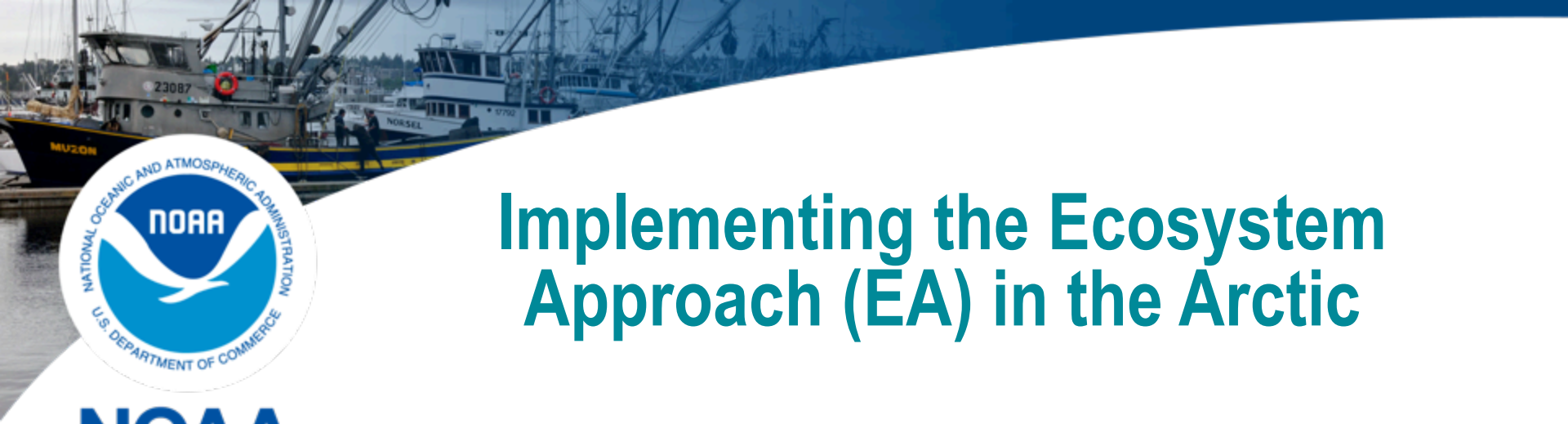

Implementing the Ecosystem Approach (EA) in the Arctic

NOAA FISHERIES

Alaska Fisheries Science Center

Phillip R. Mundy* (NOAA)
US Co-Chair Ecosystem Approach Expert Group
Protection of the Arctic Marine Environment (PAME)
Arctic Council

Ecosystems and Fisheries: Understanding Cumulative Effects and Managing Change

Arctic Biodiversity Congress

Trondheim, Norway

4 December 2014

The Ecosystem Approach Expert Group of PAME is Co-chaired by Hein Rune Skjoldal, IMR Norway and Phil Mundy, NOAA US

Atlantic cod (gadus morhua). Photo: Erlendur Bogason, www.strytan.is

Ecosystem-Based Management in the Arctic

SOURCES: CBD, BePOMAr, UN, WWF, ESA, others

ARCTIC COUNCIL

EBM = EA

Report submitted to Senior Arctic Officials
by the Expert Group on Ecosystem-Based Management
May 2013

PAME

Protection of the Arctic Marine Environment

The Ecosystem Approach to Management

EA is a system of knowledge concerning the ecosystem and its systems. EA embodies what is known about how to shape human behavior in ways that minimize interference with continuing *operations of the ecosystem.* **What kinds of knowledge?**

Six elements of the Ecosystem Approach (PAME EA-EG)

1. **Identify the ecosystem**
2. **Describe the ecosystem**
3. **Set ecological objectives**
4. **Assess the ecosystem**
5. **Value the ecosystem**
6. Manage human activities

The system of knowledge

The regulatory process

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The system of knowledge

The regulatory process

Elements of the Ecosystem Approach

1. **Identify the ecosystem** the ecosystem as a geographical entity based on ecological criteria. **Arctic Large Marine Ecosystems, www.pame.is**

2. Describe the ecosystem in terms of its biological and physical characteristics (species and habitats), as well as the physical and biological processes and relationships that forge them into an ecosystem. **CAFF, AMAP, PAME, SDWG, and Arctic States**

3. Set ecological objectives for ecosystem components (species and habitats) and for the overall state of the ecosystem by defining the envelope of conditions for ecosystem state compatible with sustainable use. **In Element 6** ecological objectives are translated into management objectives.

Elements of the Ecosystem Approach

4. Assess the ecosystem by gathering synoptic observations on the status and trends of all relevant ecosystem components in an **integrated assessment**. Integrated assessment includes measuring or estimating the impacts by various human activities such as fishing, pollution, coastal development, as well as the overall or **cumulative impacts** of those activities.

5. **Value the ecosystem** by identifying and valuing its goods and services in order that those economic, social and cultural values may be more fully incorporated into mainstream socioeconomics ('greening of the economy'). Socioeconomics in the broadest sense (including cultural, political and other aspects) come into play in all elements of the EA.

How does EA enable understanding cumulative effects and managing change in ecosystems and fisheries?

EA is a learning process that uses frequent integrated assessments to allow adaptive management of human activities. Frequent integrated assessments measure both environmental drivers of change and cumulative effects on ecological objectives to inform management on how to adapt its actions to achieve ecological objectives.

The End

EBM is fundamental to implementing recommendations of the Arctic Biodiversity Assessment.

Ecosystem-based management

3. Advance and advocate ecosystem-based management efforts in the Arctic as a framework for cooperation, planning and development.

Climate change

2. Incorporate resilience and adaptation of biodiversity to climate change into plans for development in the Arctic.

Identifying and safeguarding important areas for biodiversity

6. Develop guidelines and implement appropriate spatial and temporal measures where necessary to reduce human disturbance to areas critical for sensitive life stages of Arctic species outside protected areas

7. Develop and implement mechanisms that best safeguard Arctic biodiversity under changing environmental conditions, such as loss of sea ice, glaciers and permafrost.

Addressing individual stressors on biodiversity

Improving knowledge and public awareness