



Føroya Náttúrugripasavn  
FAROESE MUSEUM OF NATURAL HISTORY

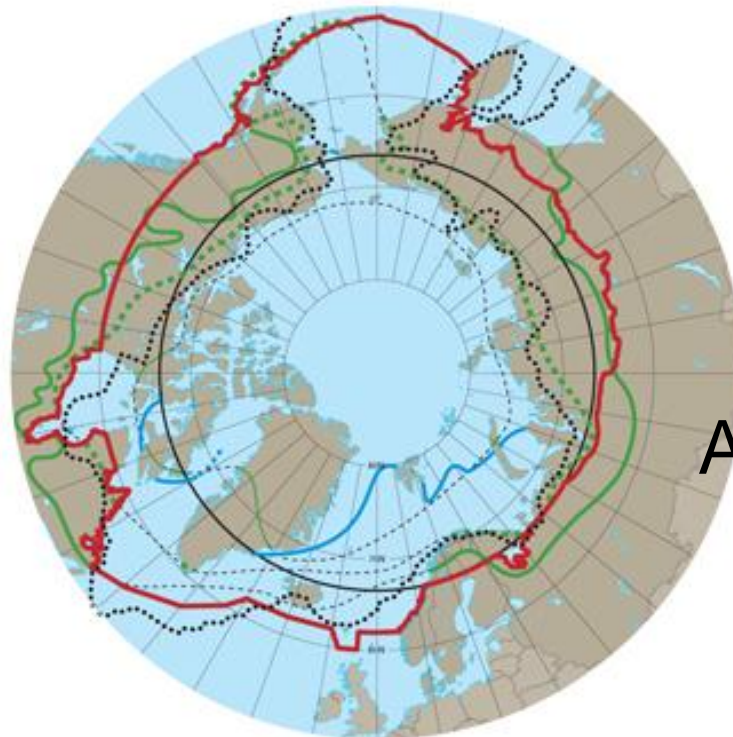


umhvørvisstovan  
environment agency



HAVSTOVAN  
FAROE MARINE RESEARCH INSTITUTE

# AMAP/CAFF related activities in Faroe Islands perspective



**Maria Dam**

Anna Maria Fosaa

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Bjarni Mikkelsen

# Contents

- CAFF related monitoring and research
- AMAP monitoring POPs, HM and radioactivity in the environment
- “New” contaminants
- The Arctic Strategy – ideas for follow-up

# CAFF Circumpolar Seabird Working Group

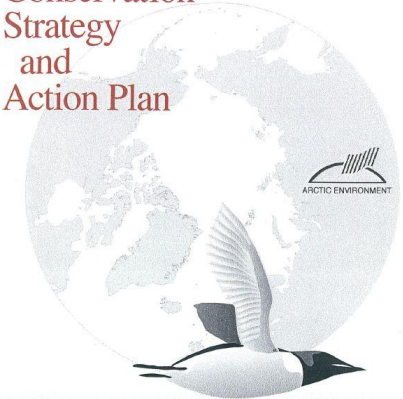
Faroe Marine Research Institute

- [International Murre Conservation Strategy and Action Plan](#)
- Aims to facilitate circumpolar implementation of initiatives to conserve, protect and restore murre populations in the Arctic.
- [Framework for a Circumpolar Arctic Seabird Monitoring Network](#)
- A framework document for developing an integrated monitoring framework for seabirds.

CONSERVATION OF ARCTIC  
FLORA AND FAUNA

CAFF

## International Murre Conservation Strategy and Action Plan



CAFF  
Conservation of Arctic Flora and Fauna



Supporting Publication to the  
Circumpolar Biodiversity Monitoring Program  
CAFF CBMP Report No. 15  
September 2008

FRAMEWORK FOR A CIRCUMPOLAR ARCTIC SEABIRD MONITORING NETWORK  
CAFF's CIRCUMPOLAR SEABIRD GROUP



# CAFF Seabird WG (CBird)

Faroe Marine Research Institute

## Seabird Harvest in the Arctic

As assessment of seabird harvest in the Arctic by the Circumpolar Seabird Group (CBird).

## Arctic Biodiversity Trends 2010: Indicator #04, Seabirds - Murres, Guillemots

The status and trend of indicator species #4, seabirds - murre/guillemots

## Arctic Biodiversity Trends 2010: Indicator #19, Seabird Harvest

The status and trend of indicator species #19, seabird harvest, in the Arctic Biodiversity Trend 2010 report.

### Seabirds – murres (guillemots)

Tony Gaston, Environment Canada, National Wildlife Research Centre, Carleton University, Ottawa, Canada.  
David Irwin, US Fish and Wildlife Service, Anchorage, Alaska, USA.

Acknowledgements: Thanks to Freylik Vigfusson and members of the CBird – Circumpolar Seabird Group of CAFF for information and advice.



The two species of murres (known as guillemots in Europe), the thick-billed murre, *Uria*

### Seabird harvest

Flemming B. Merkel, National Environmental Research Institute, Aarhus University / Greenland Institute of Natural Resources, Denmark.



The use of living resources is fundamental to many regions of the Arctic, and for coastal people, marine mammals and seabirds are among the principal sources of harvest. The human use of seabirds varies between the circumpolar nations, both in scale and in form, but often dates back hundreds of years. Historically, birds were taken for their meat, eggs, skins, and down [1]. With

# Seabird Information Network

- A common web based database with Faroe Islands, Iceland and Norway, into which data will be added



## FIRST THREE RAMSAR SITES DESIGNATED IN 2012

- Each site is designated due to high seabird numbers
- Each site about 10 km<sup>2</sup>

### ISLAND OF MYKINES

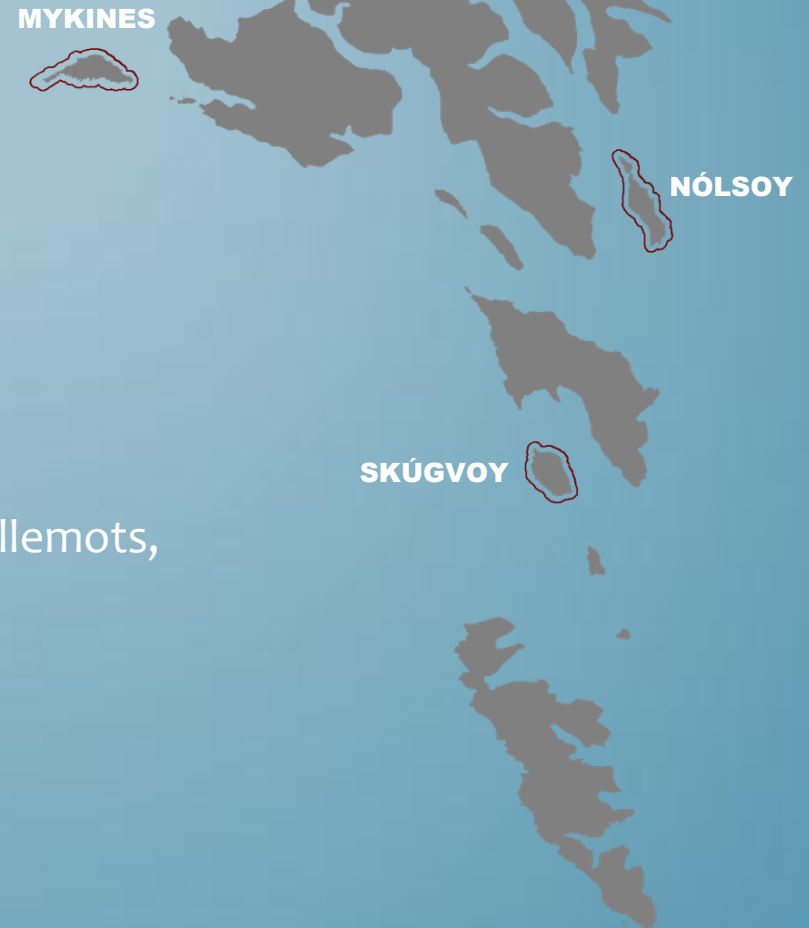
- Second year of Atlantic Puffin survey

### ISLAND OF NÓLSOY

- First year of European Storm-Petrel survey

### ISLAND OF SKÚGVOY

- Monitoring of a study plot with Common Guillemots, Black-Legged Kittiwakes and Fulmars





# GRINDEHVALERNES VANDRINGER I NORDATLANTEN

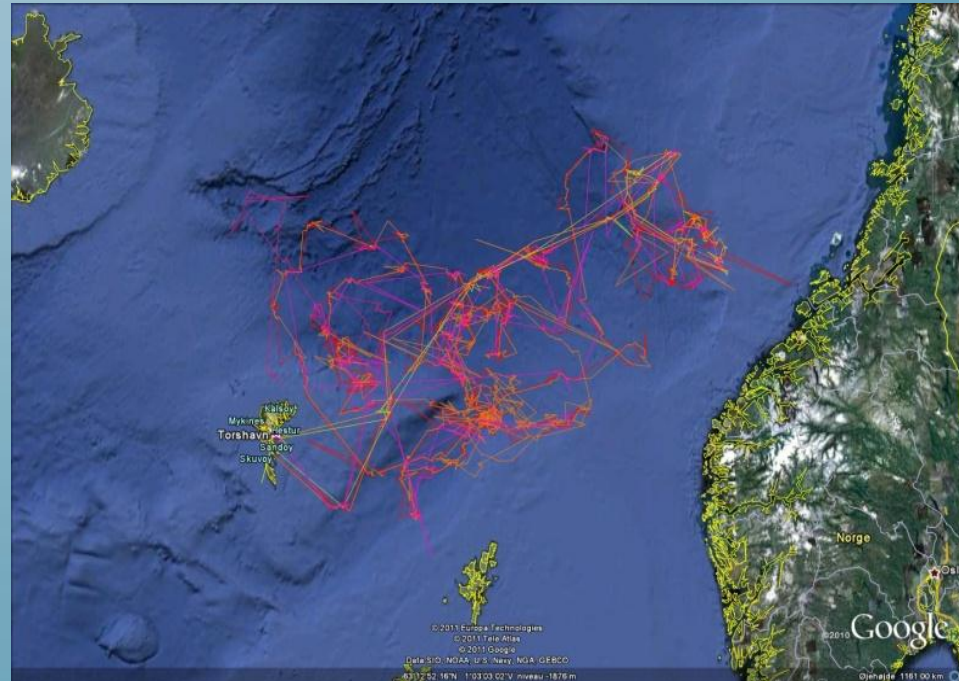
Hoved formål er at sikre en bæredygtig beskatning af grindehvaler på Færøerne.

Robust forvaltning kræver kendskab til størrelse på den komponent af bestanden som de færøske fangster tages fra.

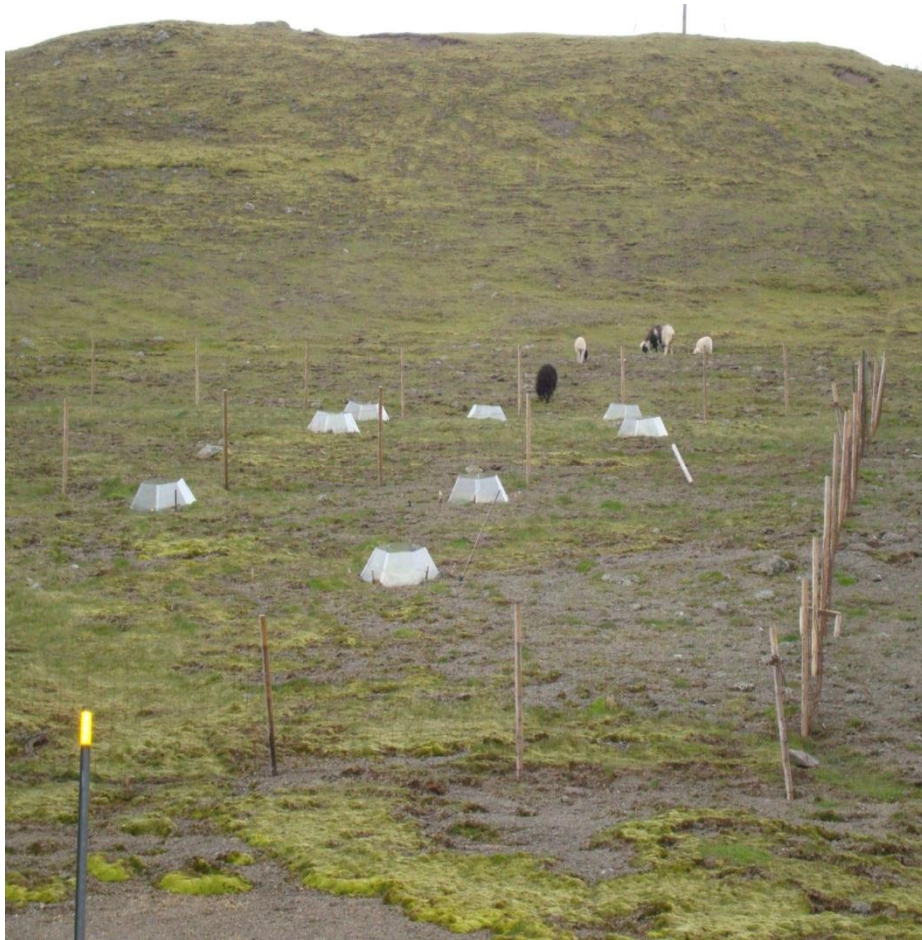
Bestandsstørrelsen i Nordatlanten estimeret fra internationale tælletogeter og biologiske data samles fra fangsterne.

Projektet har givet ny og verdifuld viden om grindehvalernes vandring, udbredelse og adfærd. Disse resultater er essentielle for at bedømme bæredygtigheden af fangsten.

I fremtiden vil grindehvalerne endvidere samle ind mere og mere avanceret fysiske oceanografiske data, som vil øge viden om og forståelsen af svingninger og forandringer i miljø og klima.



# International Tundra experiment (ITEX)



- Established:
  - 2001 at 600 m a.s.l.
- Available data
  - Phenology (*Silene acaulis*): 2001, 2005, 2007-2010
  - Vegetation (quantitative): 2001, 2005, 2008 and 2010
  - Temperature: 2001-2012



# Global Research Initiative in Alpine Environments (**Gloria**)



- Established:
  - 2009 and 2010, four mountain tops
- Available data:
  - Vegetation and temperature

# Circumboreal Vegetation Map (CBVM)

## Mapping the vegetation in the Oceanic North Atlantic area



1. Establish a coordinating monitoring effort in southeast Greenland, Iceland and the Faroe Islands
2. Define a common vegetation system
3. Establish permanent plots in the area
4. Mapping the vegetation in the area

# The AMAP monitoring program on POPs, Heavy metals and radioactivity Faroe Islands





# AMAP monitoring species



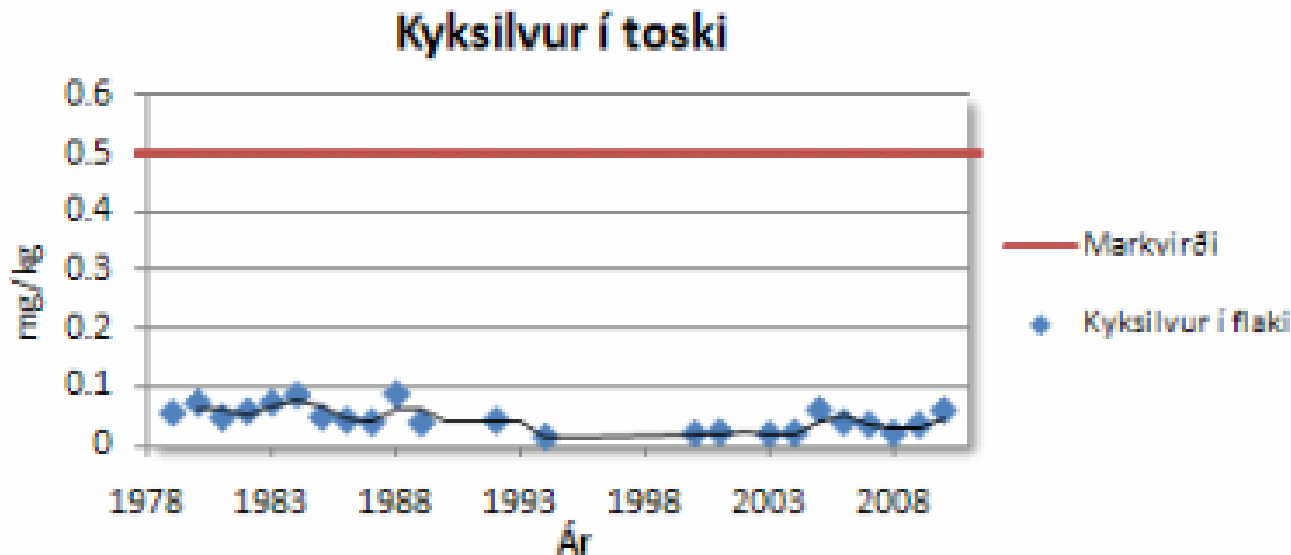


# The POP /HM monitoring programme

Species	Tissue	Chemical parameters	Important for human pollutants exposure, or effects assessment?	Important for geographical trend or time trend?
Pilot whales	blubber	PCB, pesticides	Human exposure	Time trend
	muscle	Mercury, cadmium, selenium	Human exposure	Time trend
	kidney	Cadmium	Effects in animal	
	liver	Mercury, cadmium, selenium	Effects in animal	
Black guillemot	eggs	PCB, pesticides, mercury		Geo. and time trend
	liver	Mercury, cadmium, selenium		Geo. and time trend Geo. and time trend
	feather	Mercury		
Cod	muscle	Mercury	Human exposure	Geo. and time trend
	liver	PCB, pesticides		Geo. and time trend
Arctic char	muscle	PCB, pesticides, mercury, selenium		Geo. and time trend
Sheep	liver	Mercury, cadmium	(Human exposure)	(Geo. and time trend)
Hare	liver	PCB, pesticides, mercury, cadmium, selenium		Discontinued. (Geo. and time trend)

# We have some data series:

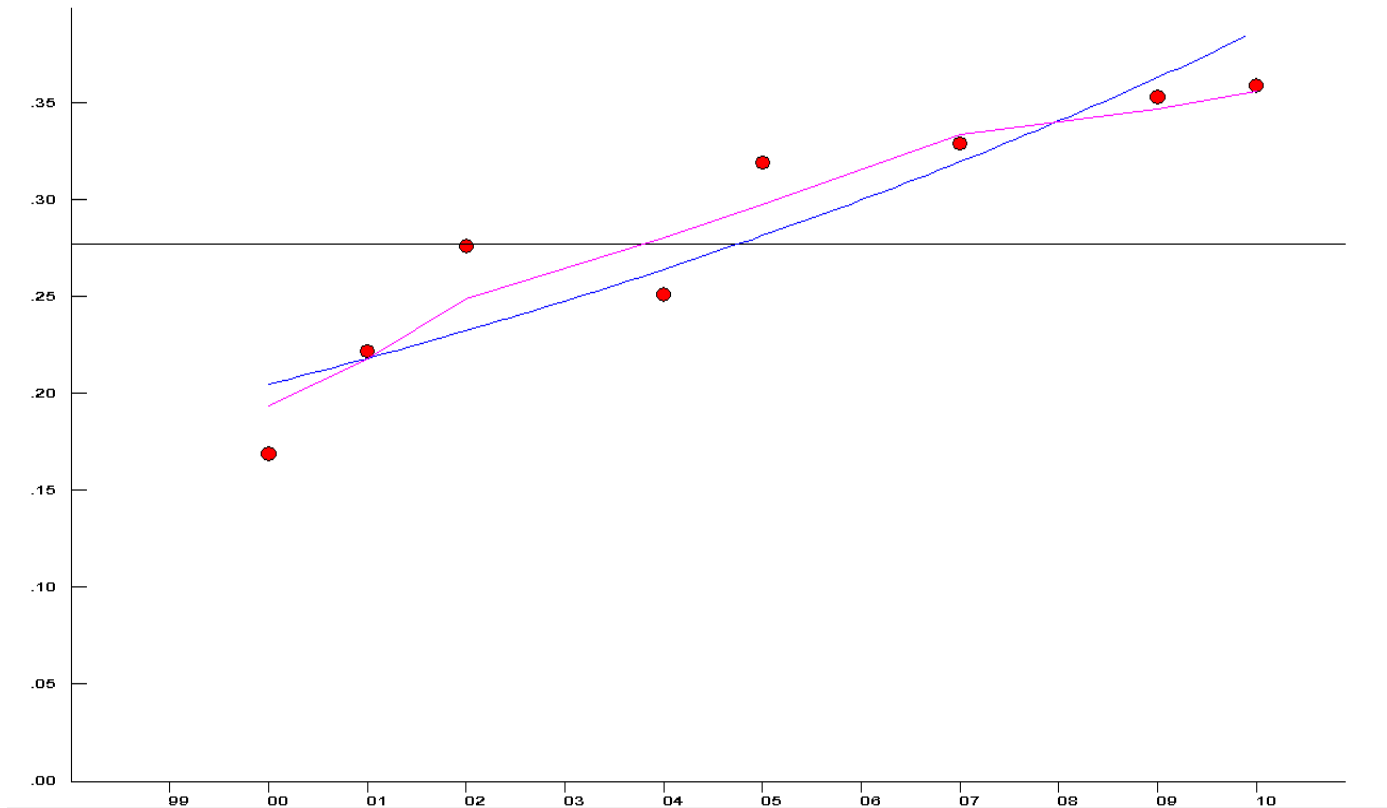
Mercury in cod goes back to 1979, but most of our data-series goes back to late 1990ies



Mynd 1 Miðal innihaldið av kyksilvuri í toski minnið enn 70 cm frá føroyska landgrunninum síðani 1979. Markvirðið sum fyri Hg í fiski (ES Reg. 1881/2006, sum nú er lýst í Føroyum við kunngerð 147 frá 1.des 2009) er víst við reyðum.

# Mercury increases in Arctic char

Arctic char (muscle)  
Mercury (milligram/kg ww.) at Faroe Islands



**Muscle mercury in Arctic char from the Lake á Mýranar.**

# Radioactivity monitoring

Radioactivity monitoring goes back to the early 1960ies.

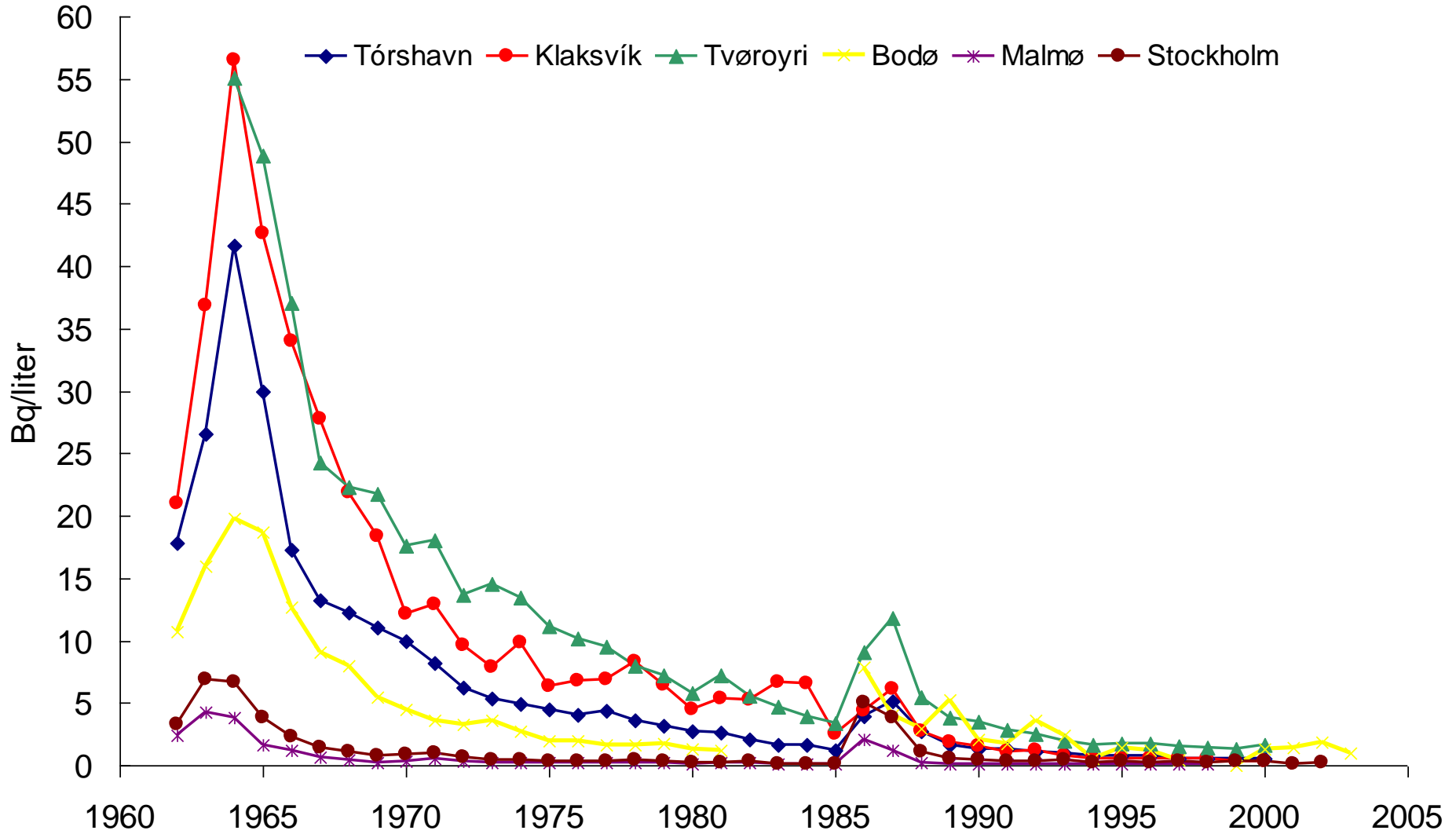
Prioritization for continued monitoring:

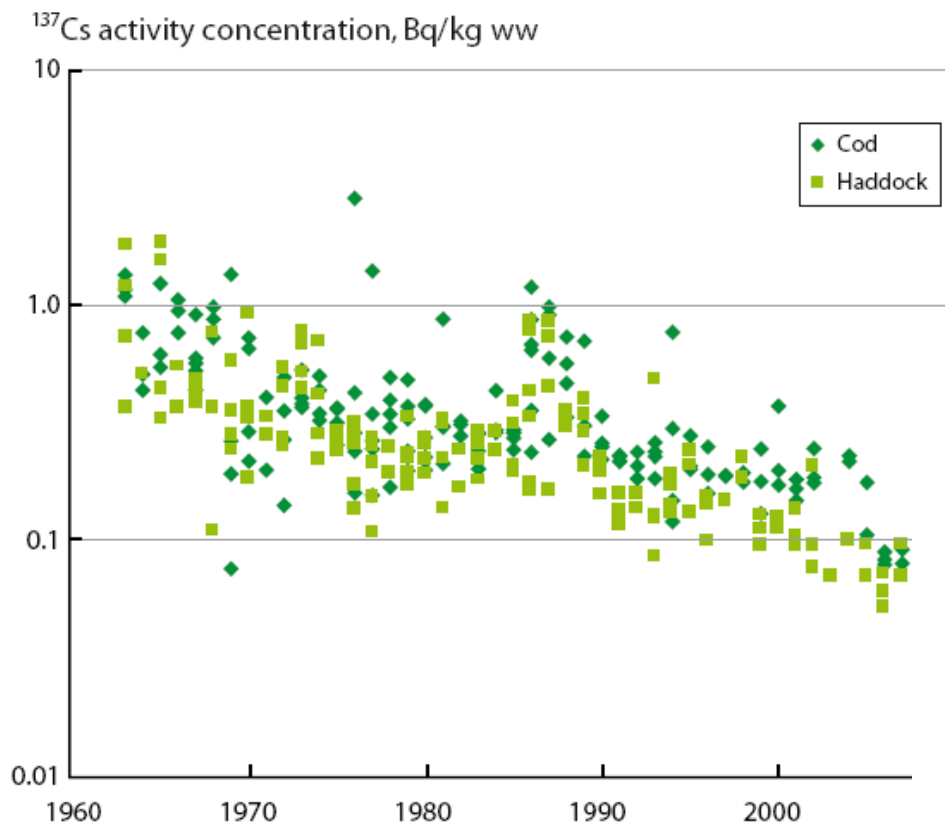
- Cs-137 and Sr-90 in the terrestrial environment
- Cs-137, Sr-90 in Tc-99 (and I-129) in the marine environment



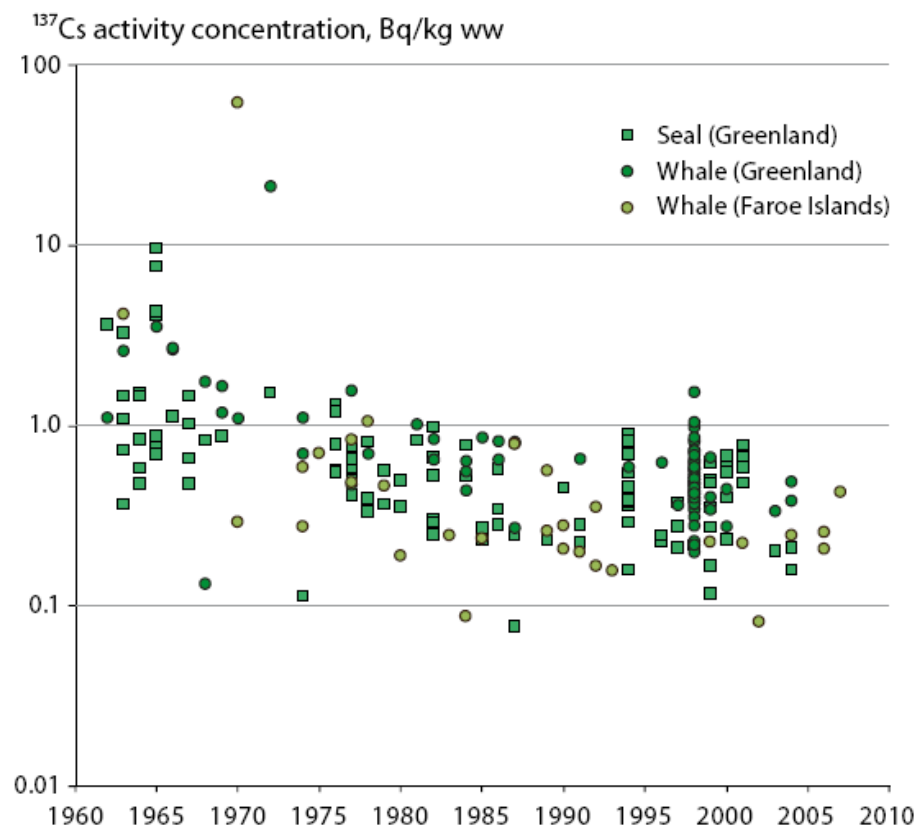


# Cesium-137 in cows milk since 1962 in the Faroe Islands, Norway and Sweden





**Figure 4-17.** Activity concentrations of  $^{137}\text{Cs}$  in cod and haddock from the Faroe Islands since 1960.



**Figure 4-19.** Trends in  $^{137}\text{Cs}$  activity concentrations in seals and whales from Greenland and in whales from the Faroe Islands since 1960.

# Some examples of data use

- Assess environmental status and trends in international cooperation.
- Assess human pollutants exposure via food based on key species.
- Basis for regulatory initiatives.
- Basis for scientific exploration.



# “New” Contaminants

## **Selected plasticizers in the Nordic Environment**

Mikael Remberger

Katarina Hansson

Lennart Kaj

Hanna Andersson

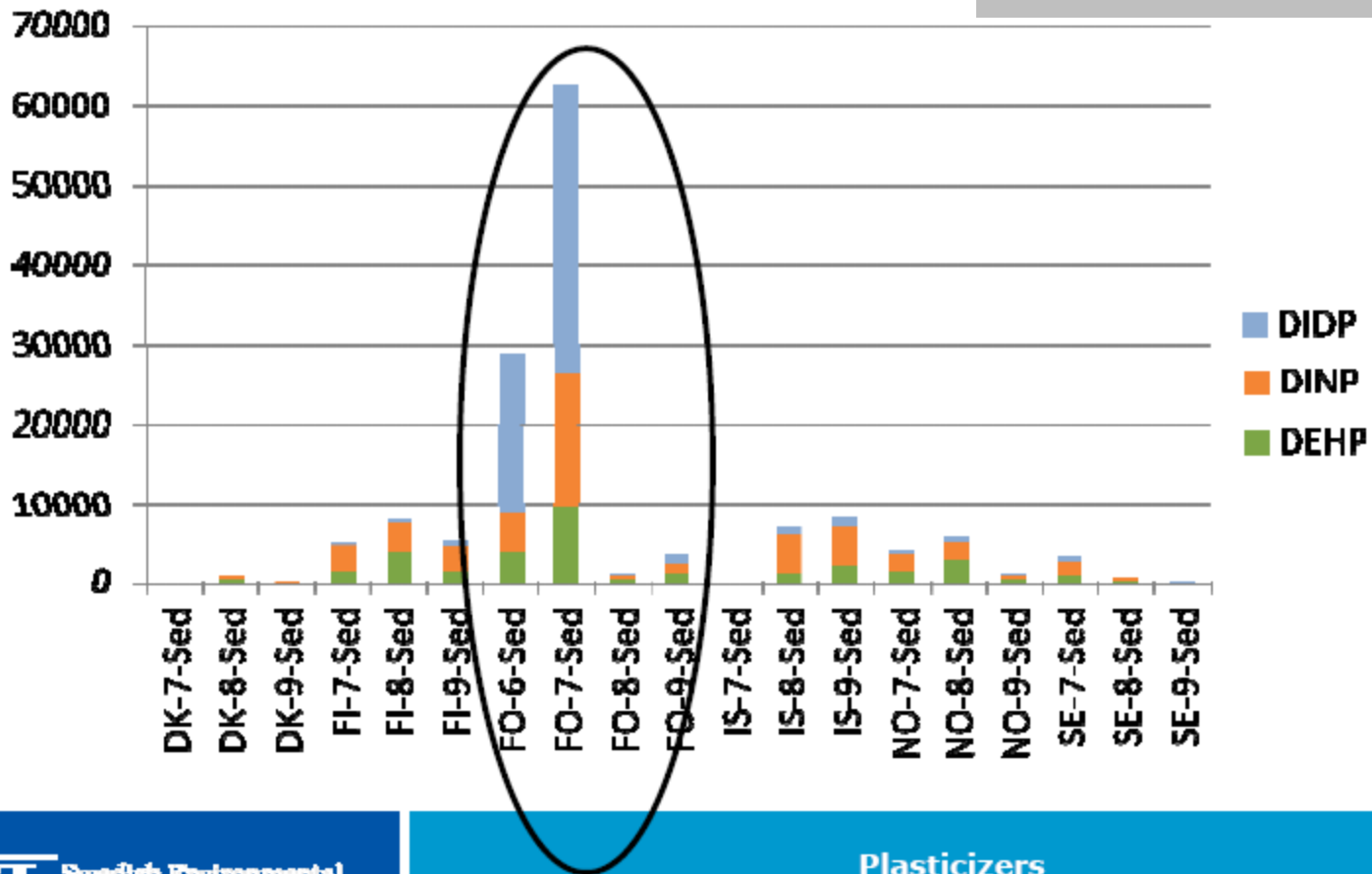
Eva Brorström-Lundén

IVL Swedish Environmental Research Institute

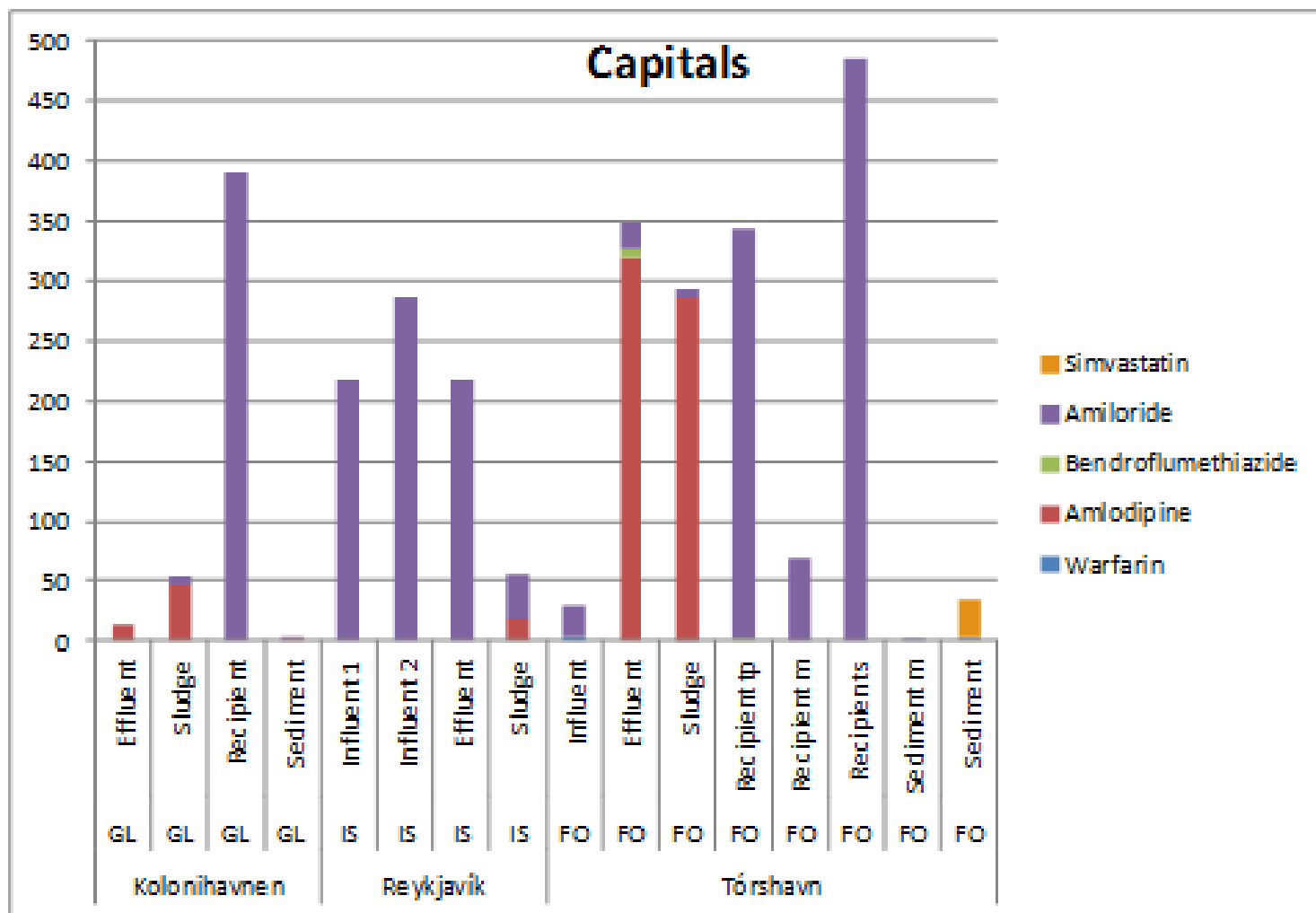


# Sediment, $\mu\text{g}/\text{kg dw}$ DEHP, DINP, DIDP only

Fra 2013 kommer  
Grønland med i det  
nordiske samarbejdet se  
[www.nordicscreening.org](http://www.nordicscreening.org)



# Pharmaceuticals and personal care substances im Faroe-Iceland-Greenland

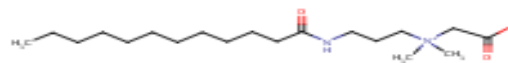


# The highest risk (calculated) for surfactants

Ratio	DEP	Bu-P	EDT A	SD S	SDSEO1-4	CAP B	ATAC-C16
MEC <sub>max</sub> /PNEC	0.04	0.02	0.2	0.0 2	19	375	165
MEC <sub>median</sub> /PNEC	0.02	0.02	0.2	0.0 1	0.4	14	112
PEC/PNEC (Schlabach et al 2007)	0.62	0.00 2	0.23	15	563	1773	360

CAPB = cocoamidopropyl betain

ATAC-C16 = cetrimonium salts



# POPs effects on Pilot whales





# Pilot whale brain neurons





# Prioriteringer i Den Artiske Strategi (Dk/Gr/Fo) - Indledningen

- Det er et centralt mål for Grønland, Færøerne og Danmark , at beslutninger vedrørende forvaltning og anvendelse af ressourcer og beskyttelse af miljøet træffes i overensstemmelse med internationale forpligtelser, **er baseret på den bedste videnskabelige rådgivning**, og støtter op om sunde, produktive og selv bærende samfund.

# Projektforslag “Platform for Marine spatial planning in the NE Atlantic”

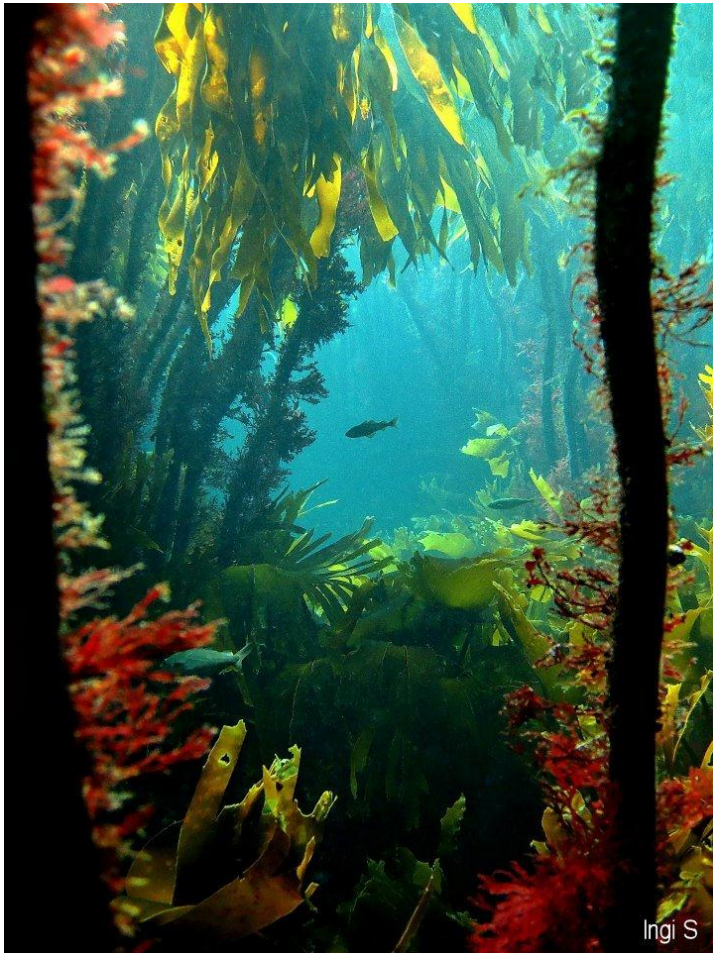
- Samarbejde ml Færøerne-Island-Grønland om at producere **en regional assessment som viser miljøstatus med forventet udvikling imod 2030**. Fokus på det marine med fiskeri, transport/shipping, energiudvinding og/eller områder som forvaltningen finder særlig interessante at få belyst. Skal danne grundlag for (senere mulige) forvaltningsplaner.

# Idégrundlag 1- det oprindelige forslag til Arctic Change Assessment

- Arktisk Råd har fått laget undersøkelser av
  - Tungmetaller/POPs/Radioaktivitet
  - Olje
  - Forsuring
  - Klimaendringer inkl SLCF
  - Biodiversitet
  - Folkehelse og mye annet...

Formålet med **Arctic change assessment** slik det oprindelige forslaget forelå var å lage regionale rapporter med basis i eksisterende forsker-nettverk og eksisterende tematiske rapporter, med fokus på å beskrive forandringer i miljøet.

# Idégrundlag 2- Workshop Tórshavn 15-16 nov. 2011: Brug og forvaltning af de nordiske havområder- i dag og i morgen



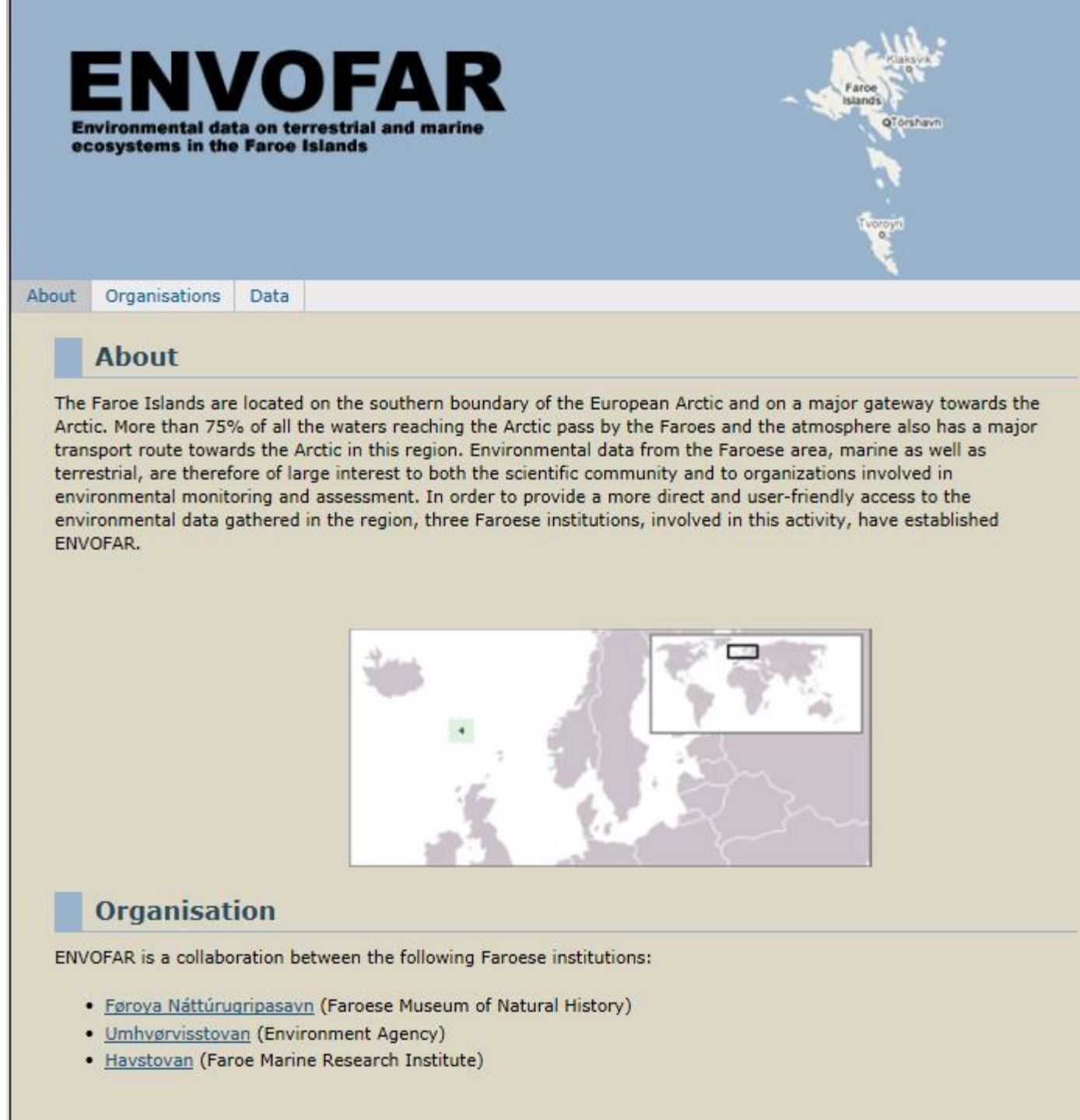
Konklusjoner bl.a.

- Havsplanering är ett nödvändigt instrument för att samordna många olika aktiviteter till havs och måste få acceptans på den politiska nivån liksom hos sektorerna och allmänheten.
- Stora erfarenheter kan dras från det norska arbetet med ekosystemansatsbaserad havsplanering som är en tvärspektoriell process **som sammanställer och analyserar existerande kunskap om miljö, naturresurser, sektorsaktiviteter och samhällsekonomi** mm. Detta ger underlag för en kunskapsbaserad planering och förvaltning, ett förbättrat **samarbete mellan nationella sektorsmyndigheter och en vetenskaplig grundval** för politiska beslut.



# Idégrundlag 3

Data are available at [www.us.fo](http://www.us.fo), and at [www.envofar.fo](http://www.envofar.fo)



# ENVOFAR


Environmental data on terrestrial and marine ecosystems in the Faroe Islands

Faroe Islands  
Tórshavn  
Tvøroyri

About Organisations Data

## About

The Faroe Islands are located on the southern boundary of the European Arctic and on a major gateway towards the Arctic. More than 75% of all the waters reaching the Arctic pass by the Faroes and the atmosphere also has a major transport route towards the Arctic in this region. Environmental data from the Faroese area, marine as well as terrestrial, are therefore of large interest to both the scientific community and to organizations involved in environmental monitoring and assessment. In order to provide a more direct and user-friendly access to the environmental data gathered in the region, three Faroese institutions, involved in this activity, have established ENVOFAR.



## Organisation

ENVOFAR is a collaboration between the following Faroese institutions:

- [Føroya Náttúrugripasavn](#) (Faroese Museum of Natural History)
- [Umhvørvisstovan](#) (Environment Agency)
- [Havstovan](#) (Faroe Marine Research Institute)

# Mulige synergieffekter?

- Kongeriget vil endvidere frem mod 2014 gennemføre **en risikoanalyse for havmiljøområdet i og omkring Grønland, herunder risikoen for olie- og kemikalieforurening som følge af den forventede udvidelse af trafikmængden og aktivitetsniveauet i området.**

Fra Arktisk Strategi kap. Udvikling under respekt for Arktis' sårbare klima, miljø og natur

