Environmental impacts of Arctic shipping

Sandra Cavalieri
Fellow, Ecologic Institute, Berlin

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Outline

• Overview of Arctic shipping

• Environmental impacts
  • Emissions
  • Waste
  • Accidents
  • Invasive species
  • Noise

• Policy needs
Overview
Overview

MercoPress, 2010
Overview

Corbett, 2010
## Overview

### 2004 Ship traffic by type and season reported by the Arctic marine shipping assessment (AMSA).

<table>
<thead>
<tr>
<th>Ship Type</th>
<th>Annual Trips</th>
<th>Season</th>
<th>Seasonal Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Trips</td>
<td>1052</td>
<td>Winter (December–February)</td>
<td>3072</td>
</tr>
<tr>
<td>Container Trips</td>
<td>2096</td>
<td>Spring (March–May)</td>
<td>3390</td>
</tr>
<tr>
<td>General Cargo Trips</td>
<td>1403</td>
<td>Summer (June–August)</td>
<td>4807</td>
</tr>
<tr>
<td>Government Vessel Trips</td>
<td>273</td>
<td>Fall (September–November)</td>
<td>3729</td>
</tr>
<tr>
<td>OSV Trips</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Vessel Trips</td>
<td>6972</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanker Trips</td>
<td>2827</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tug and Barge Trips</td>
<td>317</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Trips in 2004</strong></td>
<td><strong>14,998</strong></td>
<td></td>
<td><strong>14,998</strong></td>
</tr>
</tbody>
</table>

Note: Container trips include portions of transoceanic voyages that transected the study region; voyages for most other ship-types are contained within the study domain.

Corbett, 2010
Overview
Overview
Environmental impacts

- Emissions
- Waste
- Accidents
- Invasive species
- Noise
Environmental impacts: Emissions

• Greenhouse gases
• Short-lived climate forcers
Environmental impacts: Waste

- Oily water
- Sewage, gray water
- Food waste (with plastics)

Doug Helton, NOAA, NOS, ORR
Environmental impacts: Accidents

- Oil spill
- Cruise ship accident

http://www.boemre.gov
Environmental impacts: Invasive species

• Relatively pristine, only 1 known invasive marine species above 66° North

• Predicted to increase
Environmental impacts: Noise

- Potentially harmful to marine wildlife
- Need planning and technological solutions
Policy needs

✓ International Maritime Organization (IMO)

✓ Binding Polar Code

✓ Arctic PSSA(s)

✓ International regulation of shipping emissions (UNFCCC or IMO)

✓ Development of shipping infrastructure
Thank you

Arctic TRANSFORM:  
http://arctic-transform.org

EU Arctic Footprint and Policy Assessment: 
http://arctic-footprint.eu/

Ecologic Institute:  
http://ecologic.eu/