ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment for the Central Arctic Ocean (WGICA)

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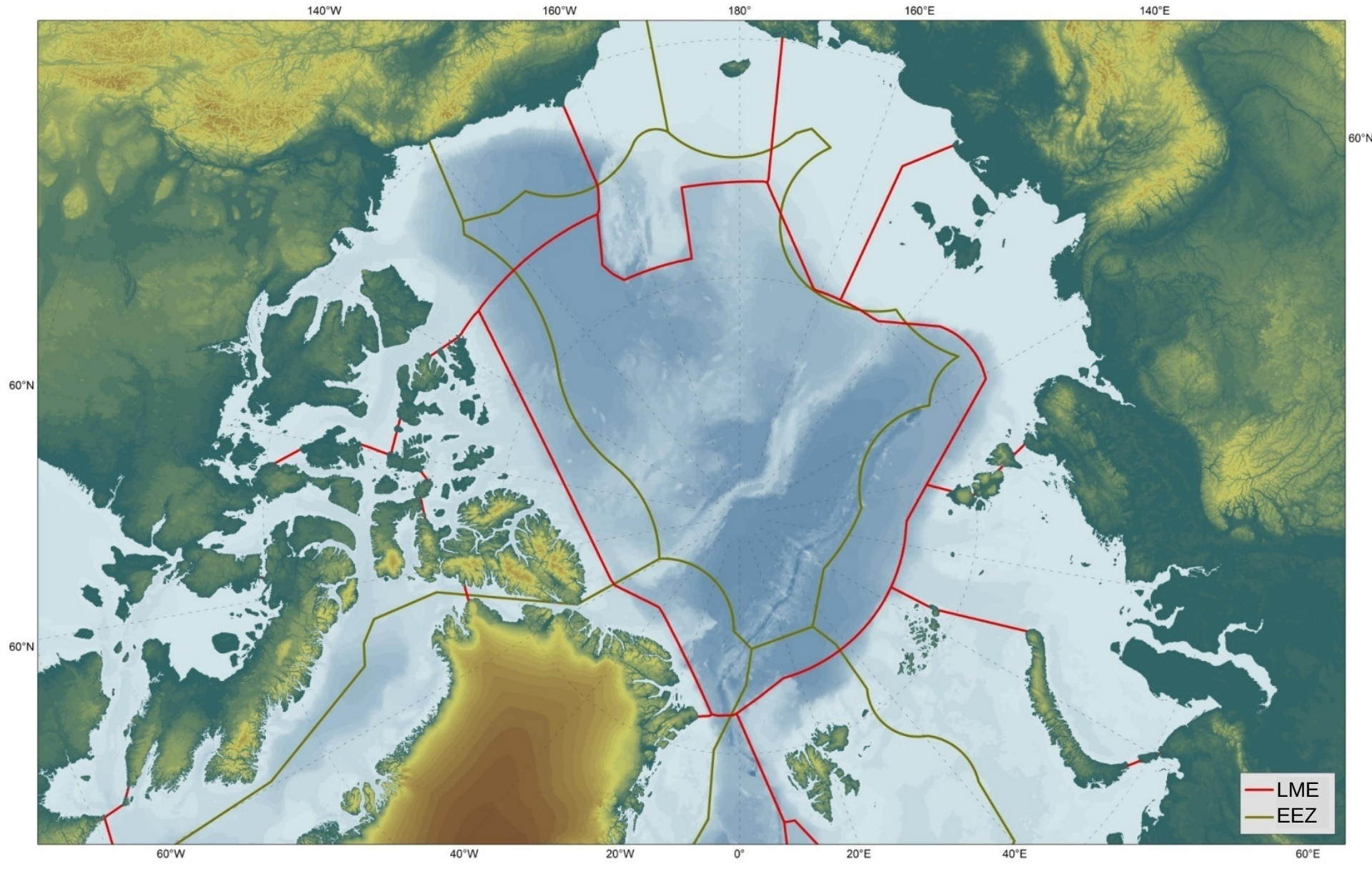
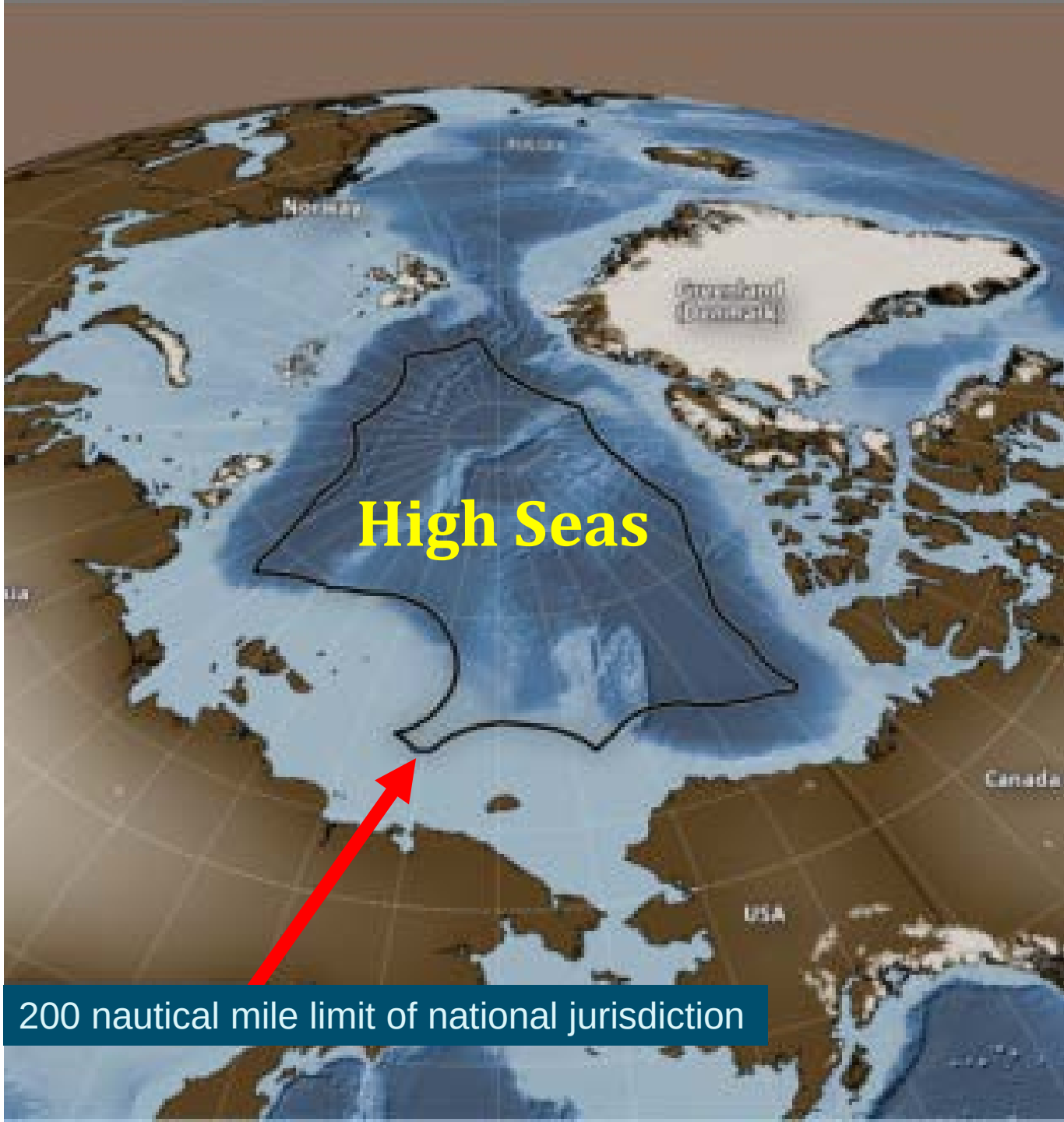
Large Marine Ecosystems (red) and Territorial Boundaries (green) of the Central Arctic Ocean



"Agreement to prevent unregulated high seas fisheries in the Central Arctic Ocean" (November 2017)

Support for the CAO agreement from a precautionary, ecosystem approach

Integrated Ecosystem Assessment & Joint Program of Scientific Research and Monitoring



WGICA Terms of Reference

- Approach and methodology for doing an IEA
- Assemble data and information, carry out appropriate analyses
- Prepare an IEA for the current status of the CAO ecosystem
  - Productivity – phyto- and zooplankton
  - Fish stocks – potential production, abundance
  - Vulnerability – to anthropogenic and natural impacts

  (Sea ice biota, plankton, benthos, fish, marine mammals, birds)
- Requirements and design of future research and monitoring
- Identify priority research issues

Key Questions

1. What projected shifts in climate and oceanography are likely to impact ecosystems in the Central Arctic Ocean?

2. What is the productivity of plankton, benthic organisms, and sea ice biota in the Central Arctic Ocean?

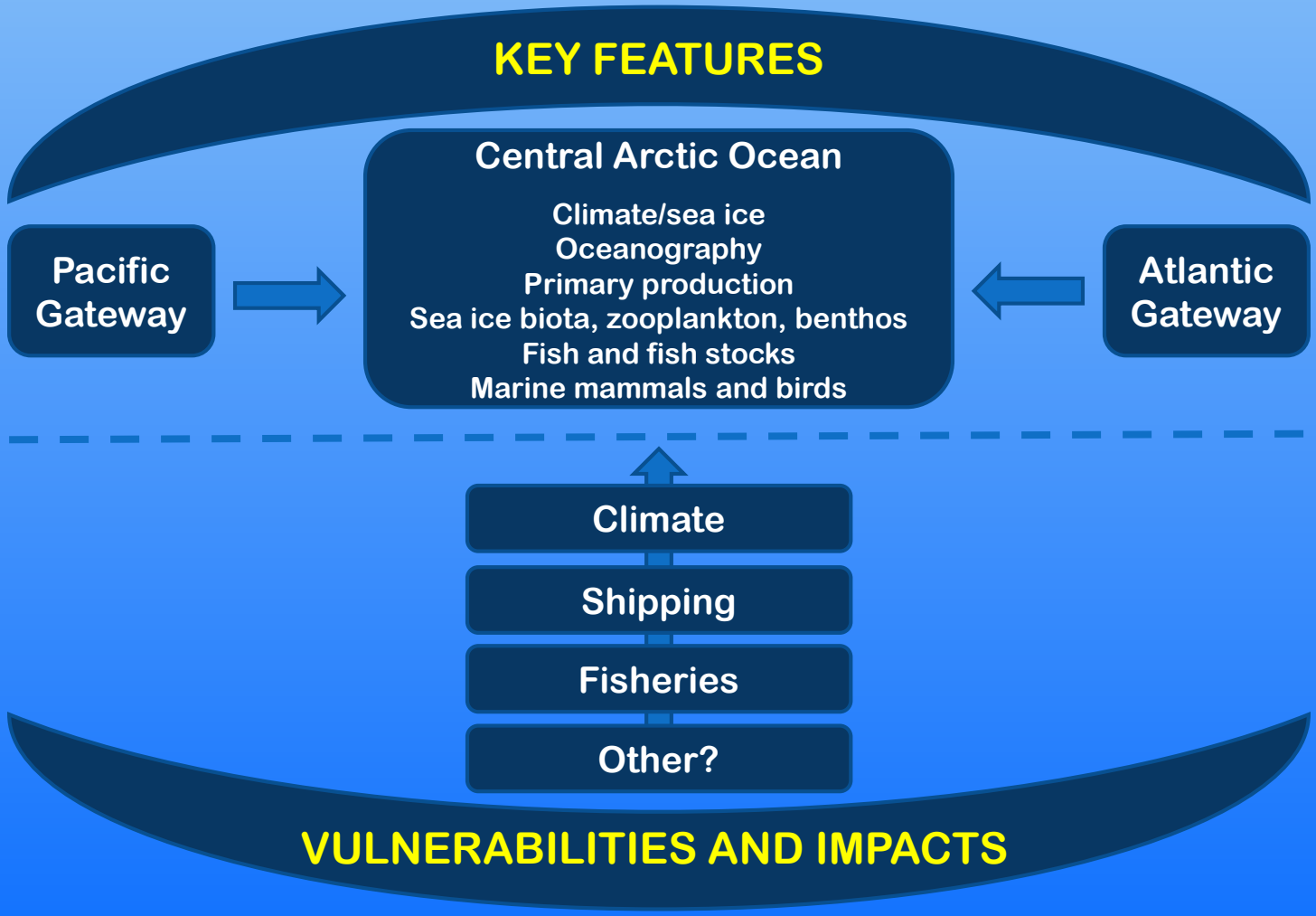
3. What is the potential productivity of fish stocks in the Central Arctic Ocean?

4. What is the vulnerability of ice-associated marine mammals and birds in the Central Arctic Ocean to climate change, shipping, potential commercial fishing, and other anthropogenic activities?

Ecosystem Approach Framework

- Define the ecosystem
- Describe the ecosystem
- Set ecological objectives
- Assess the ecosystem (IEA)
- Value the ecosystem
- Manage human activities

Integrated Ecosystem Assessment



WGICA 2017

- 2nd meeting, at NOAA in Seattle, 19-21 April 2017
- 23 persons from four countries (Canada, Japan, Norway, U.S.A.)
- Report available

Summary of 2017 Meeting

Progress since 2016 meeting

- Focal areas for IEA:
  - Amerasian Basin/Pacific Gateway
  - Eurasian Basin/Atlantic Gateway
  - Central Arctic Ocean
  - High seas basins plus relevant slopes and shelves
- Arctic fisheries: new fisheries agreement, links to FiSCAO
- CAFF/CBMP – State of Arctic Marine Biodiversity Report (SAMBR)

Ecosystem description (emphasis on key characteristics)

- Descriptions of key features, seasonal aspects, climate linkages, and conceptual models for:
  - Climate and sea ice
  - Oceanography
  - Primary production
  - Sea ice biota/zooplankton, benthos
  - Fish and fish stocks
  - Marine mammals and birds

Summary of 2017 Meeting

Climate, oceanography and sea ice

- Changing Arctic climate and sea ice
- "Great Melt" – including a climate assessment in the CAO IEA
  - Loss of 75% of summer ice in recent decades
  - Loss of 50% area coverage, 50% thickness
  - Effects on plankton, sea ice biota, fish, mammals & birds

Primary production (literature review)

- Limiting factors for primary production
- Light conditions
- Nutrients

Summary of 2017 Meeting

Fish and fish stocks

- Arctic fishes and fish in the CAO – overview
- Occurrence/distribution of fish in the Arctic Ocean
- Polar and Arctic cod
- Acoustic data from Swedish icebreaker 'Oden'

Ecosystem vulnerability (strategic impact assessment)

- Sources of potential impacts to ecosystem
  - Climate
  - Shipping
  - Commercial fisheries
  - Other impacts
- Sea ice biota, plankton, benthos
- Marine mammals & seabirds – overview
  - Polar bear – several subpopulations
  - Ringed seal, bowhead whale, beluga, narwhal
  - Ivory and Ross' gulls

Next Steps

Prepare initial draft text
on vulnerabilities (April 2018)

Assemble first version
of IEA (April 2018)

Next Steps

3rd WGICA meeting:

24-26 April 2018

St. John's, Newfoundland

Canada


Thank you