

# CBMP-Marine Plan

*Kathleen Crane and Reidar Hindrum*



# Expert Monitoring Groups (EMG):

- ***Marine (MEMG),***
- Coastal,
- ***Freshwater (FEMG),***
- Terrestrial Flora, and Fauna
- + ***Arctic Protected Areas Monitoring Scheme (APAMS)***



# Participating institutions in the MEMG:



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada



Environment  
Canada

Environnement  
Canada



## Marine EMG members:

### CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

#### Co-leads:

Dr Kathleen Crane, US  
Mr Reidar Hindrum, Norway

#### US:

Dr Sue E. Moore  
Dr Russ Hopcroft  
Dr Katrin Iken

#### Russia:

Dr Igor A. Melnikov  
Dr Boris I. Sirenko  
Dr Olga S. Liubina  
Dr Nina Denisenko

#### Greenland:

Mr Fernando Ugarte  
Ms Aili Labansen

#### Iceland:

Dr. Gudmundur Gudmundsson

#### Canada:

Dr Jill Watkins  
Dr Jim D. Reist

#### Norway:

Dr Ingrid Bysveen  
Mr Dag Vongraven  
Dr Per Arneberg

#### CBMP Secretariat:

Mr Mike Gill

#### Aleut International Association:

Ms Victoria Gofman

#### AMAP

Mr Jason Stow

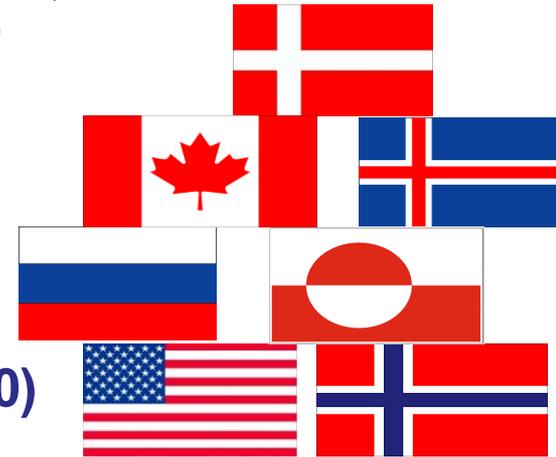
#### PAME:

Ms Soffia Gudmundsdottir



# Developing a Marine IMP: Overall Process & Timeline

- ✓ Marine Expert Monitoring Group (MEMG) activated (**Aug'08**) – consisting of:
  - ✓ Norway & U.S. (Co-leads), Canada, Russia, Greenland/Denmark, Iceland, Aleut International Association (AIA), & Arctic Monitoring & Assessment Program (AMAP)
- ✓ Background paper (**Dec'08**)
- ✓ 1<sup>st</sup> Expert Workshop - Tromsø, Norway (**Jan'09**)
- ✓ 2<sup>nd</sup> Expert Workshop - Coral Gables, U.S. (**Nov'09**)
- ✓ Marine IMP 1<sup>st</sup> and 2<sup>nd</sup> Draft for review (**Jan'/June'10**)
- ✓ CBMP-Marine Plan for CAFF and SAO review (**Sep'/Oct'10**)
- ✓ Arctic Council Endorsement & Implementation (**2011**)



## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

# Arctic Marine Biodiversity Monitoring Plan (CBMP-Marine Plan) *Final Draft – January 2010*

Arctic Marine Biodiversity Monitoring Plan: Final Draft for Review / December 2010

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### ARCTIC MARINE BIODIVERSITY MONITORING PLAN (CBMP-MARINE PLAN)

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FINAL DRAFT

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--JANUARY 2010--

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Gill, M.J., K. Crane, R. Hindrum, P. Arneberg, I. Bysveen, N.V. Denisenko, V. Gofman, A. Grant-Friedman,  
G. Gudmundsson, R.R. Hopcroft, K. Iken, A. Labansen, O.S. Liubina, I.A. Melnikov, S.E. Moore, J.D. Reist,  
B.I. Sirenko, J. Stow, F. Ugarte, D. Vongraven, and J. Watkins.

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Submitted by the

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Marine Expert Monitoring Group

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Circumpolar Biodiversity Monitoring Program

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Contact: Mike Gill

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Chair, Circumpolar Biodiversity Monitoring Program

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Northern Conservation Division | Division de la conservation du Nord

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Canadian Wildlife Service | Service Canadien de la faune

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Environment Canada | Environnement Canada

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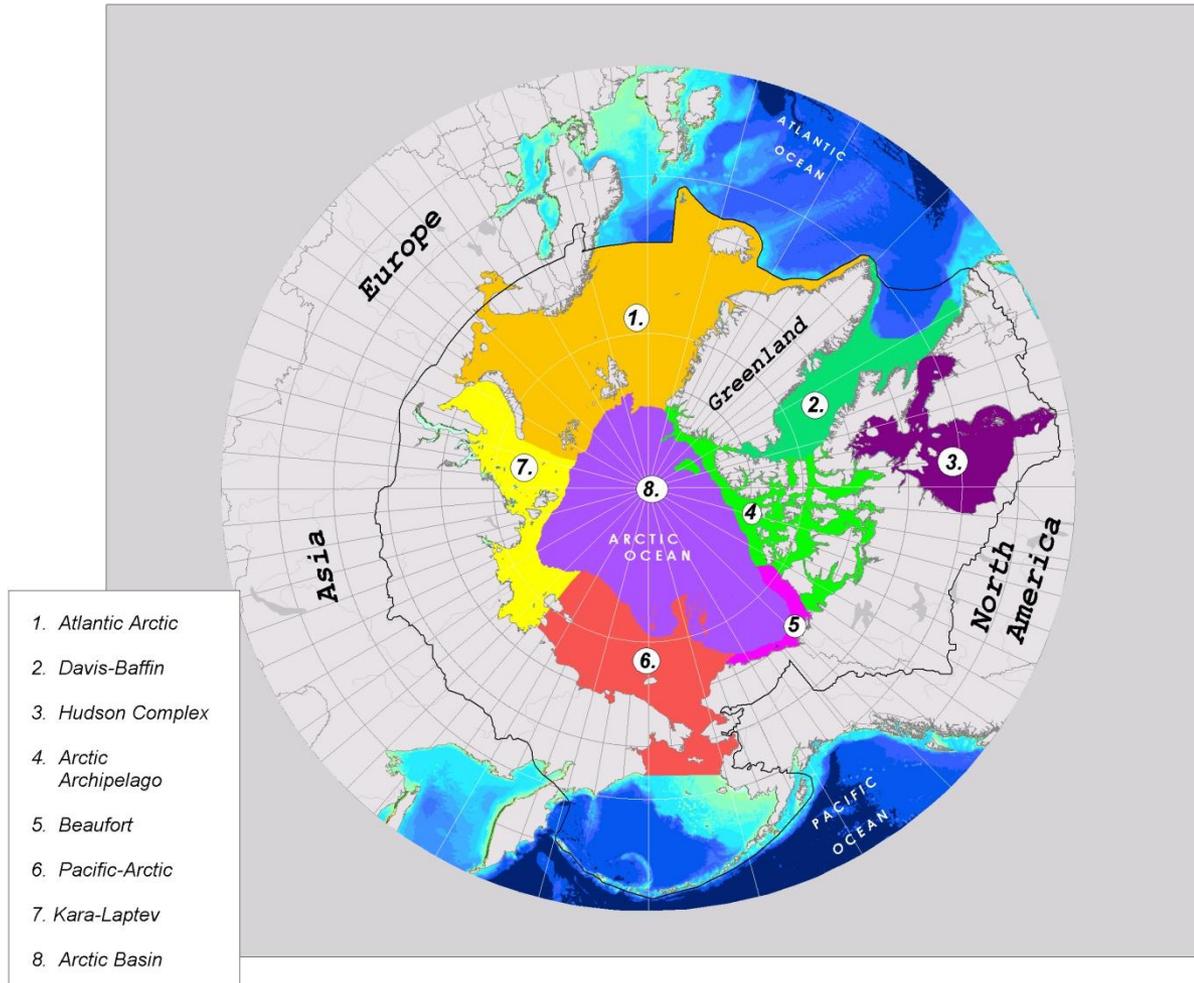
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## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

### Arctic Marine Areas



*EXAMPLE:*

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

Focal Ecosystem Components	Key Parameters	Existing Monitoring Programs	Coverage
Phytoplankton	Chlorophyll	Marine Basic Zackenberg	Zackenberg, East Greenland
		Barents Sea Ecosystem (IMR+PINRO)	Barents Sea from 68-80°N, 5°W to Novaya Zemlya
		Assorted (NPI)	Svalbard and MIZ region
		Assorted (ARCTOS, e.g. CLEOPATRA, Arctic Tipping points)	Barents Sea, Svalbard, MIZ
		White Sea Labs (Katesh - ZIN, WSBS -Moscow State)	White Sea



# The most important drivers:

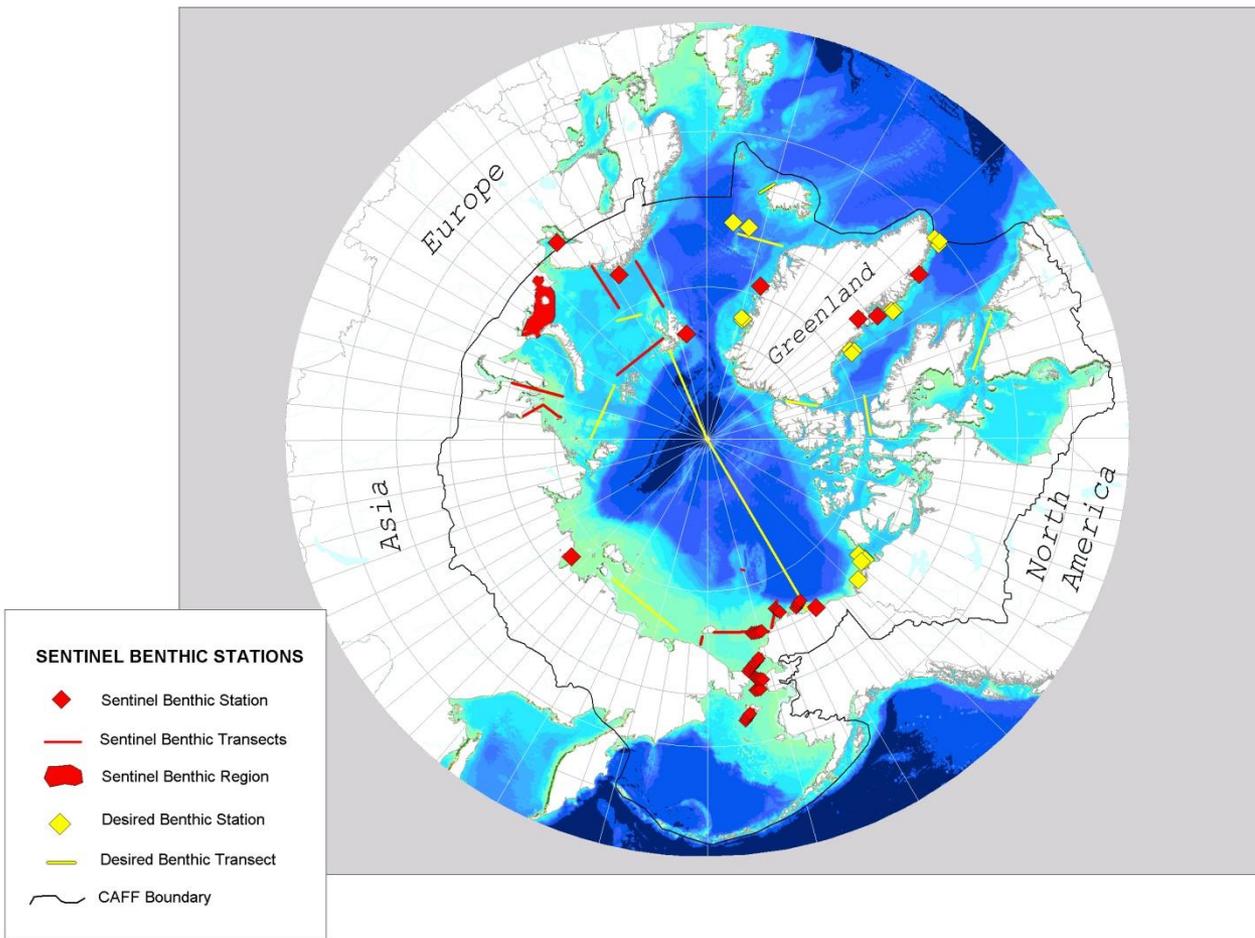
## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

- ✓ **Environmental contamination** (i.e., long range transport of contaminants)
- ✓ **Invasive species** (non-native)
- ✓ **Increasing ship & air traffic**
- ✓ **Harvest**
- ✓ **Oil & gas exploration**
- ✓ **Climate change...**  
**...the most pervasive threat!**



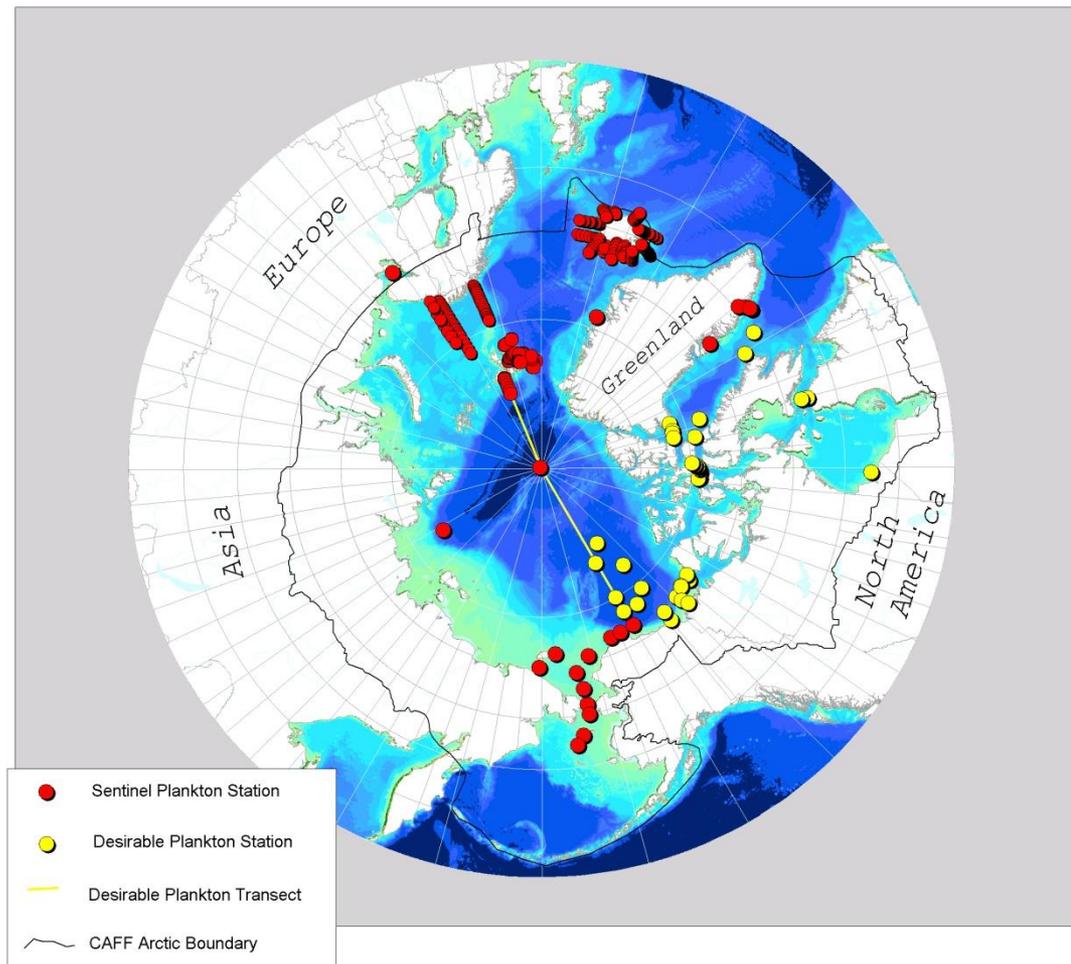
## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

### Sentinel Benthic Regions, Stations and Transects



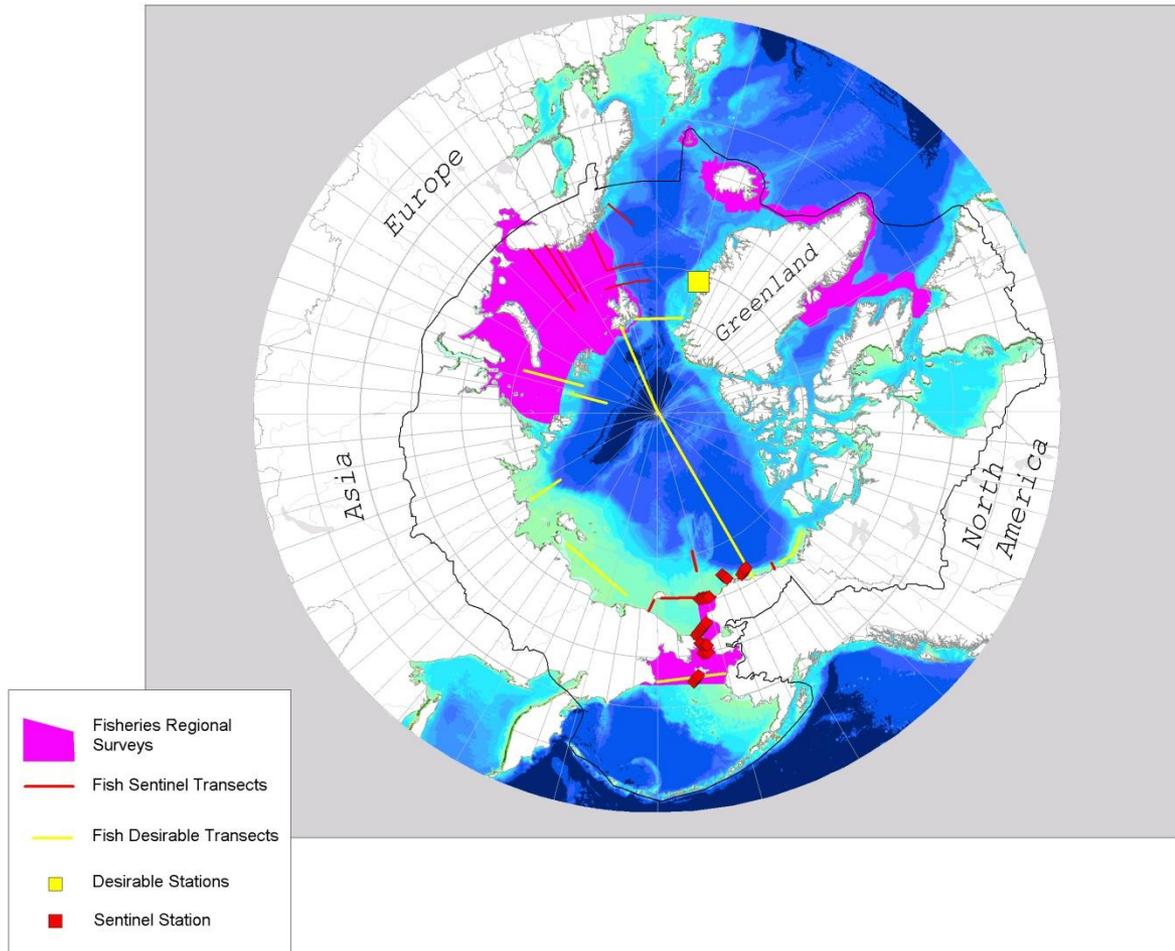
## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

### Sentinel Plankton Stations and Transects



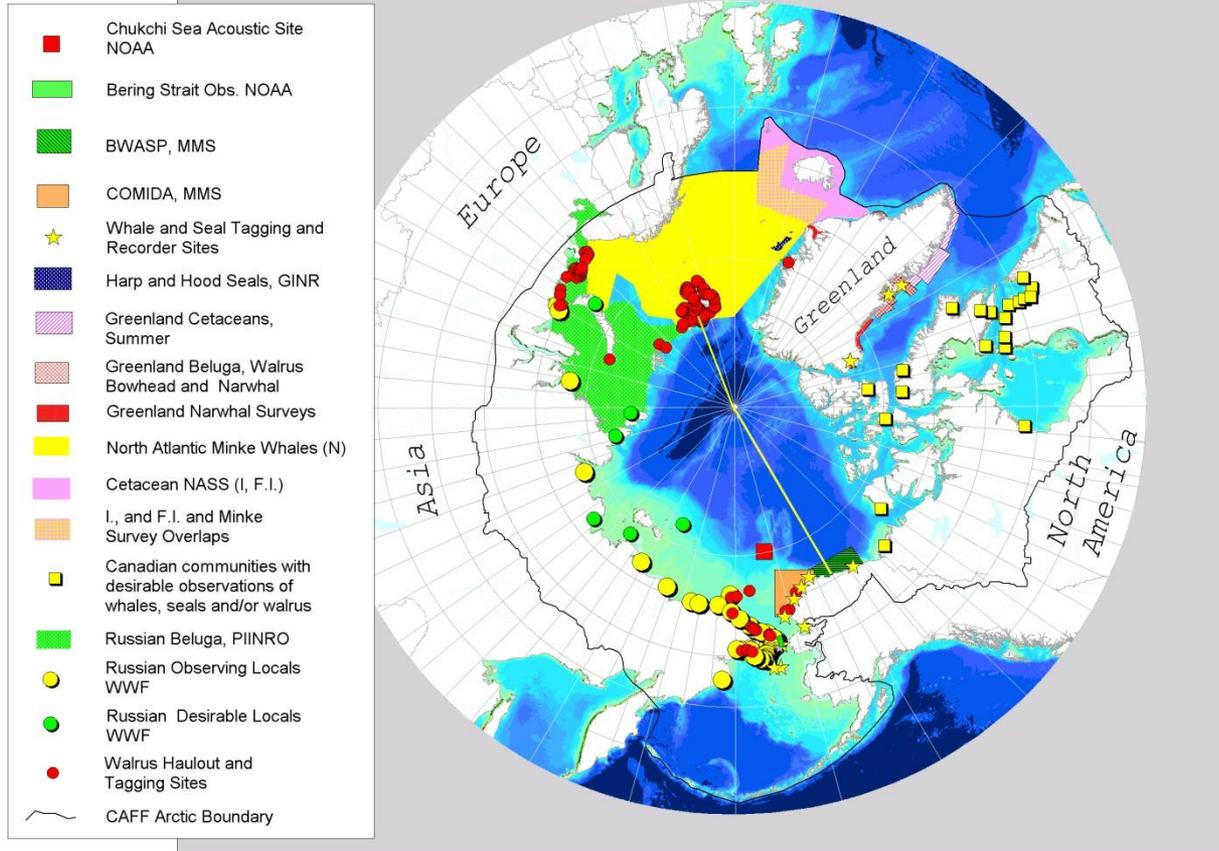
## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

### Sentinel Fish Regions, Transects, and Stations



## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

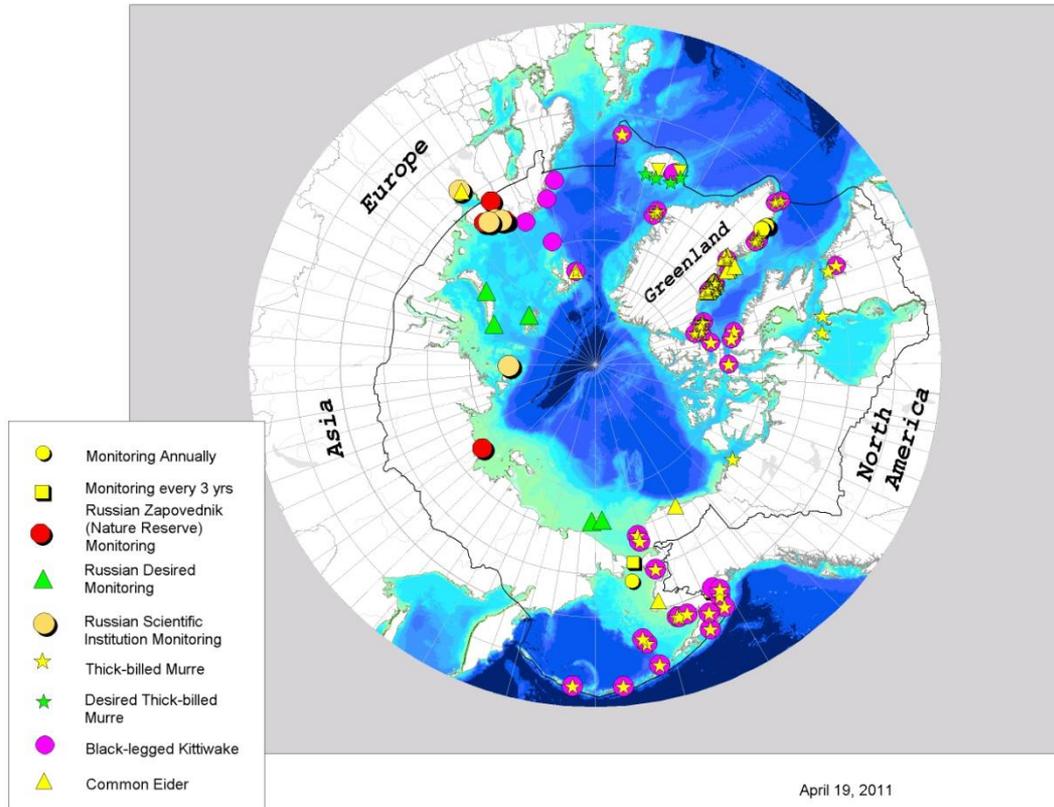
### Sentinel Marine Mammal Regions and Tagging Sites



N., I., and F.I. (Norway, Iceland and Faroe Islands)

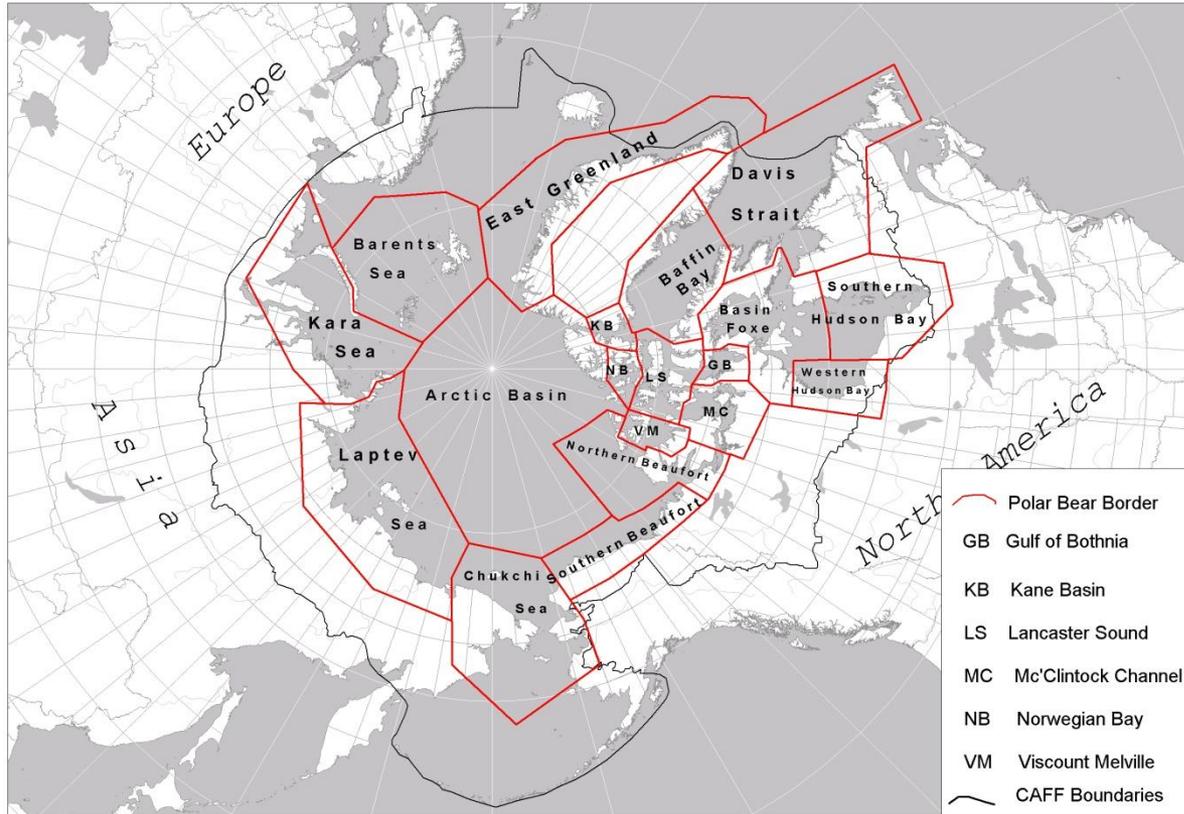
## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

### Sentinel Seabird Monitoring Sites



# CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

## Polar Bear Regions

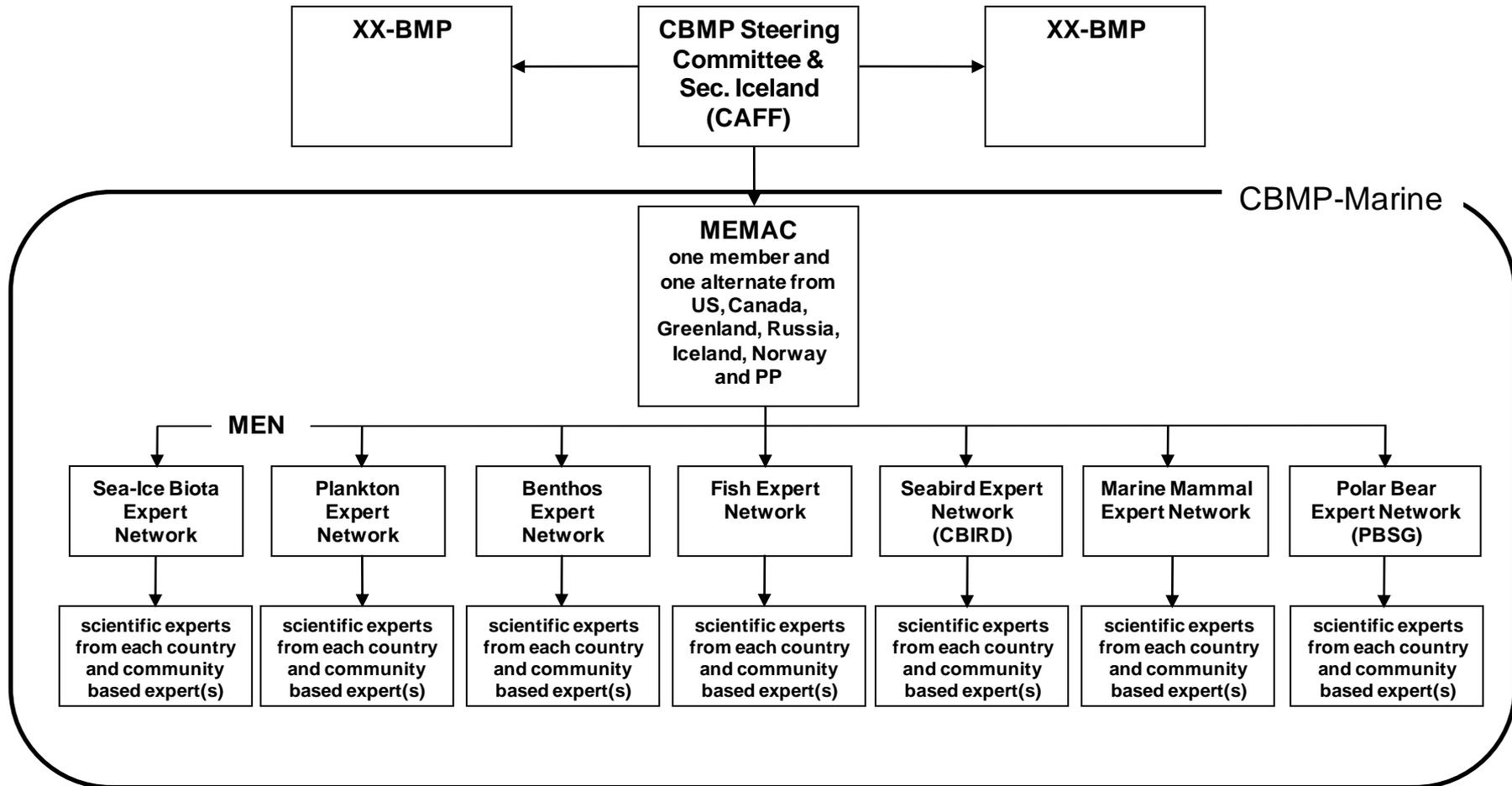


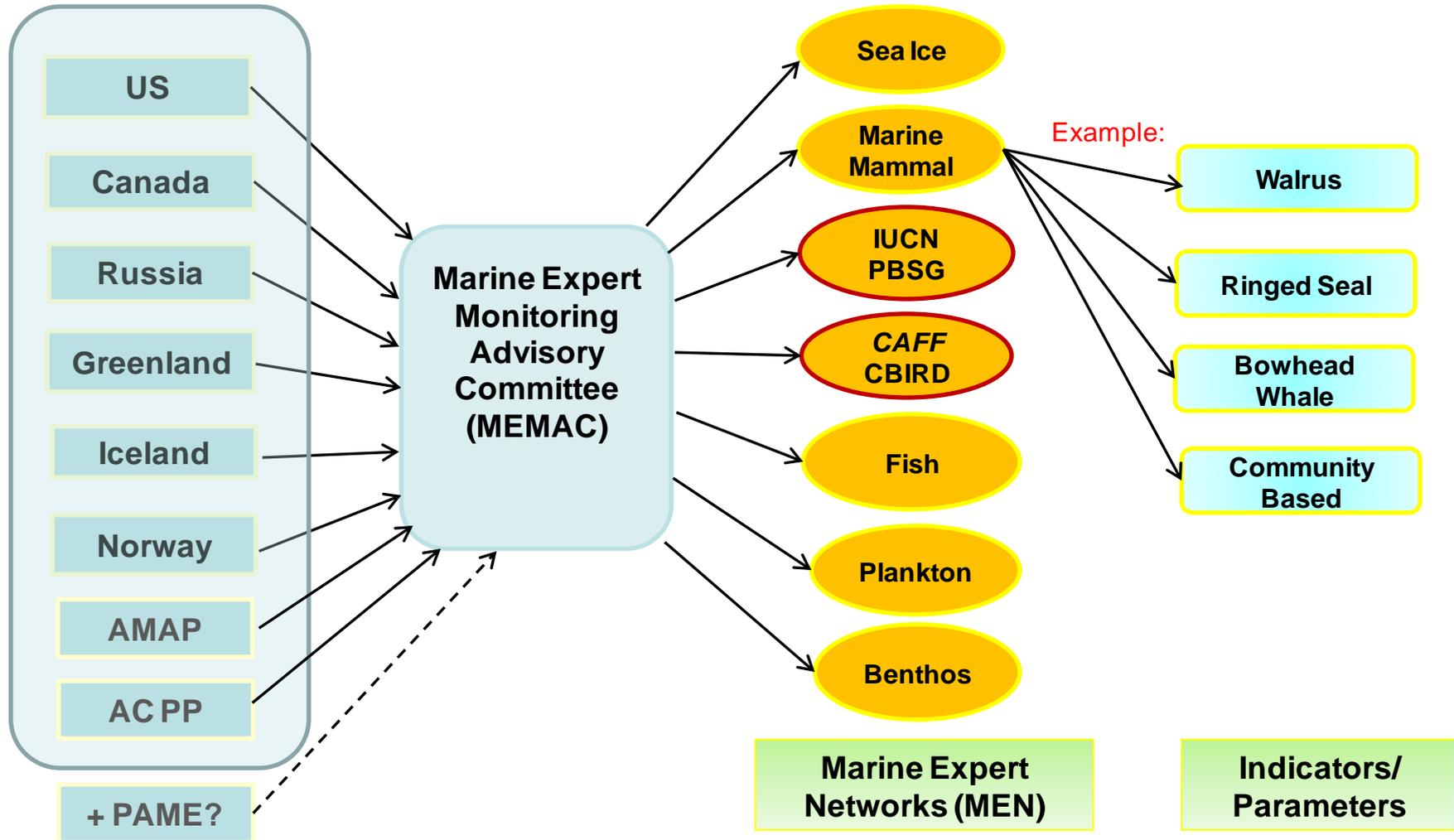
## Data Management Approach

- Data Management (treatment, roles, financing, links to SAON, objectives, etc.)
- Functions of Data Management
- CBMP Web-Based Portal and Data Nodes
- Data formats agreed upon
- Current data in comparisons to historical baselines – trends
- Testing hypotheses about human induced changes



## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM







## Start up from 2011

- Marine Expert Networks (MEN's) **supported by the nations** will be established by the Marine Expert Monitoring Advisory Committee (MEMAC) (**supported by nations**)
- **Task:** Expert Networks will establish “baselines” from historical data
- **Task:** Expert networks will aggregate existing Pan Arctic data sets.





# **Circumpolar Marine Biodiversity Monitoring: *A Phased Approach to Planning & Implementation***

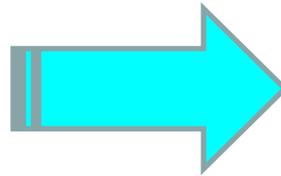
## **Phase 1 (2008-2011):**

- ✓ Arctic Nations – Russia, USA, Canada, Greenland/Denmark, Iceland, & Norway

## **Phase 2 (2015 - TBD):**

- ✓ Integration of Observer Countries into Phase 2 IMP  
(*f. ex. PAG Member Nations: Japan, China, & Korea*)

Circumpolar Marine  
Biodiversity  
Monitoring Plan



**Sustaining Arctic  
Observing  
Network (SAON)**

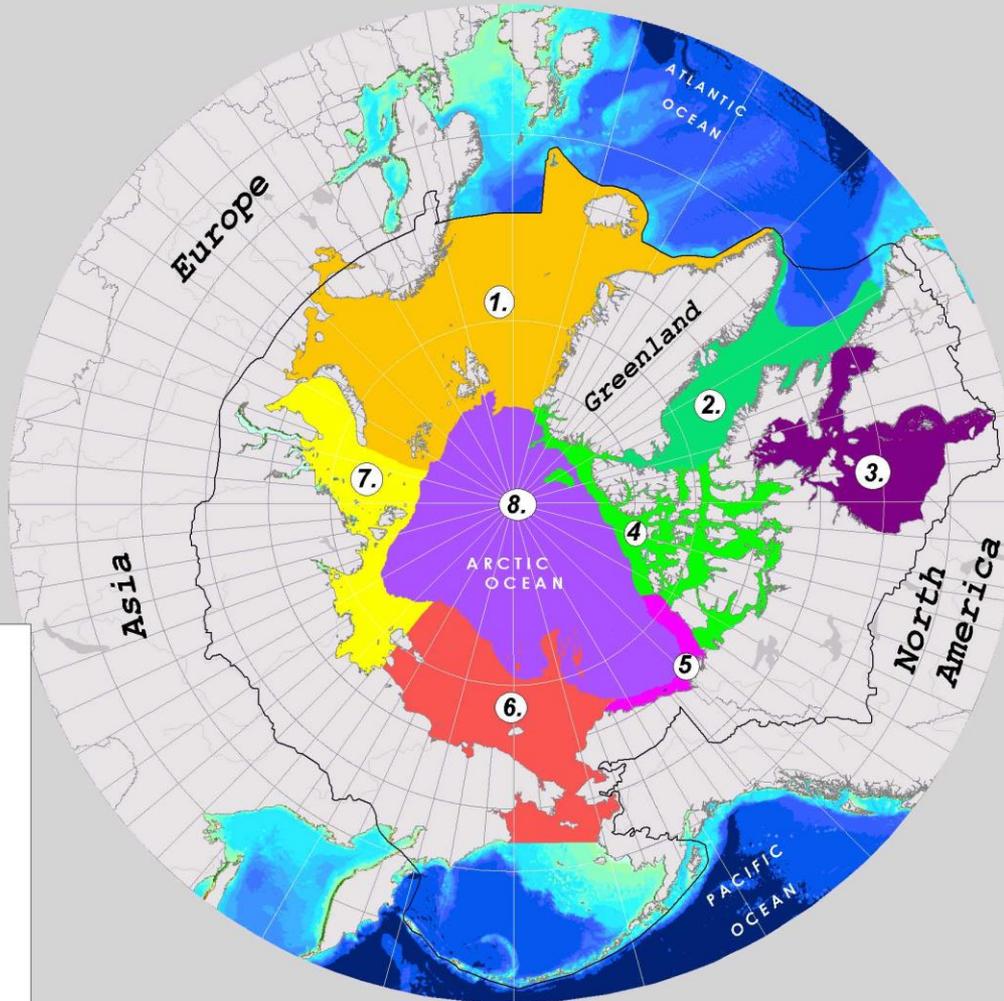
The SAON *vision* is that users should *have access to free, open & high quality data that will realize pan-Arctic & global value-added services & provide societal benefits.*

To attain that vision, SAON's *goal* is to enhance Arctic-wide observing activities by facilitating partnerships & synergies among existing 'building blocks', & promoting sharing & synthesis of data & information.

**The CBMP MEMG directly supports the SAON vision & goal using the Circumpolar Marine Biodiversity Monitoring Plan as a tool to achieve this**



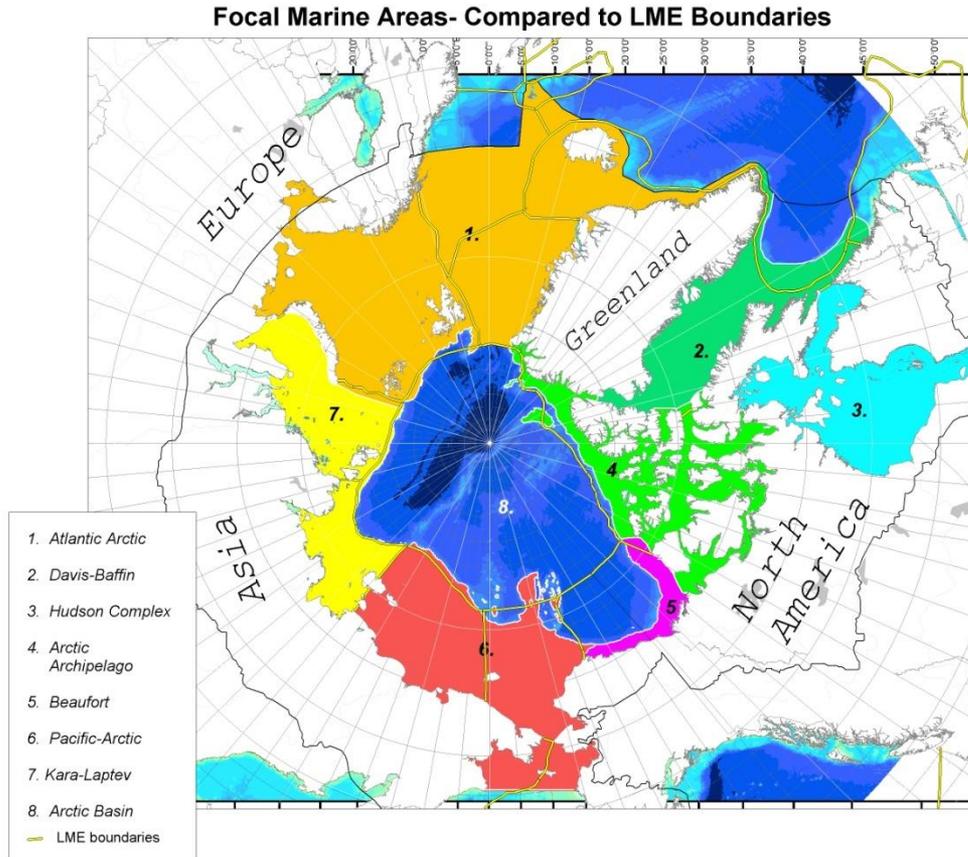
# Arctic Marine Areas



1. Atlantic Arctic
2. Davis-Baffin
3. Hudson Complex
4. Arctic Archipelago
5. Beaufort
6. Pacific-Arctic
7. Kara-Laptev
8. Arctic Basin

## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

### LME's and AMA's



## CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM



Thank you!

