eutrophication,
- ❑ Cost-effective reduction of the nutrient load combining economics and ecology.
- ❑ Reference conditions and typologies for aquatic vegetation and macrozoobenthos in the Skagerrak and Kattegat
- ❑ Defining reference conditions for coastal areas in the Baltic Sea for the Water Framework Directive
- ❑ Estuarine quality classes for Water Framework Directive indicators
- ❑ Bioavailability of organic N fraction

Since 1997 there has been an ongoing strategic venture within the Sea & Air Group to develop operative model systems related to marine eutrophication issues.

The overall objective is to optimise the results of the research activities in the Nordic countries in order to reach a scientifically sound basis for cost-effective measures.

A marine model system should aim at, in conformity with the models for transboundary air pollution, be used as a basis for the development of abatement strategies in the framework of the marine conventions.

The "customers" of such a model system are the environmental protection agencies in the Nordic countries as well as a number of international organisations such as OSPAR, HELCOM, EU, and EEA. The efforts have so far been devoted to develop models, which are capable to simulate the dynamics of nutrients and to a certain extent also, biomass in the open sea areas.

Cost-effective reduction...

By combining biological-chemical and socio-economic expertise this project aims at providing scientifically sound and economically realistic methodology and measures for the assessment and reduction of the anthropogenic nutrient load to the Baltic Sea. Since agriculture is a major source of nutrients, proven to be difficult to control, special emphasis will be paid on the nutrients originating from crop production and animal husbandry. The Gulf of Finland will serve as a case area but the results will be applied to the scale of the entire Baltic Sea in co-operation with the Swedish MARE project.

Reference conditions (RETRO)

Inriktning på att utveckla en metod för att karaktärisera typområden för vegetation och bottenfauna i samband med implementeringen av WFD. Projektet avslutas 2004.

Defining reference conditions (DEFINE)

Projektet avser att definiera referensförhållanden för närsaltskoncentrationer i Östersjöns kustområden genom att ta fram transfer functions baserade på diatoméförekomsten i sediment. Projektet är en fortsättning på EU MOLTEN project som avslutas i januari 2004 och målet är att få en heltäckande bild av referenstillståndet med avseende på närsaltskoncentrationer i hela Östersjöns kustområden utom i den sötvatteninfluerade Bottniska viken.

Estuarine quality classes (EQUAL)

Projektet avser att utveckla och testa metoder för en gemensam nordisk kvalitetsklassificering av indikatorer för WFD.

What has the Sea & Air Group done so far?

Hazardous substances

A comparative assessment of persistent organic pollutants and their metabolites, with emphasis on non-traditional contaminants, in the West-Nordic and the Baltic Proper.

Environmental risk assessment of chemicals from marine fish farms - medicines, biocides and POPs from fish feeds.

Monitoring of organic contaminants in air and deposition in the Nordic countries and in Arctic areas. An evaluation of data and methods.

Long term ecological effects by oil spill in the Baltic Sea and the North Atlantic



ECOSYSTEM APPROACH PRINCIPLES

- ❑ Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems;
- ❑ Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach;
- ❑ Ecosystems must be managed within the limits of their functioning;
- ❑ The ecosystem approach should be undertaken at the appropriate spatial and temporal scales;
- ❑ Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term;
- ❑ Management must recognize that change is inevitable.

OPERATIONAL GUIDANCE FOR APPLICATION OF THE ECOSYSTEM APPROACH

- ❑ Focus on the functional relationships and processes within ecosystems;
- ❑ Enhance benefit-sharing;
- ❑ Use adaptive management practices;
- ❑ Carry out actions at the scale appropriate for the issue being addressed, with decentralization to lowest level, as appropriate;
- ❑ Ensure intersectional cooperation

Priority issues by the Sea & Air Group 2006

Eutrophication

- ❑ Relations between inputs, concentrations and biological effects, in particular critical levels
- ❑ Turnover and bioavailability of nutrients
- ❑ Operative hydrodynamic model systems

Hazardous substances

- ❑ Screening of POPs and metals in North East Atlantic and Arctic

Sustainable use of the marine environment

- ❑ Development of assessment criteria and environmental classification system appropriate for Nordic conditions (BC, RC, EAC, EcoQO, EQS)

The hydrodynamic models developed within the Nordic Council of Ministers Sea & Air Group could be used as a tool for the further development of an integrated assessment model system to support decisions about effect-based, cost-effective abatement strategies for marine eutrophication.

Environmental strategies require effect-oriented and cost-effective approaches

- ❑ Develop strategies by taking the relation between costs and environmental benefits into account;
- ❑ Promote to the development of concepts and tools for a cost-effective strategy such as the development of models for actual sea areas by which currents, mixing and material fluxes can be expressed;
- ❑ Develop relations between loads and effects in the ecosystems and their relationships to environmental objectives;
- ❑ Develop adequate assessment criteria which reflect the condition in the maritime area.

Gaps in knowledge

- ❑ The links between various human impacts and their response in the marine environment are poor;
- ❑ Quality criteria to identify issues of concern are not made explicit;
- ❑ The root causes behind environmental degradation have not been scrutinized to any extent;
- ❑ Improved data and evaluation tools are needed.

Sammenfatning: EU-kommissionens havsstrategi, vattendirektivet och arbetet i HELCOM och OSPAR - en analys med nordiska utgångspunkter

The role of NMR

The Nordic Council of Ministers (NMR) supports Nordic cooperation in order to underpin and speed up ratification and implementation of international agreements. Cooperation between the Nordic ministers of the Environment is based on four-year Action plans. The Action plan 2005-2008 focuses on four areas; one of them is the marine environment. The Nordic cooperative work in the marine field aims at strengthening the sustainable use of the Nordic sea areas and to support the activities of the EU and the regional marine conventions.

The task of *the Council of Minister's Sea & Air Group* is to submit joint material for political decisions in the field of air and sea pollution in order to strengthen the Nordic influence in different international bodies. The objective is thus to optimise the results of the research activities in the Nordic countries in order to reach a scientifically sound basis for cost-effective measures. The HELCOM and OSPAR conventions, the EU directives and the Nordic Environmental Action Plan comprise the basis for the Group's work. At present the Sea & Air Group focuses its effort to mainly three areas: transboundary air pollution, hazardous substances, and marine eutrophication.

The European Marine Strategy (EMS)

The European Commission's Marine Strategy package, which was published on 26 October 2005, consists of:

- A Communication from the Commission to the Council and the European Parliament "*Thematic Strategy on the Protection of the Marine Environment*" COM (2005) 504 (the Marine Thematic Strategy);
- A Proposal for a Directive of the European Parliament and of the Council "*Establishing a Framework for Community Action in the field of Marine Environment Policy*" COM (2005) 505 (the Marine Strategy Directive).

The Communication

1. Sets out an overall vision for the protection of the marine environment,
2. Describes the needs to recognise the differences in the character of the different marine areas in the EU,
3. Suggests an ecosystem-based approach,
4. Recommends the identification of Marine Regions as being the most appropriate level to prepare implementation plans,
5. Explains how the EU marine strategy will interface with non-EU countries and with the international and regional conventions and commissions which already exist for the protection of European regional seas.

The Proposal for a Marine Directive reports on:

1. Scope and definitions,
2. Environmental objectives –good environmental status- to be achieved within a defined time period,
3. The establishment of Marine Regions as the management unit,
4. Pressures, Impacts, Status and Trends,
5. Implementation Plan to be developed by MS for each Marine Region,

6. Cooperation through existing structure stemming from international agreements,
7. Stakeholder involvement,
8. Implementation measures affecting/requiring EU action to take the form of recommendations to the Commission,
9. Regular updates of the implementation plans,
10. Reporting.

This strategy meets a twofold objective: to protect and restore Europe's seas and ensure the ecological sustainability of economic activities linked to the marine environment by 2021. This date coincides with the first review of River Basin Management Plans under the EU Water Framework Directive (WFD), allowing for synergies on the further implementation of both Directives. Furthermore, the Marine Strategy will constitute the environmental pillar of the *future Maritime Policy* the European Commission is currently working on, designed to achieve the full economic potential of oceans and seas in harmony with the marine environment.

Regional marine strategies

The strategy foresees a regional approach (North East Atlantic Sea, Baltic Sea, and Mediterranean Sea) to the protection of the marine environment across European seas through the development of separate action plans. Regional marine strategies should successively be developed and implemented and will contain:

1. A description of the specific region and an evaluation of its environmental status and the anthropogenic impacts. HELCOM and OSPAR are in possession of comprehensive sets of basic information. The EU member states are also actively generating important data in their realisation of the WFD.
2. Ecological Quality Objectives. There is an ongoing work both within HELCOM and OSPAR for the open sea. Countries should make available their results related to the characterisation of their coastal areas.
3. A Monitoring and Assessment Programme. There is current work within both the marine conventions and WFD.
4. An Action Plan in order to reach the objective Good Environmental Status.

Regions may be further divided into sub regions (e.g. Greater North Sea), if deemed appropriate. The first marine strategy shall be ready in 2016 and all actions should be carried through in 2018 at the latest. The plan should be submitted to the European Commission. Member States who are in the same marine region are required to coordinate their action. To this end the strategy recommends use of the cooperation mechanisms set up by existing international conventions. The international organisations established by these conventions provide their scientific and technical know-how and allow cooperation to be extended to third countries that are parties.

Member States shall identify necessary actions in order to reach the environmental objective. The Action Plan should be available at the latest seven years after the adoption of the directive. Member States shall report how the actions will be implemented and how they will contribute to the fulfilment of the objective. The measures should be cost-effective.

The Commission is the guarantor of the coherence of actions by the Member States; they have to submit the details of their strategies at each stage of their formulation as well as their complete programmes of measures. This information is examined and then approved by the Commission that thus ensures compliance with the strategy and the coherence of the proposed measures. The Community approach also ensures coherence between the sectors and with other European policies, such as the Common fisheries policy or the future European maritime policy.

Environmental targets

Member States shall establish a comprehensive set of environmental targets and associated indicators. When devising those targets and indicators, Member States shall take into account the continuing application of existing environmental targets, set out at national, Community or international level in respect of the same waters. Member States shall notify the environmental targets to the Commission no later than three months after their establishment. The Commission shall publish a first evaluation report on the implementation of this Directive within two years of receiving all programmes of measures and, in any case, by 2021 at the latest.

The Water Framework directive (WFD)

The key aim of the Water Framework Directive is to achieve at least *Good Ecological Status* and *Good Chemical Status* for all waters, including transitional and coastal waters by 2015. Ecological status is determined by its assessment against a defined set of biological, physico-chemical and hydromorphological quality elements. Good chemical status is defined in terms of compliance with all the quality standards established for chemical substances at European level. There are requirements to undertake assessment of the risk of not meeting good status due to human pressures

Similarities and differences between the EMS, the WFD, and the marine conventions

Geographical coverage

The WFD covers waters up to one nautical mile seaward from the coastal base line for biological quality elements, including nutrients and oxygen, and 12 nautical miles for compliance with environmental quality standards for the 33 hazardous substances. *The EMS* is applicable to all European waters on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach of the area covered by the sovereignty or jurisdiction of Member States including the bed of all those waters and its sub-soils. *HELCOM and OSPAR* have a wider geographical coverage (Baltic Sea, North-East Atlantic), which in some case extends beyond the EEZ and include estuaries as well.

Assessment schedules

The time-frames to reach the targets for eutrophication (2010) and hazardous substances (2020) in the marine conventions are identical to those of the Nordic Environmental Action Plan.

Ecological Quality Objectives (EcoQO:s) and associated indicators

EcoQO:s are intended to reflect the state of region-specific marine ecosystems and are developed by the marine conventions and by the WFD.

Assessment methods:

The marine conventions generally focus on the relationships between pollutants and their biological effects using Background Concentrations and Environmental Assessment Criteria. The Water Framework Directive provides for the classification of water types including estuaries and coastal waters, comprising the following five classes: high, good, moderate, poor and bad. However, efforts are being made to bring the elements together using the same assessment methods and making them comparable.

Baltic Sea Action Plan (BSAP)

As a response to the European Marine Strategy and its request to develop regional Action plans, HELCOM has started the development of a Baltic Sea Action plan. The BSAP will be reported at a ministerial meeting in 2007. A Task force has started to outline the structure and content of the plan. EU-Russian cooperation could be further strengthened in Baltic Sea cooperation. The key issues are eutrophication, hazardous substances, maritime activities, and biodiversity. The BSAP is to be based on Ecological Objectives and progress towards these targets will be assessed through Indicators.

What has the Sea & Air Group done so far?

Eutrophication

Since 1997 there has been an ongoing strategic venture within the Sea & Air Group to develop operative model systems related to marine eutrophication issues.

The overall objective is to optimise the results of the research activities in the Nordic countries in order to reach a scientifically sound basis for cost-effective measures. A marine model system should aim at, in conformity with the models for transboundary air pollution, be used as a basis for the development of abatement strategies in the framework of the marine conventions.

The "customers" of such a model system are the environmental protection agencies in the Nordic countries as well as a number of international organisations such as OSPAR, HELCOM, EU, and EEA.

The efforts have so far been devoted to develop models, which are capable to simulate the dynamics of nutrients and to a certain extent also, biomass in the open sea areas.

Other important issues related to eutrophication are:

- Cost-effective reduction of the nutrient load combining economics and ecology,
- Reference conditions and typologies for aquatic vegetation and macrozoobenthos in the Skagerrak and Kattegat
- Defining reference conditions for coastal areas in the Baltic Sea for the Water Framework Directive
- Estuarine quality classes for Water Framework Directive indicators
- Bioavailability of organic N fraction

Hazardous substances

Hazardous substances issues run by the Sea & Air Group include e.g.:

- A comparative assessment of persistent organic pollutants and their metabolites, with emphasis on non-traditional contaminants, in the West-Nordic and the Baltic Proper,
- Environmental risk assessment of chemicals from marine fish farms - medicines, biocides and POPs from fish feeds,
- Monitoring of organic contaminants in air and deposition in the Nordic countries and in Arctic areas: An evaluation of data and methods,
- Long term ecological effects by oil spill in the Baltic Sea and the North Atlantic

Harmonising the NMR and the EMS initiatives in the field of marine environment protection

The Sea & Air Group and the Environment & Fisheries Group have jointly produced a report how to harmonise the Nordic marine environment protection work with the intentions of the EMS ("Nordiske indspil til EU's Marine Strategi"). It is important that the proposed activities in the report will be considered in e.g. the BSAP. From an NMR perspective we need a common view as regards:

- Definition of Good Environmental Status, which must emerge at the regional level,
- Environmental targets should correspond to the WFD and be based on typology and should use EcoQO:s, that are developed by the regional conventions,
- Consistency between the EMS, the WFD and the Habitats directive for bordering or overlapping sea areas,
- Better integration of monitoring programmes under the EMS and the WFD,
- Development of marine operational models,
- Research on impact of fisheries on biodiversity,
- Mapping of sensitive areas and a strategy for their protection

7.2 Saara Back (Finlands Miljöcentral): Hur kan Norden samverka vid genomförandet av EU's förslag till marint direktiv och EU's Ramdirektiv för vatten?

WFD ja Marine Strategy Directive

- Need of co-operation for understanding, harmonising and integrating
- Administration level
 - Harmonising the understanding of the content
 - Bridging with the WFD and other directives and strategies (e.g. UWWO, Nitrate Directive, Habitat directive, ICZM strategy)
 - important on the Baltic Sea, effect on the catchment area
 - Define the concept of programmes of measures
- Clarify the role of the Marine conventions and Member States



SYKE

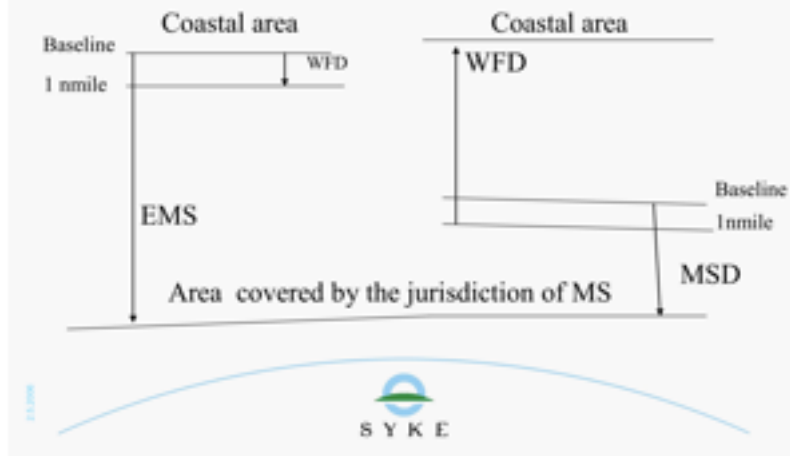
Scientific point of view

- Physical and chemical features
- Inventories of marine underwater habitats both coastal and off shore
 - Description of biological communities (phyto- and zooplankton, invertebrates, mammals, fish, invasive species, other species under EU legislation)
- Ecological classification needs qualitative descriptors, detailed criteria and standards
 - Definition of reference values
 - Classification **system**
 - Consideration of economic and social concerns in setting targets
 - Integrate this system with WFD system
- Chemical contamination in species for human consumption
- Monitoring programmes,
 - stand. methods for monitoring, avoiding duplication of efforts



SYKE

WFD and Marine Strategy Directive - areas of implementations



7.3 Per Erik Iversen (Statens Forureningstilsyn, Norge): Miljøgifter i nordiska havsområdene – en bristanalyse

s ft: Miljøgifter i nordiska havsområdene – en bristanalyse

Kunnskapsbehov for miljøgifter i nordiske havsområder

Per Erik Iversen SFT

Miljøgifter – NMR overordnede målsetninger

- "Naturfråmende åmnen som år skadelige for mnniskan och naturen br p skt ej f frekomma"
- Bud nr. 10 av 11 i "Hllbar utveckling – En ny kurs fr Norden"*
- "t bidra till at tilfrsklen af farlige stoffer til de nordiske havsomrder reduceres inden 2020, s indholdet af farlige stoffer ikke overskrider bagrunds niveauer for naturlige stoffer, og s menneskeskabte stoffer reduceres til nul"
- Fra Miljhandlingsprogram 2005 – 2009 , under 8 Hoved ..*

s ft: Miljøgifter i nordiska havsområdene – en bristanalyse

Skal vi klare dette m vi vite

- Hva er "farlige miljgifter" – som vi vet om ?
- Hvor mye finnes det...
- Hvor finnes de...
- Hvilke nver har vi...
- Hvordan spres de....
- Hvilke egenskaper har de...
- Hvordan virker disse p individ/kosystemniv ...
- Hvilke stoffer har vi kontroll p...
- Hvilke vet vi lite om...
- Hvilke prioriteres hyest ...
- Hvor og hvordan skal tiltakene settes inn...

s ft: Miljøgifter i nordiska havsområdene – en bristanalyse

Generell kunnskapsbehov

Det trengs mer og bedre kunnskap om;

- Kilder og tilfrskler
- Spredning av miljgifter
- Nver av alle typer miljgifter
- Effekter av miljgifter fra individ til kosystemniv
- De "nye miljgiftene"

s ft: Miljøgifter i nordiska havsområdene – en bristanalyse

Kilder og tilfrskler

- Hvordan miljgiftene brukes og slippes ut
- Utslippmengder (emissions, discharges and losses)
- Oppdaterte livslpsanalyser
- ...

s ft: Miljøgifter i nordiska havsområdene – en bristanalyse

Spredning av miljgifter

- Transport av miljgifter i vannmassene
- Transport av miljgifter via atmosfren
- Transport igjennom nringskjeden
- Biotilgjengelighet av sedimentbundne miljgifter
- ...

Nivåer av miljøgifter

- Nordisk kartlegging rimelig god, men noe dårlig geografisk dekning? (OSPAR, HELCOM; nasjonale programmer)
- Årlige (eller oftere) målinger for å få gode trend-data
- Alltid behov for data for å få bedre begrep om bakgrunnsnivåer/utarbeide vurderingskriterier
- Særlig behov når det gjelder nye stoffer..

Effekter av miljøgifter på økosystemene

- Forståelse av korttids - og langtids - effekter
- Effekten av hormonhermere på enkeltarten/bestander
- Utvikle bedre bioassays/BEM - teknikker
- Kumulative effekter av forurensning fra flere typer av miljøgifter
- Virkning av enkelte stoffers metabolitter

Nye stoffer - screening

- Godt i gang nasjonalt og på nordisk basis – noe etter innen konvensjonene?
- Mer kunnskap om bruk, tilførsler og mulige effekter...
- Hvilke stoffer skal undersøkes i ulike matrikser ...
- Tilgang på analyselaboratorier / metoder
- Etter en screening - prioritering inn mot løpende overvåkingsprogrammer ..

OSPAR – HELCOM – EU - NMR

- De beskrevne kunnskapsbehov dekker til en stor grad behovene i konvensjonene og vel også EU...
- Miljøgiftovervåkingen i konvensjonene må koordineres med kommende EU overvåking...
- Det er fortsatt mulig å påvirke EUs opplegg for miljøgiftovervåking i det marine miljø...
- Nordisk arbeid på miljøgifter i våre kyst – og havområder bør rettes inn mot behov i konvensjonene...
- Konvensjonenes arbeid og erfaringer bør tilrettelegges og samordnes med EUs miljøgiftarbeid..

7.4. Stig Markager (Danmarks Miljøundersøgelser): Eutrofiering i nordiske havområder – bristanalyse

Challenges in science and management of eutrophication

NMR, April 2006

Prof. Stig Markager, Ph.D.
National Environmental Research Institute, Denmark
Department of Marine Ecology and
University of Copenhagen

Overview

Suggestions for themes to discuss:

1. Quantitative relationships between loadings and effects
2. Bioavailability of nutrients
- role of estuaries and the coastal zone
3. Eutrophication and marine resources
4. EU directives
5. Ecotoxicology and eutrophication – combined effects

Overview

Suggestions for themes to discuss:

1. Quantitative relationships between loadings and effects
2. Bioavailability of nutrients
- role of estuaries and the coastal zone
3. Eutrophication and marine resources
4. EU directives
5. Ecotoxicology and eutrophication – combined effects

The MARE – NEST project

Scenarios: effects of N-loading

Calculated with empirical models for The Kattegat

Winter conc. of inorganic N (DIN)

$$I_{\text{DIN}} (\text{Jan-Mar}) = 192 + 0.83 I_{\text{N}} (\text{Mar-Nov}) + 1.77 I_{\text{DIN}} (\text{Aug-Jan})$$

Limfjorden, Denmark

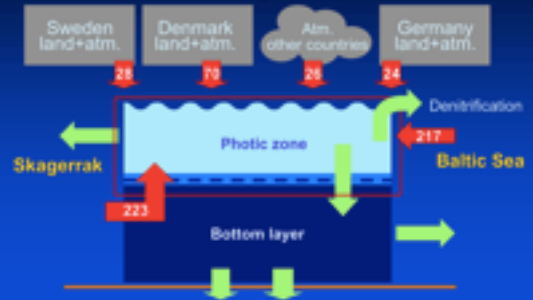
Overview

Suggestions for themes to discuss:

1. Quantitative relationships between loadings and effects
2. Bioavailability of nutrients
- role of estuaries and the coastal zone
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4. EU directives
5. Ecotoxicology and eutrophication – combined effects

External N-load to Kattegat

Total nitrogen x 1.000 T/year



Budget for total nitrogen

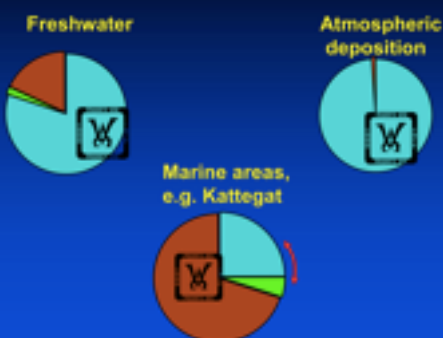
X 1000 tons year⁻¹

	Total N	
Denmark	70	12%
Sweden	28	5%
Germany	24	4%
Atm. dep. other	26	4%
Skagerrak	223	38%
Baltic Sea	217	37%
alt	588	

Nitrogen fractions



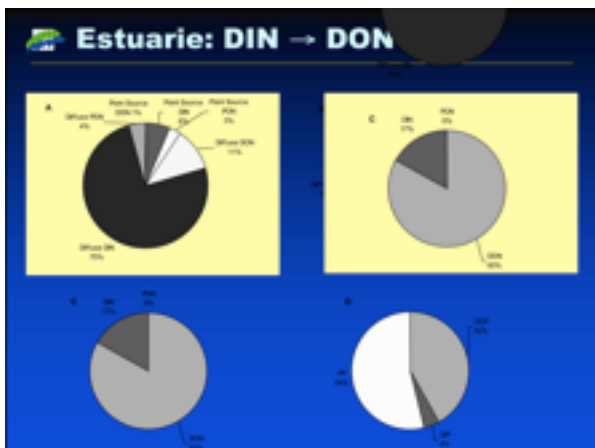
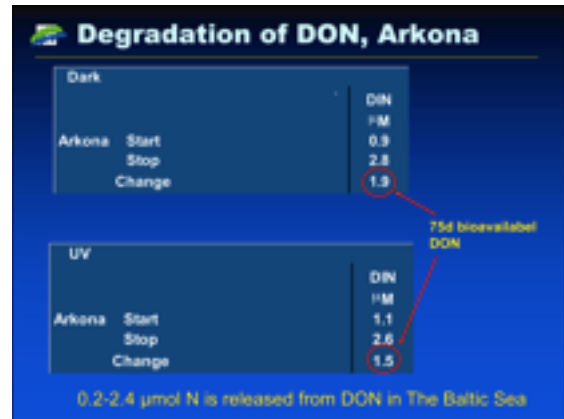
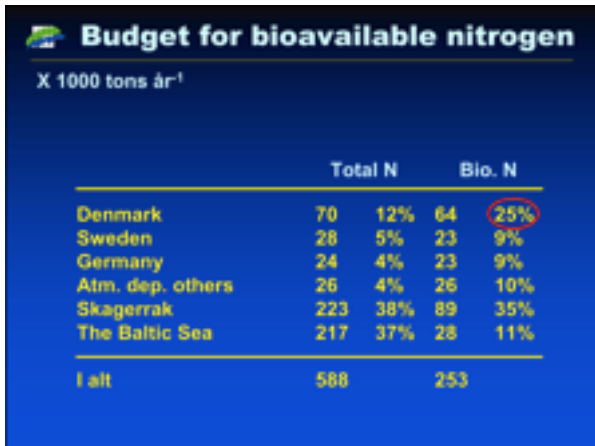
Nitrogen fractions - distributions



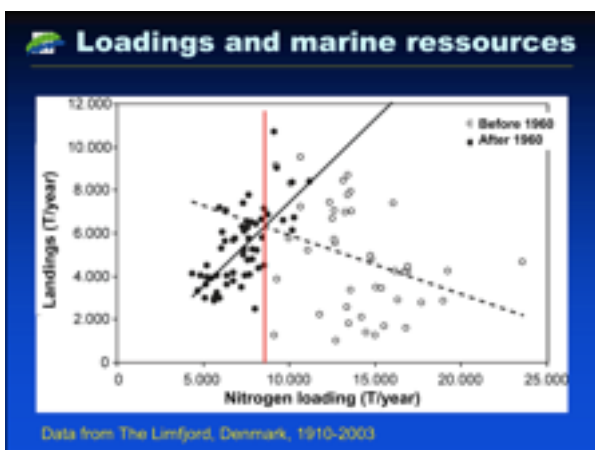
Bioavailability of nitrogen

X 1000 tons year⁻¹

	Total N		Bio. N
Denmark	60	0,9	54
- atm. part	10	1	10
Sweden	25	0,8	20
- atm. part	3	1	3
Germany	11	0,9	10
- atm. part	13	1	13
Atm. dep. other	26	1	26
Skagerrak	223	0,4	89
The Baltic Sea	217	0,13	28
alt	588		253



- ### Overview
- Suggestions for themes to discuss:
1. Quantitative relationships between loadings and effects
 2. Bioavailability of nutrients
- role of estuaries and the coastal zone
 3. Eutrophication and marine resources
 4. EU directives
 5. Ecotoxicology and eutrophication – combined effects



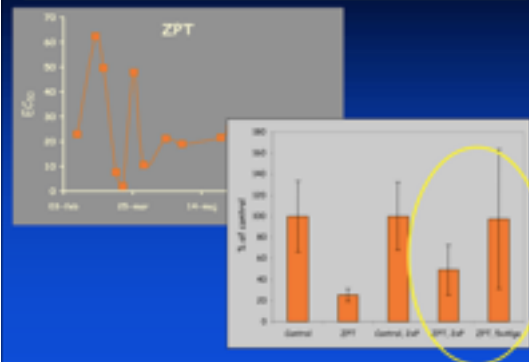
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Overview

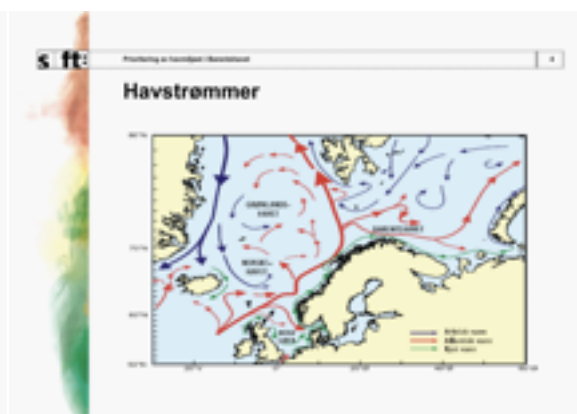
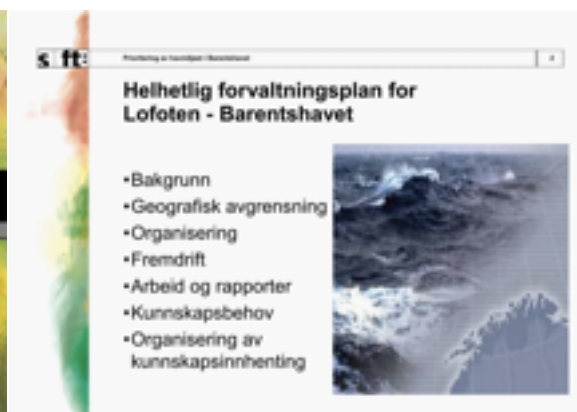
Suggestions for themes to discuss:

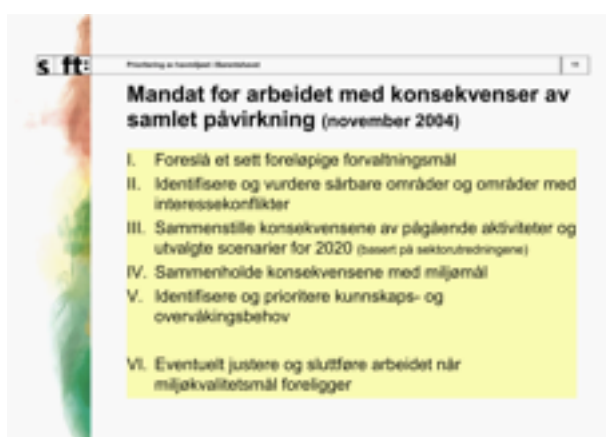
1. Quantitative relationships between loadings and effects
2. Bioavailability of nutrients
- role of estuaries and the coastal zone
3. Eutrophication and marine resources
4. EU directives
5. **Ecotoxicology and eutrophication – combined effects**

Ecotoxicology and nutrients



7.5 Erik E. Syvertsen (Statens Forureningstilsyn, Norge): Helhetlig forvaltningsplan for Barentshavet, prosess og prioriteringer.





s ft: Prioritering av handlingsplan - Barentshavet

Forvaltningsmål

(biol. mangfold, samfunnsøkonomi, forurensning, miljørisiko)

Tema - forurensning

- Operasjonelle utslipp av olje skal ikke medføre uakseptabel helse- eller miljøskade. Ved fastsettelse av akseptnivå skal det legges til grunn at miljøkvaliteten i Barentshavet skal opprettholdes
- Utslipp og bruk av helse- og miljøfarlige kjemikalier skal stanses eller reduseres og operasjonelle utslipp av andre stoffer skal ikke føre til redusert miljøkvalitet
- Utslipp av radioaktive stoffer og risiko for utslipp som kan føre til forurensning av norsk miljø skal reduseres
- Skade på naturmiljø forårsaket av avfall skal reduseres
- Det skal ikke være utslipp til sjø fra boring – med unntak for borekaks fra toppshalt. Det skal heller ikke være utslipp av produsert vann fra petroleumsvirksomhet ved normal drift

s ft: Prioritering av handlingsplan - Barentshavet

Kunnskapsbehov

- Overvåking
- Kartlegging
- Forskning



s ft: Prioritering av handlingsplan - Barentshavet

Kunnskapsbehov

Forurensning

- Bedre kunnskap om tilførsel av "nye" miljøgifter
- Bedre metoder for effektovervåking av forurensningspåvirkning
- Bedre kunnskap om effekter av tungmetaller og POP'er på viktige arter
- Bedre kunnskap om direkte og indirekte effekter av tungmetaller og POP'er på økosystemene (effekter på økosystemenes struktur og virkemåte)
- Analyse av seppel i sjøer for å finne kilder
- Kunnskap om effekter av radioaktiv forurensning i arktisk miljø
- Kunnskap om kilder, optak og transport av radioaktiv forurensning i Arktis

s ft: Prioritering av handlingsplan - Barentshavet

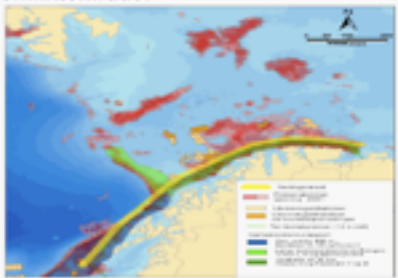
Prioriterte, særlig verdifulle områder



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s ft: Prioritering av handlingsplan - Barentshavet

Konfliktområder



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s ft: Prioritering av handlingsplan - Barentshavet

Samlede konsekvenser i dag

Tema	Følgende konsekvenser				
	Prosjekt	Permitterings-aktiviteter	Drift	Utslipp	Sammenheng
Biotiske miljø	Forurensning	1	1	1	1
	Spredning	1	1	1	1
	Trusler og påvirkning	1	1	1	1
	Utslipp	1	1	1	1
	Trusler og påvirkning	1	1	1	1
	Biotiske miljø	1	1	1	1
	Prosjekt	1	1	1	1
	Drift	1	1	1	1
Sammenheng	Prosjekt	1	1	1	1
	Drift	1	1	1	1
	Utslipp	1	1	1	1
	Sammenheng	1	1	1	1
	Sammenheng	1	1	1	1

5

ft:

Prosjektet av:

Kriterier for prioritering av kunnskapsbehov

Overordnet kriterium: Beslutningsrelevans

- Måloppnåelse, nasjonale miljømål og int. avtaler
- Tidlig varsling av nye miljøutfordringer
- Effekter av tiltak
- Forutsi utvikling
- Skille menneskeskapt påvirkning og naturlig variasjon
- Redusere usikkerhet om konsekvenser
- Bidra til operasjonell overvåking

[illegible][illegible]



Prosjektering av Tettstasjon / Østlandet

10

Overvåkingsbehov som ikke dekkes av kriteriene

Fysiske miljø
Klima
Beslutt varmerussystem, klimabelastning etc. Ikke varmerussystem, klimabelastning og klimabelastning
Økologi
Planlagt
Utviklet miljøplan, studie av planlagt utvikling, klimabelastning og klimabelastning
Analyse av klimabelastning, klimabelastning, klimabelastning og klimabelastning
Plan
Utviklet klimabelastning, studie av planlagt utvikling, klimabelastning og klimabelastning
Næringer
Skilteplan
Utviklet klimabelastning, studie av planlagt utvikling, klimabelastning og klimabelastning
Analyse av klimabelastning, klimabelastning, klimabelastning og klimabelastning
Planlagt
Utviklet klimabelastning, studie av planlagt utvikling, klimabelastning og klimabelastning
Analyse av klimabelastning, klimabelastning, klimabelastning og klimabelastning

sft:	Prosjektet av Hordaland Universitet	10
Kartlegging		
Fysiske miljø		
miljøfaglige		
TINOCART (over) kartet har oppfølgere på fysiske geografiske data		
Utbredelse, basabiologi og arend		
RESELT		
Denne kartet er en vandringskart (interne og eventuelt et og to av utbredingskartet, inkludert kartet og utbredelse i tid og rom for ulike biologiske bestander og arter)		
Havbunnen		
BUNNFAA OG FAUNA		
Generell, komposert kartlegging av bunnskip, topografi, sedimentkvalitet, flora og fauna, inkl. koraller og annen sjøtt levende fauna (inkludert)		
Næringer		
SKUPTRAFIKK		
Kartlegging av menneskelig aktivitet av fra satellittdata, AIS osv. Omfatter også en sammenstilling av data fra forskningskip og kilder og etablering av en felles statistikk som genererer fra datamengder fra AIS, Satellittkartlegging av fiskeri, annen satellittovervåking osv.		
Undersøkelser av ulike organismer som fisker i satellittkartlegging eksponering og utbredelse av "target biler" for julestude introduksjoner i utbredingsområdet		


Problemløst og kreativt

Forskningsbehov

- Fysisk miljø
- Økologi
- Udbredelse, basalbiologi og adferd
- Havbunnen
- Næringer
- Forurensning
- Metoder

• Andre vigtige forskningsbehov

s ft: Prosjektet i handplan - Økosystemer

Forskningsbehov, forts.

Fysiske miljø
KLIMA
Utsatte nær, lange tidsserier med kartlegging av ulike klimaparametere og organismer gjennom hele året, både land og hav.
Ansvar for tilgjengelighet på klimadata i nord. Skape disse seriene som del som er anslått i utvalgte områder.
Identifisering av gode klimadatakilder
Integrering og utvikling av satellittdata for bruk i modeller for miljøsystemer i Sammenheng overfor land.
Økologi
PLANKTON OG ISHANT
Studier av produksjon, energioverføring og trofisk økologi i planktonsystem, dypplankton, østisk og isbjørn.
Fisk
Vitenskapsutvikling av mangfold fra fisk og å skaffe større kunnskap om hva som styrer tilgangen til ulike levesteder.
Sammenheng og analyse av data om bio-kommersielle fiskefangst fra vitenskapelige fiske for å utvikle en indikator.
Bestemme en levested for når viltområdene blir så store at den begynner å endre økosystemet.
PRODUSENTERENNEDE ARTER
Kommersielle økologiske rolle (studier av utbredelse og døtt, påvirkning av lokal fisk og fauna, kunnskap om kulturens spridningsmønstre i alle geografiske regioner).

s ft: Prosjektet i handplan - Økosystemer

Forskningsbehov, forts.

Utbredelse, bevaringsbiologi og økologi
PLANKTON
Identifisere eksisterende fiskerier over hele året og komplementer til å se på hvordan de endrer seg over hele året.
SKAPETIDE
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
Derfor er det behov for å se på hvordan de endrer seg over hele året.
Øst
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
Utsatte mangfold (fiske) referanse punkt for studier for å se hvordan de endrer seg over hele året.
Havbunnen
UNNØDIG OG FAUNA
Identifisere bevaringsbiologi som kan brukes som indikator på forurensning og forurensning.
Derfor er det behov for å se på hvordan de endrer seg over hele året.
Næringer
FISKEHOLD
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.

s ft: Prosjektet i handplan - Økosystemer

Forskningsbehov, forts.

Forurensning
Bedre kunnskap om effekter av miljøgifter på ulike arter og direkte og indirekte på økosystemene.
Ny kunnskap om kumulative effekter av forurensning fra flere typer miljøgifter inkl. nedbrytningsprodukter.
Bedre metoder for overvåking av risiko og effekter av miljøgifter.
Modellering av miljøgifters spredning geografisk og i økosystemene.
Metoder
ØKOLOGI OG ØKOLOGI
Utsatte overvåkingssystemer for å overvåke bevaring og forandring av biomassa knyttet til å se på utbredelse av arter som kongekrabbe og ankerkrabbe.

s ft: Prosjektet i handplan - Økosystemer

Andre viktige forskningsbehov

Fysiske miljø
KLIMA
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
Økologi
SKAPETIDE
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
Næringer
PETROLEUM OG SKAPETIDE
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
Metoder
ØKOLOGI OG ØKOLOGI
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
SKAPETIDE
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.
SKAPETIDE
Identifisere og utvikle prosedyrer for å se, bevaring og fiske.

s ft: Prosjektet i handplan - Økosystemer

Organisering av overvåking

Rådgivende gruppe for overvåking
(DRL, F-år, H, KYK, DMM, MNA, NP, OG, SFT, NPPA, Sysselmannen på Svalbard)

- Koordinere eksisterende overvåking
- Foreslå ny overvåking
- Koordinere tokt og feltarbeid
- Sammenstille og presentere overvåkingsresultater
- Gjennomføre felles tolkning av data

Internettportal

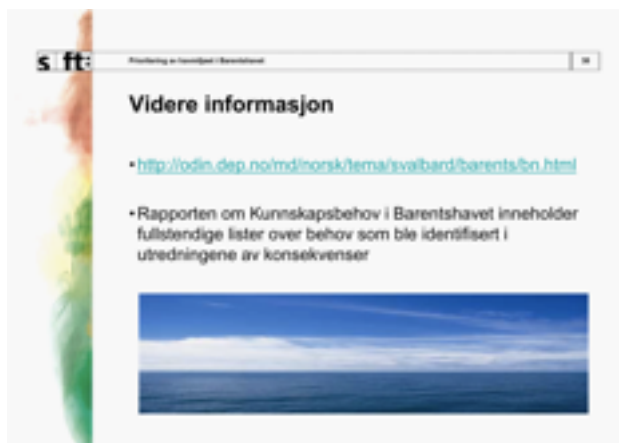
- Gjøre data og informasjon tilgjengelig på felles plattform

s ft: Prosjektet i handplan - Økosystemer

Organisering av forskning

- Kanaliseres gjennom NFR
- Fokus på metodeutvikling og tolkning av overvåkingsdata, og
- "Baseline"-kunnskap





Sammenfatning af Erik Syvertsen:

Bakgrunn

Norske, åpne havområder (utenfor 1 n.m. av grunnlinjen) er generelt rene og rike. De påvirkes imidlertid av flere aktiviteter og flere typer forurensning, og denne påvirkningen forventes å øke fremover. I noen områder kan det også oppstå konflikt mellom næringsinteresser som for eksempel fiskerier og petroleumsvirksomhet eller mellom verneinteresser og næringsinteresser. Miljømyndighetene har derfor sett et behov for å få oversikt over situasjonen og lage helhetlige forvaltningsplaner for havområdene som kan gi ”kjøreregler” for aktivitetene i et arealbasert planverk. I Stortingsmeldingen ”Rent og rikt hav” (St.meld.nr.12 (2001-2002), ble det derfor etablert en målsetning om å lage helhetlige forvaltningsplaner for alle åpne havområder. Disse forvaltningsplanene skal koordineres med forvaltningsplaner for kystsonen som utarbeides etter EUs vannrammedirektiv.

Den første helhetlige forvaltningsplanen

Den første forvaltningsplanen ble lagt frem for Stortinget den 31. mars 2006, og er en integrert plan for Lofoten-Barentshavet. Planen er basert på konsekvensutredninger av næringsaktiviteter og langtransporterte miljøgifter og en utredning av konsekvensene av de samlede aktivitetene og påvirkningene. Det er utarbeidet scenarier for utviklingen frem mot 2020, og det er sett på mulige konsekvenser av utvalgte katastrofeshendelser som kan skje i området. Planen etablerer retningslinjer for økosystembasert forvaltning av havområdet, og identifiser, blant annet, særlig verdifulle områder som ikke skal åpnes for petroleumsvirksomhet og seilingsleder for skip. Forvaltningsrelevante kunnskapsmangler er sammenstilt i en egen rapport, og det vil bli en del av oppfølgingen av planen å fylle disse kunnskapshullene. I tillegg etableres det et system for koordinert overvåking og oppfølging. Planen skal oppdateres regelmessig, første gang i 2010. Stortingsmeldingen om planen og alle de underliggende utredningene finnes på: <http://odin.dep.no/md/norsk/tema/svalbard/barents/bn.html>

7.6 Björn Sjöberg (Vattenmyndigheten Västerhavet): En ny svensk vattenförvaltning

En ny svensk vattenförvaltning

Antagandet av Förordningen om förvaltning av kvaliteten på vattenmiljön år 2004 skapade förutsättningar för en ny vattenförvaltning i Sverige.

Förutom förordningen styrs vattenförvaltningen av EU:s ramdirektiv för vatten, miljöbalken och länsstyrelseinstruktionen.

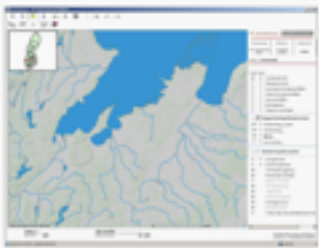
Ansvarsfördelning

- Miljö och Samhällsbyggnadsdepartementet
- Naturvårdsverket, Statens Geologiska Undersökning
- Vattenmyndigheterna – Länsstyrelserna
- Kommunerna

**Vad har åstadkommits under 2005?
- fem höjdpunkter.....**

- Etablerat en organisation på nationell och regional skala.
- Rapporterat enl. artiklarna 3 och 5
- Genomfört ett antal pilotprojekt och påbörjat framtagande av riktlinjer och verktyg för karakterisering, övervakning och åtgärdsprogram.
- Skapat diskussion mellan myndigheter, särskilt kring framtida "miljödatasverige"
- Skapat engagemang bland aktörer och allmänhet via ett stort antal möten, seminarier och artiklar.

Vattenförekomster



3900 Sjöar > 1km²
8500 Vattendrag > 15 km
550 Kustvatten
20 Övergångsvatten
8000 Grundvatten

...samarbete och gemensam dialog med en lång rad myndigheter.....



..information och kommunikation....





- VATTENMYNDIGHETEN
Västerbotten
- ### Utmaningar.....
- Datatillgänglighet
 - Finansiering
 - Prispolitik
 - Kommunalt planeringsansvar
 - Formulering av kvalitetskrav
 -
- Västerbottens universitet

For flere informationer, se www.vattenmyndigheterna.se

7.7 Tonny Niilonen (danske Miljøstyrelse): Nationale forvaltningsbehov



Danish Sea Management Needs.

Tonny Niilonen, Danish Environmental Protection Agency.

Presentation at the Workshop on Nordic Co-operation in Sea and Air Issues, Nordic Council, Sea & Air Group, Helsinki, 4 April 2006

Administration and management:

- **Information and a relevant toolbox**
 - Operationalisation of monitoring data (Short term)
 - Basis research needs (longer term)



Management Needs on Environmental Quality of the Sea

- **Analysis:**
 - Modelling of the connection between trophic levels and impacts on ecosystem function caused by human activity
 - Further development of tools for assessing and establishing of relations between impacts from human activities and the resulting ecological status in terms of different quality elements (biol., hydromorph, harmful substances...)
 - Development of systems for assessing environmental risks caused by concrete human activities
- **Presentation:**
 - Development of monitoring and systems for handling of data and results as well as GIS-presentations.



Management Needs on Environmental Quality of the Sea

- **Enforcement**
 - Development of integrated systems for enforcement e.g. monitoring and control systems
- **Planning:**
 - Development of integrated systems for identifying required measures justifying the application of exemption clauses of the WFD.
 - Interdisciplinary work in the management of environment, fish and fisheries as well as the combined monitoring on fish, nature and environment.



Management needs in Nature Conservation

- **Analysis:**
 - Characterisation, mapping, modelling and verification of marine habitats and landscapes and their occurrence.
 - Modelling and identification of migration corridors (so-called 'blue corridors') between habitats.
 - Development of systems for assessing nature quality, criteria for obtaining conservation goals of the HD



Management needs in Nature Conservation

- **Planning:**
 - Demonstration of possible measures and derived effects from the implementation of these, including conflicting interests between implementation needs for NATURA 2000 areas and the Water Framework Directive.
 - Socio-economic analysis tools and reviews of cost and benefits incurred from the proposed measures.
 - Development of integrated systems for designing of the required measures in a local, and regional perspective, based on the occurrence of the quality elements from the WFD.

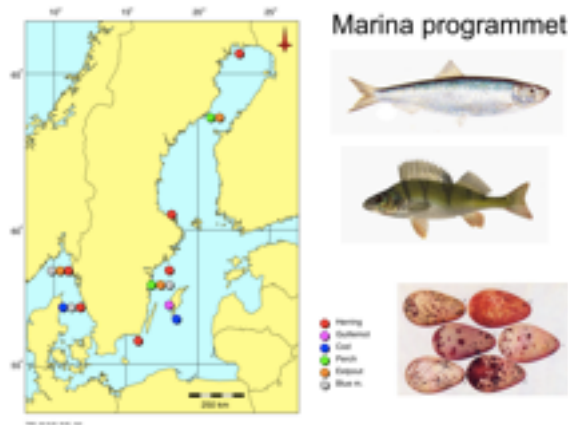
.8 Anders Bignert (Naturhistoriska Riksmuseet): Temporal trends of contaminants in marine biota

Temporal trends of contaminants in marine biota



Anders Bignert, Gruppen för miljögiftsforskning 06.03.30

- ITM, Institutet för tillämpad miljöforskning, SU, Organiska analyser, metallanalyser
- Centrum för miljöövervakning, SLU, metallanalyser
- Miljökemi, Umeå Univ., dioxinanalyser
- Naturvårdsverket, finansiering
- SLV, IVL, SVA



Ordinarie övervakning

- Kvikksilver
- Bly
- Kadmium
- Nickel
- Krom
- Koppar
- Zink
- DDT
- PCB
- HCH
- HCB
- PCDD/PCDF
- PBDE

Screening

Ag, Al, As, In, Se, Bi, Sb, Sn, Tl och W
PAH:er (Antracen, Naftalen.....)

Klorbensener

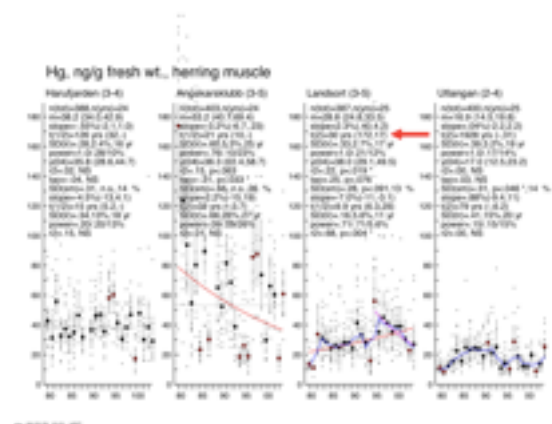
Hexaklorbutadien (HCBD)

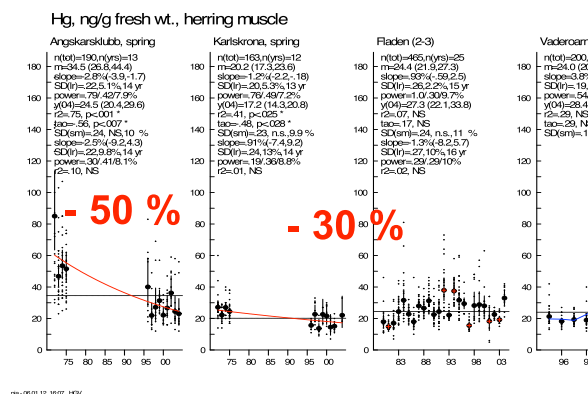
Perfluorerade ämnen (PFOS)

Bisfenol A (BPA)

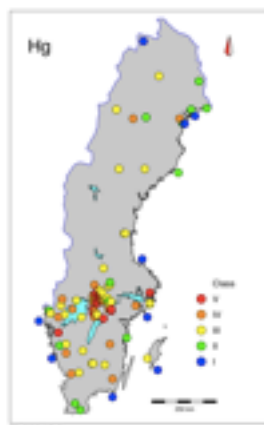
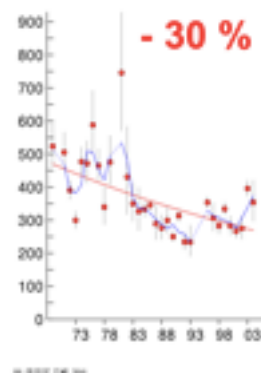
Tetrabrombisfenol A (TBBPA)

Myskämnen (HHCB, AHTN)

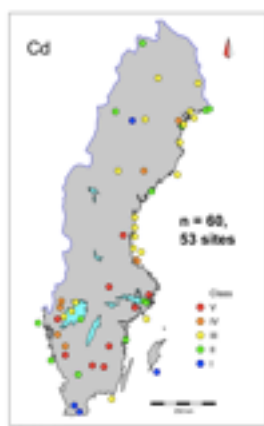
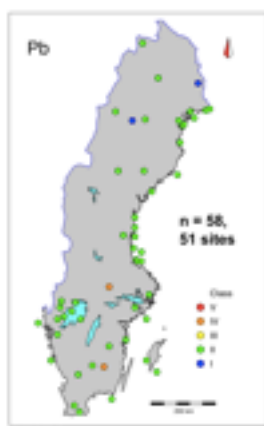
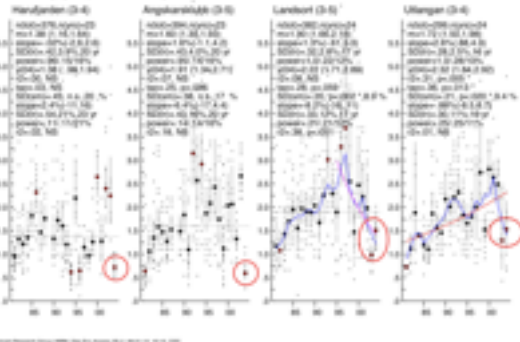




Hg, ng/g fresh w., St. Karlo, guillemot eggs, early laid



Cd, ug/g dry w., herring liver



160



161

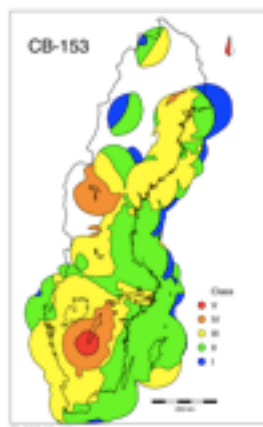
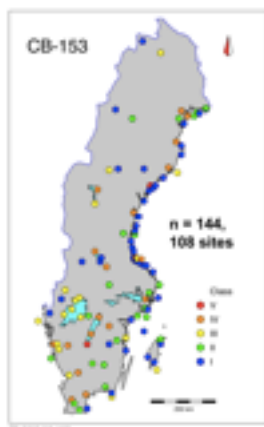
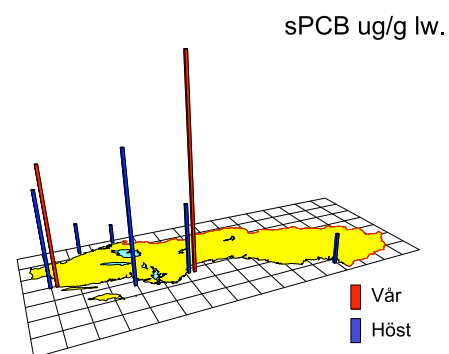


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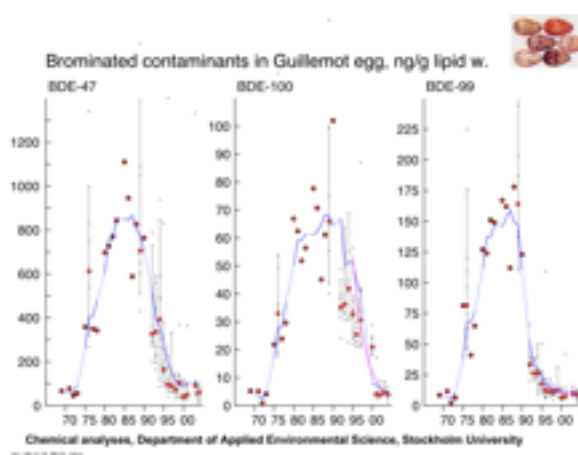
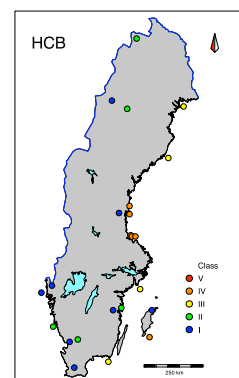
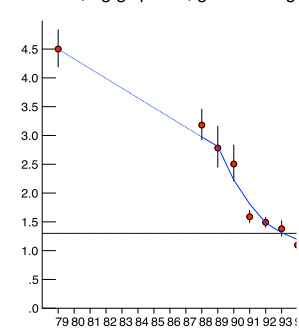
DDT-cr

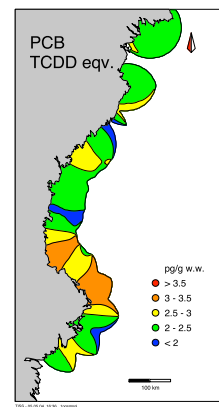
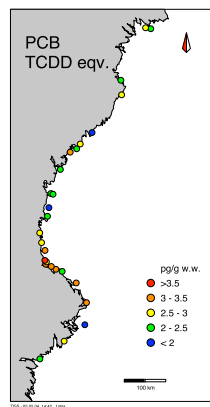
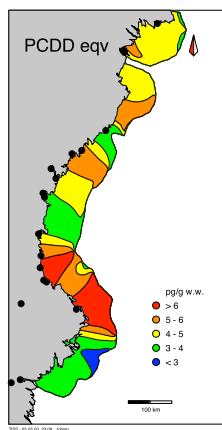
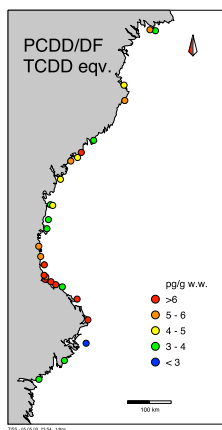
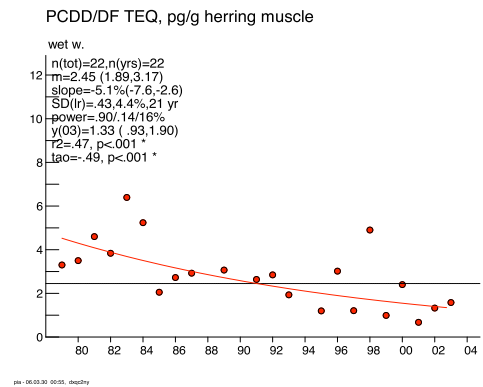
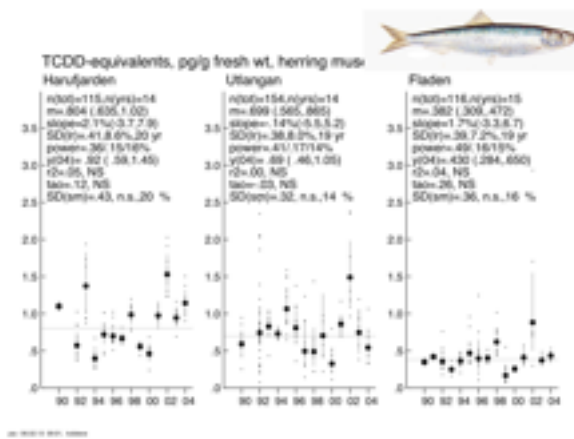
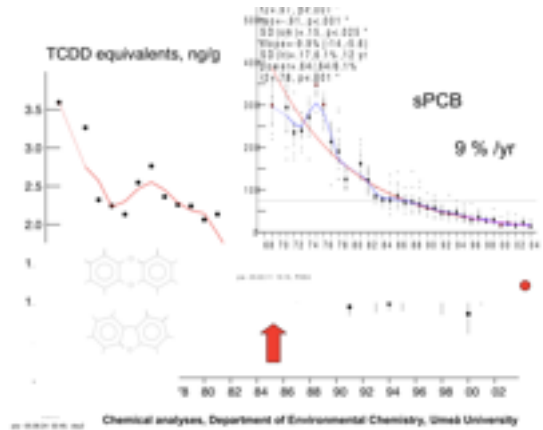
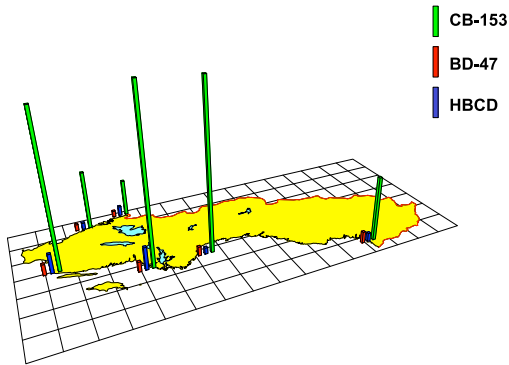
Pb

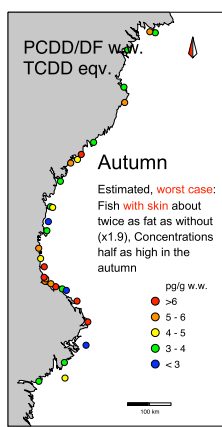
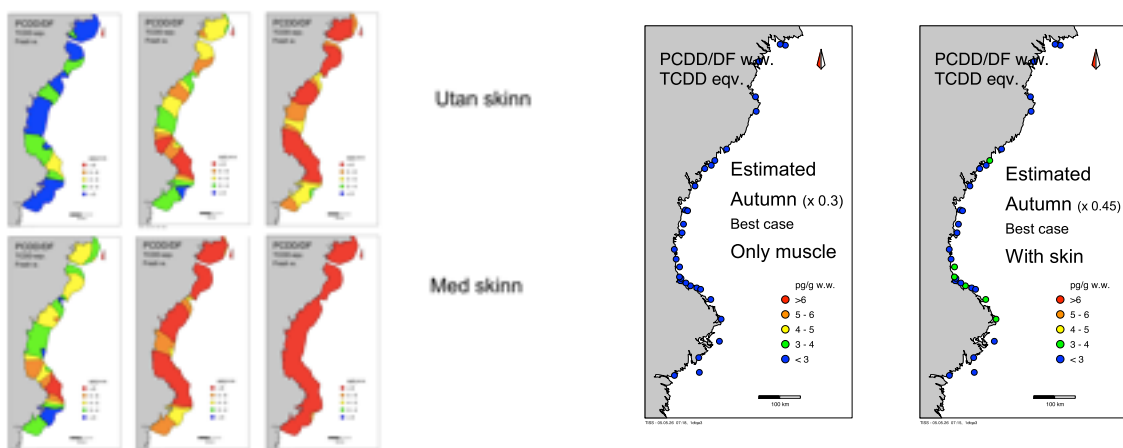
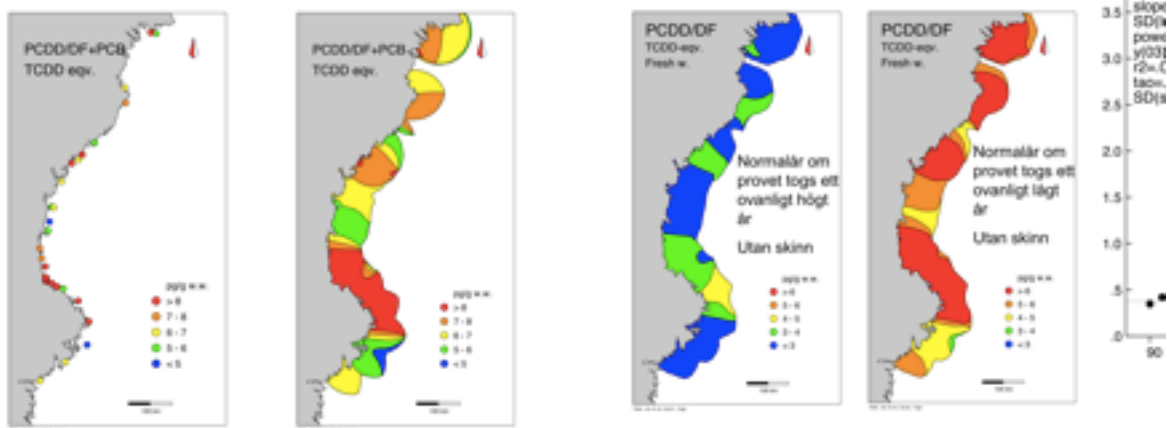




HCB, ug/g lipid w., guillemot eg

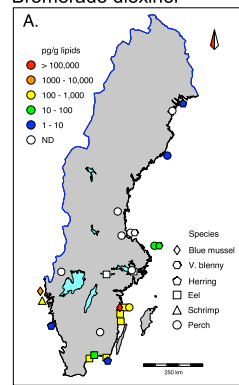






- Säsongsskillnad mindre – 2 ggr istf. 3.33 ggr
- Skillnad med/utan skinn större 1.9 ggr istf 1.5 ggr

Bromerade dioxiner



High Levels of Potentially Biogenic Dibromo and Tribromo Dibenzo-p-dioxins in Swedish fish
Peter Haglund, Karin Lindkvist, Anna Malmvärn, Karin Wiberg, Anders Bignert, Takeshi Nakano, Lillemor Asplund

7.9 Britta Hedlund (Svenska Naturvårdsverket): Vad menar vi med screening inom miljöövervakningen? - Vad har vi kommit fram till?



Vad är screening?

En undersökning/inventering för att avgöra om ett ämne/ämnesgrupp hittas i miljön och om människor riskerar att exponeras för det.

Den kan löpa över ett eller ett par år, beroende på ämne.

Naturvårdsverket | Swedish Environmental Protection Agency

Screening kan ha olika syften

- Inventering för senare beslut om ett ämne ska införas i tidsserieövervakning
- Internationella rapporteringskrav
- Ämnen som människor ev. riskerar att exponeras för
- Fylla luckor i data för riskbedömningar
- Göra nya miljöföroreningar mer kända

Naturvårdsverket | Swedish Environmental Protection Agency

Val av ämnen

- Använd mängd
- Användningssätt
- Reglering
- Egenskaper
- Internationella krav
- Referensgrupp finns med repr. från bl.a. Kemikalieinspektionen

Alternativ – söka okända toppar

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1 Genomgång av tidigare screeningämnen		
Ämne	Resultat av screening	Kommentar
2	För framtiden rekommenderas mätningar i slam och recipientvattnet eller utgående avloppsvatten. För ämnen som blir screenade är metacymol i tväthushusapparat. Även information om andra läkemedel i miljön behövs. Veterinärmedicinska produkter behöver också undersökas.	Screening av läkemedel och veterinärmedicinska produkter pågår under 2005-2006/7
4 Antibiotika	Mer information behövs om halter i fet fisk, lakratten. Man depenser samt i luft för att bedöma eventuella föroreningstransporter.	
5 Antimon	För undersökningar behövs i bottenmjolk, ingående och utgående vatten från reningsverk, grundvattnet, lakratten, fet fisk.	Får göras under 2005-2006. Är även en del av den nationella screeningen 2006.
6 Bifenyl A	Mer information behövs om ämnets toxicitet och ekototoxicitet.	
7 Tetrabutylbensen		Ingen fråga för miljöscreeningen. Inga vildsvanar i marie mjöl, slam, svart bottenmjolk.
8 HBCD	Diffus spridning i miljö. Hittas, men i mycket låga halter. Utgår knappast något större miljöproblem.	
9 HCB	Hittas, men i mycket låga halter. Utgår knappast något större miljöproblem.	
10 Öronnadsbensen	Hittas, men i mycket låga halter. Utgår knappast något större miljöproblem.	
11 Metylbensen	Hittas, men i mycket låga halter. Utgår knappast något större miljöproblem.	

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12	Myxarinen	Verkar inte tillhöra i miljöskedet. Högsta halterna i miljö är i fisk. Hittas i fisk. Kan vara aktuella för en studie igen med avseende på human exponering.	
13	Chrys, moly och stannfyller	Svartliga ämnen. Bifalls i miljöerna. Det finns smått av betydande till upprepade human exponering.	Kommer att ingå i studier av HFD-ämnen och i nationell screening 2006. My screening 2005. Inga ämnen i screening av HFD-ämnen och ingående inventering.
14	Organiska fenolbensen	Endast marie mjöl har tilläts av undersökningen. För smidbar behövs studier.	
15	Pentabutylfenol	Hittas, men i mycket låga halter. Kommer troligen till "gamla städer" utgår knappast något större miljöproblem.	Inga i screening av HFD-ämnen.
16	Perfluorokarbons	PFOS uppnår 10 den största miljön i reningsverk, depoter och tillgången via luftvägarna. Hittas, men i mycket låga halter. Utgår knappast något större miljöproblem. Mer information behövs om ämnets toxicitet och ekototoxicitet.	Fortsatta mätningar i utloppsvatten, slam samt av HFD.
17	Tertäre butylfenol	Behövs fortsatta frågor i slam. Mätningar som referens till studier av andra fenoler. Sprits via luft. Hittas i vatten. Utgår i vatten. Utgår knappast något större miljöproblem.	Får ingå i studier i slam. Mer data kommer också att få från screeningen 2006.
18	Tetralin	Hittas i vatten. Utgår i vatten. Utgår knappast något större miljöproblem.	
19	TBPA	Behövs frågor på tillräckligt till reningsverket är högre än vatten. Utgår i vatten. Utgår knappast något större miljöproblem.	
20	Organofosfor	Behövs frågor på tillräckligt till reningsverket är högre än vatten. Utgår i vatten. Utgår knappast något större miljöproblem. Det behövs fler undersökningar om organofosforer. Bifalls i vatten. Hittas i vatten. Utgår i vatten. Utgår knappast något större miljöproblem.	

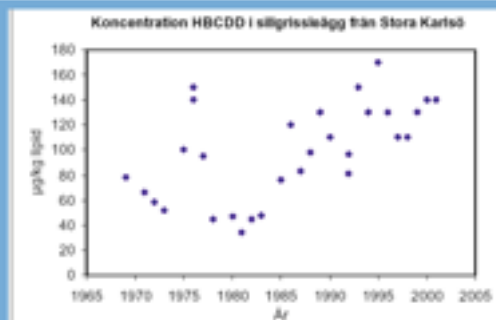
Naturvårdsverket | Swedish Environmental Protection Agency

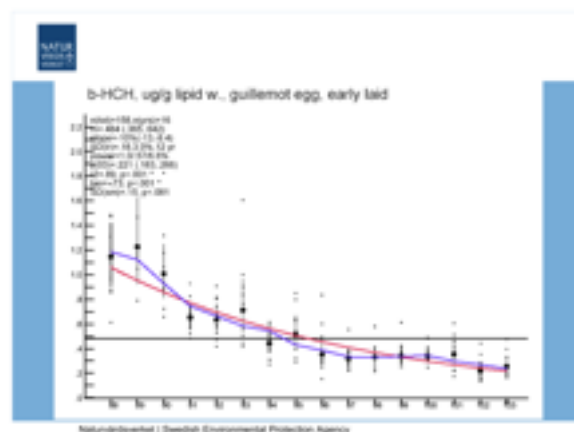
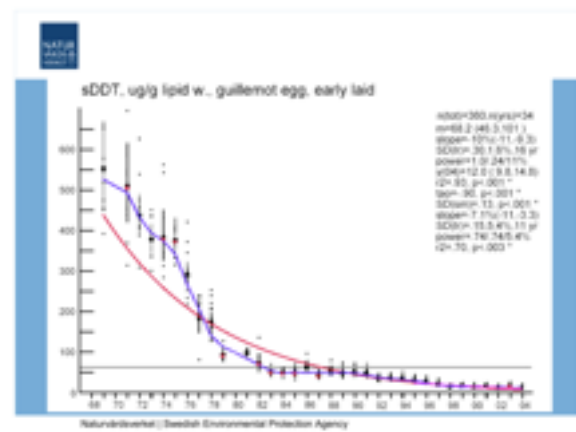
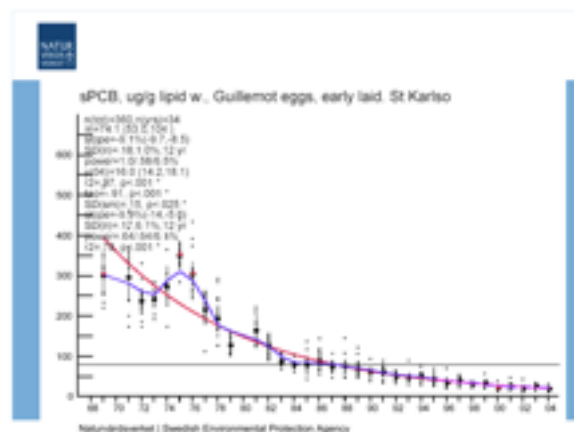
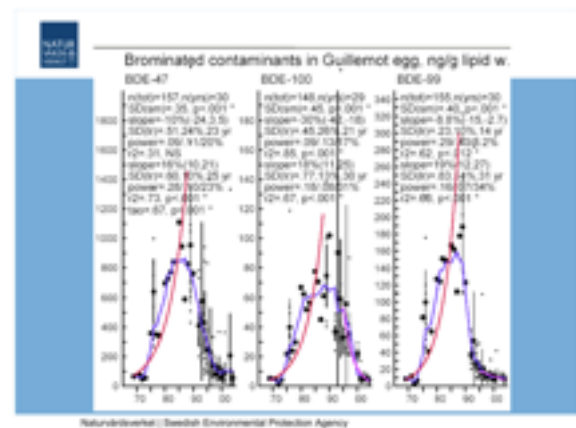
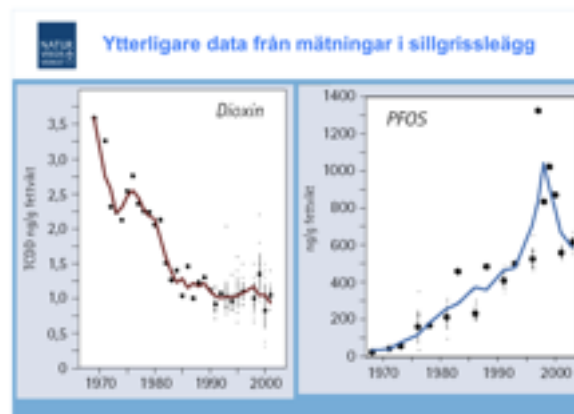
[illegible][illegible]

Screening 2006



Om man bortser från de mest flyktiga ämnena samt de som snabbt omvandlas i sediment, så är det en utmärkt överensstämmelse mellan vilka ämnen vi återfinnit i sediment och vad man kunde förvänta sig utifrån kända avrinnings- och kända utsläpp. DEHP, alkylfenoler, PDE, kloralkaner, koppar och zink är alla vanliga förekommande i konsumtionsprodukter och utgör därför generellt i betydligt högre halter i Stockholm och dess omgivning, än i kustregionen. Detta gäller även Cd, Hg, Pb, PAH, PCB, TBT och ZDGT. Av de pesticider som undersökts så återfinns vi huvudsakligen de som sprids via långväga atmosfäriska transport. Sammenfatningsvis visar denna studie att ett antal "farliga ämnen" sprids till en del i Stockholms stad och dess omgivning, men att dessa utsläpp inte generellt förefaller påverka kustmiljön utanför Åsksjöfjärden.







Resultat från screeningprogrammet

Ämnen som bör infogas i tidsserier

Ett antal ämnen och ämnesgrupper har redan infogats i olika återkommande övervakningsprogram. Detta gäller

- organiska tennföreningar – blåmussla
- hexabromocyclododekan (HBCD) – fisk, modersmjölk
- antibiotika – slam
- triclosan – slam
- PFOS – slam

Naturvårdsverket | Swedish Environmental Protection Agency



Resultat från screeningprogrammet

Vissa andra ämnesgrupper är också på gång, eller förslås, att infogas i olika typer av löpande övervakningsprogram:

- perfluorerade ämnen (PFAS) – sillgrissleägg
- endosulfan – luft och deposition i tidsserier
- siloxaner -slam

Naturvårdsverket | Swedish Environmental Protection Agency



Resultat från screeningprogrammet

Följande ämnesgrupper bör studeras vidare för senare beslut

- Organofosfater – data som visar på halter i miljön längre från källor samt eventuell human exponering behövs. Kan ev komma i avhandling senare i höst.
- Bisfenol A – Ytterligare mätningar i biologiskt material pågår. Exponeringen för ämnen via förpackningsmaterial är också i de flesta fall okänd.
- Endosulfan – Mätningar för att uppskatta diffus påverkan från varor som innehåller ämnet
- Organiska tennföreningar – studie pågår 2005-2006
- Styrener – mer data om spridning och transport

Naturvårdsverket | Swedish Environmental Protection Agency



Resultat från screeningprogrammet

Följande ämnesgrupper behöver inte följas regelbundet

- Limonen
- Mirex
- Tetrabutylidenol
- Antimon
- Butylfenoler
- Metylfenoler
- TBBPA

Naturvårdsverket | Swedish Environmental Protection Agency



Resultat från screeningprogrammet

Ämnesgrupper som kan bli föremål för upprepad screening om ett antal år

- Myskämen
- adipater

Naturvårdsverket | Swedish Environmental Protection Agency



De 32 prioriterade ämnena från EU:s vattendirektiv har analyserats i yttsediment från Stockholm och den angränsande Östersjöskusten. Dessutom har 6 andra metaller, PCB, DDT, THHPA och kloridan analyserats. Tre typmiljöer har undersökts: centrala Stockholm, sjöar i Stockholms närhet, och Svealandskusten – totalt 34 stationer. Två samlingsprov på rötslam ingick också, som en markör på om de aktuella ämnena sprids via avloppsvatten.

Naturvårdsverket | Swedish Environmental Protection Agency

Vad har vi screenat hittills 1(3)?

Under 2000 studerades följande ämnen/ämnesgrupper:

- hexabromocyclododekan (HBCD), metaller i förbränningsaskor, tetrabromobisfenol A.

Under 2001 studerades följande ämnen/ämnesgrupper:

- klorerade fenoler, oktylfenol, organiska tennföreningar, högfluorerade ämnen, diantimontrioxid, ftalater, triclosan, fosforbaserade flamskyddsmedel

Vad har vi screenat hittills 2(3)?

Under 2002 studerades följande ämnen/ämnesgrupper:

- triclosan, avslutning, fosforbaserade flamskyddsmedel, avslutning, vissa läkemedel, ftalater, bisfenoler, klorerade paraffiner, HCB.

Under 2003 studerades följande ämnen/ämnesgrupper:

- ftalater, avslutning, bisfenoler, antioxidanter, metylfenoler, bisfenoler, klorerade paraffiner, avslutning, alkylfenoler, bis(4-klorofenol)sulfon

Vad har vi screenat hittills 3(3)?

Under 2004 studerades följande ämnen/ämnesgrupper:

- Adipater, 1,2,2-oktadoklorstyren (och andra styrener klorerade och bromerade med liknande egenskaper), limonen, siloxaner, mirex, endosulfan, isocyanater

Under 2005 studeras följande ämnen/ämnesgrupper:

- | | |
|---|-----------------------------------|
| • Antibiotika | • Bronopol |
| • Antiinflammatoriska ämnen | • 4-Klor-3-kresol |
| • Hormoner | • N-Didecyldimetyl ammoniumklorid |
| • PFAS-ämnen | • Propikonazol |
| • 1-Butansulfon syra, 1,1,2,2,3,3,4,4,4-nonafluor-, kalium salt | • Resorcinol |
| • Ammoniumsalt av 1,1,2,2,3,3,4,4,4-nonafluor-1-butansulfonsyra | • Polyklorerade dibensotiofener |
| • Bensotiazoler | • Parabener |
| | • Org. Tennföreningar |

Resultat från screeningprogrammet

Slutsatser för ämnesgrupper som enligt EU:s vattendirektiv kräver regelbundna mätningar

7.10 Jaakko Mannio (Finlands Miljöcentral): Hazardous substances: Improve knowledge and support decisions by "second generation" screenings? From indicative (2000-2005) to targeted screenings (2007→)

Nordiskt samarbete på havs och luftområdena 2006-2020, workshop i Helsingfors, 4 april 2006
R&D comment by Jaakko Mannio, SYKE

Hazardous substances:
Improve knowledge and support decisions by "second generation" screenings?
From *indicative* (2000-2005) to *targeted* screenings (2007 →)

- PRESENT
- Expert judgement (or random sampling) of "hot-spots"
- Multi matrix
 - air, sludge, water, sediment, waste, aquatic & terrest biota...
- National or Nordic priority, but often different timing in resp. countries
- Nordic Screening -project: Harmonized sampling and analysis OK, but:
 - small data per matrix, distribution random, pressures unknown....

- FUTURE
- More **coordinated site & matrix selection** procedure
- 1-2 matrix (e.g. sediment, fish?)
- Focus: "**Near-legacy**" substances (with **better known properties**)
 - e.g., BFR? PFAS? OTC?
- Representative
 - samples, regions
- Compare to env. objectives, try to quantify problems, prognose...utilize modelling etc.
- => more "weight" to policy forum?

Examples from near past for traditional contaminants – building blocks for future screenings?

- Nordic Environmental Screening of Substances: PFOS 2003 (NMR project)
- Nordic Lake Survey 1995 (NMR project)
- Hg in sediment & pike (NMR project)
- + example of recent finding of organotins (especially phenyltin) in fish (Finland)
- AMAP human blood screening



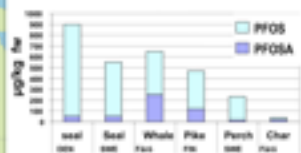
NORDIC Screening 2003 Fluorinated substances in fish and marine mammals



☐ water-, sediment- and sludge
☐ biota

Harmonized sampling and analysis OK but:

- small data per matrix
- distribution random
- pressures unknown....

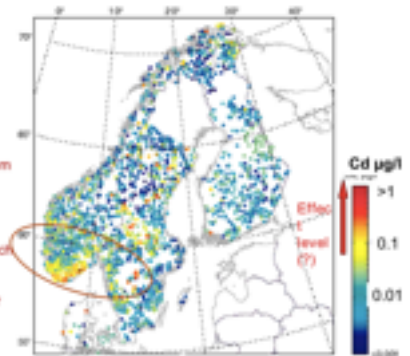


Kallenborn et al. 2004



Nordic Lake Survey 1995

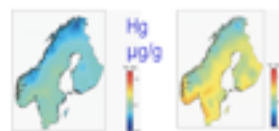
- Identifies problem areas
- comparable to LOEC-values
- ... but too extensive approach for organic contaminants
- wrong matrix for POP-types



Nordic mercury screening(s)

- Mercury accumulated in top soil and lake sediments
- Hg elevated in fish in forest lakes
- Good coverage; similar would be unrealistic for org. compounds?
- Less sites could be enough
- Sediments serve proxy history with few samples (even 3-5 depths per site) – more difficult for marine, should be known accumulation

Lake sediments in Finland
yr 1800 ~0.07 => yr 2000 ~0.3



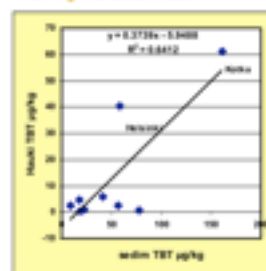
Hg in pike in Finland 1990-2003



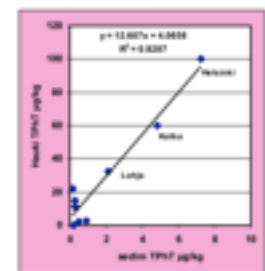
Organotins in pike: Sediment – fish connection?

(SYKE unpublished)

If sediment clearly TBT contaminated, fish might be contaminated



If sediment slightly TPnT contaminated, fish are contaminated



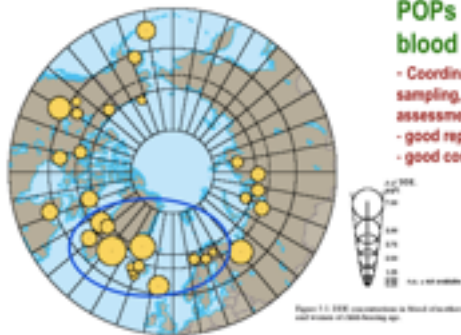
AMAP assessments 1997 & 2002

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AMAP Assessment 2002: Human Health in the Arctic

POPs in human blood

- Coordinated planning sampling, analysis and assessment
- good representativity (?)
- good cost/benefit



7.11 Erik E. Syvertsen (Statens Forureningstilsyn, Norge): Igangværende forskning under Norges forskningsråd (NFR)

Igangværende forskning under Norges forskningsråd (NFR)

Forskningsprogrammet Havet og kysten

Programmets hovedmål er:

- Styrke Norges posisjon blant de ledende i marin økosystemrelatert forskning
- Være en sentral bidragsyter til økt kunnskap om det marine miljø
- Gi et forskningsbasert grunnlag for langsiktig forvaltning og verdiskaping knyttet til marine ressurser

Havet og kysten, delmål

Programmets delmål er:

- Framskaffe ny, grunnleggende kunnskap om marine økosystemers struktur, funksjon, drivkrefter, delprosesser, arts mangfold og naturtyper.
- Framskaffe ny kunnskap om menneskelig påvirkning av marine økosystemer gjennom tilførsler av forurensninger samt bidra med kunnskap som kan danne grunnlag for å rense opp forurensende deponier og sedimenter. Det er også nødvendig å ha fokus på påvirkningen av introduserte arter på fauna og flora langs kysten.
- Øke kunnskapen om langtidsvirkninger av utslipp til sjø fra petroleumsvirksomheten

Havet og kysten, delmål forts.

- Framskaffe kunnskap og verktøy som bidrar til en helhetlig og økosystembasert forvaltning av havet og kysten, og til konfliktløsning mellom samfunnsinteresser og nasjoner.
- Framskaffe kunnskap som bidrar til grunnlag for økt marin verdiskaping.
- Øke fokus på metoder, modeller og teknologi for å framskaffe ny økosystemkunnskap og utvikle metodikk for å ta i bruk erfaringsbasert kunnskap.
- Stimulere til internasjonal forskningssamarbeid og kunnskapsutveksling

Havet og kysten

- Programmet er delt inn i fem delprogrammer:
- Marine økosystemer
- Økosystempåvirkning
- Langtidsvirkninger av utslipp til sjø fra petroleumsvirksomheten (PROOF)
- Forvaltning og konfliktløsning
- Grunnlag for verdiskaping
- og to delaktiviteter som går på tvers av delprogrammene:
- Metoder, modeller og teknologi
- Forskningsamarbeid

Havet og kysten, omfang

- Generelt mottar programmet/aktiviteten søknader fra:
- Forskningsinstitutter, universiteter og høyskoler
- Varighet:
- 2006-2015
- Totalbudsjett:
- Med nullvekst vil programmet ha en budsjetttramme på 76,5 millioner kroner i 2007.

7.12 Sverker Evans (Svenska Naturvårdsverket): Priority issues by the Sea & Air Group 2006

Priority issues by the Sea & Air Group 2006

Eutrophication

- ☐ Relations between inputs, concentrations and biological effects, in particular critical levels
- ☐ Turnover and bioavailability of nutrients
- ☐ Operative hydrodynamic model systems

Hazardous substances

- ☐ Screening of POPs and metals in North East Atlantic and Arctic

Sustainable use of the marine environment

- ☐ Development of assessment criteria and environmental classification system appropriate for Nordic conditions (BC, RC, EAC, EcoQO, EQS)

A common view on:

Definition of Good Environmental Status which emerges at the regional level (intercalibration needed)

Environmental targets correspond to the WFD and based on typology and should use EcQOs developed by the regional conventions

Consistency between EMS directive, the WFD and the Habitats directive for bordering or overlapping areas

Better integration of fisheries and environmental objectives

Development of operational models

Research on impact of fisheries on biodiversity and habitats

Mapping of sensitive and vulnerable areas and a strategy for their protection

Environmental strategies require effect-oriented and cost-effective approaches

- ☐ Develop strategies by taking the relation between costs and environmental benefits into account;
- ☐ Promote to the development of concepts and tools for a cost-effective strategy such as the development of models for actual sea areas by which currents, mixing and material fluxes can be expressed;
- ☐ Develop relations between loads and effects in the ecosystems and their relationships to environmental objectives;
- ☐ Develop adequate assessment criteria which reflect the condition in the maritime area.

Gaps in knowledge

- ☐ The links between various human impacts and their response in the marine environment are poor;
- ☐ Quality criteria to identify issues of concern are not made explicit;
- ☐ The root causes behind environmental degradation have not been scrutinized to any extent;
- ☐ Improved data and evaluation tools are needed.

Annex A: Deltagerliste + e-mailadresser

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Annex B: Oversigt over præsentationer på workshop

Title	Introduction/Rapporteur	PowerPoint Presentation	Summing-up
SESSION 1: Introduction			
Formål med workshop	Lars Lindau / Naturvårdsverket / Formand for HLG		
Uttevellingen av miljøvårdsarbeidet i EU	Leena Simonen, Finska Miljöministeriet	+	
EU- kommissionens luftstrategi och arbetet i LRTAP, en analys med nordiska utgångspunkter	Peringe Grennfelt, IVL Svenska Miljöinstitutet AB	+	
EU-Kommissionens havsstrategi, vattendirektivet och arbetet i HELCOM och OSPARCOM, en analys med nordiska utgångspunkter	Sverker Evans, Svenska Naturvårdsverket / medlem i HLG	+	+
Session II – Luft			
LRTAP			
EFFEKTER	Peringe Grennfelt		
EMEP	Leonor Tarrason		
LUFTKVALITET	Kjetil Törseth		
Göteborgsprotokollet	Sato Nurmi		
Metaller och POPs	Lars Lindau		+
EU – CAFE			
Luftkvalitet	Christian Lange-Fogh		
NECPI och takdirektivet	Anna Engleryd		
WHO och hälsofrågor	Titus Kyrklund		
Luftvårdsarbeidet nasionellt, vad är särskilt viktigt	Resp land		+ (Sverige)
FoU planering nasionellt	Resp land		+ (Sverige)
Nordiska miljöhandlingsplanen	Avstämning		
En plan för det nordiska samarbeidet på luftvårdsområdet	Lars Lindau		+
Session III - Vatten/Hav			
Hur kan Norden samverka vid genomförander av EU:s förslag till marint direktiv och EU:s Ramdirektiv för Vatten?	Saara Bäck, Finlands Miljöcentral	+	
Miljögifter i nordiska havsområden – en bristanalys	Per Erik Iversen, Statens Forureningstillsyn, Norge / Medlem i HLG	+	+
Eutrofiering i nordiska havsområden – en bristanalys	Stiig Markager, Danmarks Miljøundersøgelser		
Helhetlig forvaltningsplan for Barentshavet, prosess og prioriteringer	Erik E Syvertsen, Statens Forureningstillsyn, Norge	+	+
Genomförandet av EU:s Vattendirektiv i ett Vattendistrikt	Björn Sjöberg, Västerhavets Vattenmyndighet	+	
Nationale forvaltningsbehov	Tonny Nilonen, Miljøstyrelsen	+	
FOU planering nasionellt: Contaminants in marine biota Hvad mener vi med screening indenfor miljøovervågning Hazardous substances Igangværende forskning under Norges Forskningsråd (NFR)	Anders Bignert (Naturhistoriska Riksmuseet) Britta Hedlund, Naturvårdsverket Jaako Mannio, SYKE Erik E Syvertsen, Statens Forureningstillsyn, Norge	 + + + +	
En plan för det nordiska samarbeidet på havsområdet	Sverker Evans, Svenska Naturvårdsverket	+	+
Session IV – Opsummering			

Luft	Ole Hertel		+
Hav	Camilla Trolle		+