AMSA’s Application to the Ecosystems Approach to Management in the Arctic

- Rapid Climate Change
- Globalization ~ Arctic Natural Resources
- Regional & Global Geopolitics
- Indigenous Peoples Challenges

Lawson W. Brigham ~ University of Alaska Fairbanks
The Arctic ~ Mostly Ocean

- ~1500 nm
- ~600 nm
Arctic Council ~ Intergovernmental Forum
AMSA Lead Countries for PAME ~ Canada, Finland & USA
AMSA Focus ~ Marine Safety & Marine Environmental Protection
13 Major Workshops & 14 Town Hall Meetings

Key Challenge ~ Many Non-Arctic Stakeholders
Table of Contents

- Executive Summary with Recommendations
- Arctic Marine Geography Climate & Sea Ice
- History
- Governance
- Current Use/Database
- Scenarios to 2020 & 2050
- Human Dimensions
- Environmental Impacts
- Infrastructure

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What is ‘Arctic Shipping’?

- **AMSA ~ Holistic View:**
  - What type vessels…..what activity they undertake….what cargo they may be carrying.
  - Comprehensive Arctic vessel activity database (annual).
  - Bulk carriers, container ships, general cargo vessels, tankers, oil/gas service & supply ships, passengers ships, government vessels, tug/barges, fishing vessels, pleasure craft, unknown.

- **PAME Arctic Ocean Review: Arctic Marine Operations & Shipping**
Summer Arctic Commercial Marine Use

- Hard Minerals
- Marine Tourism
- Key Fisheries
- Oil & Gas
- Summer Sealift
- Exploration/Science

Zinc & Coal
Nickel & Copper
Maritime Traffic
1 June to 30 November 2013
Marine Exchange of Alaska
Maritime Traffic
1 Jan to 31 May 2013
Marine Exchange of Alaska
Super EBSA

1. St. Lawrence Island
2. Bering Strait
3. Chukchi Beaufort Coast
4. Wrangel Island
AMSA Scenarios ~ Key Uncertainties for Future Arctic Marine Navigation

• Stable legal climate
• Radical change in global trade dynamics
• Climate change is more disruptive sooner
• Safety of other routes
• Socio-economic impact of global weather changes
• Oil prices (55-60 to 100-150 USD?)***
• Major Arctic shipping disasters***
  • Limited windows of operation (economics)
  • Rapid climate change
• Maritime insurance industry

• China, Japan & Korea become Arctic maritime nations
  • Transit fees
• Conflict between indigenous & commercial use
• Arctic maritime enforcement
• Escalation of Arctic maritime disputes
• Shift to nuclear energy***
• New resource discovery
  • World trade patterns
• Catastrophic loss or change in Suez or Panama Canals
• Global agreements on construction rules and standards
Scenarios on the Future of Arctic Marine Navigation in 2050

**Arctic Race**
High demand and unstable governance set the stage for an economic ‘rush’ for Arctic wealth and resources.

**Arctic Saga**
High demand and stable governance lead to a healthy rate of development, includes concern for preservation of Arctic ecosystems & cultures.

**Polar Lows**
Low demand and unstable governance bring a murky and under-developed future for the Arctic.

**Polar Preserve**
Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent “no-shipping zones”.

High demand and unstable governance set the stage for an economic ‘rush’ for Arctic wealth and resources. High demand and stable governance lead to a healthy rate of development, includes concern for preservation of Arctic ecosystems & cultures. Low demand and unstable governance bring a murky and under-developed future for the Arctic. Low demand & stable governance slow development in the region while introducing an extensive eco-preserve with stringent “no-shipping zones”.

AMSA/GBN Scenarios Workshops ~ April & July 2007
The Future of Arctic Marine Navigation in 2050
AMSA Scenarios ~ Successes

- Facilitated New & Unconstrained Thinking
- Identified Major Drivers & Key Uncertainties
- Educated Arctic Council ‘Customers’ & Many Stakeholders
- Identified Linkages to the Global System
- Established an Integrated View of Arctic Marine Navigation
Arctic Linkages to the Global Economic System

• International Fishing (10%)

• Hard Minerals ~ Palladium (40%), Nickel (22%), Diamonds (20%), Platinum (15%), Zinc (10%)

• Estimated Arctic Hydrocarbons ~ Undiscovered Natural Gas (30%) & Oil (13%)

• Potential: Rare Earths (25%), Coal & Fresh Water
  - Global Marine Tourism industry
  - Regional Trade to Northern Communities & Infrastructure Development
Enhancing Arctic Marine Safety

Protecting Arctic People and the Environment

Building the Arctic Marine Infrastructure

AMSA RECOMMENDATIONS (17) ~ THEMES
Enhancing Arctic Marine Safety

- Infrastructure Deficit
- Arctic Marine Traffic System+
- Environmental ++++
- Hydrographic, Met & Ocean Data

Protecting Arctic People and the Environment

- Indigenous Use+
- Community Engagement++
- Invasive Species
- Eco-Significant Areas++
- Oil Spill Prevention
- Marine Mammal Impacts
- Reducing Air Emissions

Building the Arctic Marine Infrastructure

- Arctic State Linkages++
- IMO Measures
- Uniformity of Governance
- Passenger Ship Safety
- SAR Agreement++++

AMSA RECOMMENDATIONS (17) ~ THEMES
AMSA 2009:

- Baseline Assessment
- Arctic Council Policy Document
  ~ Negotiated Text Approved 29 April 2009 ~
- Strategic Guide

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AMSA Outcomes & Applications

- Integrated Arctic Marine Use Across Sectors & Seasonality
  - Strategies to Handle Complexity
- Scenarios Approach Provided Plausible Futures & Impacts
- AMSA ~ Negotiated Recommendations with Consensus Provided a Policy Framework
Winter & Spring Months
2014 & 2015

1 January

1 March

1 April

1 June
Timeless Arctic Marine Transport: Indigenous Use of the Arctic Ocean
Elements of the IMO Polar Code

Amendments to SOLAS and MARPOL (1 Jan 2017)
Commercial Carriers & Passenger Ships (500 tons or more)

- Polar Ship’s Structural & Equipment Standards (IASC Ice Classes: PC1/ PC7)
- Marine Safety and Lifesaving Equipment
- Training & Experience of Polar Mariners (STCW)
- Polar Ship Certificate (Issued by Flag State; Ship Classes A,B,C)
- Polar Waters Operations Manual (Ship Specific)
- Environmental Rules ~ MARPOL Annexes:
  - Annex I ~ Oil & Oily Mixtures (No Discharge)
  - Annex II ~ Noxious Liquid Substances (No Discharge)
  - Annex IV ~ Sewage
  - Annex V ~ Food Waste/Garbage