



**NOAA  
FISHERIES**

# AGREEMENT TO PREVENT UNREGULATED HIGH SEAS FISHERIES IN THE CENTRAL ARCTIC OCEAN

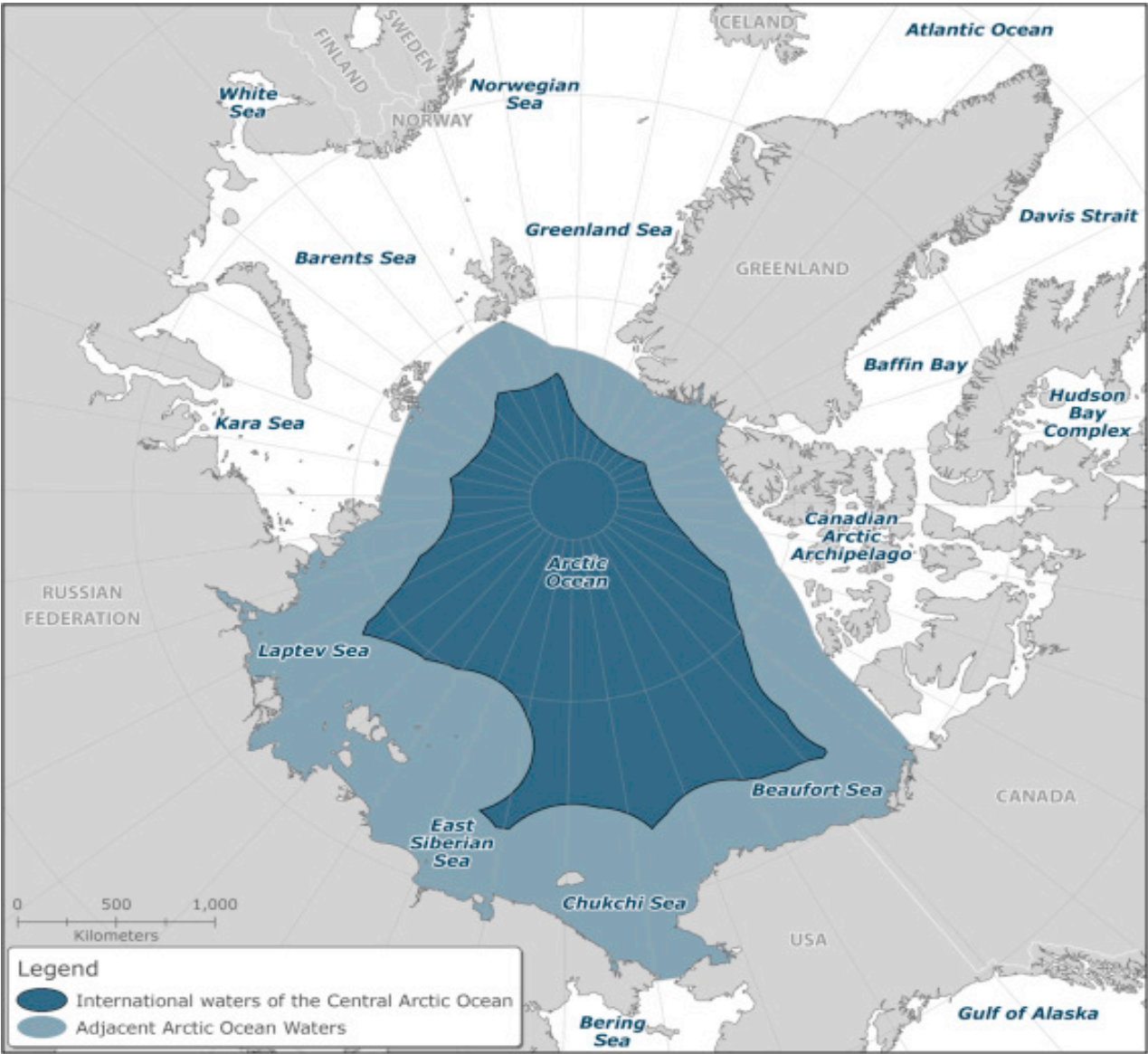
Presentation to the North Pacific Fisheries Management  
Council

February 6, 2019

# Outline of Brief

- Presenters
  - Jean-Pierre Plé – NMFS Office of International Affairs and Seafood Inspection
  - Candace Nachman – NMFS Office of Policy
- Description of the Agreement and next steps
- Science Developments
- Exploratory Fishing

# Map of Central Arctic Ocean





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# Scientific Update

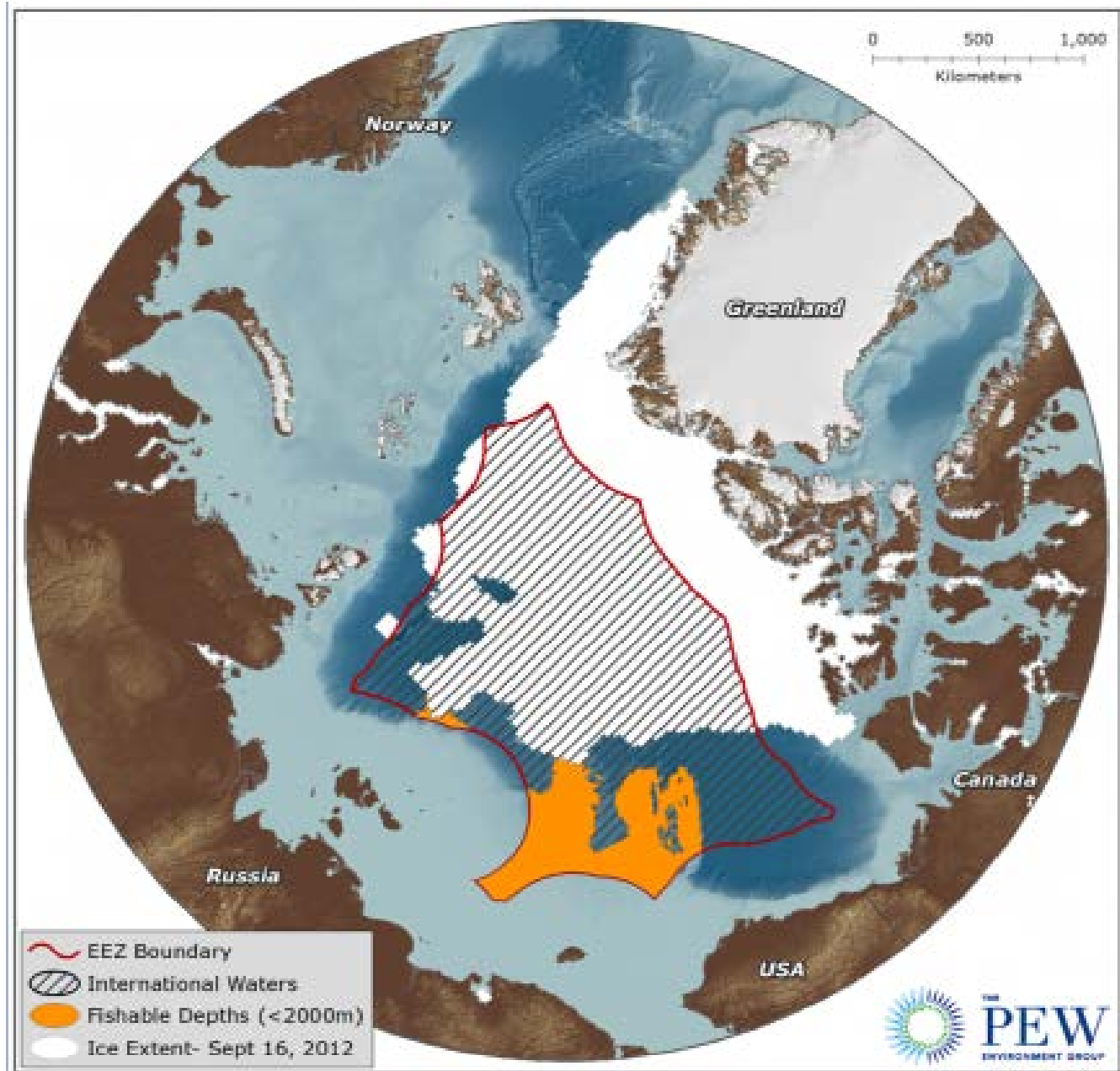
# Acknowledgements

Dr. Phillip Mundy – Retired  
Chris Lunsford – Alaska Fisheries Science Center

## AFSC

Dr. John Bengtson  
Dr. Libby Logerwell  
Dr. Ed Farley  
Dr. Anne Hollowed

Overlaying the  
CAO donut  
hole, 2012 sea  
ice extent and  
fishable  
depths



# Joint Program of Scientific Research and Monitoring

- Aim of improving understanding of the CAO ecosystems
- Determine whether fish stocks might exist in the CAO (now or in the future) that could be harvested on a sustainable basis
- Determine impacts of such fisheries on CAO ecosystems
- Will take into account the work of relevant scientific and technical organizations, bodies and programs, as well as indigenous and local knowledge

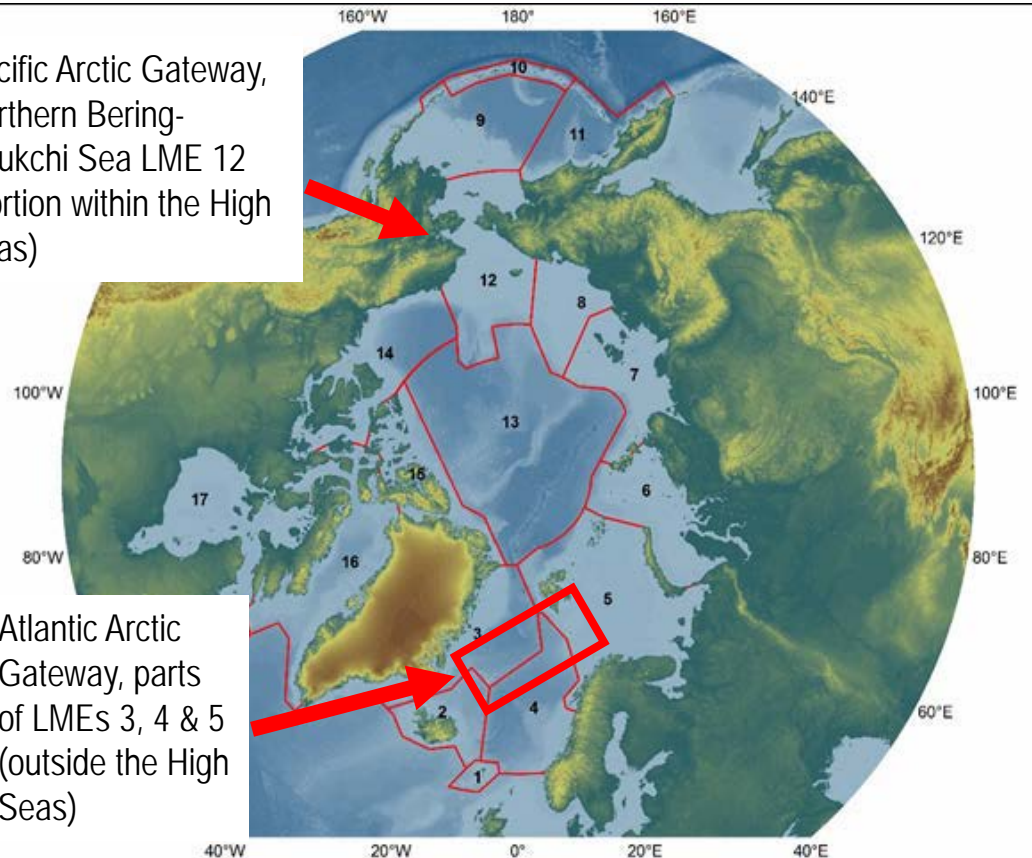
# Science Informed Decision-Making

2011-2017: 5 meetings  
of scientific experts  
(FiSCAO)

- Inventory of Research & Monitoring Programs
- Synthesis of Knowledge
- Draft Implementation Framework
- Importance of utilizing indigenous and local knowledge

Pacific Arctic Gateway,  
Northern Bering-  
Chukchi Sea LME 12  
(portion within the High  
Seas)

Atlantic Arctic  
Gateway, parts  
of LMEs 3, 4 & 5  
(outside the High  
Seas)

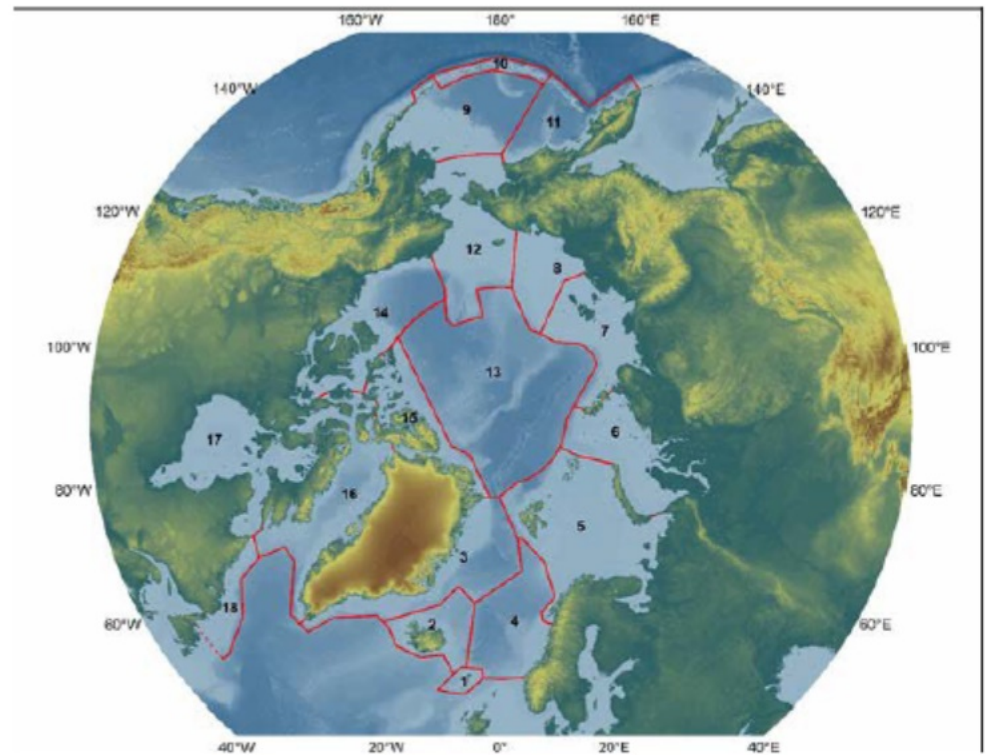




# Define Arctic Large Marine Ecosystems

Areas in the High Seas and influential shelf regions

Nine total LME's

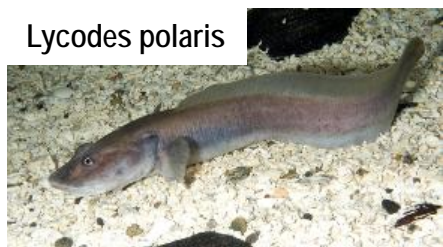


Numbers in the table refer to the numbers of the LMEs in the map.

No	Name	Area (millions km <sup>2</sup> )
13	Central Arctic LME	3.33
5	Barents Sea LME	2.01
12	Northern Bering-Chukchi Seas LME	1.36
14	Beaufort Sea LME	1.11
6	Kara Sea LME	1.00
7	Laptev Sea LME	0.92
8	East Siberian Sea LME	0.64
15	Canadian High Arctic – North Greenland LME	0.60
3	Greenland Sea LME (northern portion only)	~0.40

# Fish Species Diversity Currently Documented

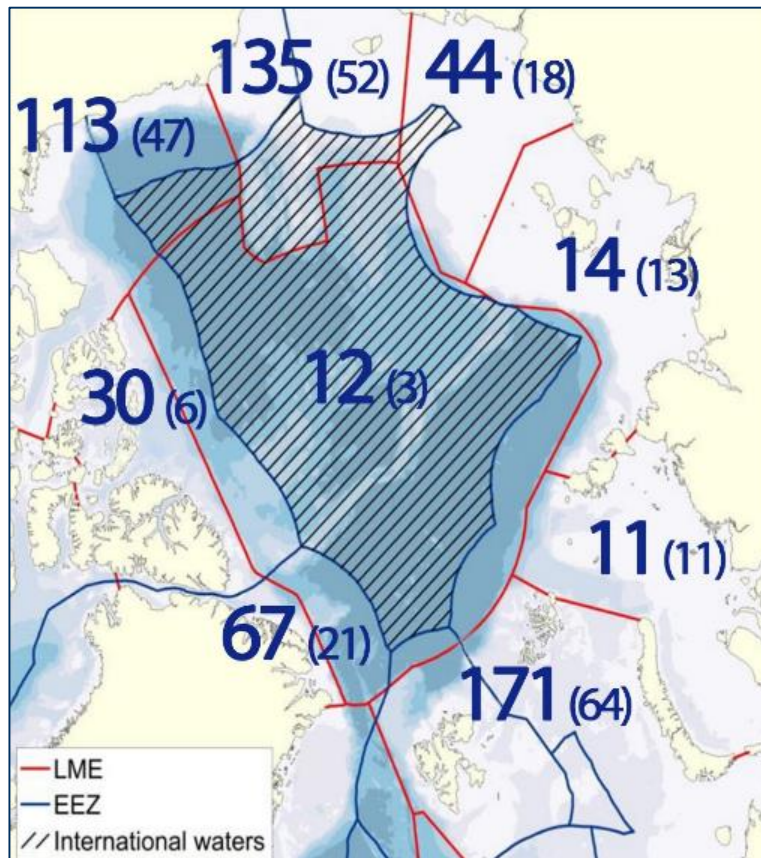
- Shelf seas: 339 species
- High seas: 12 species
- Many uncertainties



EELPOUTS (5)



CODS (2)



Cottunculus microps



SCULPINS (2)

Liparis fabricii



SNAILFISHES (2)

# Developing a framework for a Joint Program of Scientific Research & Monitoring -- Implementation plan with four tracks

Track A: Mapping and monitoring	Track B: Reference Points and Indicators	Track C: Modeling and scenarios	Track D: Governance
<pre> graph TD     A[Mapping] --&gt; B[Biomass Evaluation]     B --&gt; C{Currently fishable stock?}     C -- No --&gt; D[Monitor indicators]     C -- Yes --&gt; E[Data collection to support EBM]         </pre>	<p>Occurs in parallel with Track A.</p> <ul style="list-style-type: none"> <li>Identify potential biological reference points for managing commercial fish stocks</li> <li>Assess indicators for potential fish production.</li> <li>Identify thresholds for primary productivity changes, sea ice change or other triggers.</li> </ul>	<ul style="list-style-type: none"> <li>Develop approaches to stock assessment and ecosystem modeling.</li> <li>Agree on possible scenarios (e.g. potentially fishable now; no potentially fishable stocks now, no climate warming; no potentially fishable stocks now but with climate warming.)</li> </ul>	<p>Agree on coordinating body to:</p> <ul style="list-style-type: none"> <li>Coordinate mapping and monitoring</li> <li>Monitor indicators</li> <li>Host biennial meetings and WG to implement Tracks B &amp; C</li> <li>Set data standards.</li> <li>Provide Reporting structure.</li> </ul>

# Outcomes of 5<sup>th</sup> Scientific Fish Experts Meeting

- Design a 1-3 year mapping program
  - Most important to fill knowledge gaps in understanding of fish distribution in key areas in the High Seas CAO
  - Program should begin as soon as possible
  - New resources will be required
- Design a monitoring program
  - Developed an inventory of existing monitoring programs
  - IDed areas where reliable monitoring is needed
  - Further research required to operationalize scientifically sound monitoring indicators

# Outcomes of 5<sup>th</sup> Scientific Fish Experts Meeting

- ID human, financial, vessel/equipment resources needed for mapping and monitoring
  - Need for a coordinating body
  - Mapping effort will require dedicated resources
  - Vessels of opportunity
  - Investment in personnel & infrastructure for data management
- Develop data collection, sharing and hosting protocols
  - Draft data sharing policy
  - Data management/sharing pilot study using the fish location database developed for the 4<sup>th</sup> Scientific Meeting

# Next Steps

- Within 2 years of entry into force, adopt:
  - Data sharing protocols & share relevant data in accordance with that protocol
  - Terms of reference & other procedures for the functioning of the joint scientific meetings
- 6<sup>th</sup> FiSCAO meeting to be hosted by Russia in April

4<sup>th</sup> FiSCAO



5<sup>th</sup> FiSCAO



# For More Information:

- 5<sup>th</sup> Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean (FiSCAO):  
[https://www.afsc.noaa.gov/Arctic\\_fish\\_stocks\\_fifth\\_meeting/default.htm](https://www.afsc.noaa.gov/Arctic_fish_stocks_fifth_meeting/default.htm)
- 4<sup>th</sup> FiSCAO:  
[https://www.afsc.noaa.gov/Arctic\\_fish\\_stocks\\_fourth\\_meeting/default.htm](https://www.afsc.noaa.gov/Arctic_fish_stocks_fourth_meeting/default.htm)
- 3<sup>rd</sup> FiSCAO:  
[https://www.afsc.noaa.gov/Arctic\\_fish\\_stocks\\_third\\_meeting/default.htm](https://www.afsc.noaa.gov/Arctic_fish_stocks_third_meeting/default.htm)

# Today's Presenters

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