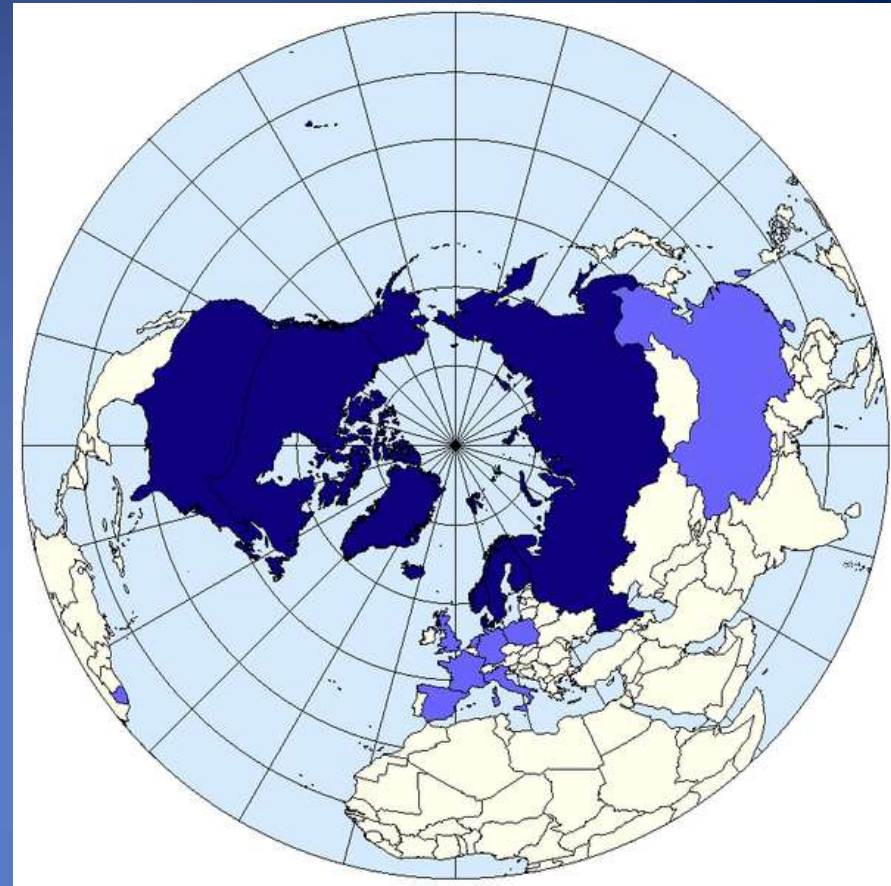


Arctic Maritime  
Shipping:  
Marine Invasive  
Species Economics  
in the Arctic Council  
Context



Brooks A. Kaiser, University of Southern Denmark  
Linda M. Fernandez, Virginia Commonwealth  
University

# Marine Invasive Species

- “Pollution” externality pathways from human maritime activities

- Ballast water
- Hull Biofouling
- Drayage

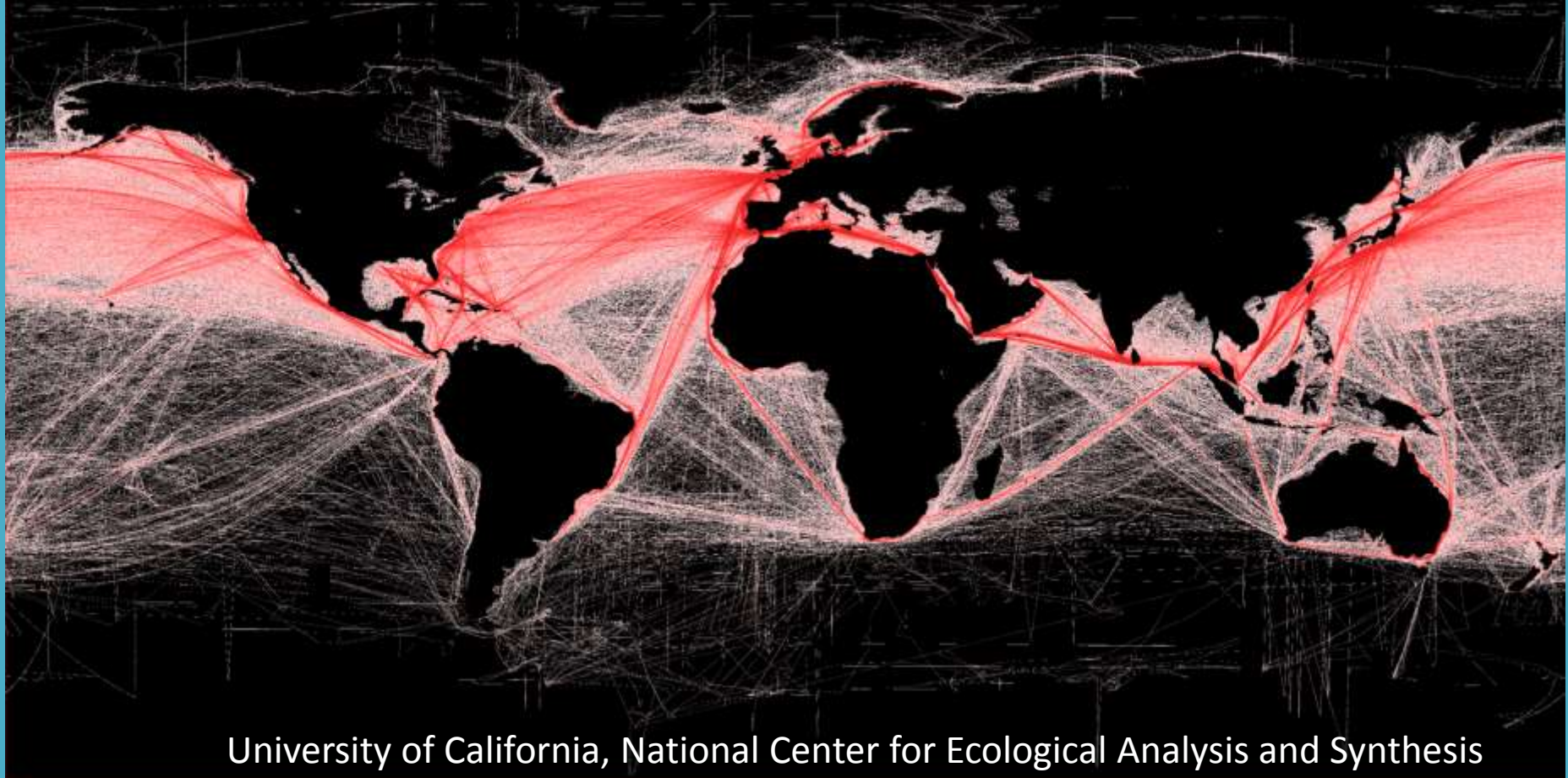


- Environmental Windows from climate change

- Warmer seas
- Ocean acidification



# Shipping routes and intensity, 2008



University of California, National Center for Ecological Analysis and Synthesis

Anticipated increases in Arctic from low historic levels

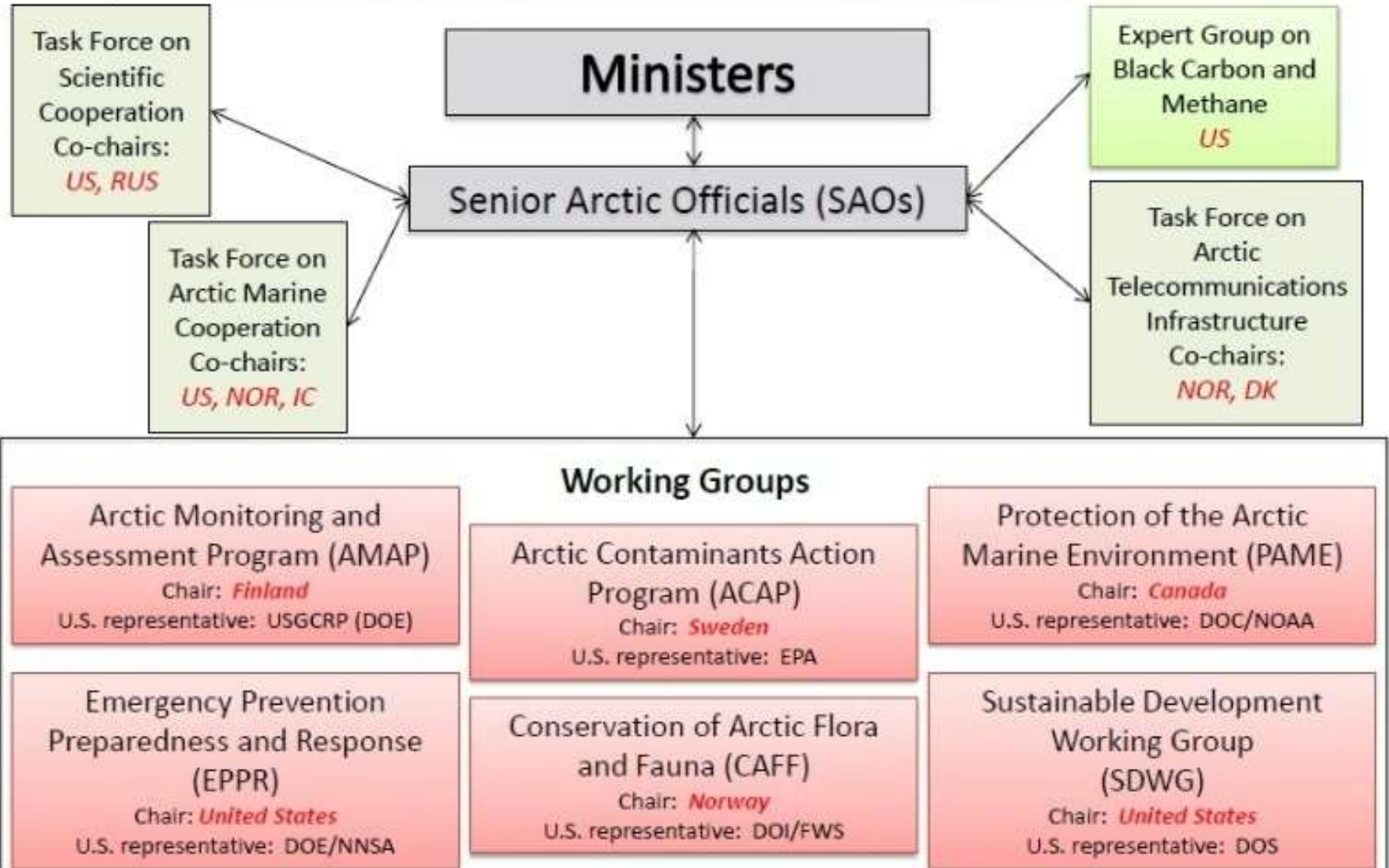
Prevention opportunities



# Arctic Council Structure

2015 – 2017 Chairmanship: **UNITED STATES**

\*Six indigenous groups ("Permanent Participants") participate at all levels

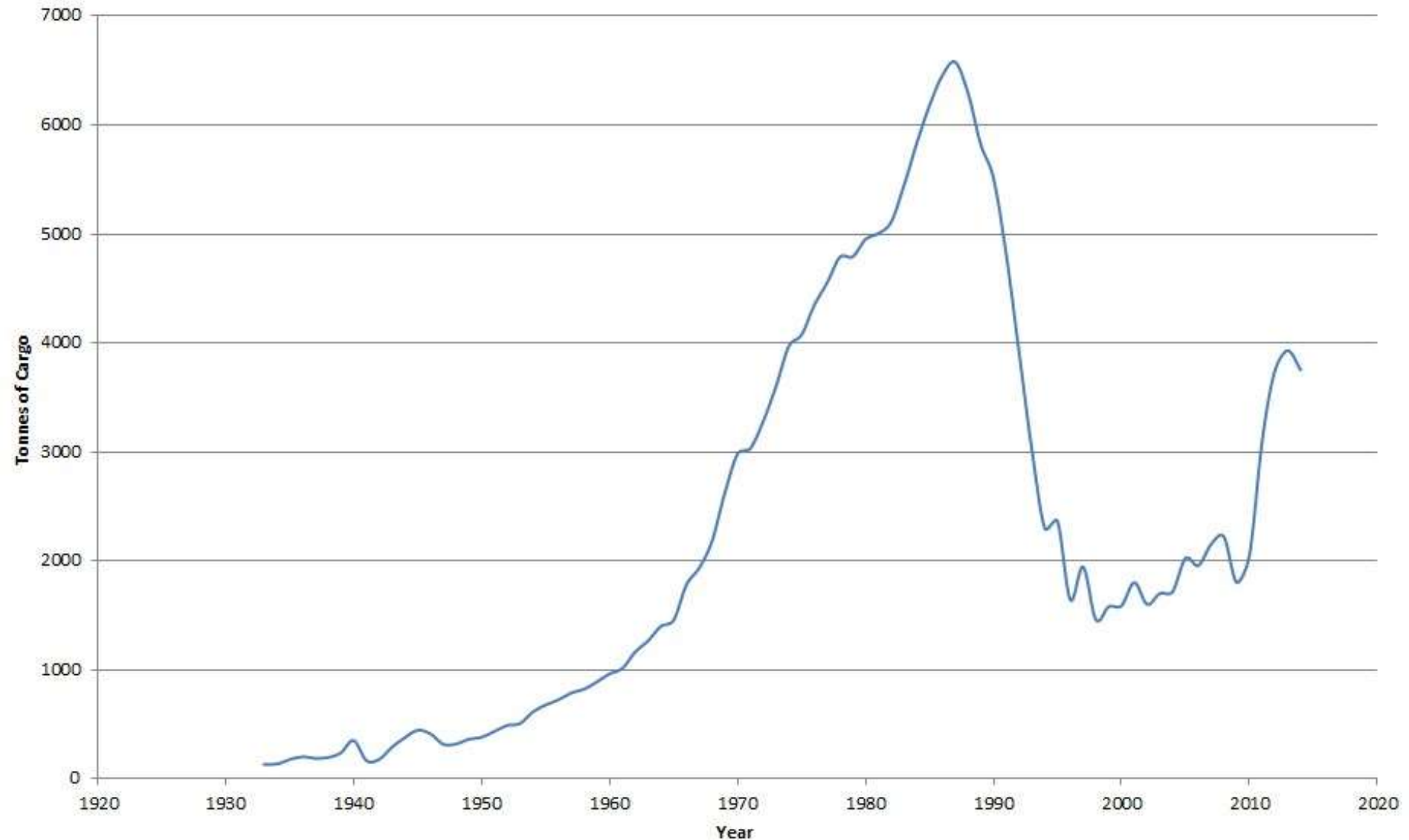


# Arctic Council (CAFF+PAME) Action Plan Apr 2017

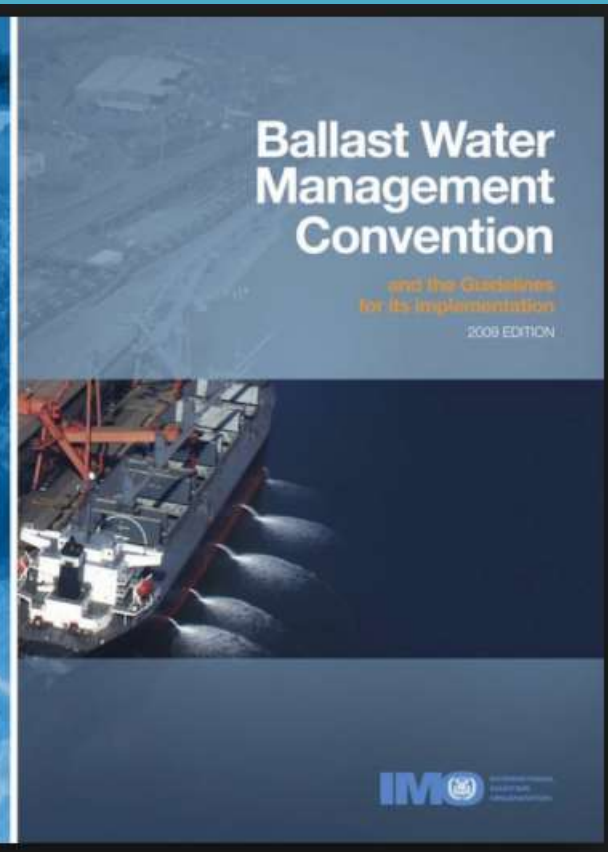
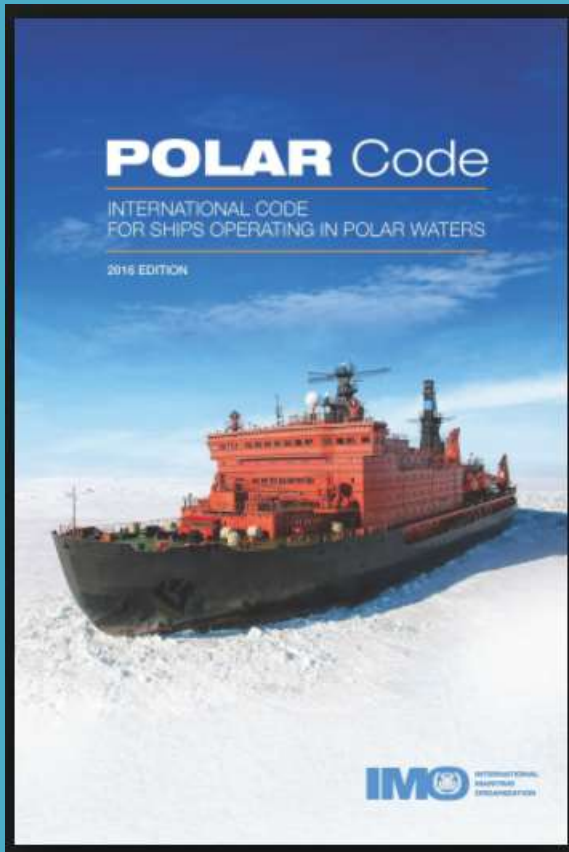
- Inspire urgent and effective action
- Improve the knowledge base for well-informed decision-making
- Undertake prevention and early detection-rapid response (EDRR) responses

# Time is of the essence

Cargo in the Northern Sea Route, 1933-2014



# IMO agreements and concerns



MARPOL 73/78: Pollution emissions  
SOLAS 74: Safety and Security



Building Blocks

# Implementation status, May 2017

## AMSA recommendations (2009)



### II(E). Protection from Invasive Species

*“That the Arctic states should consider ratification of the IMO International Convention for the Control and Management of Ships Ballast Water and Sediments, as soon as practical. Arctic states should also assess the risk of introducing invasive species through ballast water and other means so that adequate prevention measures can be implemented in waters under their jurisdiction.”*

#### Lead State and Partners

Finland

Russia

USA (NOAA)

PAME, CAFF

#### Status of Recommendation II(E)

Ratified the BWMC (2004) on 8 September 2016, which lead to the entry into force of the Convention on 8 September 2017.

A ballast water exchange requirement has put into force in all Russian ports accordingly to the regulation of the BWMC.

NOAA prepared a white paper on Arctic Economic Pressures and Invasive Species Concerns for the CAFF Invasive Species Working Group meeting in Akureyri, Iceland, March 2016.

CAFF has together with PAME developed a strategy to prevent the introduction of alien and aquatic invasive species into Arctic ecosystems (Invasive Species Project). The Arctic Invasive Species Strategy and Action plan (ARIAS) identifies actions that the Arctic Council and its partners need to take to protect the Arctic from one of its most significant threats: the adverse impacts of invasive alien species. These are priority actions directed towards all Arctic ecosystems, taking environmental, cultural and economic drivers, impacts and response measures into consideration. CAFF worked closely with PAME on the marine components of the strategy.



# Keys to Cooperation

- Simultaneous and sequential international actions needed for shipping (“floating not stationary action”)
  - Internal regulations might aid e.g. intra-Russian or intra-Canadian action, but North-South and East-West across borders need collaboration
    - Monitoring and Enforcement of not just ports but anywhere ecosystems might receive new sources (tourism sites, current-driven ‘hotspots’)
- Existing analogous and complementary regulations to build from
  - MARPOL, SOLAS, BWMS, Polar Code
    - Technology forcing, but not adaptive and not complete
  - ACAP Particulate Matter “black carbon” linkages
    - Multi-scale air pollution regulations (PM 2.5, 10) provide blueprint for comprehensive ballast water/ biofouling/ cargo regulations

# Strategic Failures

- Is the BWMS a weakest link regulation?
- Coordination on EDRR requires awareness, education
- Climate change environmental windows shifting what's a potential threat (in addition to increased direct human activity)
- AC mainly governs circumpolar; N-S issues of vital importance from both likely vessel routes and newly viable species threats

# Conclusions

- Must move beyond the CAFF/PAME action plan to concrete cooperative decisions that are incentive compatible for all participants
- This may involve direct economic incentives in policy (international payments/liability pooling) that assist monitoring, EDRR at both sources and receptors of potential invaders
- The North-South vector may pose particular problems within a system geared to pan-Arctic governance

# Thanks!

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