

# Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (CAOF Agreement)

## An ICES/PICES contribution

In October 2018, the governments of Canada, China, Denmark, Iceland, Japan, Norway, the Russian Federation, the Republic of Korea, the US, and the EU signed an agreement to prevent unregulated commercial fishing on the high seas of the central Arctic Ocean.

This document presents a description of the potential contribution by the International Council for the Exploration of the Sea (ICES) and the North Pacific Marine Science Organization (PICES) to the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean.

### In summary:

- Established intergovernmental platforms for science cooperation – including in the Arctic
- Extended scientific network spanning more than 50 countries, 700 institutes, and a pool of more than 5000 experts
- Ongoing cooperation in the Central Arctic Ocean and long-standing Arctic related work and products
- Mechanisms that allow participation by observers and stakeholders
- Extensive experience coordinating joint monitoring programs
- Willingness to further develop approaches for inclusion of indigenous and local knowledge
- ICES Data Centre provides data services to a range of organizations (e.g. AMAP, HELCOM, OSPAR), and an ICES/PICES/USA (NOAA) data management/sharing pilot study for the Central Arctic Ocean as recommended by the 5th FISCAO meeting. The data, data tools, and data products are available online and adhere to a [data policy](#) committed to open data and the FAIR principles
- Leading body for scientific advice on fisheries in the North Atlantic
- Established secretariat infrastructures to support scientific cooperation and dissemination: expert groups, meetings, symposia, products/publications, quality control and assurance, including peer review procedures



Both ICES and PICES have existing capacity and well-developed institutional infrastructure to support continued work in the Arctic. This is made possible through a legally binding convention and commitments from member countries, recognizing the importance of scientific research and coordination of effort. This is evident through the individual and joint work of our two organizations, as well as in their cooperation with other partners working in the Arctic. ICES was granted observer status by the Arctic Council in 2017 and the UN General Assembly in 2018. The text below provides detailed information about the structure and work of ICES and PICES.

### **Participating in ICES/PICES work, including stakeholders and observers**

ICES and PICES expert groups provide an international platform for scientists to meet, cooperate, and exchange knowledge on specific scientific issues of common interest, jointly agreed by Member State representatives. Participation within ICES groups is open to all experts, and not restricted to participants from Member Countries who have ratified the legal convention. Within PICES, appointments to expert groups are made by the national delegates and restricted to scientists from the six Contracting Parties. A procedure for *ex-officio* membership to bring experts from countries beyond the PICES Member Countries into their expert groups also exists. Typically, these experts represent collaborating organizations. While specific rules on participation aim to protect the impartial scientific focus (natural, economic, social), the groups remain transparent and open for observers and stakeholders, therefore allowing experts from all countries to participate. ICES and PICES expert groups have time-limited terms (renewable).

### **Ensuring the inclusion of indigenous and local knowledge and providing opportunities for the participation of Arctic communities, including Arctic indigenous people**

The inclusion of indigenous and local knowledge is integral to an ecosystem approach. ICES has been working towards co-production of knowledge through its evolving Integrated Ecosystem Assessment (IEA) framework. An ICES/PAME workshop entitled 'Ecosystem Approach guidelines and Integrated Ecosystem Assessment in the Arctic' was recently held at NOAA Alaska Fisheries Science Center, Seattle, US. Following an ecosystem approach, the workshop included indigenous perspectives, not only to avoid risks to human life and to secure resources important for indigenous peoples and their cultures but also to support the scientific basis for management in rapidly changing Arctic ecosystems.

More effort is needed to ensure indigenous knowledge is included and opportunities for meaningful participation of Arctic communities, including Arctic indigenous people, are provided.

ICES, PICES, the Arctic Council, NOAA, and IMR will co-convene the Second International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic: *Integrating information at different scales in the framework of EA* in Bergen, Norway, 25–27 June 2019. The conference will see participation from Arctic communities, and include local and traditional knowledge (LTK) as an important source of information for scale integration and ecosystem approach implementation.

## Building on ICES/PICES cooperation for the development of the Joint Program of Scientific Research and Monitoring (JPSRM), under Article 4 of the CAOF Agreement

Cooperation between our two organizations goes back more than two decades and codified [in a Memorandum of Understanding](#) in 1998.

Since then a number of joint activities have resulted, including:

- A joint strategic initiative on Climate Change Impacts on Marine Ecosystems (SICCME; established 2010) to coordinate northern hemisphere efforts to understand, estimate, and predict the impacts of climate change on marine ecosystems. This has been supported by various workshops on climate models and Arctic sea ice, as well as symposia, including the four international ICES/PICES/IOC/FAO Symposia on the effects of climate change on the world's oceans (2010, 2012, 2015, 2018)
- Joint scientific symposia (often with other partners) on important marine science issues, including:
  - o ESSAS Symposium on “Moving in, out, and across the Subarctic and Arctic - shifting boundaries of water, ice, flora, fauna, people, and institutions” (2017)
  - o Drivers of Dynamics of Small Pelagic Fish Resources (2017)
  - o Understanding Marine Socio-Ecological Systems (2016)
  - o A sequence of International Symposia on Zooplankton Production (most recent 2016)
  - o Ecological Basis of Risk Analysis for Marine Ecosystems (2014)
  - o Forage Fish Interactions: Creating the tools for ecosystem-based management of marine resources (2014)
- A series of capacity building Early Career Scientist conferences (2007, 2013, 2017)
- Joint working groups, including the latest on on climate change and biologically-driven ocean carbon sequestration (since 2017)
- A multitude of co-sponsored theme sessions/topic sessions at each other's Annual Science Conference/Annual meeting (beginning in 2005)

### 2016 ICES/PICES/Arctic Council PAME Working Group cooperation

A joint working group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean ([WGICA](#)) was established in 2016, with a three-year Terms of Reference (2016–2018). The group has recently renewed its mandate and has been given Terms of Reference for an additional three years (2019–2021). The joint nature of the group is reflected in the leadership and is chaired by experts from Norway, USA, and Japan.

The establishment of the group has been endorsed by the three organizations; PICES through their Governing Council; PAME through their working group meetings and via information to the chair of the Arctic Council; and ICES through their Science Committee and governing council.

A joint report based on the work of WGICA will be published at the end of 2019. The report will be peer-reviewed and contain a thorough review and compilation of information on the CAO ecosystem.

Looking forward, the next report from WGICA will provide information on status and trends, including impacts of climate change, pollution (including pathways and effects of contaminants), and other relevant human pressures. This information will be condensed into an ecosystem overview to provide a description of the ecosystems, identify the main human pressures, and explain how these affect key ecosystem components. Ecosystem overviews have become an important tool to facilitate communication with managers and stakeholders. [Ecosystem overviews](#) for seven ICES ecoregions have been developed; Baltic Sea, Barents Sea, Bay of Biscay and the Iberian Coast, Celtic Seas, Greater North Sea, Icelandic Waters, Norwegian Sea.

More ecosystem overviews are in development: the Oceanic Northeast Atlantic and Azores region will be covered in 2019, and the Central Arctic Ocean and Greenland Sea overviews will be developed in 2020.

### **Building on ICES role as a scientific advisor for the development of conservation and management measures for exploratory fishing, and other interim measures, under Article 3 of the CAOF Agreement**

The process of developing ICES scientific advice ensures separation between the promulgation of scientific advice and the evidence base needed for managers, and the actual decision-making process. The scientific advice developed in response to these requests is peer reviewed and open to participants from outside ICES member countries.

ICES acts as scientific advisor for a number of intergovernmental organizations, under regional seas conventions and Regional Fisheries Management Conventions/EU, as well as Member Countries. A full list of our cooperation partners is available [online](#). In the case of the North East Atlantic Fisheries Organization (NEAFC), ICES role as scientific advice provider is specified in their convention text.

Under consideration is working with NAFO to develop ecosystem overviews in West Greenland waters. In addition, following the great amount of scientific evidence presented at the first scientific researcher's conference in Arkhangelsk, under the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, it has been suggested that the Russian Federation considers developing ecosystem overviews for Russian waters adjacent to the Central Arctic Ocean.

This would deliver an almost complete overview of the adjacent sea areas to the Central Arctic Ocean from the North Atlantic gateway and offer a suggested format for inclusion of adjacent sea areas from the North Pacific gateway.

It would provide an opportunity to communicate compiled evidence, including about the potential for expansion of Boreal fish stocks outside their traditional stock area. The expansion in fish distribution due to environmental and hydrographic conditions is already documented and ICES have used the 100-year scenarios by the Intergovernmental Panel on Climate Change on greenhouse gas emissions and global warming to show how this is reflected in the oceans at 200 m depth.

This makes it possible both to use the predicted species distribution to analyze and validate methods to assess vulnerability of fish stocks to climate change and to analyze when fishing activities can take place without impact on spawning areas.

Working together, we will be able to gain important information on which species are most likely to be impacted, both in the North Atlantic and North Pacific.

This information will contribute to the ecosystem overviews, which aim to provide an overview of all information relevant to the Central Arctic Ocean. As well as the ongoing work in ICES to produce a scientific peer-reviewed paper on “Future fish production in Arctic waters”.

**Building on ICES role as a Data Centre – in cooperation with various strategic partners – for the development of data sharing protocols, under Article 4 of the CAOF Agreement**

ICES Data Centre supports our science. Together with our expert groups, it enables us to respond to requests from member countries or other intergovernmental organizations, on scientific issues of relevance to decision-makers.

[ICES Data Centre](#) has more than 300 million measurements to explore and download, ranging from biological, hydro-chemical, oceanographic and fisheries data. Our community collects and analyzes this information, contributing to the evidence that underpins ICES advice. ICES data policy regulates the access to data, with the underlying principle of open data and an adherence to the FAIR principles (Findable, Accessible, Interoperable, Reusable), acknowledging the need to exclude some data from unrestricted access due to sensitivity, such as sensitive location information (e.g. vulnerable marine ecosystems).

The datasets cover several Arctic areas and are based on cooperation with Arctic partners. Reports and products produced on the basis of these datasets address Arctic areas, such as the reports on [Ocean Climate](#) and [plankton](#).

DATRAS is an online database of trawl surveys with access to standard data products. It has been developed to collate and document survey data, assure data quality, standardize data formats and calculations, and ease data handling and availability. With the possibility of instant remote access, DATRAS data are used for stock assessments and fish community studies by both ICES community and public users. This database currently covers the Northeast Atlantic, Baltic Sea, North Sea, Irish Sea, and Bay of Biscay and contains more than 50 years of data.

Recognizing the importance of data in the development of scientific evidence the US (NOAA), ICES and PICES have jointly offered to undertake a data management/sharing pilot study, as recommended by the fifth meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean (5<sup>th</sup> FISCAO meeting).

### Areas Beyond National Jurisdiction (ABNJ)

Of the more than 150 expert groups and workshops that address many diverse marine ecosystem issues, more than one fifth of ICES groups address issues that overlap with ABNJ. In PICES, 26 out of 28 expert groups address issues that overlap with ABNJ.

We draw upon our network of scientists to provide advice on biodiversity and sustainable exploitation in ABNJ to both the North-East Atlantic Fisheries Commission (NEAFC) and the OSPAR Commission.

Examples of this include:

- Annual advice to NEAFC on the harvesting of 35–50 fish stocks in the Northeast Atlantic in ABNJ, in recent years increased due to the uptake of methods for providing fisheries advice for stocks with reduced available data (data limited).
- Annual advice to NEAFC on seabed ecosystems, such as cold-water coral reefs and cold-water seeps that require protection from fishing activities that might damage them. Currently, in the Northeast Atlantic ABNJ there are 13 closures to bottom fishing that have been supported by ICES advice. These closures are protecting vulnerable marine ecosystems (VMEs) on the Mid-Atlantic Ridge around certain seamounts and on offshore banks to the west of Scotland. ICES maintains a database of more than 40,000 records, spanning more than 60 years, of VME indicators and habitats (covering deep water areas inside and outside national jurisdiction)
- Advice to OSPAR on habitat sensitivity, reviewed proposals for listing of habitats and species as Threatened or Declining, which deep water habitats are essential for fish species, reviewed bycatch issues within fisheries, reviewed marine protected area (MPA) and Ecologically or Biologically Significant Marine Areas (EBSA) proposals.

Together, ICES and PICES are exploring how to work together on ABNJ issues.