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

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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

- Task Force on Scientific Cooperation Co-chairs: US, RUS
- Task Force on Arctic Marine Cooperation Co-chairs: US, NOR, IC
- Expert Group on Black Carbon and Methane US
- Task Force on Arctic Telecommunications Infrastructure Co-chairs: NOR, DK

Ministers

Senior Arctic Officials (SAOs)

Working Groups

- Arctic Monitoring and Assessment Program (AMAP)
  Chair: Finland
  U.S. representative: USGCRP (DOE)

- Arctic Contaminants Action Program (ACAP)
  Chair: Sweden
  U.S. representative: EPA

- Protection of the Arctic Marine Environment (PAME)
  Chair: Canada
  U.S. representative: DOC/NOAA

- Sustainable Development Working Group (SDWG)
  Chair: United States
  U.S. representative: DOS

- Emergency Prevention Preparedness and Response (EPPR)
  Chair: United States
  U.S. representative: DOE/NNSA

- Conservation of Arctic Flora and Fauna (CAFF)
  Chair: Norway
  U.S. representative: DOI/FWS
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
### 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.”

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<tr>
<th><strong>Lead State and Partners</strong></th>
<th><strong>Status of Recommendation II(E)</strong></th>
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<tr>
<td>Finland</td>
<td>Ratified the BWMC (2004) on 8 September 2016, which lead to the entry into force of the Convention on 8 September 2017.</td>
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<td>Russia</td>
<td>A ballast water exchange requirement has put into force in all Russian ports accordingly to the regulation of the BWMC.</td>
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<td>USA (NOAA)</td>
<td>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.</td>
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<td>PAME, CAFF</td>
<td>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.</td>
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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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