

## ICES 107<sup>th</sup> Statutory Draft Meeting Agenda

Copenhagen, Denmark

Chair: Fritz W. Köster, ICES President

9–10 October 2019

Day 1 (9:00 – 17:15)

Followed by a reception

Day 2 (9:00 – 16:00)

### **1 Adopt the Agenda**

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Meeting participants will be invited to adopt the agenda.

#### **1.1 President's review**

Council delegates will be invited to review the follow-up, in relation to actions decided at the 2018 Council meeting.

### **2 ICES Strategic Plan and considerations**

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An update on the dissemination of the Strategic plan will be provided, including information on national events and activities. Developments within strategic action areas will be reported as described in the following sub-points. Developments within the area of Aquaculture are now developing as part of the regular work plan and will be reported under Agenda point 9 Science.

#### **2.1 UN Observer Status**

The General Secretary will provide an update on the status of ICES engagement in UN processes including the Decade of Ocean Science, the Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction.

#### **2.2 Arctic**

The General Secretary will provide an update on the status of ICES engagement in the Arctic.

#### **2.3 Project participation**

The head of the science programme will introduce ICES project activities, with the chair of SCICOM and ACOM as well as the head of Data and Information elaborating on the benefits and shortcoming of project activities. Council will be invited to discuss the importance of project participation for realising ICES strategic priorities.

### 3 Finance

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#### 3.1 Finance Committee Report

The Council will be invited to provide comments and approve the report from the Finance Committee including feedback on the new reporting format, as well as to:

- approve the final accounts 2018, including Audit Book;
- vote on the proposed budget for 2020, noting that the national contributions have already been decided;
- vote on the 2021 national contributions, adjusted with the Danish inflation rate (1.7%) or decide on a voting procedure;
- agree on the use of equity for investments (2020 – 2023)

#### 3.2 New Clients and changes to the MoUs and Administrative Agreements

Council will be informed about the status of negotiations with Member Countries wishing to also be recognized as “Advice requesters”, as well as relevant updates to administrative procedures and existing agreements.

### 4 Advisory plan

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Mark Dickey-Collas, Chair of ICES Advisory Committee will be invited to provide an update on the development of the Advice Plan, to be launched in 2020.

### 5 Science Plan

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Simon Jennings, Chair of ICES Science Committee will be invited to provide an update on progress and implementation of the Science Plan, launched in 2019.

### 6 CSI: Resources

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The Council Strategic Initiative: Resources to support Member Countries’ contributions to ICES advice and science, as well as education/training (CSI: Resources), chaired by Fritz Köster, Denmark. The initiative has been working within three sub-components, Bill Karp will provide an introduction, progress on specific components will be presented as noted below:

- 1) Mapping the science and advice priorities – Tammo Bult;
- 2) Resourcing the advisory process – Gerd Kraus;
- 3) Strengthen science and education Bill Karp.

The Terms of reference of this strategic initiative are being addressed sequentially, a survey has been distributed to Council members. The results of the survey distributed to Council Delegates “Resourcing the ICES Advisory System” will be presented.

## 7 Reports from the Council Strategic Initiative on Maritime Transatlantic Cooperation

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William (Bill) Karp, First Vice-President will present an update on progress of the Council Strategic Initiative on Maritime Transatlantic Cooperation (CSIMTC).

## 8 Elections and Appointments

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### 8.1 Members of Bureau

Piotr Margonski, Vice-President (Poland), term concluding 2019

#### Rules of Procedure (extract)

##### Rule 11

*i) The First Vice-President shall be elected for a period of three years and shall not be eligible for re-election for the immediately succeeding term;*

*ii) Any other Vice-President shall be elected for a period of three years and shall not be eligible for re-election for the immediately succeeding term;*

*iii) Any Vice-President may resign at any time and shall vacate office on ceasing to be a Delegate;*

*iv) In the event of an office of any Vice-President falling vacant the Council shall elect a new Vice-President at its next meeting.*

##### Rule 5 (iv)

*At any time not more than one member of the Bureau shall be from the same member country.*

(Currently Bureau consists of President Fritz W. Köster, Denmark, Carl O'Brien, UK, Piotr Margonski, PL, Per Sandberg, NO, Manuela Azevedo PT, Gerd Kraus, Germany, and Bill Karp, US)

## 9 ICES Science

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### 9.1 Annual Progress Report from the SCICOM Chair

The Chair of SCICOM, Simon Jennings, is invited to report on the scope, scale, and impact of ICES science, the work of SCICOM and plans for future science delivery.

### 9.2 2019 and forthcoming Annual Science Conferences

A short report from the 2019 Annual Science Conference hosted by Sweden, will be provided. The 2020 Annual Science Conference will be held in Denmark, the 2021 ASC hosted by the UK, and 2022 by Belgium. Invitations to host future conferences will be encouraged.

## **10 ICES Advisory Services**

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### **10.1 Annual Progress Report from the ACOM Chair**

Mark Dickey-Collas, Chair of the Advisory Committee, is invited to give a report on the activities of ACOM, with a specific focus on the implementation of the ICES Strategic Plan as well as issues for which support is required to ensure continued progress including quality assurance.

## **11 Data and Information Services**

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The Head of Data and Information, Neil Holdsworth will provide a 2019 status report on the activities and deliverables by Data and Information Group and the Data and Information Centre including the following points:

- Data Centre Accreditation
- Data Governance
- Transparent Assessment Framework (TAF)
- Overall status dashboard on data activities.
- Preview of Data Licence/policy change (for Council decision in 2020)

## **12 Secretariat**

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The General Secretary, Anne Christine Brusendorff will provide a 2019 status report on the activities and deliverables by the Secretariat.

## **13 Any other Business**

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### **13.1 ICES CO<sub>2</sub> footprint**

Bill Karp will be invited to provide an update on progress towards developing Terms of Reference for a group to explore strategies for reducing the CO<sub>2</sub> footprint of the organization.

### **13.2 Date of the next meeting**



**ICES**  
**CIEM**

International Council for  
the Exploration of the Sea  
Conseil International pour  
l'Exploration de la Mer

Council Meeting

October 2019

CM 2019 Del Doc 1.1

Agenda item 1.1

### President's Review

Council delegates will be invited to review the follow-up, in relation to actions decided at the 2018 Council meeting.

Agenda item	Council Action	Follow-up
ICES Strategic Plan	Council adopted the Strategic Plan, endorsing the top-level component, and agreed to the principle of working through the different levels of the plan including the four-year goals and objectives, and annual work plan.	Progress on implementation to be reported under agenda item 2. and from the ICES pillars under agenda items 4. and 5.
Finance	<p>Council requested Finance Committee to present their report with main messages summarized when submitted for consideration at the Council meeting.</p> <ul style="list-style-type: none"><li>- Council approved the final accounts 2017, including Audit Book;</li><li>- Council approved the proposed budget for 2019, noting that the national contributions have already been decided;</li><li>- Council deferred the vote on the 2020 national contributions, adjusted with the Danish inflation rate (1.5%) to an electronic vote in January 2019 allowing some countries additional time to secure a specific mandate to vote on the proposal; The Secretariat will work with member countries to develop tailored letters to help countries be prepared for an electronic vote in January 2019. Council delegates are asked to provide information on what would be specifically relevant</li></ul>	<p>A new reporting format has been developed and will be presented under agenda item 3.</p> <p>Council approved an increase of 1.5% of national contributions for 2020 by electronic voting.</p>

	to include to the letter by 1 November.	
Project participation	<p>Council stressed the need for ensuring project work is relevant for the community, resource allocation/prioritization, and more widely the ability of the organization to influence the funding agencies in their programming.</p> <p>This will be further discussed at the February Bureau meeting.</p>	An update on project participation will be provided under agenda item 2.3
CSIMTC	Action: Council Delegates supported the continuation of the Council Strategic Initiative on Maritime Trans-Atlantic Cooperation (CSIMTC) under the Chairmanship of William (Bill) Karp (US), Nuno Lourenco (PT), and Alain Vezina (CA). The Terms of Reference will be revised by the Co-Chairs and circulated. All delegates interested in contributing to the work of the initiative are encouraged to contact the Chairs.	An update will be provided under agenda item 7.
CWGCODE	Action: The Council adopted the Code of Conduct for a three-year trial period. The Code of Conduct will be included to the Guidelines for ICES Expert Groups and dissemination to the community will be by presentation at the WGCHAIRS meeting in January 2019. Council will review the process annually.	The Code of Conduct is now included in the <a href="#">Guidelines for ICES groups</a> .
Science	<p>Action: Council supported the Science Plan, with a suggestion to review the text to ensure the ecosystem approach to fisheries was sufficiently prominent.</p> <p>The General Secretary and the SCICOM Chair will coordinate to ensure the ICES Strategic Plan and Science Plan are released at the same time.</p>	The ICES Strategic Plan and Science Plan were successfully launched in January 2019.

Arctic	Council tasked Bureau, with support from the Coordination group, to make a relevant proposal for an ICES role in the Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean (FISCAO) process once the ToRs for the FISCAO meeting are available. The aim will be to secure intersessional support from Council for a specific action to support the FISCAO process.	Progress will be reported under agenda item 2.2.
ASC	Belgium was requested to provide an indication by the end of 2018, if they can confirm their possibility to host the ASC in 2020.	Belgium will host the 2022 Annual Science Conference. The 2020 ASC will be organised in Copenhagen, and a report on status of preparation given under agenda item 9.2.
Advice	Council supported the ACOM proposed ICES dialogue meeting in 2019/2020 on a Framework for ecosystem advice. Given the work planned within the CSI (see section 8.2), on mapping the objectives of the member countries, for which they will be willing/able to allocate resources, 2020 seems to be the most appropriate time. A host will be needed. Brussels could be a good venue, as it would facilitate the participation of stakeholders/clients.	
Capacity and workload issues in the advisory services	<p>Establish a Council Strategic Initiative, chaired by Fritz W Köster: Resources to support member countries contributions to ICES advice and science, as well as education/training.</p> <ol style="list-style-type: none"> <li>1. Mapping the science and advice priorities, Tammo Bult and Per Sandberg</li> <li>2. Resourcing of the advisory process, Gerd Kraus and Carl O'Brien</li> </ol>	An update will be provided under agenda item 6

	<p>3. Strengthen science and education/training, Bill Karp, Gerd Kraus, and Pierre Petitgas</p> <p>Council agreed to conclude the work of the Council Strategic initiative on the Marine Strategy Framework Directive and Ecosystem Approach (CSIMSFDEA), with reference to the above ToRs.</p> <p>While the co-chairs will further elaborate the ToRs, Council delegates are invited to: - Nominate members for each of the sub-ToRs, noting that these can also be found out-side Council, with reference to the issues discussed (i.e. national DCF correspondents)</p>	
Data	Bureau will consider the need for strengthened data governance, including the potential for national representation and will report to Council at the 2019 meeting.	An update will be provided under agenda item 11.
Secretariat	Council endorsed the updated data privacy policy/statements. Council also agreed the nominations of national experts for ICES work will be entered via the Resource Coordination Tool within the Delegates Dashboard as soon as it goes live in November/December 2018.	Use of the Delegates Dashboard for nominations has been discontinued. An update will be provided under agenda item 12.
Rules of Procedure	Council accepted the proposed changes to the Rules of Procedure, on the condition that Bureau review the language of the new Rule 18. iv.	The language was amended and updated. The <a href="#">Rules of Procedure</a> are available online.
Request from Russia on the benchmark of cod and haddock	The ACOM Chair and Head of Advisory Support will enquire if the experts are available to conduct the work in 2019.	Progress will be addressed under agenda item 10.





**ICES**  
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International Council for  
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Conseil International pour  
l'Exploration de la Mer

Council Meeting

October 2019

CM 2019 Del-2.1

Agenda item 2.1

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## UN Observer Status

### Council is invited to take note:

- *of the involvement of ICES in various UN work, under existing agreements, and ongoing negotiations for new agreements/initiatives, and efforts made to communicate ICES work and experience*
- *of the involvement of the ICES community to ensure that relevant work of ICES is being shared, to begin with focusing on areas beyond national jurisdiction and an ICES Highlights Series on ICES work directly related to the UN Decade of Ocean Science, and where possible furthering cooperation with other IGOs establishing joint groups, and other joint activities*
- *on-going discussions with PICES, and potentially other IGOs on how we can jointly provide input to UN process, on our independent and joint activities*

### Council is invited:

- *to establish links with national counterparts taking part in the work mentioned below, and share relevant ICES material*
- *to submit proposals to the Secretariat for development of thematic material (2-page information documents) that could be relevant in other UN fora, and where ICES presentations could be relevant.*

### Background – ICES process

In 2014 Council considered and supported a Bureau proposal for ICES to apply for UN observer status. It was decided for the Secretariat to draft a letter for use by Member Countries to contact the appropriate agency in their home country, to assist in requesting that an item related to ICES observer status with the UN be added to the agenda of the UN General Assembly. Despite engagement from several countries, it was not possible to proceed with the ICES application.

In June 2018, after extensive preparations and very active involvement and support by Norway throughout 2018, Ambassador Tore Hattrem, Permanent Mission of Norway in NY addressed a letter to H.E. the UN Secretary General, regarding a request for the inclusion of an item in the provisional agenda of the seventy-third session; “Observer status for the International Council for the Exploration of the Sea”.

The Norwegian involvement in the UN observer status process, with participation inter alia from the IMR Director Sissel Rogne, the Director Per Sandberg, Fisheries Directorate, the Ministry of

Foreign Affairs, and the Permanent Mission in NY, included knowledge about the UN process, help with all aspect of the application, including hosting of events at the UN mission and the Norwegian representation in NY, lobbying and reactions to worries by countries, important for the application to succeed, as well as presentation of the ICES application in relevant UN fora.

An involvement that in November 2018 resulted in ICES being [granted observer status to the UN General Assembly](#)

## **Background – development of selected UN processes**

The first UN Ocean Conference took place at UN HQ in June 2017, aiming to mobilize action for the conservation and sustainable use of the oceans, seas and marine resources. The Conference was a follow-up to the UN Agenda 2030 for sustainable development, its 17 Sustainable Development Goals (SDGs) and 169 targets. With SDG 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”, specifically dealing with the oceans and acknowledging the interrelation between the SDGs, it became evident that ICES has much to contribute with its science, data and information products, and scientific advisory role. And also that it would be in the interest of the ICES Contracting Parties to ensure that such information finds its way to the UN processes.

Below is a description of the main focus of the work, following the granting of ICES observer status, with a more detailed overview of the ongoing negotiations of a new global agreement for marine biodiversity of areas beyond national jurisdiction and the UN Decade of Ocean Science, as well as a table overview of strategic considerations for other existing /initiated UN initiatives, contained in attachment 2.

## **Biodiversity Beyond National Jurisdiction – new global agreement being negotiated**

(Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction)

### **Background to the negotiations:**

2006-2015/UNGA Resolution 68/70; An Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (Working Group) met nine times between 2006 and 2015. Made recommendation on the scope, parameters and feasibility of an international instrument under UNCLOS.

2015-2017/UNGA Resolution 69/292; Preparatory Committee established

2017/UNGA resolution 72/249; decision to convene an Intergovernmental Conference (IGC), to consider the recommendations of the Preparatory Committee to elaborate the text of an international legally binding instrument under the United Nations Convention on the Law of Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible.

### **Substance of the negotiations**

Four topics, are being addressed in the IGC; agreed in a package in 2011 together and as a whole;

- marine genetic resources, including questions on the sharing of benefits,

- measures such as area-based management tools, including marine protected areas,
- environmental impact assessments (EIAs); and
- capacity-building and the transfer of marine technology.

Examples of ICES work in the four areas addressed in the BBNJ negotiations are presented in Attachment 1.

### **Status of negotiations**

Prior to the third IGC a first draft text of an agreement was provided, with various textual alternatives.

Alternatives that reflect the different opinions of Member Countries on:

- How to achieve a good balance between a robust global standard with universal acceptance– and at the same time to recognize and respect existing legal regimes and global/regional/sub-regional organizations.
- What is the role of the new legal instrument under discussion; to “push”/“strengthen” existing organizations to deliver, to ensure coherence between existing sectoral organizations, to establish measures where organization exists **or** to work within existing organizations and recommend measures for these to consider, and thus to work towards coordination and cooperation across existing sectoral bodies.
- Should the new legal instrument establish global minimum standards or guidelines?
- The role of the new legal instrument, and a possible Scientific and Technical Body thereunder, versus the role and responsibility of State Parties in deciding whether to carry out a EIA, and whether or not EIAs should be considered and reviewed under the proposed new agreement.
- A regime for access and benefit sharing for marine genetic resources, considering needs of the marine scientific research community, and the private sector into studying marine genetic resources, and potential commercial applications.
- To what extent fish as a commodity is covered by the provisions of the draft agreement?

### **ICES contributions and benefits from the negotiations**

A number of Intergovernmental Organizations, including ICES, are during the plenary session and side-events referring to their existing legal mandates, competences, and current practices for biodiversity in areas beyond national jurisdiction. ICES made a statement in plenary (see attachment 5), and participated in the joint IOC, ICES, DOSI, IUCN side event “Facilitating Capacity Development, Transfer of Marine Technology and Ocean Science in BBNJ” [http://ioc-unesco.org/index.php?option=com\\_oe&task=viewDocumentRecord&docID=24027](http://ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=24027). ICES has also during the UN BBNJ negotiations distributed a 2-page summary of our ABNJ work <https://www.ices.dk/news-and-events/Documents/Press%20Room/Areas%20Beyond%20National%20Jurisdiction.pdf>.

The Secretariat is, following discussions with Member Country delegations in UN, preparing:

- Further 2-page summaries of ICES work in areas of relevance to the draft agreement, as indicated in the attachment. Efforts are being made to engage with the community, to ensure that they will also see this as an important opportunity to relate their work to the BBNJ negotiations
- Further joint activities with other IGOs to highlight our on-going and new work in ABNJ, independently and jointly, both within the area of science and as regards our provision of scientific evidence to managers. This includes establishment of joint groups for issues in ABNJ
- Presentation of ICES work in ABNJ, as appropriate

## **UN Decade of Ocean Science**

In December 2017, the UN General Assembly proclaimed the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) confirming the importance, of ocean science and observations for ocean stewardship and society. IOC was mandated to lead the planning process, and an Executive Planning Group (EPG) was established to advance the development of the Decade Implementation Plan, expected to be finalized by mid- 2020.

ICES has submitted a document to the Executive Planning Group in July 2019, mapping the ICES science plan to the six priorities of UNDOOS. See attachment 4.

The First Global Planning Meeting was held in Copenhagen on 13-15 May, 2019, and in addition, a series of regional workshops will be arranged on how to achieve by 2030 the six key Decade societal outcomes (see description in attachment 3), with workshops already taking place in the Pacific Community Workshop in Noumea, New Caledonia, the North Pacific Regional Workshop in Tokyo, Japan.

The North Atlantic regional workshop is planned for 7-10 January in Halifax, Nova Scotia, Canada, with Canada, USA, and EU as the main organizers, and with a steering committee involving also other countries (Ireland, UK) as well as ICES.

In parallel, a Science Action Plan (SAP) is being developed, as a component of the Implementation Plan for the Decade. The SAP will propose science actions outcomes and priority actions of the Decade.

ICES has been invited to provide preliminary inputs on our proposed contribution to the Decade to further inform the development of the SAP, as well as the design process of the Decade as a whole. Together with PICES we are considering to suggest joint on-going initiatives, potentially with other IGOS, to suggest how established organizations can contribute with co-delivery of solutions to identified problems, promotion of transdisciplinarity and pairing of the visions of multiple stakeholders through co-design, recognition of multiple knowledge systems, adherence to the principles of open access to data, and addressing critical ocean science capacity needs.

## Examples of ICES work in the four areas addressed in the BBNJ negotiations

### 1. Marine genetic resources

The Working Group on Application of Genetics in Fisheries and Aquaculture (WGAGFA) provides advice on methods to describe, conserve, and manage intra-specific biodiversity, focusing on the application of genetic and genomic analyses.

A training course on Genetics in support of fisheries and aquaculture management was arranged in September 2019

### 2. Area-based management tools

ICES has a joint working group together with the Regional Fisheries Management organization in the North-West Atlantic - NAFO - annually collating and mapping the distribution of vulnerable deep-water ecosystems (VMEs). More than 40.000 records of VMEs are included in the publicly available ICES VME database, covering both deep water areas within and outside national jurisdiction. Locations of VMEs are essential as they are extremely vulnerable to human activities, such as bottom fishing or fossil fuel extraction. And ICES uses this to provide annual evidence to the regional fisheries management organization in the North-East Atlantic – NEAFC - on VMEs that require protection from fishing activities.

Likewise, ICES has provided scientific advice on biodiversity conservation to the Regional Seas Commission in the North East Atlantic – OSPAR –, including habitat sensitivity, proposals for threatened or declining species, and bycatch issues within fisheries. ICES is preparing joint advice to NEAFC and OSPAR on deep-water elasmobranchs, a deep-water species sensitive to fisheries.

Currently, ICES is making available all its data and information products of relevance to the upcoming regional workshop on Ecologically or Biologically Significant Marine Areas (EBSAs) in the North-East Atlantic Ocean.

### 3. Environmental impact assessment

ICES has no direct work on Environmental Impact Assessments, but work on many things that would contribute to it.

This includes;

- Modelling to predict where VMEs might occur – enabling management bodies to take further precautionary measures and to target research and survey to areas of greatest uncertainty
- Development of methods to better characterize and map the sensitivity and role of seabed and pelagic habitats
- Exploring impacts of pressures on the marine environment, including cumulative pressures and their cumulative impacts

- Development of indicators to describe and monitor an ecosystem in good environmental health
- Narrative of ecosystems, main human pressures conducted, and how these affect key ecosystem components, covering both ecosystems within and beyond national jurisdiction

ICES has provided the evidence base for managers for deep-sea bottom fisheries footprint, for depths of 200 m and greater, based on vessel management system (VMS) and logbook data. ICES likewise provided for potential options for a prioritization scheme for which areas to close for habitat protection.

#### 4. Capacity building and transfer of marine technology

ICES is constantly looking into new and emerging techniques that has the potential to progress the sustainable use of our seas and oceans.

Examples of this are:

- the development of practical survey methods for measuring and monitoring in the mesopelagic zone – known as the twilight zone; beginning where only 1% of the light reaches and ending where there is no light at all – based on development and application of acoustic technologies
- the review of machine learning methods in marine science, and their deployment in advisory and scientific processes.
- ICES training courses on various scientific issues, our Annual Scientific Conference, and the mentoring in ICES expert groups
- And last, but not least the ICES databases, accessible on the ICES web-site

## Attachment 2

UN Process	Background	Suggestion for possible ICES activities	Actions/considerations
<p>Biodiversity Beyond National Jurisdiction (BBNJ)</p>	<p>Two-thirds of the world's oceans lie beyond national jurisdiction. These areas beyond national jurisdiction (ABNJ) are of key importance for food security, carbon capture, and scientific research. The UN General Assembly has decided to convene an Intergovernmental Conference, under the auspices of the United Nations, to consider the <a href="#">recommendations of the Preparatory Committee</a> established by <a href="#">resolution 69/292 of 19 June 2015</a>. The conference will consider the <a href="#">required</a> elements and elaborate the text of an international legally binding instrument under the United Nations Convention on the Law of Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible.</p> <p>The Conference will meet over four sessions.</p> <p>1<sup>st</sup> session 4- 17 September  2<sup>nd</sup> session 25 March – 5 April  3<sup>rd</sup> session 19-30 August  4<sup>th</sup> session (TBC) Q1 or Q2 2020</p> <p>The negotiation process will address multiple elements of a new instrument, including in particular: 1) marine genetic resources, including questions on the sharing of benefits;</p>	<p>Potential for ICES contributions relates especially to <i>capacity building and transfer of marine technology</i> covering both training and the interaction behind science and advice, especially the function of science under this legal instrument to be negotiated.</p> <p>ICES to participate in parts of the second and/or third sessions, to make an intervention as observer, to prepare material (cf. Annex 1 for ICES advice and science in Areas beyond National Jurisdiction, as well as a more factual description of how ICES works, including our advisory work)</p> <p>Joint side-events, with IOC and PICES, and RFMOs.</p>	<p>ICES participated in the second session (March 2019), and in a side-event with inter alia IOC, and in the third session, giving a statement in plenary.</p> <p>Participation in the fourth session, during 2020 should be considered, and prepared.</p>

	2) measures such as area-based management tools, including marine protected areas; 3) environmental impact assessments; and 4) capacity building and the transfer of marine technology.		
UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea - (ICP-20) as well as contribution to the UN Secretary-General report "Oceans and the Law of the Sea"	<p>Informal Consultative Process The 20th meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP-20) will convene at UN Headquarters in New York, US. It will take place prior to the 29th Meeting of States Parties to the 1982 United Nations Convention on the Law of the Sea, which will convene from 17-19 June. The theme is "Ocean Science and the United Nations Decade of Ocean Science for sustainable Development". ICES was presented by ICES Ecosystem Processes and Dynamics Steering Group Chair Silvana Birchenough, who highlighted the role of ICES in the Atlantic Ocean, and adjacent seas, and our cooperation with other organizations to this end.</p> <p>In 2018 the 19<sup>th</sup> meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP-19) focused on anthropogenic underwater noise, and Mark Tasker participated on behalf of ICES, highlighting our role and capacity in addressing underwater noise.</p> <p>ICES has contributed to the UN Secretary-General report "Oceans and the Law of the Sea", this year with highlights of our work relevant to the themes requested by the UN:</p> <p>Advancing ocean science and identifying</p>	ICES has the possibility to send an observer, and should also try via its Member Countries to get support for participation in relevant panels/to make presentations of our work in relevant areas.	This fits nicely with the ICES Strategic Plan and Science Plan, and the upcoming Advisory Plan. Reference to the revised Mission and Vision, as well as our strategic cooperation partners, including involvement of Countries beyond the ICES Member Countries will be important. It is important to explain the special way ICES works, and the unbiased and non-political nature of our scientific advice.



	<p>and addressing gaps in knowledge and ocean science in SDG 14 of the 2030 Agenda for Sustainable Development;</p> <p>UN Decade of Ocean Science for sustainable development: initiatives, ideas, proposals, perspectives;</p> <p>The cross-cutting role of ocean science in SDG 14 and Agenda 2030;</p> <p>Emerging technologies;</p> <p>The science policy interface;</p> <p>The integration of traditional knowledge in ocean research;</p> <p>Strengthening ocean science in developing countries.</p>		
UN Decade of Ocean Science	<p>In December 2017 the UN announced the Decade of Ocean Science for Sustainable Development (2021-2030) to mobilize the scientific community, policy-makers, business and civil society around a programme of joint research and technological innovation.</p> <p>The announcement was a consolidation of efforts by UNESCO's Intergovernmental Oceanographic Commission (IOC) to boost international cooperation in ocean sciences. The aim is to enable better coordination of research programmes, observation systems, capacity development, maritime space planning and the reduction of maritime risks to improve the management of ocean and</p>	<p>ICES was well represented at the first global planning meeting for the United Nations Decade of Ocean Science (UNDOS) held in Copenhagen 13-15 May.</p> <p>A document was submitted to the UNDOS Executive Planning Group in July 2019, mapping the ICES science plan to the six priorities of UNDOS. See attachment 4.</p> <p>PICES has reached out to ICES to find out if we independently and together could identify projects that fit under the</p>	<p>ICES is part of the Steering Committee, for the North Atlantic Regional Workshop, Halifax, Nova Scotia, Canada, January 7 - 10, 2020</p>

	<p>coastal zone resources.</p> <p>An Executive Planning Group has been established <a href="https://en.unesco.org/ocean-decade/epg">https://en.unesco.org/ocean-decade/epg</a>. The planning group seems to be very strong in oceanography and reasonably strong in some “conservation issues” (MPAs and Marine Spatial Planning). There seems to be less representation on fisheries science and aquaculture. Based on internal (ICES) calculations there are 3 representatives from 20 ICES countries (2 from the USA, 1 from SE, the former SCICOM national representative, and 1 from the Russian Federation –and as it seems - an independent DE scientist).</p> <p>The aim is to produce both a Science Action Plan, an outline of which will be ready by last quarter of 2019, and which will be an essential component of the Implementation Plan for the Decade, to be finalized mid-2020.</p> <p>A first global meeting took place 13 -15 May, 2019.</p> <p>Canada, Minister of Fisheries, Oceans and the Canadian Coast Guard has supported the initiative, announcing an additional investment of up to \$9.5 million in funding to advance activities of the Decade of Ocean Science.</p> <p>Regional workshops are planned, and a workshop for the North Atlantic, jointly arranged by Canada, USA, and EU, with involvement from other countries, will take</p>	<p>UNDOS, covering our current activities which are also important for the UNDOS, like:</p> <p>d) To demonstrate our good intentions under the Decade, we include activities that exceed what we would normally do in areas that are important for the Decade like:</p> <ul style="list-style-type: none"> <li>a. Data management and data products</li> <li>b. Outreach and education</li> <li>c. Tech/expertise transfer to developing countries and SIDS.</li> <li>d. Strong Human Dimension integration.</li> </ul>	
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	place in Halifax, Nova Scotia, Canada, January 7 - 10, 2020. ICES is part of the Steering Committee.		
Second World Ocean Assessment	The assessment is carried out in accordance with pre-defined UN writing Guidelines. Many of ICES and PICES member countries are "Lead" or "Co-Lead" Members. There is a possibility to try to coordinate references to ICES and PICES work.	Anne Christine is currently in contact with Robin Brown, Executive secretary of PICES to find out how this could be progressed.	
Informal Consultations of States Parties to the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (ICSP)	Offers a good opportunity to present ICES and to show how ICES is working, through presentations, participations in panels.  The (former) chair of ACOM Eskild Kirkegaard participated in the ICSP in 2018 in New York	Depending on the themes for discussion these meetings offer a good opportunity for ICES to inform about relevant work.	
Convention on Biological Diversity	There are a number of issues that are being worked out under the Convention of Biological Diversity, and which are of interest to ICES, such as: Ecologically or Biologically Significant Marine Areas (EBSAs), post 2020 Aichi targets, and the Sustainable Ocean Initiative Global Dialogue with Regional Seas Organizations and Regional Fisheries Bodies on Accelerating the Progress towards the Aichi Biodiversity Targets	For an upcoming workshop in the North-East Atlantic on designating EBSAs, ICES has offered, and actively helped locate information for use by the EBSA workshop, and the ACOM Vice-Chair Eugene Nixon, has taken part in the EBSA workshop.  Post 2020 Aichi targets ICES has nominated Eugene Nixon to take part in the thematic	

		<p>workshop on marine and coastal biodiversity for the post-2020 global biodiversity framework (13 – 15 November 2019, Montreal, CA).</p> <p>Meetings on the Sustainable Ocean Initiative Global Dialogue with Regional Seas Organizations and Regional Fisheries Bodies on Accelerating the Progress towards the Aichi Biodiversity Targets</p> <p>ICES has been represented at the two first meetings, by Wojciech Wawrzynski, and should continue to engage, as this offers good possibilities of both representing ICES and our work as well as making liaisons with other partners.</p>	
<p><i>Other relevant fora</i></p> <p>International Authority</p> <p>Seabed</p>	<p>Workshop on the regional environmental management plan for the area of the northern mid-Atlantic ridge, 25-29 November, 2019; Evora, Portugal</p> <p>The International Seabed Authority (ISA), in collaboration with the Atlantic Regional Environmental Management Plan (REMP) Project (funded by European Union) and the Government of Portugal, will convene the First Workshop on REMP for the Area of the Northern Mid-Atlantic Ridge (MAR), at the University of Évora, Évora, Portugal, from 25-29 November 2019.</p> <p>The workshop aims (i) to review and analyze seafloor and water column ecosystem data from the northern mid-Atlantic ridge (MAR), (ii) to</p>	<p>ICES is considering nominating an expert to take part in the workshop</p>	

	<p>synthesize environmental data, faunal distribution, faunal dispersal capabilities and distances, genetic connectivity, patterns of biodiversity, community structure, ecosystem function, and ecological proxy variables along and across the northern MAR, (iii) to review current exploration activity within contract areas and distribution of resources (polymetallic sulfides) along the northern MAR, (iv) to describe potential areas that could be vulnerable to exploitation of mineral resources in the Area and would require enhanced management measures, and (v) to describe potential areas in the Area that could be reserved from exploitation in order to achieve effective protection of the marine environment, including through the designation of areas of particular environmental interests (APEIs).</p> <p>The results of this first workshop will provide scientific inputs to the second workshop on the regional environmental plan for Area of the northern MAR to be held in St. Petersburg, Russia, in June 2020, which will focus on identifying specific management measures for developing draft elements for inclusion in the REMP.</p>		
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### Attachment 3

#### DESCRIPTION OF UN DECADE SOCIETAL OUTCOMES

(extracted from UN Decade Roadmap document)

The main principle is that the Decade will address both deep disciplinary understanding of ocean processes and solution-oriented research to generate new knowledge. This knowledge will support societal actors in reducing pressures on the ocean, preserving and restoring ocean ecosystems and safeguarding ocean-related prosperity for generations to come. The Decade should turn the scientific knowledge and understanding into effective actions supporting improved ocean management, stewardship and sustainable development.

The Roadmap identifies six societal outcomes:

1. A clean ocean whereby sources of pollution are identified, quantified and reduced and pollutants removed from the ocean

“Human activities are increasingly impacting its local and, subsequently, the global environment, leading to pollution by both chemical and physical wastes. Through the Decade, integrated research will be fostered to assess the human and environmental risks of ongoing and future types of ocean pollution, to generate new ideas to reduce the ocean pressures by promoting recycling, improved waste management and related incentives, and by strengthening the governance regimes to encourage more sustainable production and consumption. The most challenging ocean pollutants include: atmospheric carbon dioxide, which is the main cause of the climate change with ocean warming, ocean acidification, and sea-level rise; agricultural fertilizers, which lead to increased primary production but result in ocean deoxygenation; untreated waste water; invasive species; and micro- and macro-plastics.”

2. A healthy and resilient ocean whereby marine ecosystems are mapped and protected, multiple impacts, including climate change, are measured and reduced, and provision of ocean ecosystem services is maintained

“Marine ecosystem degradation has greatly accelerated during the last five decades due to the multitude of stressors affecting the ocean. To support the conservation and protection of ocean ecosystems, the Decade will promote interdisciplinary research aimed at elucidating impacts of cumulative stressors on the ocean, its seas, ecosystems and resources, hence providing more complete information to fill gaps, and specify actions, which can improve the situation and reverse the degradation. Improved appreciation of the economic and societal value of ocean ecosystems will also be key to stimulate the development of marine spatial planning, marine protected areas, and other ecosystem-based management approaches. Supplementing and completing the science base with holistic mapping of the ocean, in all its dimensions, will also be needed for adaptive management approach towards good ocean stewardship. All nations will benefit in a healthy and resilient ocean and by preserving its capacity to deliver food, income, support transportation and many other elements of sustainable development.”

3. A predicted ocean whereby society has the capacity to understand current and future ocean conditions, forecast their change and impact on human wellbeing and livelihoods

“The vast volume of the ocean and its complex coastlines are neither adequately observed nor fully understood. In particular, the deep sea is a frontier of ocean sciences. Under the Decade, sustained and systematic ocean observations can be expanded to all ocean basins and depths to document ocean change, initialize

ocean system models and provide critical information for improved ocean understanding. Such information is increasingly needed by nations and the ocean business community operating within or beyond national jurisdictions. Improved access to understanding ocean present and future conditions will be a pre-requisite to the development of sustainable ocean economic policies and ecosystem-based management and will lead to more efficient shipping, mitigate storm damage and flooding of coastal cities, sustain healthy fisheries, protect coral reefs and other key marine ecosystems from degradation, and improve climate forecasting, amongst a few. The Decade will also build on advances in ocean robotics and the combination of remote and in situ ocean observations which offer new opportunities and will reduce operational costs; it will also promote free and open data sharing and multi-stakeholder contributions by governments (rich and poor), the private sector and citizens.”

4. A safe ocean whereby human communities are protected from ocean hazards and where the safety of operations at sea and on the coast is ensured

“Ocean hazards such as storm surges, tsunamis, harmful algal blooms, or coastline erosion can be devastating for coastal communities. The rush for coastal recreation and economic expansion in the maritime domain has increased access to the sea to a multitude of users, producing newly built infrastructures that are increasingly vulnerable to ocean extreme events. Climate change impacts on the ocean will have profound implications for all human societies and most of our activities. The Decade will promote research aimed at reducing and minimizing impacts of various changes (risk reduction) through adaptation and mitigation, at assessing social and physical vulnerability and help clarify interactions between natural and man-induced changes. It will also support the development of integrated multi-hazard warning systems in all basins hence contributing to enhanced preparedness and awareness of society with regards to ocean risks. This could trigger the introduction and use of new technologies through private-public partnerships. Community resilience and adaptive capacity, with elevated education and awareness as regards the use of observations and data, will also contribute to reduced impacts and improved efficiency of early warning systems for natural and man-made hazards.”

5. A sustainably harvested and productive ocean ensuring the provision of food supply and alternative livelihoods

“Society now depends on the ocean more than at any time before. It is a vital source of nourishment, supporting directly the livelihood of about 500 million people, especially in the poorest nations, and, indirectly, the global population. Ocean economies are among the most rapidly growing and promising in the world, providing benefits to many sectors of great economic value, such as fisheries, biotechnologies, energy production, tourism and transport, and many others. The Decade should create a better understanding of the interactions and interdependencies of the environmental conditions and processes, the use of resources and the economy. A major task in context of the development of the ocean economy will be in documenting the potential impacts from environmental changes on the established and emerging maritime industries and their ability to generate growth, especially for LDCs (Least Developed Countries) and SIDS (Small Island Development States). Defining safe and sustainable thresholds for economic operations in the ocean will help policy-makers and stakeholders in implementing a truly sustainable blue economy. New research should develop

and flesh out sustainable blue-green growth agendas and link it to efforts in ecosystem protection.”

6. A transparent and accessible ocean whereby all nations, stakeholders and citizens have access to ocean data and information, technologies and have the capacities to inform their decisions

“The achievement of the above outcomes very much depends on global capacity building and resource-sharing between countries at different levels of wealth and development. The enormous need for more ocean information at the scientific, governmental, private sector, and public levels demands a step-change in ocean education at all levels. New technology, and the digital revolution are transforming the ocean sciences; these will be harnessed to deliver data and information to all stakeholders. Science-policy interface for oceans should be enhanced as well. Open access to ocean information, increased interactions between the academic and societal actor communities, and ocean literacy for all should capacitate all citizens and stakeholders to have a more responsible and informed behaviour towards the ocean and its resources. Innovative capacity development schemes between south–south and north–south ocean actors as well as courses for ocean professionals will be key in raising ocean awareness and promote better solutions.”



## **Submission from the International Council for the Exploration of the Sea to the Executive Planning Group for the United Nations Decade of Ocean Science for Sustainable Development (2021–2030)**

### **Background**

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The purpose of this submission from the International Council for the Exploration of the Sea (ICES) to the Executive Planning Group is to enable the group to further formulate priorities and plans for a global ocean science agenda and to connect ocean science activities with the 2030 Sustainable Development Agenda. ICES intends that work in support of the priorities outlined in this submission will help to increase the societal value of future marine science, and that the resulting knowledge, data, assessments and advice will help policy-makers find solutions to ocean sustainability challenges. ICES proposals for priorities are linked to the Decade's six societal objectives, as identified at the 1<sup>st</sup> Global Planning Meeting. We are able to mobilise our network to contribute to these tasks as described in this submission.

As well as providing this submission, and supporting any follow-up by the Executive Planning Group, ICES will actively engage in the Regional Workshop for the North Atlantic (Halifax, January 2020), to develop and share ideas about the design of the Decade and the resulting planning and co-ordination, science delivery and pathways to impact.

### **About ICES**

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The International Council for the Exploration of the Sea (ICES) is an intergovernmental marine science organisation that develops science and advice to support the sustainable use of the seas and oceans. ICES is a network of experts from over 700 institutes and organizations in 20 member countries and beyond. Over 4000 experts participate in our activities annually, including meetings of over 150 expert groups that address diverse marine science topics. Experts committed 22000 days to core ICES activities in 2018. ICES activities span ecosystem science, the impacts of human activities, observation and exploration, emerging techniques and technologies, seafood production, conservation and management science, and sea and society. Through strategic partnerships our work on all these topics in the Atlantic Ocean, and especially the North Atlantic, extends into the Arctic, the Mediterranean, the Black Sea, and the North Pacific. ICES activities covers both areas within and beyond national jurisdiction.

ICES mission is to advance and share scientific understanding of marine ecosystems and the services they provide and to use this knowledge to generate state-of-the-art advice for meeting conservation, management, and sustainability goals. ICES successes as a marine science organization, and in meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans, have been achieved by people from diverse national and disciplinary backgrounds working together to accomplish shared goals.

ICES mission, expertise and resources align with the aspiration for the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) to

create a new foundation, across the science-policy interface, to strengthen the management of the ocean.

## **The scope of ICES science**

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The ICES science network works collectively and collaboratively to generate ecosystem and sustainability science that advances and shapes understanding of marine ecosystems and their interactions with society and climate. This understanding, and the data and evidence streams that enrich it, are used to advance ICES capacity to provide authoritative and impartial insight and advice into the state and sustainable use of our seas and oceans. ICES has seven interrelated science priorities, each with an objective and purpose, as described in the ICES Science Plan “Marine ecosystem and sustainability science for the 2020s and beyond”. ICES is sharing information on these priorities to support the Executive Planning Group in further formulating priorities and plans for a global ocean science agenda and to highlight ICES potential to contribute to the Decade.

### **Priority 1: Ecosystem science**

To advance and shape understanding of the structure, function, and dynamics of marine ecosystems — to develop and vitalize marine science and underpin its applications

### **Priority 2: Impacts of human activities**

To measure and project the effects of human activities on ecosystems and ecosystem services — to elucidate present and future states of natural and social systems

### **Priority 3: Observation and exploration**

To monitor and explore the seas and oceans — to track changes in the environment and ecosystems and to identify resources for sustainable use and protection

### **Priority 4: Emerging techniques and technologies**

To develop, evaluate, and harness new techniques and technologies — to advance knowledge of marine systems, inform management, and increase the scope and efficiency of monitoring

### **Priority 5: Seafood production**

To generate evidence and advice for management of wild capture fisheries and aquaculture — to help sustain safe and sufficient seafood supplies

### **Priority 6: Conservation and management science**

To develop tools, knowledge, and evidence for conservation and management — to provide more and better options to help managers set and meet objectives

### **Priority 7: Sea and society**

To evaluate contributions of the sea to livelihoods, cultural identities, and recreation — to inform ecosystem status assessments, policy development, and management

## Proposed priorities

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To support the Decade's six societal objectives, ICES highlights the importance of the following topics and would seek to contribute to the Decade in these and related areas. Some of the topics which ICES would prioritise are relevant to two or more of the Decade's societal objectives.

### I. A clean ocean.

Supporting integrated research to assess the human and environmental risks of ongoing and future types of ocean pollution, to support effective management of pressures on the ocean to ensure resulting impacts are sustainable.

- a) Describe the distribution and intensity of pressures that result from contaminants and pollutants, eutrophication, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture and fishing.
- b) Describe the exposure of habitats to pressures, their vulnerability and resilience, and develop and test indicators of pressure, state and function.
- c) Develop methods and models for individually and cumulatively assessing and projecting ecological impacts of diffuse pressures (e.g. pollution, litter) spanning different levels of biological organisation and at a range of time and space scales.
- d) Model the transport of litter and pollutants to link sources to areas of impact, especially when these span long distances (e.g. Arctic and deep sea) or many trophic levels (e.g. impacts on predatory fishes, birds and mammals).
- e) Assess and project implications of emerging human activities for existing management systems and marine industries and advise on options for mitigation and adaption.
- f) Track the emergence of new technologies in marine industries and assess how these technologies affect the interactions between those industries and the marine environment.
- g) Assess interactions between aquaculture and the environment including the risks posed by nutrient and organic loads.
- h) Develop an evidence base and assessment tools to support existing and potential demands for advice on conservation and management of contaminants and pollutants, eutrophication, litter, shipping, noise, oil and gas extraction, construction and renewable energy.
- i) Further develop capacity to provide ecosystem-based advice by adding quantitative analyses of more pressures and impacts to fisheries and ecosystem overviews; and by developing and integrating aquaculture overviews.

### II. A healthy and resilient ocean.

Supporting science to advance and shape knowledge of the ocean system, its role in the earth and climate system, including the human component, its biodiversity and the seabed. Supporting interdisciplinary research to elucidate the impacts of cumulative stressors.

- a) Assess and report on trends in ocean climate.
- b) Improve understanding of the oceanography of semi-enclosed and shelf seas around the North Atlantic and of the wider north Atlantic ocean.
- c) Describe links between the physical and biological environment and their influence on production, biogeochemical cycles and other ecosystem functions, and consequences for the stability and resilience of ecosystems and the services they provide.
- d) Describe connectivity within and among ecosystems, of many species and life stages at a range of spatial scales, and assess the ecological consequences of disruption to connectivity networks.
- e) Develop methods to map and predict the distribution of seabed and pelagic habitats and biodiversity and their sensitivity to environmental variation and change.

- f) Develop and apply molecular, morphological and other taxonomic methods to describe and identify species.
- g) Describe species' life histories, their links to the environment and responses to environmental change, including phenotypic and genetic adaptation.
- h) Build on and challenge existing assumptions about population and community structures and interactions, by searching for new insights using molecular methods, physiology and behavioural science.
- i) Describe the distribution and intensity of pressures that result from contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture, fishing, climate change, acidification and habitat loss.
- j) Explore how pressures on the marine environment act, independently and collectively, to modify the variety, quantity and distribution of marine life and the structure, function and dynamics of food webs and marine ecosystems (including cumulative pressures and their cumulative impacts).
- k) Conduct an ambitious co-ordinated programme to further explore and report the ecological characteristics of the ICES region, with a focus on the distribution of habitats, in part to support integrated assessment.

### **III. A predicted ocean.**

Supporting development, management and operation of ocean observing networks and associated data systems to provide information on current and future ocean conditions. Forecasting environmental change and its impact on human wellbeing and livelihoods.

- a) Assess and report on trends in ocean climate.
- b) Develop and co-ordinate, integrated, quality assured and cost-effective monitoring programmes.
- c) Evaluate and optimise survey design, connectivity of observation systems, and survey data handling, access and analysis — to meet existing demands for data and to meet emerging data, science and advisory needs; with a focus on supporting fisheries assessment, integrated ecosystem assessment and ecosystem-based management.
- d) Conduct analyses and testing of techniques, sensors and the logistical and statistical aspects of survey design to increase the efficiency, scope and accuracy of monitoring and the relevance of monitoring programmes to science and advisory needs.
- e) Horizon scan, test, develop and where appropriate harness new and emerging techniques and technologies that have potential to progress methods of data gathering, processing and interpretation.
- f) Develop more efficient ways of analysing, sharing and presenting big data from observation and monitoring; especially using data from remote sensing of the seas and monitoring of human activities.
- g) Develop and apply a wide range of analytical and statistical tools, such as machine learning, to describe the state and dynamics of the marine environment and the distribution and dynamics of human activities, and assess their strengths and weaknesses.
- h) Describe alternate futures and management options for marine socio-ecological systems and assess the vulnerability and resilience of marine industries and society to climate change.
- i) Investigate the future social and economic consequences of human responses to management actions and the role of marine spatial planning in resolving conflicts and supporting co-existence of human activities and livelihoods.

### **IV. A safe ocean.**

Supporting provision of safe seafood and increasing understanding of extreme events and their implications for ocean ecosystems and society.

- a) Assess interactions between aquaculture and the environment including the risks posed by diseases and pathogens and their mitigation, harmful algal blooms and the effects of escapees and nutrient and organic loads.

## V. A sustainable, productive ocean.

Creating a more holistic understanding of the interactions and interdependencies of environmental conditions and processes. Defining science-based metrics and advice on production and sustainability to support food security.

- a) Improve methods of single-species and multi-species stock assessment, including data-limited methods. Develop and conduct management strategy evaluations, address uncertainty, and improve the transparency, robustness, efficiency and repeatability of stock assessment.
- b) Increase understanding of stock structures, migrations, life histories, natural mortality, and climate and food web impacts on marine and diadromous species, as well as multi-species interactions and the consequences of stock recovery, to strengthen the inputs and evidence base for assessment and advice.
- c) Further understanding and operationalisation of ecosystem-based fishery management and MSY concepts and their application, especially in mixed, multispecies and emerging (e.g. mesopelagic) fisheries.
- d) Examine fisheries spatial dynamics, performance and impact of gear, links between catch and effort, mixed fishery interactions, role and impacts of recreational and small-scale fisheries and the consequences of responses to management measures.
- e) Assess aquaculture production potential and carrying capacity, development scenarios, and methods of risk and benefits assessment; for rearing or full production systems including low trophic level and seaweed aquaculture, integrated multi-trophic aquaculture and offshore production facilities.
- f) Assess interactions between aquaculture and the environment including the risks posed by diseases and pathogens and their mitigation, harmful algal blooms and the effects of escapees and nutrient and organic loads.
- g) Develop aquaculture overviews to describe the distribution, ecosystem interactions, benefits and impacts of aquaculture production.
- h) Assess the wider role of seafood production in society, including resilience of the food system, interactions between food systems in the sea and on land, the effects of the changing expectations of seafood consumers on practices in aquaculture and fishing.
- i) Develop an evidence base and assessment tools to support existing and potential demands for advice on fisheries and aquaculture conservation and management.
- j) Develop methods to support implementation, and evaluation of the suitability and effectiveness of, national and international commitments and governance relating to marine spatial planning; coastal zone management; protection of species, habitats and marine ecosystems; mitigation; restoration; and the delineation, management and monitoring of marine protected areas.
- k) Develop methods to support implementation of marine policies and commitments applying to ICES member countries, including the UN Sustainable Development Goals, the Common Fisheries Policy and the Marine Strategy Framework Directive.
- l) Provide evidence to inform policy developers as they seek to set objectives and to address and reconcile use and conservation of the sea.
- m) Develop, test and apply methods and indicators to assess the social and economic status and dependence of coastal communities on aquaculture, commercial and recreational fishing, tourism and other marine industries.
- n) Investigate the social and economic risks and opportunities provided by alternate uses of the sea.
- o) Investigate the social and economic consequences of human responses to the management of fisheries and aquaculture and the role of spatial planning in resolving conflicts and supporting co-existence of human activities and livelihoods.
- p) Assess the effects of alternate models of engagement on the success of participatory processes and the perceived salience, credibility and legitimacy of outcomes that result, as

well as the practicality and performance of resulting conservation and management options.

- q) Describe alternate futures and management options for marine socio-ecological systems and assess the vulnerability and resilience of fishing and aquaculture and society to climate change.
- r) Develop understanding of how traditional and historical knowledge can inform fisheries conservation and management and how this understanding influences the effectiveness of contemporary conservation and management.

## **VI. Transparent and accessible ocean.**

Supporting access to scientific knowledge and accelerating transfer of marine science and technology through training and education.

- a) Develop more effective mechanisms to ensure that monitoring and surveillance data (e.g. VMS, AIS) can be reused or reprocessed to support ICES scientific and advisory needs.
- b) Identify, design and make use of opportunities for public participation in observation and exploration through citizen-science; and identify and make use of opportunities for marine industries and other stakeholders to contribute to research design, data gathering and interpretation.
- c) Develop more efficient ways of analysing, sharing and presenting big data from observation and monitoring; especially using data from remote sensing of the seas and monitoring of human activities.
- d) Provide resources and infrastructure to develop and share knowledge and expertise: in expert groups, at international conferences, and through communications and publications.
- e) Provide training and networking opportunities in marine science, with a focus on applied science to support fisheries and ecosystem based management.

## Creating legitimate science and evidence

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ICES engagement in the Decade will also strengthen the credibility, salience and legitimacy of Decade activities in the Atlantic Ocean. First, because of the breadth of international representation in our working groups and a longstanding culture among scientists, from many national and institutional backgrounds and with different types of expertise, of working constructively and respectfully to reach scientific consensus. Second, because we have regional expertise and analyses that are ultimately intended to have an applied impact on regional management and policy need significant and effective regional engagement, and this is something we are well placed to continue to provide in all the science and advice we develop for our region.

ICES sees the dual tools of consensual deliberation of science and independent peer review of those deliberations, as the key mechanisms to deliver credible best available science for decision making for society. The breadth of knowledge across over 150 expert groups, and the dynamism of our experts, is the foundation of ICES science for society. Our experience as a trusted knowledge provider and facilitator of evidence for policy builds on this foundation. ICES uses dialogue with recipients of advice and wider society to maintain the relevancy of our science. The management objectives determined by society are already incorporated into our ICES advice frameworks. ICES uses international guidance on the ecosystem-based fisheries management to link and where possible reconcile resource management and biodiversity conservation objectives. By adapting and improving of our processes to reflect the expectations of society, ICES knowledge for society remains legitimate. Clear decision making and appropriate quality assurance of our processes underpin our role as an independent evidence provider.

ICES already has strong regional co-operation with other organisations with domains of relevance to the Decade. These include the European Commission (EC), Helsinki Commission (HELCOM), OSPAR Commission (OSPAR), Northwest Atlantic Fisheries Organization (NAFO), North Atlantic Salmon Commission (NASCO) and North East Atlantic Fisheries Commission (NEAFC). ICES also works with partners through projects and mechanisms such as the Atlantic Ocean Research Alliance. As an evidence provider, ICES bridges the management arenas of natural resources management (e.g. fisheries advice) and conservation measures (e.g. value of seabed habitat). Annual advice flows into the delineation of vulnerable marine areas in the Atlantic, mechanisms to assess and reach marine Good Environmental Status in EU waters, population dynamics of threatened and sensitive species, assessment of underwater noise, monitoring of contaminants. ICES strives to maintain consistent approaches to scientific method and evaluation of risk across these diverse evidence sources.

Relationships with partners also extend the reach of our science into the Mediterranean, Black Sea, Arctic, North Pacific Ocean and globally (e.g. The north Pacific Marine Science Organisation (PICES), Arctic Monitoring and Assessment Programme (AMAP), International Arctic Science Committee (IASC), BONUS programme (science for a better future of the Baltic Sea region), General Fisheries Commission in the Mediterranean (GFCM), Mediterranean Science Commission (CIESM), UN Intergovernmental Oceanographic Commission (IOC), Food and Agriculture Organization (FAO)). Partnerships bring mutual benefits, by strengthening the contribution of regional expertise to larger-scale and global

processes such as the Decade and contributing to shaping and delivering marine science and advice beyond the ICES region.





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## ICES statement for the UN Law of the Sea Intergovernmental Conference on conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

The International Council for the Exploration of the Sea (ICES) is a global organization that develops science and advice to support the sustainable use of the oceans. While our focus is on the Northeast Atlantic, our work has great relevance to all oceans, including areas beyond national jurisdiction (ABNJ).

In accordance with the UN Convention on the Law of the Sea, the International Council for the Exploration of the Sea (ICES) has for more than 100 years promoted international cooperation in marine scientific research in the Atlantic Ocean and adjacent seas, and since 1964 this cooperation has been supported by an international convention between 20 Contracting Parties.

ICES develops knowledge and information products used in marine scientific research to meet societal needs, on the state and sustainable use of our seas and oceans. ICES is a platform for ensuring the coordination of science, data collection, data quality, and accessibility. This science and data contributes to the evidence base required to generate state-of-the-art advice for meeting conservation, management, and sustainability goals.

The ICES network extends well beyond the 20 Contracting Parties; with experts participating in more than 150 scientific working groups that address diverse marine science topics. Participation in the groups is based on expertise and is indifferent of nationality. Many of the groups are a joint effort with other international organizations, meaning that our work covers the Atlantic Ocean, especially the North Atlantic, and extends into the Arctic, the Mediterranean, the Black Sea, and the North Pacific. And including areas within and beyond national jurisdiction. Of the 150 working groups, more than a fifth are dealing with scientific issues in Areas Beyond National Jurisdiction. Altogether the groups attract over 1500 scientists annually.

The breadth of available scientific expertise means that ICES is capable of, and already providing, scientific advice to its member countries and other intergovernmental organizations in Areas Beyond National Jurisdiction. Our scientific advice is used as evidence by decision-makers, and

generated with a four-step approach; a dialogue with those that request our advice, the knowledge synthesis based on the best available science, an independent peer-review process, and an advice formulation process. A process that is participatory, transparent, and documented and generates advice that is quality-assured, unbiased and independent.

In order to identify, conserve and sustainably use biological diversity in ABNJ, appropriate science and methods are required to develop the evidence base needed to support responsible decision-making; including contributing to impact assessments. Taking the ecosystem approach as a starting point, ICES is a unique and established leader in providing advice to competent authorities on marine policy and management issues related to the impacts of human activities on marine ecosystems and the sustainable use of living marine resources.

Biodiversity is not only critical as a resource, but also to overall functioning of the ecosystem. ICES has recently advised on methods on how to identify special/valued areas in the marine environment, which in turn are key to support marine biological diversity of areas beyond national jurisdiction. ICES advises that a data-driven, expert-informed framework for mapping ecological and biological value and the subsequent identification of special/valued areas in the marine environment should be applied. And that four general ecological dimensions can be used to describe general functional aspects of the marine ecosystem: food web, habitat, biodiversity, and productivity.

ICES regards biodiversity in the broadest sense, as the variety, quantity and distribution of life. Our expert groups focus on biodiversity that spans the tree of life, from phytoplankton and bacteria to marine mammals and birds. And biodiversity in geographies from the shallow coasts to ABNJ. This integrated understanding of biodiversity in its widest sense informs our science and advice in ABNJ. Combined with our capacity to assess human and environmental pressures on the marine environment, this understanding can provide the basis for area-based management and environmental impact assessment, for example.

ICES also recognizes that valuable areas cannot be intrinsically compared to, or substituted by, one another. An area containing a single unique feature (e.g. a threatened species) is not intrinsically more, or less, valuable than another that contains multiple similar features (e.g. high biomasses of multiple key species like copepods, cod, and capelin), or that combines structurally different features (e.g. coral reefs, nursery areas, and core primary production locations). These areas are important because they contribute significantly to one or more of the features selected on basis of the EBSA criteria.

The dynamics in biodiversity, driven by human activities and climate change means that we are dealing with a non-stable situation that needs continuous observations and assessments. ICES works with impacts and projections for future impacts on ecosystems, and has provided advice on the effects of climate change on the distribution of species and their vulnerability to increasing sea temperatures.

Building capacity and the transfer of knowledge and technology is at the heart of ICES work. Our collaboration platform offers scientists an operational and established basis for coordination of international research, comparison of methods, conventional training programmes, robust data management, and data accessibility, to more than 300 million measurements ranging from biological, hydro-chemical, oceanographic and fisheries data. The ICES data policy is committed to open data and the FAIR principles.

We are dedicated to offering our platform and knowledge to continue to develop the science needed to support a future Convention on the conservation and sustainable use of marine biological diversity – and to do this in cooperation with other international organizations.



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## Arctic

Council is invited to take note of the information on developments in the Arctic, and specifically to:

- *Note the slightly modified proposal, following talks with NOAA, and following the proposal that Council adopted in 2017, outlining areas that ICES could contribute to the FiSCAO scientific discussions, for a joint ICES/PICES/NOAA pilot study on data hosting and sharing protocols based on existing survey data. This proposal will also be discussed with and presented at the PICES Governing Council meeting in October.*
- *Note the establishment of the Provisional Scientific Coordinating Group (PSCG), under the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, and consider how to ensure cooperation/coordination with ICES member country delegations appointed by each Signatory, which may include scientists and experts.*
- *Consider the importance of the continued participation of ICES (and PICES) in the scientific contribution to the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, as outlined in the joint ICES/PICES document contained in Attachment 1.*
- *Consider the opportunity for ICES and PICES to participate and contribute to the Arctic Science Ministerial to take place in 2020, in Japan and co-hosted by Iceland, the latter in their capacity as Arctic Council Chair.*
- *Note the developments to cater for a coherent communication of evidence about the potential for expansion of boreal fish stocks outside their classical stock distribution area, through Ecosystem Overviews covering waters adjacent to the Central Arctic Ocean.*

### **Arctic Research – in an Arctic of increasing political importance**

Since our inception, ICES work has covered Arctic areas, with one of the longest standing Working Group being the Arctic Fisheries Working Group (AFWG).

All five (5) Arctic Coastal States, as well as all eight (8) Arctic Council Countries are members of ICES, and through the cooperation with especially PICES the cooperation in the Arctic extends beyond the 20 ICES member countries.

With rapid transformation expected or already occurring in Arctic ecosystems as a consequence of climate change, it is important to deal with Arctic, sub-Arctic, and adjacent seas in a coherent and coordinated manner. From data acquisition, data and information products to assessment products.

And it is important for ICES to consider how to include non-member countries in scientific advisory processes, to contribute to the required legitimacy for products.

A main aim of ICES has been to ensure that our Arctic involvement adds value within our existing remit, avoids duplication of effort, and recognizes Arctic (marine) experts as a limited resource.

### **Cooperation with other IGOs and Arctic Initiatives/organizations**

One way to ensure broadening of cooperation with other member countries and involvement of new experts is through cooperation with intergovernmental organizations (IGO) and Arctic initiatives/organizations.

This is also necessary as the Arctic spans many sector ministries and many organizations are involved.

At national level, the Arctic is dealt with by many different sector ministries (dealing with environment, climate, fisheries, transport, research, etc.) and this requires sharing of information, and coordination of work.

Below is a description of organization with whom ICES engages, or has established formal cooperation with, through f.i. acquiring observer status.

### **Arctic Council**

ICES obtained observer status in the Arctic Council in May 2017. The observer status gives access to meetings, and codifies our cooperation with the Arctic Council working groups, mainly;

- AMAP; ICES being the data depository for the Contaminants and Biological Effects dataset used in AMAP assessment, and also working to develop hazardous substances assessment tool, generating on demand a dataset product from the ICES databases, as already developed for other clients (OSPAR)
- PAME; being part of the joint ICES-PICES-PAME group on Integrated Ecosystem Assessment for the Central Arctic Ocean (WGICA), and which is expected to publish a trilateral [Cooperative Research Report](#) (CRR) report by the end of the year. The report will contribute to the Central Arctic Ocean ecosystem overview, planned for 2020 and the Viewpoint on fish production potential in Central Arctic Ocean. As these two products are advisory products, they will need to follow the advisory process in ICES and it is important to ensure that this involves also countries beyond the ICES member countries, as well as indigenous people, represented in for example the Inuit Circumpolar Council (ICC).
- Joint symposia, e.g. 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 implementation was held 25-27 June. A Joint PICES, PAME, ICES, NOAA event. And the upcoming International Symposium on Plastics in the Arctic and Sub-Arctic Region, 21–23 April 2020, in Iceland, together with a group of co-sponsors, including PICES.

- Joint answers to requests on the process and procedure for involving also non-ICES member countries in scientific and advisory work in the Arctic, where ICES is involved.

### **Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean – FiSCAO**

The FiSCAO meetings are providing the scientific input to the recently concluded Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean. A sixth meeting is expected in February 2020 in ISPRA, arranged by EC though there is some uncertainty if this meeting will follow-on or be a restart of the process, now including all signatories to the agreement. ICES has participated in earlier meetings, and presented proposals agreed by Council.

To demonstrate the joint cooperation between the two organizations, ICES and PICES Secretariats have agreed to represent each other at the meetings, and whenever possible present joint proposals.

ICES and PICES Secretariats are also in discussions, in cooperation with NOAA to follow up on the recommendation from the Fifth FiSCAO meeting; *Conduct joint NOAA/ICES/PICES pilot study on data hosting and sharing protocols using the fish distribution dataset developed during the 4th FiSCAO meeting.*

Up until now both General Secretary and the Head of Data and Information have made efforts with various representatives from PICES (PICES chair and T-CODE chair), and more specifically with the US delegation to FiSCAO and their colleagues in NOAA. During the ASC, a meeting took place between Anne Christine Brusendorff, Bill Karp, Neil Holdsworth and Cisco Werner (NOAA), to discuss the stalled progress in the pilot case recommended for ICES/PICES and NOAA to carry out during the 5th FiSCAO meeting, where the former ACOM Chair, Eskild Kirkegaard participated.

Neil Holdsworth relayed the discussion he had had with Candace Nachman and Chris Lunsford (both from NOAA fisheries), where there seemed to be little desire to work further with the proposed pilot dataset and bibliography as they had served their purpose, and were now more than 2 years out of date. During the meeting with Cisco Werner the following components for a slightly revisited pilot case were discussed;

### **Pilot study revisited**

The pilot should be limited in scope as this would rely on existing resources/activities, but at the same time capture the commonality between the ICES/PICES contracting parties, and NOAA in regards to monitoring, data acquisition and protocols in the area of fisheries, with particular regard to the Arctic and Central Arctic Ocean. There are 3 aspects in which this could be developed:

1. Data standards and protocols in relation to existing survey data, particularly acoustic surveys<sup>1</sup>; Canada, Iceland and Norway have plans to deliver survey data either under the Advice MoU's/Science priorities, and this might be beneficial for the US to consider;
2. Survey protocols standardization ([SISPS](#)) – common monitoring standards for both Fish and Ecosystem surveys.
3. Data sharing and governance Frameworks. Potential international data portal/agreement on data sharing protocols between ICES/PICES/NOAA.

It is important to state that the above three components follow the spirit of the [proposal](#) that ICES Council adopted in 2017, outlining areas that ICES could contribute to the FiSCAO scientific discussions, and also that ICES/PICES/NOAA are suggesting to conduct a pilot study – and thus not a fully-fledged implementation project. For ICES, the ICES Data Centre, WGFAST (Acoustics), Steering Group on Ecosystem Observations, WGAF (Arctic Fisheries) and the Data and Information Group (DIG) would all have a role in such a pilot.

The revisited pilot case, is supported by the Coordination Group, and the aim is to discuss this with PICES at their meeting in October.

### **Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean**

The first meeting of Signatories to the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, took place in Ottawa, May 2019. Neither PICES nor ICES were invited. At the meeting the Provisional Scientific Coordinating Group was established, and its Terms of Reference adopted, see below:

1. The Provisional Scientific Coordinating Group (PSCG) is established on an interim basis to provide scientific support and advice to the Signatories on matters related to implementing the Agreement, develop reports and advice for the biennial meetings of the Signatories, and provide support for the scientific work called for under the Agreement.
2. The PSCG is to consist of delegations appointed by each Signatory, which may include scientists and experts, as the respective Signatory deems appropriate.
3. Functions of the PSCG are:
  - a. Develop interim Rules of Procedure for the PSCG.
  - b. Develop the Joint Program of Scientific Research and Monitoring (JPSRM), and, in the interim, coordinate scientific activities by the Signatories in a manner consistent with Article 4 of the Agreement.
  - c. Develop the data sharing protocol as called for in Article 4 in the Agreement.

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<sup>1</sup> See <http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx> and [WGFAST](#)

- d. Identify processes and mechanisms to incorporate indigenous and local knowledge, through the inclusion of representatives of Arctic communities, including Arctic indigenous peoples, in the work of the PSCG.
- e. Provide scientific advice for the development of conservation and management measures for exploratory fishing, and other interim measures, as requested by the Signatories.
- f. Develop quantitative indicators based, inter alia, on data collected during the mapping phase.
- g. Facilitate the possible exchange of samples.
- h. Promote cooperation by the scientific experts of the Signatories with relevant scientific and technical organizations, bodies, and programs.
- i. Other functions as may be assigned.

### **PICES Cooperation**

ICES and PICES continue to cooperate closely, both through joint groups, events and with regular meetings between the ICES General Secretary and the PICES Executive Secretary.

An ICES/PICES contribution to the agreement to prevent unregulated high seas fisheries in the Central Arctic Ocean was developed and circulated to ICES Council (Attachment 1) as well as PICES Governing Council.

### **Arctic Science Ministerial**

The 2nd Arctic Science Ministerial (ASM2) meeting, took place in Berlin, 25-26 October 2018, co-arranged by Finland (in their capacity as Arctic Council Chair), Germany and EU.

The ASM2 focused on three themes where an improved and better-coordinated international scientific effort can provide clear opportunities to advance the understanding of the impact of rapid Arctic changes and to respond to major societal challenges in the Arctic and globally.

Theme 1; strengthening, integrating and sustaining arctic observations, facilitating access to arctic data, and sharing arctic research infrastructure

Theme 2; understanding regional and global dynamics of arctic change

Theme 3; assessing vulnerability and building resilience of arctic environments and societies.

The ASM3 is scheduled to take place in 2020 and will be held in Japan and co-hosted by Iceland, the latter in their capacity as Arctic Council Chair. This could be an opportunity for ICES and PICES to plan and aim to find a way to input to the Arctic Science ministerial meeting in Japan 2020.

The North East Atlantic Fisheries Commission (NEAFC) According to Article 14, § 1 of the Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries ICES provides information and advice, to ensure optimal performance of NEAFC when carrying out its functions. NEAFC has competence to adopt conservation and management measures in part of the high seas portion of the central Arctic Ocean, thus coordination and cooperation is needed between NEAFC and the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean.

# 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 CAOFA 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 CAOFA 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.



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## Project participation

### Summary

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With the transition from EU Framework Programme 8 (Horizon 2020) to the Framework Programme 9 (Horizon Europe) considerable changes with regards to strategic activities - those not supporting research itself but research coordination - are envisaged. The existing regional ERA-NETs (initiatives coordinating research programming and funding at macro-regional scale) will be asked to create an alliance of regional seas in Europe. EU funding for the trans-Atlantic Research coordination mechanism (the Atlantic Ocean Research Alliance, based on the 2015 Galway Statement) will come to an end in 2020. Continuation of EU support to these initiatives is likely to take place under Horizon Europe. The exact funding mechanisms to strategic level projects (e.g. Coordination and Support Action) is yet to be developed.

During the Statutory Meeting in October 2015, the Council Working Group ICES Business Model (CWGIBM) recommended that ICES and the Secretariat should have a proactive participation role in Coordination and Support Action (CSA) projects (an EU funding mechanism that is aimed at supporting use of existing knowledge, through coordination and net-working activities, as well as dissemination, rather than research) that are aligned with the ICES Science Plan. The Council, at its statutory meeting in 2016, supported the proposal for ICES to seek to lead relevant CSA projects. It was highlighted that CSAs provide full-cost recovery.

### Action:

*The Council is requested to decouple decision-making on research project development (in-line with the [ICES projects policy](#)) from strategic project development, and give Secretariat/ACOM/SCICOM a mandate to engage ICES with the latter.*

## 2. Ongoing projects

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Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
	H2020 <b>AtlantOS</b> Optimizing and Enhancing the Integrated Atlantic Ocean Observing System' (2015-2019) <i>3m cost-neutral extension until sept 2019</i>	<b>Neil Holdsworth,</b> Mehdi Abbasi, Hjalte Parner,	Improving fish survey acoustic and biotic data availability through ICES Data Centre for three key pelagic fisheries surveys. Standards and harmonization to information aggregator portals for fisheries via ICES DATRAS and ICES ACOUSTIC.	BE: 3; CA: 2; DE: 8; DK: 3; ES: 3; FR: 12; IE: 3; NL: 2; NO: 3; PL: 1; PT: 3; UK: 10; USA: 1	Enabled ICES to build the acoustic data portal (WP2), and support the steering and expert groups behind acoustic data. This is a key input to the transparent assessment framework, and the portal has helped develop standards, protocols and increased access to these data. <a href="http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx">http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx</a> . The networking and contribution to the Atlantic Observing system architecture under WP1 has put ICES together with other international networks to help define a blueprint (IOC, GOOS).	Yes, quality assurance and transparency of ICES advice (see previous column)

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
	H2020 AORA-CSA Atlantic Ocean Research Alliance Coordination and Support Action' (2015-2020)	Anne Christine Brusendorff, Wojciech Wawrzynski, Ellen Johannesen, Karolina Reducha, Neil Holdsworth, Julie Krogh Hallin	Participation in the project's High Level Operational Board (WP1) as well as leading three work packages: Ecosystem Approach/Ocean Stressors (WP4), Aquaculture (WP7), Knowledge Sharing Platform (WP11).	CA: 1; DK: 1; ES: 1; FR: 2; IE: 1; IS: 1; NO: 1; PT: 1; UK: 1	Inventories of international collaborations / projects / applicable research results in the AORA thematic areas (ocean stressors, aquaculture, ocean literacy, seabed mapping); Trilateral WGs on AORA thematic areas; Action roadmaps with staff exchanges, project twinning, joint publications, resource sharing and coupling of research funding.	The project explored the mandates and objectives for EBM in the North Atlantic. These can be used directly by the development of the ECOFRAME initiative. The clarification of EBM goals proved useful in the production of the ICES statement on EBM.



	<p>H2020 <b>ClimeFish</b> Co-creating a decision support framework to ensure sustainable fish production in Europe under climate change’  (2016-2019)</p>	<p><b>Lotte Worsøe Clausen,</b> Anne Cooper, Eirini Glyki, Wojciech Wawrzynski</p>	<p>ICES will contribute to debates and dissemination activities within its European arenas to ensure science for sustainable use of the sea, especially within the fishery sector.</p>	<p>CA: 1; DE: 1; DK: 1; ES: 2; FR: 1; IS: 1; NO: 3; SE: 1; UK: 2</p>	<p>Provision of input to the DGMARE request concerning fish distributions over time and potential changes herein. EDF/ClimeFish workshop on governance and management of European fisheries in changing climate scenarios.</p>	<p>ICES involvement in the ClimeFish project facilitates the strengthening of the ICES advisory system in three key fields:</p> <ul style="list-style-type: none"> <li>• modelling the impacts of climate change on wild fish stocks in the Northeast Atlantic;</li> <li>• modelling the impacts of climate change on current and potential aquaculture activities in the Northeast Atlantic;</li> <li>• communicating key scientific findings to relevant policymakers in an efficient and effective manner.</li> </ul> <p>Aquaculture is a strategic initiative in the ICES Strategic Plan and via ICES participation we have access to</p> <ul style="list-style-type: none"> <li>• a network of experts studying the impacts of climate change on existing and planned aquaculture activities in the Northeast Atlantic;</li> </ul>
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Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
						<ul style="list-style-type: none"> <li>the associated government officials and industry representatives.</li> </ul>
	<b>GEF LME LEARN</b> Strengthening Global Governance of Large Marine Ecosystems and Their Coasts through Enhanced Sharing and Application of LME/ICM/MPA Knowledge and Information Tools (2016-2019)	<b>Wojciech Wawrzynski</b> , Anna Davies, Ellen Johannesen	ICES leadership in the LME-LEARN Ocean Governance WG; organization of training courses for LME practitioners and managers within the ICES Training Programme.	USA: 1; Intergovernmental: 7	LME-LEARN toolkits to be made available (on ocean governance; LMEs and stakeholder participation; maritime spatial planning; environmental economics); Thematic / geographical boost to the ICES Training Programme. ICES gateway to the partner agencies implementing the UN SDG14.	The project contributing to integrated ecosystem assessments and ecosystem overviews (previously through links with the WGLMEBP, now through IEA SG).

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
	H2020 <b>SeaDataCloud</b> Further developing the pan-European infrastructure for marine and ocean data management (2016-2020)	<b>Neil Holdsworth</b> , Anna Osypchuk, Hjalte Parner, Marilynn Sorensen	Project network coordination (WP2); Expansion and governance of metadata and data content (WP5); Governance of standards and development of common services (WP8); Developments of upstream services (WP9); Developments of downstream services (WP10); Development, update and publication of data products for European sea regions (WP11).	BE: 5; DE: 5; DK: 2; EE: 1; ES: 2; FI: 3; FR: 3; IE: 1; IS: 1; LV: 1; NL: 3; NO: 1; PL: 2; PT: 1; SE: 1; UK: 2	SeaDataCloud is the 3rd iteration of SeaDataNet, the ICES Data Centre is a key player in the steering of the development and ensures the development of standardisation and governance. The infrastructure service that ICES supply as part of the SeaDataCloud backbone is a core (and demanding) part of the ICES data work, and subsidised by this activity.	Indirectly – working on joint standards and coding conventions is at the core of this project community; this in turn brings knowledge on best practice on data management into ICES work.

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
	EMFF EASME <b>EMODnet Biology III</b> Operation, development and maintenance of a European Marine Observation and Data Network Part 1 (2017-2019) Part 2 (2019-2021)	<b>Neil Holdsworth,</b> Carlos Pinto	Major provider of biological observations (presence/absence). Collaborating on data products i.e. the ICES OOPS derived via this project. Also contributing to data standards and harmonization.	BE: 3; DK: 2; ES: 1; FI: 1; FR: 1; NL: 3; NO: 1; PT: 1; SE: 1; UK: 5	The OOPS Zooplankton product <a href="http://ices.dk/news-and-events/news-archive/news/Pages/Zoom-in-on-zooplankton-data.aspx">http://ices.dk/news-and-events/news-archive/news/Pages/Zoom-in-on-zooplankton-data.aspx</a> was developed via this cooperation.	The project has the potential – as shown with OOPS – to deliver operational data products in addition to what the ICES Data Centre, and ICES community can offer and is prepared to do this in a way that would allow these products to be used in an advice process with assessment of their quality.

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
	H2020 <b>PANDORA</b> Paradigm for Novel Dynamic Oceanic Resource Assessments (2018-2021)	<b>Lotte Worsøe Clausen,</b> Anna Davies, Neil Holdsworth, Eirini Glyki, Periklis Panagiotidis,	Training, integration of new knowledge into operational advice, incorporation new data collection methods. Enabling conversations between research scientists and ICES advisory working groups.	DE: 3; DK: 3; EE: 1; ES: 3; FR: 1; NL: 3; NO: 2; UK: 6	This project addresses the incorporation of new data and knowledge into the management process. It helps address many of the objectives in the ICES strategic plan. ICES will facilitate in particular the interface between operational stock assessment developments and management needs.	This project aims to directly improve the stock assessment methods for management challenges in the ICES area. The regional case studies are mostly centred on major stocks of interest for ICES, and paths for incorporation of new methods into ICES advice have been written into the proposal.

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
	EEA <b>ETC-ICM</b> The European Topic Centre on Inland, Coastal and Marine waters (2019-2021)	<b>Neil Holdsworth</b> , Neil Holdsworth, Periklis Panagiotidis, Hans Mose Jensen, Sebastian Valanko, Colin Millar, Inigo Martinez	Data flows in support to the MSFD. Supporting the publication of marine indicators and assessment in the European Seas.	DE: 4; ES:1; FI: 1; NL: 1; NO: 1; UK: 1	Extended use of ICES data in the publication of marine indicators (Nutrients and chlorophyll in seawater, contaminants in biota, and changes in fish distribution) and assessment (Hazardous substances and eutrophication).	ICES does not give advice on assessments of these indicators. However, the data flows directly benefit member countries that are members of ICES, OSPAR, HELCOM as it allows for streamlined reporting of data and greater harmonization of assessment tools. A standing special request from OSPAR is the management of data handled by ICES on their behalf, as well as hosting/developing Eutrophication and Contaminants tools for both OSPAR And HELCOM, which are also relevant to the EEA European assessments of the same state indicators.

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
<b>Sustainable harvesting of marine biological resources</b> - LC-BG03-2018	H2020 <b>MEESO</b> - Ecologically and economically sustainable mesopelagic fisheries (2019-2023)	<b>Vaishav Soni</b> , Neil Holdsworth, Hjalte Parner, Lise Cronne-Grigorov, Hans Mose Jensen, Periklis Panagiotidis, Mehdi Abassi, Adriana Villamor, Joana Ribeiro	Work Package lead of Data management and dissemination	DK: 2; FR: 1; IR: 3; IS: 1; NL: 1; NO: 5; PT: 1; SE: 1; SP: 1; UK: 2	Embedding ICES standards and protocols in the data collection processes of the project, ensuring hosting of the data beyond the project life cycle. Further development of the acoustic data portal, as well as boosting the eggs and larvae standards and datasets managed through ICES.	This project will strengthen the workflow and standardization of the input of acoustic and biotic dataflows to ICES, and therefore improve overall quality assurance of the advice workflow.

<b>MSFD - second cycle: implementation of the new GES decision and programmes of measures</b> - DG ENV/MSFD 2018 call	<b>QUIETMED2 -</b> Joint programme for GES assessment on D11-noise in the Mediterranean Marine Region (2019-2021)	<b>Neil Holdsworth,</b> Sebastian Valanko, Carlos Pinto	Knowledge share about the process of development of the OSPAR noise register, the implementation of the tool. Identification of barriers and difficulties of the contributors to the register for submitting data, reporting, etc. Contributions to a preparatory study with requirements specification of a tool to implement an impulsive noise impact indicator. Knowledge share about technical issues for the design, development and implementation of a tool to implement an impulsive noise impact indicator Review and assessment of the demo tool. Attendance to the kick-off and final meeting in		Continue the cooperation on standards, exchange of data and knowledge between the NE Atlantic, Baltic and Mediterranean sea regions. Ensure the noise register at ICES remains at the front of developments in including impact indicators into the framework.  Ensures that there is no disconnect between contracting parties to ICES feeding the ICES hosted noise register, and the Mediterranean noise register (France, Spain). And prevents a lost opportunity to align/connect the two regional platforms.	
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Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
			Brussels and up to 4 workshops.			
<b>EASME/2019/OP/0003</b> European Marine Observation and Data Network (EMODnet) - Thematic groups Geology, Seabed habitats, Physics and Chemistry	EMFF EASME <b>EMODnet Chemistry IV</b> (2019-2021)	<b>Neil Holdsworth,</b> Lise Cronne-Grigorov	Work package lead on user feedback, especially linking MSFD into the data product development of EMODnet Chemistry. Also contributing to data standards and harmonization.	BE: 3; DE: 1; DK: 1; EE: 1; ES: 1; FI: 2; FR: 1; IE: 1; LV: 1; NL: 4; NO: 1; PT: 1; SE: 1 <i>(include partners, subcontractors , and data providers)</i>	ICES is ensuring synergy between existing dataflows and the EMODnet portal to avoid duplication of data (and effort). ICES also acts as the main conduit from the OSPAR and HELCOM data product needs into EMODnet Chemistry.	ICES do not provide Advice on assessments of contaminants and eutrophication, however ICES are contracted to provide services to both HELCOM and OSPAR that are strengthened through this project.

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
<b>EASME/2019/OP/0003</b> European Marine Observation and Data Network (EMODnet) - Thematic groups Geology, Seabed habitats, Physics and Chemistry	EMFF EASME <b>EMODnet Physics</b> (2019-2021)	<b>Neil Holdsworth,</b> Lise Cronne-Grigorov	ICES Data Centre to provide expertise in the underwater noise data developments (both impulsive and ambient) and act as conduit between RSC's, MSFD TG NOISE and the EMODnet project; Also help in providing web services to the EMODnet portal	FR: 1; NL: 1; SE: 1	Consolidate ICES activities on underwater noise and to avoid missed synergies and ensure ICES is recognized in area	

Call	Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
<b>EASME/2019/OP/006:</b> EMODnet – Ingestion and safe-keeping of marine data	EMFF EASME <b>EMODnet Data Ingestion II</b>	<b>Neil Holdsworth,</b> Lise Cronne-Grigorov	ICES serves as a point of contact for biological and environmental data.	BE: 3; DE: 2; DK: 2; ES: 2; FI: 2; FR: 2; IE: 1; NL: 4; NO: 1; PT: 1; SE: 1; UK: 3	Influence and staying in line with current metadata standard developments used for submitting data. Potential source of new data from providers not currently in established data collecting frameworks leading into EMODnet data portals as well as ICES.	If the project succeeds in leveraging data from new sources – primarily industry and other commercial sources, this will deepen the pool of data available to the Advice process.

### 3. Subcontracts

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Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance
<b>JMP-EUNOSAT Joint Monitoring Programme of the Eutrophication of the North Sea with Satellite data (2017-2019)</b>	<b>Neil Holdsworth,</b> Hjalte Parner	Contributing to OSPAR indicator development for eutrophication	BE: 1;DK: 1; FR: 1;UK: 3; NL: 2;NO: 2; SE:1	Embed the assessment tool and process developed for HELCOM in the OSPAR assessment.
<b>Impulsive Noise Register (2017-2019) (2019-2020)</b>	<b>Neil Holdsworth,</b> Carlos Pinto	Development and Hosting of underwater noise register	OSPAR and HELCOM contracting parties	ICES is developing the standards for data and technical development of the MSFD indicators in close collaboration with OSPAR, HELCOM and EU TG NOISE groups
<b>Nansen Legacy Project (2018-2023)</b>	<b>Lotte Worsøe Clausen,</b> David Miller, Sebastian Valanko	Contribute to user and stakeholder reference group. Increase ICES presence in Arctic networks and see where and how ICES can contribute to future endeavours in the Arctic.	NO: 10	Nansen Legacy will result in a scientific basis for long-term, holistic, and sustainable management of marine ecosystems and human presence in the emerging oceans of the high Arctic.
<b>BALTIC-BIAS (2019+)</b>	<b>Neil Holdsworth</b>	Hosting HELCOM data on continuous noise.		Making the data available in the ICES system in line with the impulsive noise register.

<b>HELCOM contaminants assessment tool (2018-2019)</b>	<b>Neil Holdsworth</b>	Development of a platform for HELCOM hazardous substances; Optimization of the platform; The HELCOM hazardous substances integrated assessment tool (CHASE) will be incorporated into the platform.		This reinforces ICES expertise and position as the data manager for marine contaminants for HELCOM. In addition, this work builds on a special request which was delivered to OSPAR at the end of 2018 for the development of the OSPAR assessment tool in an online map based platform. Furthermore, the platform will be used in a 3rd phase to develop a contaminants assessment tool for AMAP. In this way ICES will act as a bridge between all 3 regional programmes, and also ensure non-duplication of data streams and tools for the overlapping contracting parties, who are all ICES member countries.
<b>AMAP – ICES DoME – DCE Cooperation (2018-2019)</b>	<b>Neil Holdsworth</b>	ICES serves as the AMAP (marine) Thematic Data Centre in relation to data collected in the Arctic area for its thematic assessments. ICES will organize work by an external consultant to secure reporting of Danish AMAP CORE data from 1984 to 2016 and its incorporation in the ICES DOME database using the Environmental Reporting Format (ERFv3.2) data format and performing quality checks (DATSU) on the submissions. If any checks are critical, these will be resolved by dialogue with ICES.		This small project, mainly carried out by Aarhus University (DCE), ensures that the datasets for marine contaminants gathered in Greenland as part of the AMAP assessments is available on an international portal. This was specifically requested by the Danish Ministry. This process also brings AMAP to using the standards, checks and procedures that are used in our contaminants database (ICES DOME).

<b>ECOMAR – ICES – DTU Aqua cooperation (2019-2020)</b>	Lotte Worsøe Clausen, Colin Millar, Carlos Pinto, Adriana Villamor	<p>ICES is a subcontractor to the project, tasked with production of data layer maps. This request reconciles the need for a rational approach to the cost of extracting and submitting the data by the states across the region.</p> <p>The final outputs will be map layers of gridded data (500m grid) showing:</p> <ol style="list-style-type: none"> <li>1) presence, absence and intensity of fishing in the Danish EEZ by gear category.</li> <li>2) estimated uncertainty of the above values in each cell</li> <li>3) the current scientific knowledge, availability of data / measurements</li> </ol>		<p>The ECOMAR project, funded by the Velux Foundation, is developing and testing data-based tools for ecosystem-based marine spatial planning in Danish waters with the aim of making these tools available for relevant authorities and other users after completion of the project</p>
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#### 4. Projects in pipeline

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Call	Name of project	ICES Secretariat contact person	Main task
<b>All Atlantic Ocean Research Alliance Flagship - LC-BG08-2018</b>	BG8b Mission Atlantic	<b>Wojciech Wawrzynski</b> , Neil Holdsworth, , Anna Osypchuk, Carlos Pinto Anna Davies, Alondra Sofia Rodriguez	Contribute to the Data Management Work package; Delivery of an online course; definition of learning objectives for the e-learning Contribution to engagement in the 'Atlantic Forum' (All-Atlantic CSA)
<b>COST Action Proposal OC-2019-1-24081</b>	ODIP + Ocean Data Interoperability Platform	<b>Neil Holdsworth</b> , Lise Cronne-Grigorov	Tasks under negotiation with coordinators.



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International Council for  
the Exploration of the Sea  
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Council Meeting 2019

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CM 2019 Del-Doc 3.1

Agenda item 3.1

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## New Finance Report

*At its 2018 meeting Council requested the Finance Committee to present their report with main messages summarised when submitted for consideration in Council. This has been discussed, and a new reporting format endorsed, in the Finance Committee and Bureau.*

*This document presents the outcome of the Finance Committee, using the new reporting format, summarising the main trends and uncertainties for revenues, expenditures, and costing of the recurrent advisory requests. In addition, the report contains a two years' projection, based on the audited accounts for the previous year, and the estimate for the current year. Furthermore, the report contains an overview of realized and estimated revenue for recurrent advice, and an overview of on-going external projects, projects in the pipeline and contracts.*

*Based on the description below, and the information contained in the attachments Council is invited to:*

- *approve the final accounts 2018, including Audit Book, noting that the Final Accounts for 2018 did not give rise to any qualifications or emphasis on any specific matters, cf. Attachment 4;*
- *approve the proposed budget for 2020, noting that the national contributions have already been decided, and a 1.5% inflation regulation agreed, cf. Attachment 1;*
- *approve the 2021 forecast budget, with a 1.7% inflation regulation of the national contributions, noting that Attachment 1 shows the implications on the budget without an inflation regulation of the national contributions*
- *note the trends in revenue and expenditure, contained in the two-year projections, compared to the realized and audited 2018 budget, and the current 2019 budget*
- *note the positive development in the trend towards 100% cost recovery of recurrent advisory requests. Future versions of the report will provide additional information about the specific MoUs, depending on the agreement of how costs are shared between advice requesters*



## **Two year projections, compared to the realized and audited 2018 budget and the current 2019 budget**

Attachment 1 contains a two-year projection, 2020-2021, of revenue and expenditures, compared to the audited 2018 figures and the estimated figures for the current budget year, 2019.

It should be noted, that the figures for 2020 and 2021 have been made on the basis of the following (conservative) assumptions:

### **Revenue**

- The size of the national contributions is based on a 1.5% increase in 2020, and 1.7% in 2021
- Only known project revenue has been listed, and thus not expected revenue from projects in the pipeline, not yet approved
- Special requests and contracts (apart for those with HELCOM, OSPAR, AMAP) have been capped, based on current revenue, at a fixed level of DKK 1,500,000 this includes on-going negotiations with EC Directorate General for Environment, about an annual agreement on special requests in the range of DKK 4,500,000 over a period of four years (DKK 1,125,000/year)
- The unknown value of future national contributions, project revenue, and special requests have cumulative importance to ensure a balanced operating result
- Revenue from potential new advice requester has not been included (e.g., Iceland and United Kingdom) nor has the discussions of future inclusion in the MoUs of costs for database developments been reflected

### **Trends**

- The increase in the revenue from recipients of advice from 2018 to 2019 is due to the increase in the EC contribution from DKK 11,900, 000 in 2018, to DKK 14,100,000 in 2019.
- The decrease in revenue from 2019 to 2020 is due to the payment in 2019 of 2018 special requests. 2018 saw an exceptionally high number of special requests.

### **Uncertainties**

- The two major unknowns are usually “special requests + contracts” and projects. “Special requests + contracts” usually pose less than 10% of the revenue from advisory requesters, but can come with large and unexpected fluctuations on an annual basis. Likewise, projects are fluctuating over the budget years, with different resource commitments, and thus revenue. Around 1/3 of the projects are based on lump sums, with fairly generous financing. A new EU Framework Program for Projects, Horizon Europe 2021-2027, as well as a new European Maritime and Fisheries Fund 2021-2027, all included under the Multiannual Financial Framework for 2021-2027, also contribute to the uncertainty, with the risk of gaps in-between current and future project financing. Attachment 3 contains an overview of on-going external projects, external projects in the pipeline, and contracts.

### Expenditures

- Salary figures are based on best knowledge, of recurrent and special requests, and resources needed to fulfil these
- Other expenses are based on actual and estimated expenditures

### Trends

- The increase in salaries from 2018 to 2021 is due to maternity/paternity cover, inflation regulation and step-increases, and are thus estimates for which final figures will be available by the end of the year.
- The increase in “Travelling and meetings” in 2019 as compared to 2020 and 2021 is due mainly to the following; a new budget line included for covering ADG participation in connection with non-EU special requests, a new budget line for expenses related to travels for projects, an underspend of the Steering Group Chairs budget, and the increased number and thus expenditures for ICES supported symposia. Especially for the increases in travel, it is important to note that this is due to a change in accounting practises, and therefore not reflecting increased travel. In addition, the coverage of ADG participation in connection with non-EU requests are funded by the advice requesters.
- The increase in IT expenses are based on a stable IT budget over the past 10 years, and increasing demand for services for a growing community, and the Secretariat.

### Costing the recurrent advisory requests

Attachment 2 contains an overview of realized and estimated revenue and costs for recurrent advice, for 2016, 2017, 2018 and 2019.

### Trends

- The total revenue has steadily increased, from DKK 14,100,000 in 2016 to DKK 17,900,000 in 2019
- The increase in direct costs, and corresponding decrease in indirect costs, are based on a marked decrease in the overhead costs from 35% to 7%, dictated by a new Advisory Framework Agreement with EC
- The fluctuation in the total costs is due to changes in staff, an additional ACOM vice-chair, and is in 2019 based on a predefined total cost, with the EC contribution having been capped at DKK 14,100,000, including a special budget line for special requests of DKK 900,000 based on documentation of resources and hours used, the latter part of 2019 will therefore have to be used to verify the actual costs.
- Generally, there is a positive trend towards the 100% cost recovery of cost incurred for recurrent requests

### Uncertainties

- New advice requesters (e.g. Iceland and UK) will require the development of a standardized costing mechanism, according to an agreed cost-sharing key between new and established advice requesters. This will take time to get in place.

## Proposed Budget 2020 and Forecast Budget 2021

## Attachment 1

		Audited	Estimate	Proposed	Forecast
		2018	2019	Budget 2020 incl. 1.5%	Budget 2021 incl. 1.7% (based on 2020 with 1.5%)
	<b>Note</b>				
Contributions from member countries	1	22.363.000	22.657.250	23.005.000	23.406.250
Contribution from Faeroe Island and Greenland		418.000	423.500	430.000	437.500
Recipients of Scientific Advice	2	18.383.315	22.254.101	21.185.500	21.202.500
Revenue from Projects		3.057.383	4.060.431	2.274.755	1.478.438
Other revenue	3	3.100.763	3.098.000	2.760.000	2.760.000
Sales of publications		16.111	5.000	5.000	5.000
<b>Total revenue</b>		<b>47.338.572</b>	<b>52.498.282</b>	<b>49.660.255</b>	<b>49.289.688</b>
Salaries	4	35.259.301	38.273.057	38.230.000	39.067.000
Office expenses		2.010.799	2.069.885	2.120.000	1.966.885
IT expenses		3.705.952	3.097.263	3.526.117	3.518.764
Expenses for Council and ASC		1.129.795	955.000	2.500.000	930.000
Travelling and meeting expenses	5	4.866.808	7.121.000	6.021.000	5.966.000
Publications		453.837	510.000	510.000	510.000
<b>Total operating expenditures</b>		<b>47.426.492</b>	<b>52.026.205</b>	<b>52.907.117</b>	<b>51.958.649</b>
<b>Operating result</b>		<b>-87.920</b>	<b>472.077</b>	<b>-3.246.862</b>	<b>-2.668.961</b>
Financial revenue		715.857	200.000	200.000	200.000
Financial expenses		-88.386			
Transfer from equity	6	0	1.743.000	2.789.372	940.000
<b>Net result</b>		<b>539.551</b>	<b>2.415.077</b>	<b>-257.490</b>	<b>-1.528.961</b>

### 1. Contributions from member countries (shares)

Belgium (2)	836.000	847.000	860.000	875.000
Canada (3)	1.254.000	1.270.500	1.290.000	1.312.500
Denmark (3)	1.254.000	1.270.500	1.290.000	1.312.500
Estonia (1)	418.000	423.500	430.000	437.500
Finland (1,5)	627.000	635.250	645.000	656.250
France (4)	1.672.000	1.694.000	1.720.000	1.750.000
Germany (4)	1.672.000	1.694.000	1.720.000	1.750.000
Iceland (3)	1.254.000	1.270.500	1.290.000	1.312.500
Ireland (2)	836.000	847.000	860.000	875.000
Latvia (1)	418.000	423.500	430.000	437.500
Lithuania (1)	418.000	423.500	430.000	437.500
The Netherlands (3)	1.254.000	1.270.500	1.290.000	1.312.500
Norway (4)	1.672.000	1.694.000	1.720.000	1.750.000
Poland (3)	1.254.000	1.270.500	1.290.000	1.312.500
Portugal (2)	836.000	847.000	860.000	875.000
Russia (3)	1.254.000	1.270.500	1.290.000	1.312.500

Spain (3)	1.254.000	1.270.500	1.290.000	1.312.500
Sweden (3)	1.254.000	1.270.500	1.290.000	1.312.500
United Kingdom (4)	1.672.000	1.694.000	1.720.000	1.750.000
The USA (3)	1.254.000	1.270.500	1.290.000	1.312.500
	<b>22.363.000</b>	<b>22.657.250</b>	<b>23.005.000</b>	<b>23.406.250</b>

## 2. Recipients of Scientific Advice

European Commission	11.939.040	14.100.000	14.100.000	14.100.000
NEAFC	2.403.611	2.442.309	2.486.500	2.486.500
OSPAR	834.374	1.404.213	1.200.000	1.200.000
HELCOM	540.988	480.000	480.000	480.000
NASCO	550.220	559.079	560.000	560.000
Norway	845.934	844.500	859.000	876.000
Special request and contracts	1.269.148	2.424.000	1.500.000	1.500.000
	<b>18.383.315</b>	<b>22.254.101</b>	<b>21.185.500</b>	<b>21.202.500</b>

## 3. Other revenue

Revenue from ICES Journal	1.571.722	1.688.000	1.500.000	1.500.000
Revenue from Training courses	492.995	700.000	550.000	550.000
ASC Fees	764.706	490.000	490.000	490.000
Miscellaneous	271.340	220.000	220.000	220.000
	<b>3.100.763</b>	<b>3.098.000</b>	<b>2.760.000</b>	<b>2.760.000</b>

## 4. Salaries

Salaries	31.445.713	33.690.885	33.740.000	34.400.000
Fees external consultants	31.481	250.000	250.000	250.000
Overtime for Secretariat staff	0	15.000	15.000	15.000
Social activities and training	242.121	305.000	305.000	305.000
Honorarium ACOM/SCICOM Chair and ACOM Vice Chairs	3.406.204	3.787.172	3.710.000	3.887.000
ATP pensions 2/3 share	133.782	225.000	210.000	210.000
	<b>35.259.301</b>	<b>38.273.057</b>	<b>38.230.000</b>	<b>39.067.000</b>

## 5. Travelling and meeting expenses

President, Bureau + sub Groups, statutory meeting, Finance Committee	256.498	370.000	340.000	335.000
Expenses special request (incl. travel) not EU		750.000		
Secretariat travel	739.438	765.000	765.000	765.000
External reviewing of assessments/benchmarking	455.077	500.000	500.000	500.000

Expenses projects (incl. travel)		600.000		
Travel costs for RAC	9.103	60.000	60.000	60.000
ACOM travel and meeting costs	266.924	311.000	311.000	311.000
ACOM Chairs and vice chairs travel	442.909	480.000	480.000	480.000
Advice Drafting Groups travel	1.630.216	1.700.000	1.700.000	1.700.000
SCICOM travel and meeting costs	319.807	400.000	400.000	400.000
ICES co-sponsored Symposia	145.686	250.000	300.000	250.000
SCICOM strategic activities	176.204	115.000	115.000	115.000
Steering Group Chairs budget (travel)		550.000	550.000	550.000
Training support for DG MAREs officials			100.000	100.000
Course revenue/expenses	424.945	620.000	400.000	400.000
	<b>4.866.807</b>	<b>7.471.000</b>	<b>6.021.000</b>	<b>5.966.000</b>

## 6. Transfer from Equity

SCICOM strategic activities		115.000		
Investment in quality assurance for the financial administration		353.000	900.000	940.000
ACOM assessment workload issue		1.275.000	319.372	
ASC in Copenhagen			1.570.000	
	<b>0</b>	<b>1.743.000</b>	<b>2.789.372</b>	<b>940.000</b>

## Attachment 2

Overview of realized and estimated revenue and costs for recurrent advice, in million DKK – for 2016, 2017, 2018, 2019

	Total (EC, NEAFC, NASCO & Norway)			
Year	2016	2017	2018	2019
Revenue	14,1	14,2	15,7	17,9*
Direct Costs	15,2	13,9	15,0	18,0
Indirect Costs	2,9	3,1	2,9	1,2
Total Costs	18,1	17,0	17,9	19,2
Balance	-4,0	-2,8	-2,2	-1,3

\*) Including special request DKK 900,000

## Attachment 3

Overview of on-going external projects, external projects in the pipeline, and contracts

ESTIMATED PROJECT INCOME 2019 – 2023

Tables 1a and b list the 12 ongoing projects, indicating their time of conclusion. One out of 12 projects are without eligible costs.

Table 1.a.

		Original project budgets (incl. "other" expenses)			
	Project	Estimated total costs and overhead 2019	Estimated total costs and overhead 2020	Estimated total costs and overhead 2021	Estimated total costs and overhead 2022
Hours Dependent Projects	<a href="#">2016-ETC ICM</a>				
	<a href="#">2033-AORA-CSA</a>	1,461,234	388,230		
	<a href="#">2034-AtlantOS</a>	23,812			
	<a href="#">2039-ClimeFish</a>	208,846			
	<a href="#">2045-PANDORA</a>	117,300	173,525	121,938	102,483
	<a href="#">2046-JMP-EUNOSAT</a>				
	<a href="#">2049-ETC ICM</a>	760,000	760,000	760,000	
	<a href="#">2057-MEESO</a>	150,000	300,000	300,000	450,000
	<a href="#">2051-QuitMed2</a>	102,146			
	<a href="#">2042-SeaDataCloud</a>	60,000	60,000		
Lump Sum	<a href="#">2056-EMODPhys IV</a>	65,000	130,000	65,000	
	<a href="#">2040-EMODIng II</a>	384,188	52,000	26,000	
	<a href="#">2043-EMODnet Biology IV</a>	279,570	186,000	93,000	
	<a href="#">2044-EMODnet Chemistry IV</a>	448,335	225,000	112,500	
	<b>TOTAL</b>	<b>4,060,431</b>	<b>2,274,755</b>	<b>1,478,438</b>	<b>552,483</b>

Table 1.b.

	Ongoing project with no eligible costs	
Project Name	Project Period	Max Lifetime Grant
LME LEARN	October 2016 - December 2019	888,269 Only "Other Costs" (training courses, travel, meeting rooms)" - no income

Table 2.

	Projects in pipeline	
Project Name	Project Period	Max Lifetime Grant
H2020 BG8b Mission Atlantic	2021-2024	265K EUR (to be negotiated) (DKK 2 million)
H2020-INFRAIA-2018-2020 – SeaDataCloud2	2018-2020	Tasks are still being negotiated
<b>TOTAL estimate – until 2023</b>		DKK 2,000,000

Table 3.a

	Ongoing contracts and sub-contracts		
Contract Name	Contract Period	Payments 2019	Payments 2020
JMP-Eunosat Joint Monitoring Programme of the Eutrophication of the North Sea with Satellite data	Finalized 2019	No further income (covered meeting participation and travel 2018)	
Impulsive noise registry for OSPAR	2017 – 2019	DKK 35.000	
Impulsive noise registry for HELCOM	2017 – 2019	DKK 35.000	
HELCOM contaminants assessment tool	2018-2019	DKK 75.000	
AMAP–ICES DoME–DCE Co-operation	2018-2019	DKK 19.000	
ECOMAR	2019-2020	DKK 60.000	DKK 40.000
<b>Total</b>		<b>DKK 224.000</b>	<b>DKK 40.000</b>

Deloitte Statsautoriseret Revisionsaktieselskab  
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P.O. Box 1600  
0900 Copenhagen C  
Denmark

## **Letter of representation on the Final Accounts for 2018**

We submit this letter of representation in connection with your audit of the Final Accounts 2018. We confirm to the best of our knowledge:

1. That we are aware that Management is responsible for preparing the Final Accounts in accordance with Rule 18 of the Rules of Procedures, and for the Final Accounts giving a true and fair view of the organisation's financial position and the results of its activities, and for the General Secretary's review containing a fair review of the affairs and conditions referred to therein.
2. That the Organisation's capital resources, including its financial position, and its future prospects support the application of the principle of going concern.
3. That the management commentary contains all the required information, also for the purpose of evaluating the profit/loss for the year and the financial position.
4. That the General Secretary's review and the Final Accounts comprise the required disclosures about any unusual or uncertain circumstances.
5. That we are aware of Management's responsibility for the design and implementation of internal controls to prevent and detect fraud.
6. That we have disclosed the results of our assessment of the risk that the Final Accounts and the General Secretary's review may be materially misstated as a result of fraud.
7. That we have disclosed all information on known alleged or suspected fraud that may have involved Management, employees who have significant roles in internal control or others where the fraud could have a material effect on the annual report.
8. That the Final Accounts does not contain material misstatements.
9. That we have made available all accounting records and supporting documentation up to this date.
10. That the disclosures provided to Deloitte on related parties are correct and complete.



11. That we have provided information about all existing or possible violations of law or other regulations of relevance to the Final Accounts.
12. That the Organisation has complied with all aspects of contractual agreements that could have a material effect on the Final Accounts in the event of non-compliance.
13. That all assets have been recognised in the balance sheet, that these assets exist and belong to the Organisation, and that they have been measured reliably, and also that any impairment losses, etc are adequate to match the risk associated with the assets.
14. That there are no liens or encumbrances etc on the Organisation's assets other than what is disclosed in the Final Accounts.
15. That all existing liabilities and contingent liabilities incumbent on the Organisation have been recognised or disclosed in the Final Accounts, and that these items have been measured reliably.
16. That there are no pending or threatening claims for damages, lawsuits, tax cases, etc or contingent liabilities such as pension, recourse and non-recourse guarantee commitments or financial obligations, including currency exposure and lease commitments, other than those disclosed in the Final Accounts which could have a material influence on the evaluation of the Organisation's financial position.
17. That we have no plans or intentions that may materially alter the carrying value or classification of the assets and liabilities reflected in the Final Accounts.
18. That such insurance policies have been taken out as are considered sufficient in the Organisation's circumstances to cover any situations of loss which the Organisation might experience.
19. That all transactions carried out in the financial year under review have been carried out on an arm's length basis.
20. That no events have occurred after the balance sheet date to this date which influence the evaluation of the Final Accounts, and which require adjustment of or disclosure in the General Secretary's review or notes to the Final Accounts.

Copenhagen, 14 May 2019

International Council for the Exploration of the Sea



Anne Christine Brusendorff, General Secretary



Kirsten Gudmandsen, Finance Officer

Deloitte Statsautoriseret Revisionspartnerselskab  
Attn.: Nikolaj Erik Johnsen  
Weidekampsgade 6  
P.O. Box 1600  
0900 Copenhagen C  
Denmark

## Statement on the Final Accounts for 2018

This statement is given in connection with the audit of the Final Accounts for 2018. On behalf of the Finance Committee, I confirm the following to the best of my knowledge:

1. That the Finance Committee is aware of Management's responsibility for designing and implementing internal controls to mitigate and detect fraud.
2. That the Finance Committee does not consider a specific risk of fraud to exist and that the organisation has an efficient control environment mitigating the risk of material misstatement in the Final Accounts, including misstatements in the Final Accounts as a result of fraudulent financial reporting or misappropriation of the organisations assets.
3. That the Finance Committee has no knowledge of information about actual, presumed or alleged fraud which may have involved Management or staff and which may be material for the Final Accounts.

Copenhagen, 14 May 2019

International Council for the Exploration of the Sea (ICES)



Ari Leskelä  
Chairman of Finance Committee

Deloitte  
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Business Registration No 12063814

**Final Accounts 2018**

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## General Secretary's and Finance Committee's statement

The General Secretary and the Finance Committee have today considered and approved the Final Accounts of International Council for the Exploration of the Sea (hereinafter referred to as "the Council" or "ICES") for 2018.

The Final Accounts have been prepared in accordance with Rule 18 of the Rules of Procedure.

We consider the accounting policies applied appropriate and the accounting estimates made reasonable. Therefore, in our opinion, the Final Accounts give a true and fair view of the financial position at 31 December 2018 of International Council for the Exploration of the Sea and of the results of its operations for the financial year 1 January to 31 December 2018.

We believe that the General Secretary's review contains a fair review of the affairs and conditions referred to therein.

We recommend that the Final Accounts be adopted.

Copenhagen, 14 May 2019

### General Secretary



Anne Christine Brusendorff

Having examined the Final Accounts, we recommend that the Bureau submit the document to the Members of the Council for approval.

### Finance Committee



Ari Leskelä  
Chair  
Finland



Karin Victorin  
Sweden



Markus Vetemaa  
Estonia



Pablo Abaunza  
Spain



Fritz Köster  
Denmark.



## **Independent auditor's report**

### **To the members of International Council for the Exploration of the Sea Report on the Final Accounts**

We have audited the financial statements of International Council for the Exploration of the Sea for the financial year 01.01.2018 - 31.12.2018, which comprise the income statement, balance sheet and notes, including a summary of significant accounting policies. The financial statements are prepared in accordance with the Rules of Procedure of 22 October 2008.

In our opinion, the financial statements give a true and fair view of the Entity's financial position at 31.12.2018 and of the results of its operations for the financial year 01.01.2018 - 31.12.2018 in accordance with the Rules of Procedure of 22 October 2008.

#### **Basis for opinion**

We conducted our audit in accordance with International Standards on Auditing (ISAs) and additional requirements applicable in Denmark. Our responsibilities under those standards and requirements are further described in the *Auditor's responsibilities for the audit of the financial statements* section of this auditor's report. We are independent of the Entity in accordance with the International Ethics Standards Board of Accountants' Code of Ethics for Professional Accountants (IESBA Code) and the additional requirements applicable in Denmark, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

#### **General Secretary's responsibilities for the Final Accounts**

The General Secretary (Management) is responsible for the preparation of final accounts that give a true and fair view in accordance with the Rules of Procedure, and for such internal control as Management determines is necessary to enable the preparation of final accounts that are free from material misstatement, whether due to fraud or error.

In preparing the final accounts, Management is responsible for assessing the Entity's ability to continue as a going concern, for disclosing, as applicable, matters related to going concern, and for using the going concern basis of accounting in preparing the final accounts unless Management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

#### **Auditor's responsibilities for the audit of the Final Accounts**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Rule 20 (VII) of the Rules of Procedure adopted by the Council on 22 October 2008, ISAs and the additional requirements applicable in Denmark will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if,

## Independent auditor's report

individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit conducted in accordance with the Rules of Procedure adopted by the Council on 22 October 2008, ISAs and the additional requirements applicable in Denmark, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by Management.
- Conclude on the appropriateness of Management's use of the going concern basis of accounting in preparing the financial statements, and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures in the notes, and whether the financial statements represent the underlying transactions and events in a manner that gives a true and fair view.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.



## **Independent auditor's report**

### **Statement on the General Secretary's review**

Management is responsible for the General Secretary's review.

Our opinion on the financial statements does not cover the General Secretary's review, and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the General Secretary's review and, in doing so, consider whether the General Secretary's review is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

Moreover, it is our responsibility to consider whether the General Secretary's review provides the information required under the Rules of Procedure adopted by the Council on 22 October 2008.

Copenhagen, 14 May 2019

### **Deloitte**

Statsautoriseret Revisionspartnerselskab  
Business Registration No 33963556



Nikolaj Erik Johnsen  
Identification no mne35806  
State-Authorised Public Accountant

## General Secretary's review

### General Operating Principles

The operations of International Council for the Exploration of the Sea ("ICES") are governed by the 1964 Convention agreed among the 20 Contracting Parties<sup>1</sup> and entered into force on 22 July 1968.

According to Article 2 of the Convention, ICES shall be concerned with the Atlantic Ocean and its adjacent seas and primarily concerned with the North Atlantic, with the following main goal:

- (a) to promote and encourage research and investigations for the study of the sea particularly those related to the living resources hereof;
- (b) to draw up programmes required for this purpose and to organise, in agreement with the Contracting Parties, such research and investigations as may appear necessary;
- (c) to publish or otherwise disseminate the results of research and investigations carried out under its auspices or to encourage the publication thereof.

In addition, the 2002 Copenhagen Declaration stresses the need for ICES to strengthen working relationships with users of scientific information on living marine resources and marine ecosystems, including fisheries management organisations, environmental commissions, as well as with stakeholders, thus requiring that ICES:

- apply a quality assurance scheme for its advisory function;
- adopt procedures to include the full consideration of data from a wide range of stakeholders;
- be flexible and timely in providing scientific advice to meet the needs of decision makers responsible for the stewardship of living marine resources and marine ecosystems without compromising the quality or reliability of the advice;
- ensure that ecosystem considerations, including the effects of human activities and climatic and oceanographic conditions, are taken into account; and
- frame advice in relation to fisheries management, giving full consideration to the ecosystem context.

The ICES Secretariat is located in Copenhagen, Denmark. A Host Agreement between the Government of Denmark and ICES on the office and the privileges and immunities entered into force on 24 July 1968.

The Council is an international legal entity with the capacity to enter into contracts, to acquire and dispose of immovable and movable property, and institute legal proceedings. The Council and its property, income and expenditures are exempt from all national direct and other taxes or duties.

### Primary activities

The Final Accounts for the year 2018 show total revenue for ICES of DKK 47,338,572, of which DKK 22,363,000 was from national contributions. Another major component was income received from recipients of scientific advice amounting to DKK 17,114,167.

---

<sup>1</sup> Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, the United Kingdom, and the United States of America.

## General Secretary's review

The difference between revenue and expenditures for 2018 resulted in a minor surplus of DKK 539,551. This surplus arose mainly due to an increase in the revenue from Advice Recipients, an increased revenue from External Projects, and a doubling in the revenue from interest earned on equity/Capital Reserve Fund.

National contributions to ICES are due in advance, or by the end of January of the budget year. As of April 2019, seven national contributions were not paid (reminders have been sent). There are no outstanding contributions from previous years.

### Development in activities and finances

Over a ten-year period (2009-2018)<sup>2</sup>, increases in national contributions were agreed in 2011 (2%), 2016 (1.9%), and 2019 (1.3%, with reference to the need for inflation adjustment); in the other years, national contributions remained stable. The relative share of national contributions in 2018 was 47%.

On the expenditure side, salaries increased by the cost of living (based on the Danish inflation rate) and by the step increases. The secretariat salary cost in 2018 was DKK 31,853,097, roughly equivalent to the 2017 amount. The total amount of salaries, including honoraria for the ACOM Chair, ACOM Vice-Chairs, and SCICOM Chair, amounted to DKK 35,259,301. Following the Council's directions to achieve full cost recovery for the advisory services, an increasing share of the salary costs are covered by MoUs, inter alia through financing of special request outside the ICES-EU Administrative Arrangement (AA).

Work continues, with the aim to implement during 2019 a system that better reflects a full cost recovery agreement with advisory clients, through verification and documentation of resources used to fulfil the advisory services in the Secretariat and the ACOM and SCICOM leadership.

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<sup>2</sup> The value of the 2020 national contributions will be known after May 2019, when the remaining ICES member countries will have secured a mandate to vote on the proposal for an inflation adjustment by 1.5% of the 2020 national contributions.

**Income statement for 2018**

	<b>Notes</b>	<b>2018 DKK</b>	<b>2017 DKK'000</b>
Contributions from member countries	1	22.363.000	22.363
Contribution from Faeroe Island and Greenland		418.000	418
Recipients of Scientific Advice	2	17.114.167	15.893
Income from Projects		3.057.383	3.275
Other income	3	4.369.911	3.994
Sales of publications		16.111	28
<b>Total revenue</b>		<b>47.338.572</b>	<b>45.971</b>
Salaries	4	(35.259.301)	(34.093)
Office expenses		(2.010.799)	(2.322)
IT expenses		(3.705.952)	(3.144)
Expenses for Council and ASC		(1.129.795)	(1.017)
Travelling and meeting expenses		(4.866.808)	(5.803)
Publications		(453.837)	(427)
<b>Total expenditure</b>		<b>(47.426.492)</b>	<b>(46.806)</b>
<b>Result of revenue and expenditure</b>		<b>(87.920)</b>	<b>(835)</b>
Financial income	5	715.857	410
Financial expenses	6	(88.386)	(233)
<b>Income over expenditure</b>		<b>539.551</b>	<b>(658)</b>
The years income over expenditure is distributed as follows			
Accumulated income over expenditure (equity)		539.551	(658)
<b>Total</b>		<b>539.551</b>	<b>(658)</b>

**Balance sheet at 31 December 2018**

	<b>Notes</b>	<b>2018 DKK</b>	<b>2017 DKK'000</b>
Capital Reserve Fund – Investment & cash at bank	10	10.730.552	9.043
<b>Non-current assets</b>		<b>10.730.552</b>	<b>9.043</b>
Receivable member contribution	7	12.493.250	10.450
Other receivables	8	6.920.495	5.877
Prepayments and accrued income	9	304.693	303
<b>Receivables</b>		<b>19.718.438</b>	<b>16.630</b>
<b>Investments</b>	10	<b>17.500.900</b>	<b>24.595</b>
<b>Cash at bank and in hand</b>		<b>2.346.199</b>	<b>54</b>
<b>Current assets</b>		<b>39.565.537</b>	<b>41.279</b>
<b>Assets</b>		<b>50.296.089</b>	<b>50.322</b>

**Balance sheet at 31 December 2018**

	<b>Notes</b>	<b>2018 DKK</b>	<b>2017 DKK'000</b>
Capital Reserve Fund (CRF)		9.096.664	9.186
Accumulated income over expenditure		<u>15.670.408</u>	<u>15.131</u>
<b>Equity</b>	<b>11</b>	<b><u>24.767.072</u></b>	<b><u>24.317</u></b>
Bank debt		307.092	835
Prepaid/pre-invoiced contributions		22.657.250	22.363
Prepaid projects funded by third parties		844.828	1.137
Other payables	<b>12</b>	<u>1.719.846</u>	<u>1.670</u>
<b>Total short-term liabilities</b>		<b><u>25.529.016</u></b>	<b><u>26.005</u></b>
<b>Equity and liabilities</b>		<b><u>50.296.088</u></b>	<b><u>50.322</u></b>
Lease of IT equipment	<b>13</b>		
Additional information	<b>14</b>		

## Notes

	<b>2018 DKK</b>	<b>2017 DKK'000</b>
<b>1. Contributions from member countries (shares)</b>		
Belgium (2)	836.000	836
Canada (3)	1.254.000	1.254
Denmark (3)	1.254.000	1.254
Estonia (1)	418.000	418
Finland (1,5)	627.000	627
France (4)	1.672.000	1.672
Germany (4)	1.672.000	1.672
Iceland (3)	1.254.000	1.254
Ireland (2)	836.000	836
Latvia (1)	418.000	418
Lithuania (1)	418.000	418
The Netherlands (3)	1.254.000	1.254
Norway (4)	1.672.000	1.672
Poland (3)	1.254.000	1.254
Portugal (2)	836.000	836
Russia (3)	1.254.000	1.254
Spain (3)	1.254.000	1.254
Sweden (3)	1.254.000	1.254
United Kingdom (4)	1.672.000	1.672
The USA (3)	1.254.000	1.254
	<b><u>22.363.000</u></b>	<b><u>22.363</u></b>
<b>2. Recipients of Scientific Advice</b>		
European Commission	11.939.040	10.447
NEAFC	2.403.611	2.374
OSPAR	834.374	1.169
HELCOM	540.988	519
NASCO	550.220	543
Norway	845.934	841
	<b><u>17.114.167</u></b>	<b><u>15.893</u></b>

## Notes

	<b>2018 DKK</b>	<b>2017 DKK'000</b>
<b>3. Other income</b>		
Income from ICES Journal	1.571.722	1.659
Income from Training courses	492.995	713
ASC Fees	764.706	574
Miscellaneous	271.340	267
Special request	1.269.148	781
	<b>4.369.911</b>	<b>3.994</b>
<b>4. Salaries</b>		
Salaries are divided as follows:		
Salaries Secretariat	(31.058.239)	(29.886)
Other salaries relating costs	(794.858)	(930)
	<b>(31.853.097)</b>	<b>(30.815)</b>
Honorarium to external Chairs	(3.406.204)	(3.277)
	<b>(35.259.301)</b>	<b>(34.093)</b>
<b>5. Financial income</b>		
Interest	715.840	410
Exchange gains	17	0
	<b>715.857</b>	<b>410</b>
<b>6. Financial expenses</b>		
Exchange losses	(38.049)	(158)
Bank charges	(50.337)	(75)
	<b>(88.386)</b>	<b>(233)</b>



## Notes

	<b>2018 DKK</b>	<b>2017 DKK'000</b>
<b>7. Receivable member contributions</b>		
Belgium	847.000	836
Denmark	1.270.500	1.254
Latvia	423.500	0
Estonia	423.500	418
Germany	1.694.000	1.672
Ireland	847.000	836
Finland	635.250	0
Portugal	847.000	0
Russia	1.270.500	1.254
Sweden	1.270.500	1.254
Spain	1.270.500	1.254
United Kingdom	1.694.000	1.672
<b>Related to the following year</b>	<b><u>12.493.250</u></b>	<b><u>10.450</u></b>
<b>8. Other Receivables</b>		
European Commission	5.324.640	4.043
VAT due from the Ministry of Foreign Affairs	439.147	1.036
Deposits due from parking spaces	7.723	5
Miscellaneous receivables	1.127.884	793
	<b><u>6.920.495</u></b>	<b><u>5.877</u></b>
<b>9. Prepayments and accrued income</b>		
Prepaid pensions	304.693	303
	<b><u>304.693</u></b>	<b><u>303</u></b>
<b>10. Investments</b>		

General investment and Capital Reserve Funds are invested in Danish short-term bonds listed on the Copenhagen Stock Exchange.

## Notes

### 11. Equity

	<b>Capital Reserve Fund DKK</b>	<b>Accumulated income over Expenditure etc. DKK</b>	<b>Total equity DKK</b>
Equity at 1 January 2018	9.186.146	15.130.860	24.317.006
Unrealised fair value of bonds	(89.482)	0	(89.482)
Profit/loss for the year	0	539.548	539.548
<b>Equity at 31 December 2018</b>	<b>9.096.664</b>	<b>15.670.408</b>	<b>24.767.072</b>

### 12. Other Payables

	<b>2018 DKK</b>	<b>2017 DKK'000</b>
Accounts payable	1.618.590	1.618
Danish State Pension (ATP)	101.256	52
	<b>1.719.846</b>	<b>1.670</b>

### 13. Lease commitments

Lease obligations falling due within:		
0-1 years	315.862	870
1-5 years	459.258	734
> 5 years	00	0
	<b>775.120</b>	<b>1.604</b>

### 14. Mortgages and securities

Investments have been provided as security for bank debt.

## **Accounting policies**

The Final Accounts have been prepared in accordance with Rule 18 of the Rules of Procedure.

The Final Accounts have been presented applying the accounting policies consistently with last year.

### **Recognition and measurement**

Assets are recognised in the balance sheet when future economic benefits are probable and the value of the asset can be measured reliably.

Liabilities are recognised in the balance sheet when it is probable that economic benefits will flow out of the Organisation and when the value of the liability can be measured reliably.

In recognising and measuring assets and liabilities, any gains, losses and risks occurring prior to the presentation of the Final Accounts that evidence conditions existing at balance sheet date are taken into account.

### **Income statement**

#### **Contributions and costs**

Contributions are recorded as revenue in the financial year to which they relate. Equally, costs incurred to generate the earnings of the year are recognised in the income statement.

#### **Financial income and expenses**

Financial income and expenses comprise interest income and expenses. Realised gains and losses on bonds classified as investments are recognised in the financial year to which they relate. Unrealised gains and losses on bonds classified as investments are recognised directly in equity.

#### **Projects funded by third parties**

Revenue from projects funded by third parties is recognised as income at the same time as costs related to the project are incurred as expenses.

Profit or loss on projects funded by third parties is recognised in the income statement when the project is finalised.

## **International Council for the Exploration of the Sea**

### **Audit book comments on the Final Accounts 2018**

## Contents

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## **Audit book comments on the Final Accounts for 2018**

### **1. Our audit of the Final Accounts**

#### **1.1 Final Accounts**

We have finalised our audit of the Final Accounts of International Council for the Exploration of the Sea (ICES/the Organisation) for 2018 as presented by the General Secretary and the Finance Committee.

#### **1.2 Affairs and conditions materially influencing the evaluation of the Final Accounts**

Based on our audit, we point out the following particular affairs and conditions of relevance to the Finance Committee's evaluation of the Final Accounts:

##### **1.2.1 Segregation of duties**

As mentioned in our audit engagement letter of 25 September 2018 issued upon acceptance of the audit, the possibility of preventing material misstatements in the Final Accounts, including misstatements caused by fraud, primarily depends on the extent to which sound internal control is ensured in the organisation of the recording systems and business processes.

We draw attention to the size of ICES' administration and limited resources. Smaller administrations increase the risk of misstatements in the Final Accounts as a result of intentional or unintentional actions or omissions. Any misstatements in the Final Accounts that result from fraud may not necessarily be detected during our audit since misstatement of this nature are usually concealed or hidden.

We point out that these comments should not be taken to mean that our audit revealed specific matters that could indicate irregularities or fraud, but they are intended to emphasise that segregation of duties is usually a material element in the internal control. We also point out that during our audit we did not find any misstatements caused by fraud.

##### **1.2.2. Inquiries of the Executive Board and the Board of Directors about the risk of fraud**

We have made inquiries of the General Secretary and the Chairman of the Finance Committee about the Organisation's risk of fraud as well as the internal controls implemented by the Finance Committee to mitigate such risk. They have informed us that the Finance Committee and the General Secretary do not have any knowledge of actual, presumed or alleged fraud and that no particular risk of material misstatement is estimated to exist in the Organisation's Final Accounts as a result of fraudulent financial reporting or misappropriation of organisation assets. We should point out that, during our audit, we did not identify any misstatements in the Final Accounts caused by fraud.

## 2. Audit of business processes and internal controls

Our audit included determining whether the Organisation's financial reporting systems, business processes and internal controls function properly in the areas covered by our audit. The purpose of the audit was to determine whether the internal controls are satisfactory, meaning

- if the controls have been designed appropriately in relation to the control objectives they are intended to ensure
- if they have actually been implemented in the enterprise, and
- possibly if they have functioned throughout the period covered by the audit

The focus of our audit efforts has been on the internal controls relevant for the financial reporting areas and the financial statement items which we consider material and risky in terms of auditing. Accordingly, our review will not necessarily disclose all weaknesses or inadequacies of the business processes and internal controls reviewed.

As mentioned in the audit book comments issued upon acceptance of our appointment, it is the responsibility of Management to plan business processes as well as recording and control systems that are appropriate for bookkeeping and asset management to be handled in a way that is satisfactory in the Organisation's circumstances, and the auditor is responsible for reviewing these business processes and internal controls as part of the audit of the financial statements.

Internal controls are those established in and around the enterprise's business processes to ensure achievement of Management's directions (control objectives) in relation to financial reporting.

Our review included an assessment as to whether

- the internal controls ensure complete, accurate and timely processing of authorised transactions
- the internal controls prevent errors from occurring or ensure detection and adjustment of errors occurred
- documentation exists of the data processing and controls performed.

We have reviewed the following financial reporting areas:

Financial reporting area	Financial statement items
Revenue	Income from Projects
Salaries	Salaries
Cash and payment systems	Cash at bank and in hand

For the financial reporting areas Revenue and Cash and payment systems, we have only tested if controls have been designed appropriately and if they have actually been implemented in the enterprise. We have not for these areas tested if controls have functioned throughout the period covered by the audit.

We consider the administrative processes and internal controls generally to function satisfactorily and to form an adequate basis for ensuring complete, valid, accurate and timely registration and recording of the enterprise's transactions in the above areas that have been covered by our audit.

However, we should point out that our audit revealed certain internal control weaknesses – primarily in relation to the payment of salaries and controlling of the project accounts, including the amount in the balance sheet for prepaid projects funded by third parties.

We have walked through the business process regarding expenses and the approval process. We recommend that the Finance Department implement stronger controls regarding approval of expenses so that the Organisation has the same approval procedures for all expenses.

We have walked through the business process regarding time recording. There has not been any approval process for time recording before. We know that ICES has developed some new guidelines and controls for salaries that we believe will improve the processes in relation to projects funded by third parties.

To improve the financial reporting process we recommend that the Finance Department perform a quarterly reconciliation of the balance sheet.

We have not found any material misstatements in our review.

### **3. Comments on the Final Accounts**

#### **3.1 Income statement**

The individual items of the income statement have been reviewed and analysed based on specifications, vouchers and other reconciliation records prepared by ICES. We have taken a number of samples, made analyses and reconciliations to verify the reliability of the recordings.

We have checked that contributions from member countries are recognised in accordance with agreed amounts at ICES Council. A total of DKK 22,363k has been recognised as income, according to agreement, and has not given rise to any comments.



Recipients of Scientific Advice are recognised in accordance with memorandum of understanding and other agreements between ICES and the donor. A sample of contracts has been reviewed which did not give rise to comments.

The audit of revenue did not give rise to any comments.

We have examined costs and checked against invoices, contracts or other bases. We have compared salary costs to contracts and to Salary Table.

The audit of expenses did not give rise to any comments.

We have checked cut-off regarding recurring expenses. We recommend that ICES write down their business processes regarding cut-off which are consistent with their accounting policies.

### **3.2 Balance sheet**

On 31 December 2018, the Capital Reserve Fund in the equity amounts to DKK 9,097k, corresponding to approx. 19% of total income.

We have compared ICES' investments to confirmation letters from the bank, which did not give rise to comments.

We have made a surprise cash audit on 26 February 2019, which did not give rise to any comments.

When auditing cash and cash equivalents we obtained lists of accounts from the Organisation's bankers, and we checked the cash at bank at 31 December.

We have analysed or reconciled receivables to supporting documentation of DKK 19,718k recognised in the Final Accounts. The receivables consist primarily of member contributions (DKK 12,493k) and other receivables (DKK 7,225k).

The individual items of the income statement have been reviewed and analysed based on specifications and decisions from the Council with respect to contributions from member countries.

Liabilities have been reconciled to contracts, agreements etc. and consist primarily of pre-invoiced member contributions for the following year.

The audit of the balance sheet did not give rise to any comments.

## **4. Other comments**

### **4.1 Letter of representation and unadjusted misstatements in the Final Accounts**

As part of our audit of complex areas, the General Secretary has issued a letter of representation to us on the Final Accounts for 2018.

The audit did not give rise to any comments, and no misstatements were found during the audit.

### **4.2 Insurance**

Our audit did not include insurance taken out by the Organisation. We recommend that the Organisation's insurance cover be reviewed with the insurance organisation or insurance broker at least once a year in order to assess the cover taken out etc., including whether the cover provided by the insurance taken out is adequate, and whether the Organisation may need to take out insurance in special areas.

In connection with the closing of accounts, we asked the General Secretary to confirm that the insurance taken out is considered adequate in view of the Organisation's circumstances to cover potential loss or damage arising in the Organisation.

### **3.3 General IT controls**

We have not reviewed the Organisation's general IT controls as any weaknesses or inadequacies therein will not in our view cause the Final Accounts to be materially misstated. We recommend that the Organisation assess whether its back-up procedures are appropriate to ensure restoration of the books of account, if lost.

## **5. Conclusion**

If the Finance Committee approves the Final Accounts 2018 in their present form, we will provide the Final Accounts with an auditor's report without qualifications or emphasis of matter.

## **6. Objective and scope of the audit, including definition of responsibilities**

Our audit engagement letter of 25 september 2018 issued upon acceptance of our appointment as auditors contain a description of the objective, scope and performance of our audit, our reporting as well as a definition of the responsibilities of Management and auditors. Please refer to those audit engagement engagement letter. We recommend that a copy thereof be handed out to any new members of the Finance Committee.

Our audit did not include the General Secretary's review. However, we read the General Secretary's review to ensure that the disclosures in this report are consistent with the financial statements and with the information that came to our knowledge during our audit. Having read the General Secretary's review, we are to issue a statement on whether or not the General Secretary's review is consistent with the Final Accounts. Our statement on the General Secretary's review has to be placed immediately after our auditor's opinion on the Final Accounts.

## **7. Advisory services and assistance assignments**

Since our audit book comments of 29 May 2018 we have done several audit services for the organization:

- Advisory regarding new EU contract for 2019
- Smaller queries regarding accounting etc.

## **8. Auditor's declaration**

We declare that we comply with the legal requirements of independence and that we have received all the information requested during our audit.

Copenhagen, 14 May 2019

**Deloitte**

Statsautoriseret Revisionspartnerselskab



Nikolaj Erik Johnsen  
State-Authorised Public Accountant

Presented at the Finance Committee' meeting on 14 of may 2019

**Finance Committee**



**Ari Leskelä**  
Chair



**Karin Victorin**



**Markus Vetemaa**

**Pablo Abaunza**



**Fritz Köster**



## **Accounting policies**

### **Balance sheet**

#### **Non-current assets**

Non-current assets comprise investments and cash at bank dedicated to Capital Reserve Fund.

#### **Investments**

Investments comprising listed bonds are measured at fair value at the balance sheet date, however, at a maximum price of 100, corresponding to the redemption price. Gains and losses on investments from the Capital Reserve Fund and General Fund are recorded in the related equity accounts. All other gains and losses are recorded in the income statement, except for unrealised fair value adjustments of investments, which are recognised directly in equity.

#### **Receivables**

Receivables are measured at cost. Provisions are made for bad debts.

#### **Unpaid contributions from projects funded by third parties (assets)**

Unpaid contributions from ongoing projects comprise costs related to work performed on projects during which funding is not yet received from third party.

Unpaid contributions are measured at cost.

#### **Prepayments from projects funded by third parties (liabilities)**

Prepayments from projects funded by third parties comprise funds received from third parties regarding projects, which are not finished at the end of the year.

Prepayments from projects funded by third parties are recognised as funds received from third parties.

## **New Clients and changes to the MoUs and Administrative Agreement**

*Council delegates are invited to take note of the status of negotiations with new and existing advisory clients, as described below.*

ICES has entered into Memoranda of Understanding (MoU) and a Specific Agreement (SA) with its advice requesters, including member countries and intergovernmental organizations. The MoUs and SA cover both recurrent advice on ecosystem and fisheries, including fishing opportunities, and quality assurance of advice deliverables, as well as special requests. The MoUs with Norway and NEAFC are undergoing review, and MoUs are being elaborated with Iceland and UK. It has been agreed with NASCO to start a review of their MoU in 2020.

The MoUs with the Regional Seas Commissions OSPAR and HELCOM, are less specific as to content of the advice requested, as this is either decided in an annual work plan or on a case by case basis. ICES provides data services for both HELCOM and OSPAR. For OSPAR, data are part of the MoU as well as part of the annual request to ICES, with some additional services coming in as separate agreements. For HELCOM, the data agreement is entirely separate and negotiated as a standalone contract (every three years), with some additional service contracts as well.

Discussions are in progress with DGENV to set up a Cooperation Agreement.

Below more details are given regarding the MoUs and the SA covering recurrent advice on fishing opportunities, as well as special requests – with a specific focus on administrative and financial issues. As more advice requesters are entering the scene it will be necessary to develop an agreed and transparent method to divide costs for advice requested on a specific stock by more than one advice requester. A first draft of a possible cost share key has been elaborated, and discussed in Finance Committee and Bureau, and has been shared with a number of the advice requesters, to ensure that ICES is transparent and using the same financial calculation for all advice requesters. The “Temporary calculations of costs for providing advice” is contained in attachment 1.

### **Status of MoUs and SA**

#### **Grant Agreement with EU**

The 2019 Framework Partnership Agreement (FPA, formerly the Administrative Agreement and MoU) was signed 17 December 2018. This agreement outlines the general administrative and financial set-up for the next four years with DGMARE, with a Standard Grant Application, agreed on an annual basis, outlining work programme and maximum payment.

2019 is a test year, as the new administrative and financial set up requires documentation and verification of time accrued under the tasks in the work programme, and also contains a flat overhead rate of 7%.

### **MoU with Norway**

The MoU with Norway is under review, following the completion of the first three years of cooperation. The main parts up for revision is cost-share, policy basis inclusion, quality assurance of the advisory process, and data collection agreement. A final draft is being elaborated, and an updated MoU ready for signing before the end of the year.

### **MoU with Iceland**

A draft MoU is being discussed with Iceland, including also the costing, based on the document “Temporary calculations of costs for providing advice”. The aim is to sign the MoU within this year.

### **MoU with UK**

Two draft MoUs have been prepared;

- If UK leaves the EU, without a deal, a temporary MoU will already need to enter into force 31 October until 31 December 2020, with its own associated costs. After which a more permanent MoU, comparable to other MoUs will enter into force, on 1 January 2021, also with its own associated costs.
- If UK leaves the EU, with a deal, they will be covered by the EU agreement up till 31 December 2020, also as regards costs, and a more permanent MoU, will need to be in place only by 1 January 2021, with associated costs.

The MoUs are based on the document “Temporary calculations of costs for providing advice”.

### **MoU with NEAFC**

The NEAFC MoU is under review and revision, for the first time since it was signed in 2007. The main parts up for revision is policy basis inclusion, quality assurance of the advisory process, and cost-share. VMS and catch data for scientific analysis are provided to ICES under the separate NEAFC–ICES arrangement, and thus no data collection agreement is included under the MoU.

The MoU is based on the document “Temporary calculations of costs for providing advice”, and following the conclusion of the substantive parts, the negotiations of the finances will be initiated, with a NEAFC Finance Committee meeting in November.

The MoU is expected to be finalised during 2019.



**MoU with NASCO**

The MoU will undergo revision in 2020, this is the first time for revision after being signed in 2007. As NASCO is only receiving advice for one stock, there will be need for a special financial agreement. This has been described in the document “Temporary calculations for providing scientific advice” under the heading; “Minimum charge independent of number of stocks for which recurrent advice is requested”. And is reflecting the need for ICES to charge a minimum fee for maintaining, and developing the capacity to provide recurrent advice, independent of the number of stocks for which advice is being requested.

**Additional charge averaging the last five years equity investments**

Based on an average of the equity investment in the last five years, Inter Governmental Organisation (IGO) advisory clients will be charged an additional sum for maintaining and developing advice related services. The averaged equity investment will be divided between ICES member countries and IGO advisory clients reflecting the ratio between the national contributions and the income from advisory clients (55% vs 45%).

ICES member countries, requesting advice will not be charged the averaged equity investment, as equity is a saving based on surplus in national contributions, given that advice requesters have not covered 100% for their advisory products. Also, ICES member countries are already charged 55% of the averaged equity investment.



**ICES**  
**CIEM**

International Council for  
the Exploration of the Sea  
Conseil International pour  
l'Exploration de la Mer

## Temporary calculations of costs for providing advice

Below is an explanation of the basis for temporary calculations of costs for providing advice to advice requesters. The details for specific requesters are specified within their MoU with ICES.

### **“Without prejudice” Clause**

The text below constitutes the basis for the temporary calculations that ICES has made to cost the advice under the MoUs. Thus, this will be replaced with a standardized costing mechanism (currently in development) and according to an agreed cost-sharing key.

During 2020 there will be a need to assess requirements for further developing the portfolio of data management/quality control systems which is required to fulfil our obligations to clients and which directly support ICES Assessments and Advice (e.g., TAF, Acoustic Portal, SmartDots, and RBDES).

### **Transparency and equal processes**

The interim/temporary costing is based on the same procedures and processes for all advice requesters, including;

- 7% overhead [Only for recurrent advice]
- Transforming previously indirect costs into direct costs

No attempt has been made to make a comprehensive costing of required Research and Development underpinning the Advice.

### **Basis for a temporary costing**

We have listed all stocks for which we give advice, and have indicated the advice requesters for each stock. In cases where a stock is shared (=being requested by several clients), we have shared the stock equally between the clients e.g. in case of three advice requesters being interested in a stock, the costs are shared between them in the magnitude of 0.33.

We have then divided the total costs of the advisory services with the total number of stocks, and multiplied this with the weighted number of stocks for each of the advice requester, to find the costs applicable to them.

### **Additional charge averaging the last five years equity investments**

Based on an average of the equity investment in the last five years, Inter Governmental Organisation (IGO) advisory clients will be charged an additional sum for maintaining and developing advice related services. The averaged equity investment will be divided between ICES member countries and IGO advisory clients reflecting the ratio between the national contributions and the income from advisory clients (55% vs 45 %).

ICES member countries, requesting advice will not be charged the averaged equity investment, as equity is a saving based on surplus in national contributions, given that advice requesters have not covered 100% for their advisory products. Also, ICES member countries are already charged 55% of the averaged equity investment.

**Minimum charge independent of number of stocks for which recurrent advice is requested**

ICES charges a minimum fee for maintaining, and developing the capacity to provide recurrent advice, independent of the number of stocks for which advice is being requested. Advice requesters paying the minimum charge will be exempted from the averaged 5-year equity investment charge.

## Supporting the implementation of the ICES Strategic plan 2020–2024: Equity Investments

*Council is requested to consider and approve this proposal for investing funds from equity in the organization, in support of the implementation of the ICES Strategic Plan.*

*Council should note:*

- *Investments in the further development of systems (Transparent Assessment Framework, Regional Database etc) related to quality assured production of advice are an essential support to the continuation of work in the Secretariat, facilitating the work of the Community in this area, and prioritized in the forthcoming Advice Plan*
- *That a cost share, between ICES and advice requesters, is suggested for all equity investments, in the order of 55% to be covered by ICES and 45% to be covered by intergovernmental advice requesters. This cost sharing arrangement will be part of the negotiations in connection with revisions of MoUs/negotiations of new agreements*
- *That investments to support various meetings, travels, training (ICES/PICES Early Career Scientists Conference, support to Strategic Initiatives, etc)s, and infrastructure scoping, is in line with the Science Plan, and will support the work of the community in delivering the plan*
- *That the proposal is based on the estimated equity, following the auditing of the 2018 accounts, as well as taking into account earlier decisions to allocate funds from equity until 2022.*

*Council is invited to give the General Secretary a mandate to negotiate the suggested share key with IGO advice requesters, in the current work on updating existing and developing new MoUs*

### Summary

In 2019 ICES launched a new rolling strategic plan, as well as an elaborated Science Plan and an Advisory Plan is forthcoming. As a whole, these plans are ambitious and will demand a great deal of effort from the ICES community to deliver. Delivering on these plans will also require resources beyond what is currently available within the planned investments and funding streams available to ICES. For this reason, the ICES Coordination Group have developed a prioritized list of areas, and specific deliverables that would benefit from a strategic investment from ICES equity, which have been considered and supported by Bureau.

## Priorities

A brief summary of the main priorities, grouped by the Strategic Plan headings.

**Strategic plan/Science plan, Working together** – building a more comprehensive and influential network – and consideration of our CO2 footprint:

International collaboration is a fundamental part of ICES mission, and has been emphasized with the UN observer status, work in the Arctic and new legal instruments in Areas Beyond National Jurisdiction (ABNJ), it is therefore paramount to build on existing and new relationships to support this. Through continuation of the 2017 – 2019 allocation for Strategic Initiatives, including climate change and the human dimension and including funds to cover ICES representation in meetings, e.g. chairing sessions at PICES annual conferences.

Ensuring that new experts are appropriately skilled and entering the ICES network has been a continuous challenge. Therefore, investment in building capacity in the network is key. By the development of a conceptual approach to the training course work, in cooperation with European and North American Universities, and through co-funding of the 2022 ICES/PICES Early Career Scientist Congress, ICES will attract Master and PhD Students into the network. For existing activities, and as a contribution to minimizing the carbon footprint of the ICES community, training investments will be made in remote meetings for chairs and facilitators, as well as a review of our remote meeting capacity.

**Advisory plan (AP), Assuring quality (AP.1) and Sharing Evidence (AP.4):**

Continue the development of a comprehensive ICES quality management system for advice including implementing Regional Data Base and Estimation System (RDBES), Transparent Assessment Framework (TAF), etc. that will, where possible, ensure that all advice products are based on data that adhere to the FAIR<sup>1</sup> principles. This activity will support the preparation of the ICES advisory system for an international quality accreditation and sharing evidence **(AP.4)**;

In dialogue with clients, design and develop a user friendly and dynamic web platform for ICES advice. Develop web-based advice content that includes several levels/layers (incl. popular advice, forecast options, full advice); and also enables presentation of advice in an effective and consistent format across platforms.

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<sup>1</sup> <https://www.force11.org/group/fairgroup/fairprinciples>

**Table 1. Resources required**

Negotiations with advice requesters during 2020, aiming for share key; ICES 55% and IGO advice requesters 45%, according to the document “Temporary calculations of costs for providing advice”. All figures are presented in Danish Kroner. The annual costs will be shared based on a rolling (past) 5-year average of the equity investments divided according to the 55/45 principle. See table 4 (p. 12)

Reference to Advisory Plan (AP)	Reference to table 2, Deliverables (Del) and timing	Human Resources	2020	2021	2022	2023	2024	Total
AP.1 Quality Assurance	Del 1-6	<b>Developer</b> Computer scientist with proven experience in software development life cycle;	433,000	433,000	433,000	433,000	-	1,732,000
		<b>Developer</b> Computer scientist with proven experience in software development life cycle;	433,000	433,000	433,000	433,000	-	1,732,000
AP.4 Sharing Evidence	Del 7-9	<b>Technical Project Manager</b> Technical science background with proven project management experience		434,000	434,000	-	-	868,000
		<b>Technical Science</b> Stock assessment expertise with strong coding, automation and technical knowledge	605,000	605,000	605,000	605,000		2,420,000
		<b>SUB TOTAL</b>	<b>1,471,000</b>	<b>1,905,000</b>	<b>1,905,000</b>	<b>1,471,000</b>	<b>-</b>	<b>6,752,000</b>

Reference to Science Plan (SP)	Reference to Table 2, Deliverables and timing	Activities; Meetings, Travel, Training and Infrastructure	2020	2021	2022	2023	2024	Total
	Del 10	4th ICES/PICES Early Career Scientist Congress (co-funding: ECS travel support – competitive awards, invited speakers and representatives)	-	-	500,000	-		500,000
	Del 11 and 13	Support to Strategic Initiatives, incl. developing cooperation with strategic partners (e.g. PICES, CIESM, IOC, CBD NAFO, new RFMOs) - co-chairing event sessions, participation in workshops, expert panels etc	175,000	175,000	175,000	175,000	175,000	875, 000
	Del 12	Bring academic leaders from ICES member countries together to develop multidisciplinary, multi-institutional coursework, research opportunities and scientific personnel exchanges which will build capacity for meeting future science-based advisory needs. Initial steps will include 1-2 workshops. Deliverable will be a general curriculum with specific course offerings.	100,000	100,000	300,000			500,000
	Del 14	Training for chairing, running, and supporting remote meetings	50,000	50,000	50,000			150,000
		<b>SUB TOTAL</b>	<b>325, 000</b>	<b>325, 000</b>	<b>1,025, 000</b>	<b>175, 000</b>	<b>175, 000</b>	<b>2, 025,000</b>
	Del 14	Report on review of remote meeting facilities at ICES, and recommendations	75,000	-				75,000
		<b>SUB TOTAL</b>	<b>75,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>75,000</b>
	<b>Total Equity Requested</b>							<b>8,852,000</b>

**Table 2 Deliverables and timings**

Del	Description	2020	2021	2022	2023	2024
<b>QA and QC of Fisheries independent and dependent data</b>						
1	Assist acoustic survey groups in using the ICES TAF for their abundance indices estimates that are used in stock assessments					
2	Align the DATRAS (biotic) and the Acoustic (biotic) format					
3	Redesign and new functionality on DATRAS web portal, including an updated data screening facility					
4	Fully operational ICES Regional Database (RDBES) with a regional estimation system such that statistical estimates for stock assessment can be produced from detailed sample data in a transparent manner					
5	Incorporate detailed data on Bycatch and PETS AND/OR Recreational data (to be determined by SC-RDB)					
<b>QA and QC of Assessment</b>						
6	200 unique stocks available in TAF					
7	Managed through TAF, functioning system and QA process to enable transparent documented reviews of data and code behind stock assessment results					
<b>Dissemination of Advice</b>						
8	Publish a web-based advice that includes several levels/layers (incl. popular advice, forecast options, full advice); and enables presentation of advice in an effective and consistent format					
9	Ecosystem overviews based on principles of web-based advice, using automation, FAIR principles and scripting for a consistent and recurrent product					
<b>Cooperation and capacity building in ICES network</b>						
10	Successful delivery of ICES/PICES Early Career Scientists Conference					
11	Successful arrangement of Regional Workshop North Atlantic under the UN Decade of Ocean Science					
12	Delivery of a general curriculum with specific course offerings. at European and North American Universities areas as initial steps in developing multidisciplinary, multi-institutional coursework, research opportunities and scientific personnel exchanges which will build capacity for meeting future science-based advisory needs.					
13	First approach to global ocean prediction frameworks through ICES/PICES collaboration under SICCM					
<b>ICES in a sustainable future</b>						
14	Implementation of CO <sub>2</sub> footprint reduction plan					



## **Annotations to deliverables**

### **QA and QC of Fisheries independent and dependent data (Del 1-5)**

For fisheries independent data, the deliverables will be closely monitored and reviewed by governance groups [WGDC](#) (for DATRAS trawl survey data), and the acoustic governance group which is proposed to be established in the Autumn of 2019. For fisheries dependent data, with the aim of having the new RDBES as the only ICES data management system, the deliverables will be tracked by the SC-RDB working group. These deliverables are seen as part of addressing in part the issues highlighted in the ACOM document<sup>1</sup> “Towards a Quality Assurance Framework for ICES Advice”. Some of the most substantial corrections to advice have been due to either errors in estimations, or estimations that are not fully calculated/documented within the system. In both cases, the deliverables described here will reduce the likelihood of such errors in the future. In addition, bycatch and recreational data have been dealt with in a fragmented way, and there is a strong desire both from the working groups delivering assessments, ACOM and SC-RDB to address these consistently through the RDBES.

### **QA and QC of Assessment (Del 6-7)**

For TAF, a governance group will be proposed to be established in 2019. Engagement from assessment scientists, advice stakeholders, data aggregators and statistical specialists (among others) will be intrinsic to the running of TAF. The first deliverable to be overseen by this governance group is to achieve the goal of having all annual stock assessments working from within TAF, currently there are 99 assessments in TAF representing ca. 70 unique stocks. This deliverable relies on many aspects of TAF development, such as, ease of use of the system, utility of the system, availability of suitable training materials, and improvements to user workflow. As such, this deliverable targets a wide range of aspects of TAF development.

Both the “Towards a Quality Assurance Framework for ICES Advice” document and the Quality Assurance Framework that is described within this highlight the critical need to go beyond documenting and reproducing in a transparent way. Providing a formal framework and controlled process in which reviews of data and code can be documented will provide more formal quality control and assurance of both data and code behind ICES stock assessments. This would mean that all code used in ICES stock assessments would be subject to review and a quality stamp. Until now, this has been less coordinated or assumed to be intrinsic to the way an assessment group reviews its work, however this needs to be captured in a defined process and a workflow that ensures data and code are reviewed.

### **Dissemination of Advice (Del 8, 9)**

Highlighted in the Advisory plan (Sharing Evidence AP.4), deliverable (8) touches on two aspects to an effective web presence for advice dissemination – a visible and easy to use platform, and engaging and dynamic content. In dialogue with clients, design and develop a user friendly and dynamic web platform for ICES advice (either through the ICES website, or in parallel). Furthermore, develop a web-based advice that includes several levels/layers (incl. popular advice, forecast options, full advice); and also enables presentation of advice in an effective and consistent format. The ecosystem overviews are moving from expert qualitative

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<sup>1</sup> [http://community.ices.dk/Committees/Bureau/2019/Bureau\\_meeting\\_257\\_June/Meeting\\_docs/2019-06\\_Bur\\_Doc\\_2134\\_Quality\\_Assurance\\_Advice.pdf](http://community.ices.dk/Committees/Bureau/2019/Bureau_meeting_257_June/Meeting_docs/2019-06_Bur_Doc_2134_Quality_Assurance_Advice.pdf)

compilations to data driven quantitative assessment of the ecoregions.

This suite of products will greatly benefit from the processes and technical developments in deliverable 8, and therefore moving ecosystem overviews to this platform is a key goal (deliverable 9).

#### **Cooperation and capacity building in ICES network (10-13)**

4th ICES/PICES Early Career Scientist Congress: the fourth edition of the conference will be organized by ICES, PICES and the hosting organization (tbc). The allocation supports early careers with travel grants, based on competitive awards. It will also support invited speakers and representatives. The SICCME chairs are yet to be confirmed, therefore the scope of this deliverable might change, depending on the new SICCME ToRs – to be agreed by the new chairs and presented to SCICOM in March 2020.

#### **ICES in a sustainable future (Del 14)**

Based on current trends and requests from the ICES community, the CO2 footprint reduction plan will include feasibility analysis of effectively combining face-to-face and remote participation in ICES meetings. Individual groups and committees need to be equipped with tools and knowledge to run their meetings, ICES should consider advantages and potential disadvantages of relevant investments to make this possible.

## Background details

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### **Advisory plan (AP), Assuring quality (AP.1) and Sharing evidence (AP.4)**

ICES is investing extensively in the development of systems and tools to ensure that the scientific advice outputs, Ecosystem and Fisheries overviews to name a few, are built on data (both input and output) that have been quality controlled, and are made available to the assessment process and any client scrutinization. The advice clients have recognized and appreciate this effort, and although there are ongoing challenges, such as looking at the underlying statistical models used in assessment, the development is going in the right direction. At the same time, advice clients are pressing for more tools, such as dynamic forecasting through a web interface, and different ways to package and visualize the advice (such as via a map viewer). This places a greater demand on ICES to produce advice through structured and linked content that can be served up across web platforms – pdf documents will no longer alone satisfy the advice and stakeholder communities.

The funding for these developments has so far come from a variety of sources, including ICES equity, EU Commission special requests, EU Commission Grant Agreement, and Horizon 2020 projects. With the revision of all of the new and existing client agreements, the role of QA – and the systems that are needed to provide it, are all being suggested by ICES to be included in the revised MoU's/Grant agreements.

The challenge remains in how to apportion development costs (which precludes maintenance and hosting) of these systems to the clients. We are therefore now in a situation where existing funding for development of these systems will be exhausted by the end of 2019/beginning of 2020. The development plan of all of these systems goes beyond 2019, thus funding must be found to continue these essential developments. Table 3 Key ICES systems to support Advice production, highlights four of the major systems/frameworks that are used in Advice production, where ICES is gaining some of the biggest improvements in quality assurance and the reduction in corrections of advice (once fully implemented) will be the result. For each of the systems a timeline from 2020 to 2024 is described where we demonstrate the current funding situation and how this will be phased to a cost sharing through client agreements starting in 2020.

The human resources would be on a 2+2 year contract to mitigate the risk of the planned scaling of development costs being included in client agreements not being accepted, or accepted on the timeline proposed. This is the principle that was used for the equity funding for the TAF developments, ensuring that Bureau have a mid-point review of the activities against the deliverables and can give input to changes in resourcing/priorities to ensure delivery over the 4 years.

**Table 3 Key ICES systems to support Advice production**

<b>System</b>	<b>2019</b>	<b>2020</b>	<b>2021-2024</b>
<b>RDBES</b>	ICES Equity + DG MARE (funding will be used by end of 2019)	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)
<b>TAF</b>	ICES Equity	ICES existing Equity (funding used by March)  Proposed ICES Equity and Included in client frameworks through cost sharing agreement)	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)
<b>Acoustic Portal</b>	H2020 (funding will be used by July). Some bridging possible with H2020 MEESO project	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)
<b>DATRAS</b>	DG MARE	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)	Proposed ICES Equity and Included in client frameworks through cost sharing agreement)

**Working together – building a more comprehensive and influential network, including attracting a new generation of experts:**

**Cooperation with strategic partners, and through the ICES Strategic Initiatives**

ICES has been working to build strategic partnerships for many decades, recognizing that ocean science goes beyond national borders. This is part of the ICES mission, and has also been emphasized with the recently acquired UN observer status.

A number of regularly occurring and new arrangements will provide important opportunities for cooperation with strategic partners.

To follow-up the IOC initiated UN Decade of Ocean Science, and the first global meeting in Copenhagen in May, a number of regional workshops will be arranged, one of them for the North Atlantic. Canada has expressed its interest in arranging the North Atlantic Regional Workshop, as has EC DGRTD. ICES has also stated that we are interested in contributing, and in this way ensure that our Strategic, Science, and Advisory plans will be reflected. The regional workshop has been scheduled for January 2020.

With the warming of the ocean, and the potential for expansion of Boreal fish stocks outside their traditional stock area, it is important to compile all information using the same approach and format. ICES has already developed the Ecosystem Overviews, which has been used for the Icelandic Waters, Norwegian Sea, Barents Sea, and which is planned for the Central Arctic Ocean and the Eastern Greenland Waters. With the recently concluded *Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean* it will be important to 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. This will require cooperation with NAFO for the western Greenland waters, with the Russian Federation for the Russian waters, and with PICES for the North Pacific gateway.

In order to manifest the importance of the Ecosystem Overviews, information on climate change and climate change scenarios (species distribution, vulnerability of fish stocks to climate change, and impact on spawning areas from fishing activities), as well as socio-economic impacts will be included. Furthermore, once climate change knowledge achieved through expert groups, workshops and symposia has been synthesized, first approach to global ocean prediction frameworks through ICES/PICES collaboration under SICCME will be taken. This will include standardised ensemble projections of global fisheries and marine ecosystem models under various emission scenarios and a comparative analysis of marine ecosystem responses to climate change. The study will constitute basis for state-of-the-art recommendations to global bodies such as IPCC (with key challenges in scenario development for ocean and coastal systems) and IPBES (with ecosystem-based management strategies and biodiversity scenarios).

For these reasons, requested funds from equity will also continue to support the ICES Strategic Initiatives, including climate change and the human dimensions, to support their Chairs in coordinating efforts and implementing their work plans.

To ensure that we attract a new generation of scientists to the ICES network, we will once again, together with PICES co-organize the 4<sup>th</sup> Early Career Science Conference in 2022. Similar to the past events the requested funds from equity will be used to cover the costs of the venue, invited speakers, and travel grants for participants (approx 200-250 people).

The equity allocation will also support ICES representation in meetings of strategic importance – supporting on-going science collaboration with long-standing partner organizations like PICES, IOC-UNESCO, CIESM, NAFO, as well as new ones. ICES is asked not only to be represented at these events, but to co-chair sessions and man expert panels. In this way, funding will be available for the ICES community for these assignments.

Furthermore, a conceptual approach to the training course work will be built and tested in 2022, involving European and North American Universities, to be able to offer Master and PhD students courses within ICES core areas. And in this way both attract new and skilled experts to the ICES work.

### **Strengthening remote meeting and collaboration**

Background/ rationale: Communication and collaboration are central to functioning of marine science and advice and also for ICES as an institution. We aspire to be a world-class marine science organisation. We need to ensure we can effectively support communication and collaboration, and that people will continue to engage with our network in coming decades. Against this background, some scientific groups are starting to seriously discuss best practice / restrictions on travel on environmental grounds. Some institutes reporting on GHG emissions, and targets may well be forthcoming. There are societal expectations that groups working on and knowledgeable about climate should be doing their bit if other parts of society are to follow. Individual marine scientists are already commenting on excessive travel requirements to do simple tasks. There are, in some cases, growing national expectations that organisations addressing climate are actively considering it in their own behaviours (credibility risk). Longer term (decades) possibilities of institutional restrictions on air travel, taxation of air travel.

To move towards developing world-class remote meeting facilities and practices- so ICES is, and will remain, the go-to marine science community whether meeting in person or remotely. To establish working practices that put us ahead of the curve and can be used to demonstrate ICES is making a serious contribution to the need to maintain effective communication and collaboration and drive world-class marine science while considering environmental implications of our work. To ensure remote engagement with expert groups meeting in person in Copenhagen is simple and effective and attractive- for both the remote participants and the group meeting with them. To equip expert groups with the knowledge and support to run effective meetings with a mix of in-person and remote attendees.

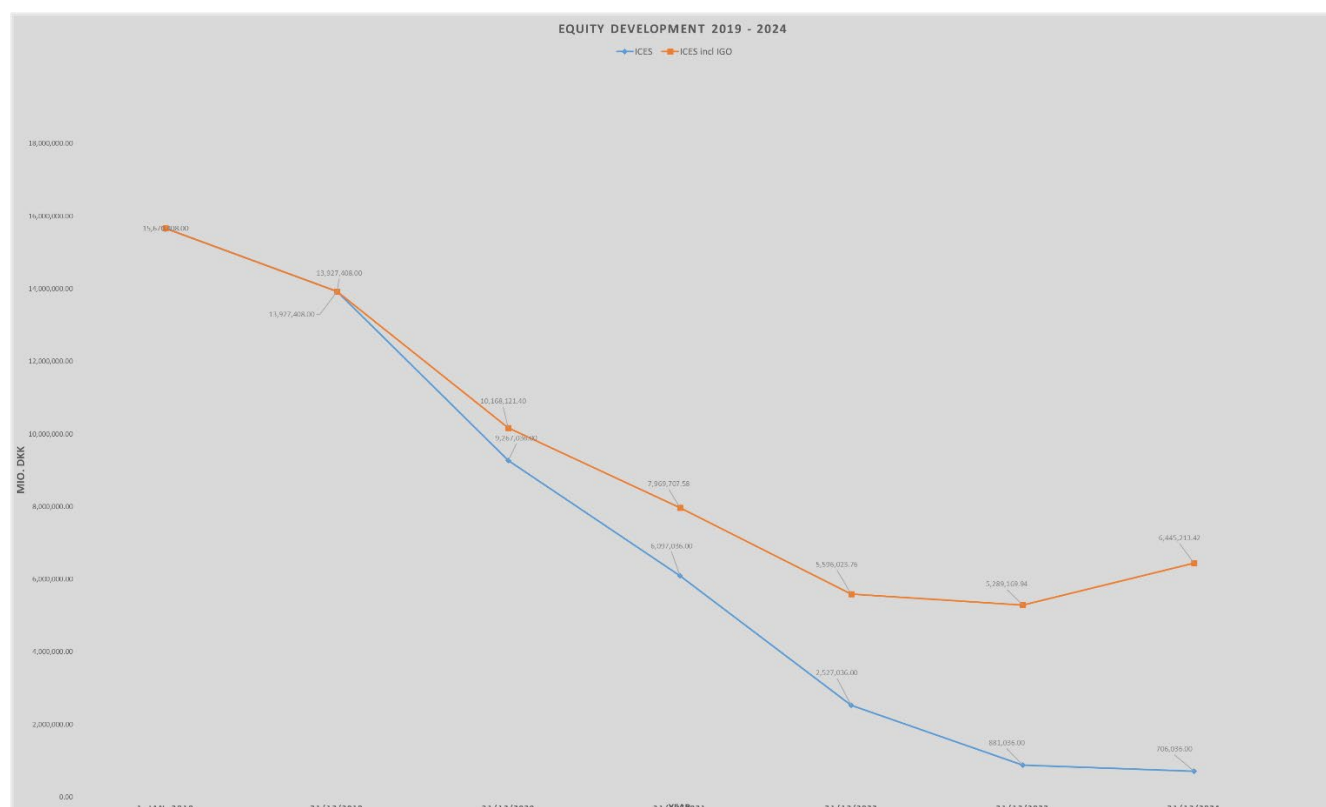
Mechanisms for effective remote engagement, review of available systems (and options for modifying or supplementing existing systems based on consideration of their strengths/ weaknesses), approaches and costs, projections of demand, and establishing view from ICES community. To consider appropriate balance of in- person and remote meetings and when in-person is most necessary. To consider ICES role as a hub for such meetings. To also consider benefits of better remote meeting systems for maintaining and increasing contact with existing partners and increasing global engagement (ie beyond current ICES member countries). Then decision point to look at pros/ cons of investment and level of investment.

## Development of Equity

Table 4. Development of Equity from 2019 to 2024, if all the investments from table 1. are approved, and IGO advice requesters charged 45% of the equity investments, based on a 5-year equity average.

	In total (5 Y)	Aver. Per Year
Average 2015 - 2019	10,012,060.00	2,002,412.00
Member states 55%		1,101,326.60
<b>IGO 45%</b>		<b>901,085.40</b>
Average 2016 - 2020	10,795,402.00	2,159,080.40
Member states 55%		1,187,494.22
<b>IGO 45%</b>		<b>971,586.18</b>
Average 2017 - 2021	13,292,402.00	2,658,480.40
Member states 55%		1,462,164.22
<b>IGO 45%</b>		<b>1,196,316.18</b>
Average 2018 - 2022	14,879,402.00	2,975,880.40
Member states 55%		1,636,734.22
<b>IGO 45%</b>		<b>1,339,146.18</b>
Average 2019 - 2023	14,789,372.00	2,957,874.40
Member states 55%		1,626,830.92
<b>IGO 45%</b>		<b>1,331,043.48</b>
Average 2020 - 2024	13,221,372.00	2,644,274.40
Member states 55%		1,454,350.92
<b>IGO 45%</b>		<b>1,189,923.48</b>

Figure 1. Development of Equity with and without the proposed cost share key (IGO 45%)





**ICES**  
**CIEM**

International Council for  
the Exploration of the Sea

Conseil International pour  
l'Exploration de la Mer

Council meeting

October 2019

CM 2019 Del-4

Agenda item 4

### **Advisory Plan – update to Council 2019**

*Council is requested to take note and promote the launch of the Advisory Plan in December 2019.*

The plan highlights ICES intent to:

1. Enhance credibility and transparency of advice, following FAIR<sup>1</sup> and Transparent Assessment Framework (TAF) principles
2. Move towards ecosystem advice and better utilise the science and data available in ICES
3. Share and communicate advice better to meet the stakeholders/requestors needs

## **ICES Advisory Plan Priority Areas**

### **Assuring quality**

*Assure quality in ICES  
encompasses the entire  
process from data  
collection to publication  
of objective & independent  
advice.*

### **Incorporating innovation**

*Incorporate new knowledge  
into advisory process to  
contribute effectively to  
creation of advice on meeting  
conservation, management  
& sustainability goals.*

### **Highlighting benefits**

*Highlight & communicate  
to existing & potential  
new users relevance &  
benefits of ICES approach  
to providing advice.*

### **Sharing evidence**

*Share effectively  
evidence & advice with  
recipients & society;  
develop responsive  
dialogue with partners  
to maintain relevance.*

### **Evolving advice**

*Evolve advice to remain  
relevant to policy developments  
& management challenges,  
while horizon scanning likely  
future evidence needs.*

### **Identifying needs**

*Identify & communicate  
expertise, monitoring, data  
& process needs to  
maintain & develop provision  
of relevant advice.*

<sup>1</sup> <https://www.go-fair.org/fair-principles/>



## 1 Objective and rationale for the ICES Advisory Plan

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The objective of the plan is to map the priority areas for further strengthening of ICES advice. The plan hopes to improve the resilience of ICES advice to future challenges, and recognise and embrace opportunities. It is the sister plan to the 2019 strategic and science plans.

## 2 Structure of ICES Advisory Plan

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There are four elements to the plan:

- 1 **Advice to support the ecosystem-based decision making for our seas and oceans.**  
A preamble setting the context for ICES advice.
- 2 **What we do and how we work**  
A broad description of the advisory processes and the principles that underpin the delivery of ICES advice.
- 3 **Priority areas of advisory plan.**  
Descriptions of six priority areas for specific consideration, with associated tasks with each priority area to improve ICES advice.
- 4 **Text boxes of examples of success stories.**  
Descriptions using graphics, of existing “good news” stories to show that ICES advice has an existing strong foundation.

## 3 Consultations and time line.

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This document represents the state of play of the ICES Advisory Plan, after development by ACOM (Nov 2018, March, May, Sept 2019) and consultations with WGChairs (Jan 2019), Bureau (February, June 2019), SCICOM (March-April, Sept 2019) and with recipients of advice (EU, Norway, NASCO, NEAFC, OSPAR, HELCOM, May-June 2019).

Agreed timeline for production of the ICES advisory plan.

Target date	Action	By who
Mar 2019	Consider 6 priorities, strengths & develop actionable tasks	ACOM
Mar 2019	Plan presented for consultation to SCICOM	ACOM leadership
Apr 2019	Consultation period with SCICOM	ACOM leadership
May & Jun 2019	Use meetings with recipients of advice used as opportunities to discuss the six priorities	ACOM leadership
Jun 2019	The full text constructed. Bureau & ACOM asked for further comment	ACOM leadership
Jun 2019	Draft for Bureau	Bureau
Jun 2019	Operational requirements to implement the plan discussed	ACOM leadership, Secr
Sep 2019	Sign off of plan at ASC	ACOM

Oct 2019	Council briefed on plan	Council, ACOM Chair
Oct & Nov 2019	Development of visual presentation of the plan	Secr, ACOM
Dec 2019	Plan launched	ACOM leadership, Secr
Jan 2020	MIRIA and MIACO introduced to the plan.	ACOM leadership

Shaded denotes completed.

#### 4 ICES Advisory Plan: delivering evidence-based advice to meet conservation, management, and sustainability goals.

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##### Advice to support the ecosystem-based decision making for our seas and oceans.

ICES mission is to advance and share scientific understanding of marine ecosystems and the services they provide and to use this knowledge to generate state-of-the-art advice for meeting conservation, management, and sustainability goals. This advice supports ecosystem-based decision making for the management of human activities in our seas and oceans, and contributes towards the effective application of an ecosystem approach. The approach seeks to maintain the health of marine ecosystems, alongside appropriate human use, for the benefit of current and future generations.

To support application of the ecosystem approach, ICES is committed to facilitating the incorporation of a wider range of scientific knowledge into the evidence base that informs decision-makers and society about the state and trends of our seas and oceans, the consequences of human use, and options for conservation and management. We will answer requests on specific challenges encountered by policy developers and managers. We will also develop and regularly publish, update, and disseminate overviews on the state of ecosystems, fisheries and aquaculture in the ICES region, drawing as appropriate on analyses of human activities, pressures, and impacts. In the longer term, these overviews will incorporate social, cultural, and economic information.

Ongoing development of advice, tools and assessments to support the ecosystem approach will build on our longstanding experience as impartial advisers on the status and use of marine ecosystems. Development of these products will be informed by ICES ecosystem science, data provision, observation and exploration, and assessments of human activities that affect and are affected by marine ecosystems.

Requests for advice will be answered following the ICES framework and guidelines for providing fisheries advice and the developing ICES framework for ecosystem advice. We consider that certain key phrases illustrate the central tenet of the ecosystem approach:

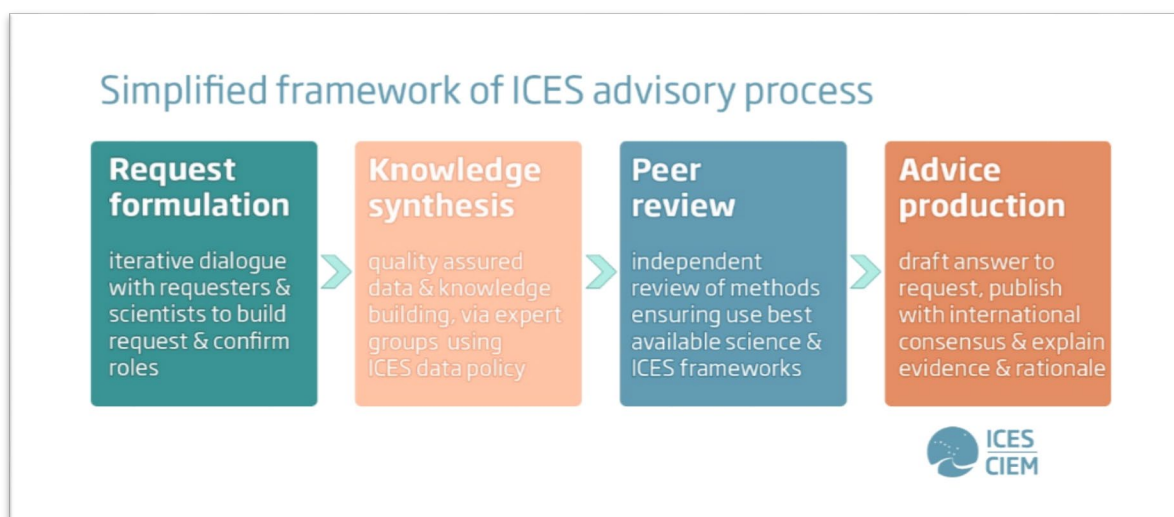
- management of human activities
- consideration of collective pressures
- achievement of good environmental status

- sustainable use
- optimization of benefits among diverse societal goals
- regionalization
- trade-offs
- stewardship for future generations

Evidence is required to explore the consequences of likely trade-offs between and within sectors as well as between sectors and conservation and protection obligations. This is to support sustainable development aimed at both human and ecosystem well-being and stewardship of marine ecosystems.

The overviews complement other types of advice, providing supporting context and allowing users to understand the implications of sectoral decisions in an ecosystem context. They provide a concise and informative introduction to ecoregions and human activities considered in other ICES advice. Ecosystem overviews identify the main human pressures and environmental characteristics and provide a description of the state of the ecoregions. Fisheries overviews summarize fishing activities in the ecoregions, describing the countries and fleets, the distribution and intensity of fishing activities, catches and bycatches. They also cover management of the fisheries, the status of fished stocks, wider fisheries impacts and advice on the trade-offs linked to mix-fisheries scenarios. Aquaculture overviews will describe the distribution, ecosystem interactions, benefits, impacts and potential of aquaculture production at a regional scale. The overviews also afford an opportunity to present information on “potential” and identify options for development where the ration of benefits to impacts is projected to be high.

## What we will do and how we work



To be relevant and credible, ICES advice should be developed and shared in a legitimate and transparent manner. It is independent and based on best available knowledge. ICES will continue to provide the evidence base for policy developers and managers of marine

activities in response to their needs for recurrent advice and special one-off requests. To imbed the provision of evidence in the context of ecosystem-based management, the advice will be framed within fisheries, aquaculture and ecosystem overviews. ICES viewpoints will also provide valuable contributions to global discourse around the state of the marine ecosystem, the management of human impacts and the provision of goods and services.

### **Credibility**

By ensuring robust debate and critical evaluation of data, methods and knowledge sources, ICES will continue to provide credible best available science for decision making for society. ICES sees the dual tools of consensual deliberation of science and independent peer review of those deliberations, as the key mechanisms to deliver our vision. The breadth of knowledge across over 150 expert groups, and the dynamism of our experts, is the foundation of ICES advice. Our experience as a trusted knowledge provider and facilitator of evidence for policy builds on this foundation.

### **Relevancy**

ICES will continue its dialogue with recipients of advice and wider society to maintain the relevancy of our advice. The management objectives determined by society are already incorporated into the fisheries advice framework. ICES will work with partners to create a similar ecosystem advice framework which reflects international objectives, such as those of the Convention of Biological Diversity (CBD) and regional objectives such as the Baltic Sea Action Plan, North-East Atlantic Environment Strategy and the Marine Strategy Framework Directive. ICES will also use FAO guidance on the ecosystem-based fisheries management to link and where possible reconcile resource management and biodiversity conservation objectives.

### **Legitimacy**

Continuing adaption and improvement of our processes to reflect the expectations of the recipients of advice will maintain our legitimacy. Clear decision making and appropriate quality assurance of the advisory processes will underpin our role as an independent and legitimate evidence provider. The potential for tensions may arise, as the transparency and the interaction with stakeholders increase, in particular regarding the independence of the advice given. ICES will work with stakeholders, and social scientists, to ensure a wider range of relevant scientific knowledge is incorporated into our advice consistent with the ecosystem approach. ICES advice will be shared and communicated in an audience relevant manner.

## Priority areas of advisory plan

### 1. Assuring quality

*Assure that quality in ICES encompasses the entire process from data collection to the publication of objective and independent advice.*

ICES will continue to build upon the proven track record of providing credible evidence-based advice through assuring quality, reproducibility and transparency. The existing quality control and assurance processes are enhanced to form an end-to-end quality assurance framework that will encompass best practice in data management, data integration and translation into advice. Quality assurance within ICES should meet international standards, adhere to the FAIR principles and include independent peer review for existing and new areas of advice. To assure high quality advice, ICES will continue to maintain and expand the expertise needed to address evolving advisory needs.

#### Tasks:

- As part of the quality assurance framework (QAF), map out process flows and critical control points and feedback loops in the advisory system and begin to address identified critical control points.
- Seek international quality accreditation for the ICES advisory system.
- Develop a comprehensive ICES quality management system for advice including implementing RDBES, TAF, etc.
- Where possible ensure that all advice products are based on data that adhere to the FAIR principals.
- Application and ongoing development of the ICES benchmark system, to ensure the advice is fit for the evolving advisory demands.

### 2. Incorporating innovation

*Incorporate new knowledge into the advisory process to contribute effectively to the creation of advice on meeting conservation, management and sustainability goals.*

ICES advice is based on the best available knowledge, while also meeting our stringent requirements for transparency, traceability, documentation, peer-review, robustness and being relevant to the needs of recipients and stakeholders. Knowledge assimilated by ICES spans outputs delivered through the ICES science plans, marine science internationally, data, tools and technologies for monitoring and assessment, as well as relevant social, cultural, economic and stakeholder information. ICES will work with scientists, advisors, recipients of advice and stakeholders and be guided by their feedback as it assimilates new and a wider range of relevant scientific knowledge. The principal use of assimilated knowledge will be to advance ICES capacity to provide ecosystem-based advice.

## Tasks

- Scan and evaluate new knowledge, from inside and outside the ICES community, to assess if it can support state of the art advice on meeting conservation, management and sustainability goals (ACOM, EG, benchmarks)
- Review and report on best practices in other agencies and management systems to inform future development of advice (Benchmarks, workshops, dialogue meetings)
- Support translation of mature science into viewpoints or ecosystem overviews (if ICES priority but no recipient request) and into requested advice (if recipient request) (EG, ACOM)
- Engage stakeholders and advice recipients to develop current and future advice products (MIRIA, MIACO, ACOM)
- Engage funding agencies to develop/ recommend approaches to project calls and design that increase uptake of science into advice (Council)

## 3. Highlighting benefits

*Profile and communicate to existing and potential new users the relevance and benefits of the ICES approach to providing advice.*

ICES is a leading, trusted adviser on the impacts of human activities on marine ecosystems; advising on more than 90% of fisheries catches and the impacts of these associated fisheries on the marine ecosystem of the North East Atlantic. The advice draws on the expertise and experience approximately 1,500 active researchers across a multitude of disciplines in many regions. Throughout its long history as an adviser, ICES has recognised the need to have credible, timely and relevant advice. The advice is based on the best available science and is characterized by quality assurance, developed in a transparent process, unbiased, independent manner. ICES will continue to develop advice products informed by its extensive network and underpinned by its experience as a trusted operator at the science for policy interface. It will profile its strengths in incorporating state-of-the art scientific knowledge and adapting globally agreed standards to regional management challenges.

## Tasks

- Prepare a communication strategy with SCICOM and the secretariat outlining the strengths and future direction of the ICES advisory system clarifying the message that ICES is an organisation that operates as a science network with functional, knowledge brokering and boundary organisation activities.
- Highlight the ecosystem approach in existing ICES advisory products and communicate this to new audiences and publicise future developments of the integration of ecosystem approach in ICES advisory products

- Communicate the synergy between ICES Data, Science and Advice by revising ICES website in terms of target audience, levels of detail and clarity. Link this to the visualisation of advice on the website.
- Raise the profile of ICES with marine sectors (commercial, managers and policy makers) not currently engaged with ICES such as energy and shipping.
- Broaden the participation in the ICES Science community by promoting participation from academia in the Advisory process – the ASC is an important event in this respect
- Identify and target specific audiences of advice when concerns are expressed about ICES advice process and begin dialogue to resolve such issues
- Expand the terms of references for MIRIA and MIACO to use these meetings as part of the communication strategy

#### 4. Sharing evidence

*Share effectively the evidence and advice with recipients and society, and develop a responsive dialogue with partners to maintain relevance.*

ICES acknowledges that the audience for its advisory products goes beyond the clients and immediate stakeholders to a much broader society. ICES already embraces a range of mechanisms for communicating and will continue to use new evolving methods to communicate our advice. ICES will maintain a dialogue with key users to ensure that it remains responsive to their needs. The methods used to create the advice must be transparent and explained with the advice. The complexity of the language used will be appropriate to the target audience. The flow from the underlying science research to the published advice to will be explicitly described, together with the principles by which ICES delivers the advice and evidence.

##### **Tasks:**

- Improve and ensure branding of all ICES advice products
- In dialogue with clients to design and develop a user friendly and dynamic web platform for ICES advice (either through the ICES website, or in parallel)
- Develop web-based advice that includes several levels/layers (incl. popular advice, forecast options, full advice) and also enables presentation of advice in an effective and consistent format
- Work with the fishing industry to develop a mechanism to bring commercially derived sample data into the RDBES
- Improve the mechanism for sharing alternative perceptions of the state of stocks and fisheries.
- Simplify the headline advice, but connect to the underlying basis and data in an interactive way

- Ensure that ICES advisory highlights are made available to society in a user-friendly way
- Ensure corrections in advice and updates in the advisory products will be transparent and easily tracked by the clients.
- Improve the advice profile in the ICES document archive, encourage the creation of an ICES online library for all documents

## 5. Evolving advice

*Evolve the advice to remain relevant to policy developments and management challenges, while horizon scanning likely future evidence needs.*

The policy arena is continuously changing and ICES advice needs to evolve to stay fit for purpose and pre-empt future requirements for impartial evidence. ICES needs to be resilient to these future policy and technology developments and ensure that the knowledge base is robust. ICES will actively engage with recipients to understand and meet their oncoming needs. The ICES advisory system will adapt to incorporate further consideration of issues such as cross sectoral challenges, ecosystem thresholds, acceptable risk and competition for space. Efforts with requesters will intensify to identify and clarify management objectives, future scenarios and potential trade-offs. Mechanisms will be developed to alert managers and stakeholders to changes in the marine ecosystem and human activities. ICES will strive to maintain clear narratives when answering complex requests.

### Tasks:

- Map with recipients their current and potential future policy initiatives and management objectives and document their potential impact on the provision of advice from ICES
- Develop an ecosystem advice framework
- Identify and develop new clients for ICES advice e.g. marine energy and spatial planning.
- Develop a stronger base in scoping and stakeholder engagement
- Investigate mechanisms and examples of assuring independence of advice in systems with increasing stakeholder participation, more consultation and iterations with client.
- Identify associated data and information needs related to policy developments, the concept of risk and thresholds for ecosystem health

## 6. Identifying needs

*Identify and communicate the expertise, monitoring, data and process needs to maintain and develop the provision of relevant advice.*



ICES receives data from providers, undertakes analysis, and provides evidence-based advice and services. To enhance the provision of advice, ICES needs to ensure that the scientific community and advice recipients are aware of potential improvements, gaps, and emerging issues that should be addressed. Successful building of capacity requires an informed development approach. ICES will evaluate skills and expertise shortages, and the provision and use of data and knowledge. This evaluation will assist the data collectors (e.g. RCGs), experts, funding agencies and advice recipients in their provision of resources for the production of advice.

### **Tasks**

- Conduct an objective stock assessment prioritization and data-gap analysis
- Collate a list of future research and data requirements from benchmarks, overviews and expert group reports in an existing database on an annual basis, across expert groups, steering groups and SCICOM
- Continuously review training courses run by ICES with the potential to increase the programme for key areas.
- Identify key under-populated areas of expertise and clearly communicate the current needs in expert groups to institutes and conduct an independent review of the gaps in expertise related to the anticipated advisory needs.
- Identify potential programme of funding and training in disciplines that are relevant to the institutes and engage funding agencies and recipients of advice to highlight research to meet future advice needs
- Once the database on surveys, RDBES and the inclusion in stock assessments is concluded, communicate with the institutes and regional data groups about gaps and modifications that will augment the surveys and monitoring utility.
- Identify disciplines and institutions that could collaborate with ICES with the view to improving and adding context to ICES advice e.g. socio-economics and marine planning

### **Text boxes highlighting existing successful approaches.**

Transparent assessment framework (TAF)

Vulnerable Marine Ecosystem portal and process (VMEs)

Data limited method development for fishing opportunities advice

Seabed impact and value of catch tradeoff advice

**Making the advisory plan operational.** Table 1 proposed allocation the tasks for each priority area to bodies within ICES.

Priority area		Tasks	Responsible
<b>Assuring quality</b>	1.1	As part of the quality assurance framework (QAF), map out process flows and critical control points and feedback loops in the advisory system and begin to address identified critical control points.	ACOM/ secretariat
	1.2	Seek international quality accreditation for the ICES advisory system.	ACOM/ secretariat
	1.3	Develop a comprehensive ICES quality management system for advice including implementing RDBES, TAF, etc.	secretariat
	1.4	Where possible ensure that all advice products are based on data that adhere to the FAIR principals.	ACOM/SCICOM
	1.5	Application and ongoing development of the ICES benchmark system, to ensure the advice is fit for the evolving advisory demands.	ACOM
<b>Incorporating innovation</b>	2.1	Scan and evaluate new knowledge, from inside and outside the ICES community, to assess if it can support state of the art advice on meeting conservation, management and sustainability goals	ACOM
	2.2	Review and report on best practices in other agencies and management systems to inform future development of advice	ACOM
	2.3	Support translation of mature science into viewpoints or ecosystem overviews (if ICES priority but no recipient request) and into requested advice (if recipient request)	ACOM/SCICOM
	2.4	Engage stakeholders and advice recipients to develop current and future advice products	ACOM
	2.5	Engage funding agencies to develop/ recommend approaches to project calls and design that increase uptake of science into advice	SCICOM/Council
<b>Profiling approach</b>	3.1	Prepare a communication strategy with SCICOM and the secretariat outlining the strengths and future direction of the ICES advisory system clarifying the message that ICES is an organisation that operates as a science network with functional, knowledge brokering and boundary organisation activities.	ACOM/ SCICOM/ secretariat
	3.2	Highlight the ecosystem approach in existing ICES advisory products and communicate this to new audiences and publicise future developments of the integration of ecosystem approach in ICES advisory products	ACOM
	3.3	Communicate the synergy between ICES Data, Science and Advice by revising ICES website in terms of target audience, levels of detail and clarity. Link this to the visualisation of advice on the website.	secretariat
	3.4	Raise the profile of ICES with marine sectors (commercial, managers and policy makers) not currently engaged with ICES such as energy and shipping.	ACOM
	3.5	Broaden the participation in the ICES Science community by promoting participation from academia in the Advisory process – the ASC is an important event in this respect	ACOM/ SCICOM

Priority area		Tasks	Responsible
	3.6	Identify and target specific audiences of advice when concerns are expressed about ICES advice process and begin dialogue to resolve such issues	ACOM
	3.7	Expand the terms of references for MIRIA and MIACO to use these meetings as part of the communication strategy	ACOM
<b>Sharing evidence</b>	4.1	Improve and ensure branding of all ICES advice products	ACOM/ secretariat
	4.2	In dialogue with clients to design and develop a user friendly and dynamic web platform for ICES advice (either through the ICES website, or in parallel)	ACOM/ secretariat/ external projects
	4.3	Develop web-based advice that includes several levels/layers (incl. popular advice, forecast options, full advice) and also enables presentation of advice in an effective and consistent format	ACOM/ secretariat/ external projects
	4.4	Work with the fishing industry to develop a mechanism to bring commercially derived sample data into the RDBES	ACOM
	4.5	Improve the mechanism for sharing alternative perceptions of the state of stocks and fisheries.	ACOM
	4.6	Simplify the headline advice, but connect to the underlying basis and data in an interactive way	ACOM
	4.7	Ensure that ICES advisory highlights are made available to society in a user-friendly way	ACOM/ secretariat
	4.8	Ensure corrections in advice and updates in the advisory products will be transparent and easily tracked by the clients.	ACOM/ secretariat
	4.9	Improve the advice profile in the ICES document archive, encourage the creation of an ICES online library for all documents	ACOM/ secretariat
<b>Evolving advice</b>	5.1	Map with recipients their current and potential future policy initiatives and management objectives and document their potential impact on the provision of advice from ICES	ACOM
	5.2	Develop an ecosystem advice framework	ACOM
	5.3	Identify and develop new clients for ICES advice e.g. marine energy and spatial planning.	ACOM
	5.4	Develop a stronger base in scoping and stakeholder engagement	ACOM/ SCICOM
	5.5	Investigate mechanisms and examples of assuring independence of advice in systems with increasing stakeholder participation, more consultation and iterations with client.	ACOM/ SCICOM
	5.6	Identify associated data and information needs related to policy developments, the concept of risk and thresholds for ecosystem health	ACOM/ SCICOM
<b>Identifying needs</b>	6.1	Conduct an objective stock assessment prioritization and data-gap analysis	ACOM
	6.2	Collate a list of future research and data requirements from benchmarks, overviews and expert group reports in an existing database on an annual basis, across expert groups, steering groups and SCICOM	ACOM

Priority area		Tasks	Responsible
	6.3	Continuously review training courses run by ICES with the potential to increase the programme for key areas.	Training Group
	6.4	Identify key under-populated areas of expertise and clearly communicate the current needs in expert groups to institutes and conduct an independent review of the gaps in expertise related to the anticipated advisory needs.	ACOM
	6.5	Identify potential programme of funding and training in disciplines that are relevant to the institutes and engage funding agencies and recipients of advice to highlight research to meet future advice needs	SCICOM
	6.6	Once the database on surveys, RDBES and the inclusion in stock assessments is concluded, communicate with the institutes and regional data groups about gaps and modifications that will augment the surveys and monitoring utility.	ACOM/ secretariat
	6.7	Identify disciplines and institutions that could collaborate with ICES with the view to improving and adding context to ICES advice e.g. socio-economics and marine planning	ACOM/ SCICOM



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International Council for  
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Conseil International pour  
l'Exploration de la Mer

Council Meeting

October 2019

CM 2019 Del-6.1

Agenda item 6

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## CSI Resources

### Report to Council Regarding Progress and Next Steps

CSI Resources was established by Council their 2018 meeting to evaluate current and potential future challenges regarding capacity and workload within the ICES' advisory system and to support Member Countries' contributions to ICES advice and science, as well as to address training needs relative to current expertise and education needs relative to building capacity to address future needs. ToRs were to:

1. Map the science and advisory priorities
2. Understand how member countries resource the advisory process
3. Build capacity through education and consider training requirements to address current needs

We have made considerable progress during the year, especially with respect to identifying priorities, challenges and limitations ICES member states are facing when resourcing the ICES advisory system. It has become evident that there are no simple solutions to the problem and this work should continue.

As an initial step, we conducted a survey which was sent to all Delegates. Responses to the survey concern, primarily, resourcing the advisory process (ToR 2, above) but also provide insights regarding ToRs 1 and 3. Below we summarize the major points (this includes input from the ACOM leadership as well as Delegates):

#### General Observations:

- An effective process for providing experts to support the advisory process has evolved over many years. In general, this works well relative to the provision of recurrent advice, but less so for non-recurrent or special requests.
- Improvements in the process for providing non-recurrent advice are ongoing and have been beneficial but additional improvements will be necessary.
- Even for recurrent advice, demands on key experts are high and this can stress the system, but ongoing improvements (such as the Transparent Assessment Framework (TAF)) will likely bring some relief.
- Funding, availability of experts, and the process of nomination to EGs varies considerably among member countries. For some countries expertise and/or money are lacking but this is not true for others.

- The ICES' model assumes shared responsibility among member countries to provide experts to established EGs. But there are limits regarding the extent to which member countries are able to provide experts to specific EGs if the ToRs are not in line with national priorities, as formulated in the response; *"If there is a need, there is money; if there is no real need (but just a wish) there is no money."* Relative to the advisory process and special requests, this leads to the need to prioritize or set limits.
- In general, Delegates do not make decisions regarding EG member nominations independently. Consultation occurs among national leaders responsible for different disciplines and bottom-up requests by individual scientists often occur. Moreover, mandates and competences of Delegates as well as quality and extent of national consultation processes differ among member countries. This can make it difficult for Delegates to respond in a timely manner to requests for non-recurrent advice.
- ICES' Advice and the Advisory Process are highly recognized for their integrity, thoroughness and quality. However, the current system will need to adapt and change if it is to be sustainable:
  - for recurrent (routine) advice concerns include opportunities for training existing experts and educating future experts. It is recognized that much training occurs "on the job" and this is a strength of the ICES' system. The training programme is seen as an asset by many, with potential for expansion (although cost of participation is considered high by some). Training, education and funding to support staff working on stock assessment, management strategy evaluation, and related disciplines will need to be enhanced and properly funded if capacity is to be maintained or even only maintained. Again, some countries (Delegates) expressed greater concerns than others.
  - special requests can be unpredictable although this is not always the case. Therefore, concerns include meeting specific requirements for experts and pressure on advisory programme personnel staff resources to find experts and provide timely (sometimes rapid) responses. Member countries may be unable to find suitable experts and/or may be unwilling to support participation of their experts if this is not a national priority. There is some sense that expertise will be forthcoming if topics are of broad enough interest. On the other hand, cost recovery for special requests may need to include additional costs for providing experts (i.e. in addition to travel and per diem). This raises questions regarding the scope of special requests and whether some requests should not be accepted. We are aware of steps that have been taken by ACOM to prioritize special requests

and improve the process for sharing responsibilities for providing experts among member countries including implementation of a decision tree. We are keen to better understand this process and support the ACOM leadership in making any necessary improvements.

- An ongoing concern relates to the lack of professional recognition for advisory work – scientists are sometimes reluctant to participate in the advisory process because this work does not lead to peer-reviewed publications or other career-building achievements. While this was raised in several survey responses, we are aware that many institutes have implemented measures to address this concern

### **Possible Solutions and Next Steps:**

- To provide support to ACOM and to ICES member countries and encourage innovation we do not only need to understand member state and client priorities, but also better understand the internal advisory process, especially relative to special requests and the effectiveness of recent and ongoing process improvements. We are working with the ACOM leadership to address this need through a workshop or briefing session.
- This will allow us to map the advisory process; at the same time, we think it is important to understand how well the science EGs support current and likely future needs of the advisory process (i.e. client needs) and whether there are any bottlenecks in this interconnection and, if so, work with the ACOM and SCICOM leadership to facilitate solutions. We plan to fine-tune the proposed mapping exercise to accomplish this.
- Encourage the Training Group to review and update training regularly to address needs for developing expertise among the pool of current experts.
- Evaluate suitability of MSc and PhD coursework and research opportunities in member countries relative to future needs. Work with academic institutions to develop multi-national/multi-institutional programmes to ensure we build capacity as an organization
- Within the EU, national processes for funding that support EG participation are complex and varied. One important funding tool for all EU countries is the European Maritime Fisheries and Aquaculture Fund (EMFAF). It may be appropriate to encourage the EU and Member Countries to implement changes and strengthen elements of coordination in their respective work programmes, which better support provision of experts to support EU needs for scientific advice.

- Overall, prioritization will become increasingly important as demands increase and funding remains limiting. This prioritization process will require engagement with Delegates from member countries as well as ongoing evaluation of our priorities as an organization.

As indicated above, CSI Resources should continue its work during the next 2-3 years. This should be guided by the following Terms of Reference (ToRs):

- 1) Map the Science and Advisory Processes to:
  - a. Understand how current Advisory processes work, the nature and effectiveness of ongoing process improvements and potential needs for future improvements.
  - b. Evaluate the effectiveness of Science EGs to support current and potential future Advisory needs and work with ACOM and SCICOM leaderships to identify possible ways to improve this effectiveness.
  - c. Understand how the Advisory Process adapts to changing client needs for recurrent and non-recurrent advice, how well the work of the Science EGs connects to this, and, together with the ACOM and SCICOM leaderships identify possible improvements.
- 2) Improve our understanding of processes employed within each member country for resourcing the advisory process and identify possible approaches resolving concerns
- 3) Build capacity through strengthening training and education
  - a. Engage with the Training Group to understand how the training programme addresses strategic needs by developing skills within the existing pool of experts needs and support necessary process improvements.
  - b. Work with academic institutions in the ICES' member countries to identify and develop multidisciplinary, multi-institutional coursework, research opportunities and scientific personnel exchanges which will build capacity for meeting future science-based advisory needs. An initial workshop will be held in 2020.

The work of the CSI will be prioritized. We will focus initially on ToR 1 (a). Work on ToR 3 will also be continued as detailed above.



## CSI Resources

*Report to Council regarding initiative for capacity building involving coordination among North American and European Universities to develop multidisciplinary, multi-institutional coursework, research opportunities and scientific personnel exchanges that will build capacity for meeting future science-based advisory needs.*

During the June, 2019 Bureau meeting, Bill Karp (USA) agreed to work on this initiative and develop a proposal for a workshop that would bring together academic leaders from across the ICES member countries to draft a plan for addressing this challenge. While this work is ongoing, Bill was successful (together with Tim Essington (USA) from the University of Washington), in securing partial funding from the US Department of State to support an initial workshop (see proposal that was funded below). Since then, Steve Cadrin (USA; University of Massachusetts)) has also agreed to participate. Next steps will be as follows:

1. Engage ICES Training Group and encourage their participation
2. Identify key participants from academic institutions within ICES member countries (ongoing: to be completed during upcoming ASC and Council meetings)
3. Develop TORs for workshop
4. Schedule workshop (most likely during Q2 of 2020)
5. Draft report and recommendations for next steps (June 2020 Bureau and October 2020 Council)

Note that this action is also relevant to TORs for CSIMTC. During the recent US/Canada/ICES trilateral in Halifax, Canada, US and Canadian participants expressed enthusiastic support.

Proposal for workshop that has been partially funded by the US Department of State:

### **ICES Capacity Building – A Proposal**

William A. Karp, Affiliate Professor, University of Washington School of Aquatic Sciences and Fisheries and US Delegate to ICES (International Council for Exploration of the Sea)

Timothy Essington, Professor, University of Washington School of Aquatic Sciences and Fisheries and Director, Center for Quantitative Sciences (CQS) and

## QERM (Quantitative Ecology and Resource Management) Interdisciplinary Graduate Program

July 30, 2019

### **Introduction**

We seek funding for a workshop which will bring academic leaders from ICES member countries (US, Canada and Europe) as the first step in developing multidisciplinary, multi-institutional coursework, research opportunities and scientific personnel exchanges which will build capacity for meeting future science-based advisory needs. While primarily focused on addressing future ICES needs it will also address future needs within NOAA and other US governmental agencies and international organizations. Through this process we will also strengthen the US contribution to ICES through engagement of academics as well as experts from resource management agencies.

### **Background**

ICES provides advice on a range of topics relating to marine policy and resource management. This includes management of living marine resources including stocks of commercially-important fish and shellfish.

ICES advises governmental organizations with responsibilities for marine management including:

- Governments of ICES member countries,
- European Commission (EC) in relation to the Marine Strategy Framework Directive, the Habitats Directive and the Common Fisheries Policy.
- Helsinki Commission (HELCOM),
- North Atlantic Salmon Commission (NASCO),
- North East Atlantic Fisheries Commission (NEAFC)
- OSPAR Commission (OSPAR)

ICES advice is produced through a process which ensures it is based on the best available science and data, is considered legitimate by both authorities and stakeholders and is relevant and operational in relation to the needs of the requestors.

### **The problem**

The basis for advice is compilation of relevant data and analysis by experts in the field, normally through an expert group which includes core researchers in the field. This analysis is peer reviewed by independent scientists who have necessary expertise but have no programmatic interest in the management decisions being made. Expertise for carrying out analyses, drafting advice and conducting independent peer reviews is drawn from the ICES member countries and includes scientists working for resource management agencies and academic institutions.

ICES is recognized globally for the quality, integrity, transparency and independence of its advisory products. Consequently, demands have increased

and the organization is beginning to face difficulties in finding suitably-qualified and experienced experts for all stages of the advice-giving process. A recent survey of national delegates articulated concerns regarding meeting current and future demands. With respect to future demands, many delegates saw challenges in finding suitably-qualified candidates for positions which would provide experts to support ICES advisory needs in the coming years.

At the same time, U.S.-based higher educational systems are facing limitations on funding and research opportunities for talented graduate students pursuing advanced degrees in statistics, modeling, ecology and natural resource management.

### **A strategy**

The complexity and scope of future advisory needs will require multidisciplinary and multi-institutional educational opportunities. ICES has itself identified this concern and is has begun to develop a strategy to build capacity involving coordination among European and North American universities to provide M.S. and Ph.D. level coursework, research opportunities, internships and exchanges that will help build capacity for future advisory needs. While some examples already exist (e.g. the NOAA Fisheries QUEST Program - <https://www.st.nmfs.noaa.gov/quest/>) much work needs to be done to understand likely future advisory needs and current capabilities within academic institutions in the ICES area, and to develop and implement structures for the kind of cross-institutional collaboration that will be necessary. We believe an essential first step would be to bring together educators and leaders from key institutions in the ICES area in a workshop designed to define needs and collaborative opportunities and draft a plan for moving forward.

Successful implementation of programs of the type described above would be beneficial not only to ICES but to other international organizations which provide scientific advice for marine resource and ecosystem managers as well as to federal agencies such as NOAA and individual State natural resource management agencies. In the context of ICES, it would enable greater US participation in the capacity building and advisory processes consistent with our obligations to the organization.

### **Budget**

We seek funding for a one-week workshop which would take place in the in early 2020 to address the goals described above. Ideally, we would invite approximately 20 individuals to participate and the deliverable would be a draft plan as described. Funding is requested for travel, lodging and per diem for 20 individuals at an average cost \$4,500 each; total request is for \$90,000.00. These funds would be made available to ICES who would manage reimbursement. Please note that this request is scalable; if only a smaller amount is available, we would seek additional funds from other sources.



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Council Meeting

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CM 2019 Del-7

Agenda item 7

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## Council Strategic Initiative Maritime Transatlantic Cooperation

### NOAA/DFO/ICES Trilateral Meeting summary and follow-up

*Council delegates are invited to take note of efforts and ongoing discussion to strengthen transatlantic cooperation.*

Attached is the report on the high-level joint NOAA DFO ICES meeting in Halifax, Canada.

The NOAA/DFO bilateral meeting the day before concluded that US and Canada should use ICES more as a mechanism for facilitating bilateral work. They also highlighted the need to create/invest in expert groups to achieve bilateral objectives which overlap with broader ICES objectives. Alain Vezina (CA) and Jon Hare (US) will work on a suite (up to three) proposed expert groups that they will encourage their SCICOM and ACOM representatives to champion. ICES representatives welcomed this approach, especially relative to shared interests in increasing transatlantic scientific cooperation in areas such as monitoring, data, stock assessment and capacity building.

**Fisheries and Oceans Canada - National Oceanic and Atmospheric  
Administration – International Council for the Exploration of the Seas  
Trilateral Meeting Summary and Action Items**

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On August 7th, 2019 senior representatives from Fisheries and Oceans Canada, Ecosystems and Oceans Science Sector (DFO Science) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) met with two ICES high level representatives at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. The goal of the meeting was to explore and identify existing and potential future opportunities for collaboration among Canadian and US government and academic scientists with ICES on common strategic priorities

***Meeting Participants:***

<b>Leads</b>	Alain Vézina (Regional Director of Science, Maritimes Region, DFO),
	Jon Hare (Director, Northeast Fisheries Center; NOAA ICES Delegate)
	Bill Karp, United States International Council for Exploration of the Sea (ICES) Delegate, ICES First Vice President
<b>Attendees</b>	Cisco Werner (Director of Scientific Programs and Chief Science Advisor, NOAA Fisheries), Yves de Lafontaine (Regional Director of Science, Quebec Region, DFO), Rowena Orok (A/DG Ecosystem Science Directorate, DFO), Ben Davis (A/Regional Director of Science, Newfoundland and Labrador Region, DFO), Matthew Hardy (A/Regional Director of Science, Gulf Region, DFO) Neill Gilbride (National Head Quarters, DFO), Edward Gorecki (NOAA Fisheries), Roger Griffis (NOAA Fisheries) Marla Valentine (NOAA Fisheries), Adrian Mahoney (NOAA Research), Mark Dickey-Collas (ICES, ACOM Chair)

**Discussion Highlights**

**Exchange of high-level strategic priorities**

Alain Vézina and Rowena Orok presented high level DFO priorities, emphasizing important review processes for the sector and the department: Review of science funding programs; Review of Canadian Science Advice Secretariat (CSAS), Fisheries Act renewal (Bill C-68) for modernizing protections for fish habitat and rebuilding fish stocks; and renewal of aquaculture programs.

Jon Hare presented an overview for NOAA Fisheries, emphasizing continuity in their programs on protected species, climate and habitat assessments, and fisheries and aquaculture. Emphasis was placed on the emerging issues of wind energy development. NOAA is trying to link science to socio-economics, with increased emphasis on proactive communications and partnerships.

Mark and Bill presented ICES' strategic plan.

Much of the discussion was on how ICES WGs are created and monitored and also on ICES' role in new technology (for ex. Protocols for industry sampling, video monitoring, VMS and automated ageing).

### **Summarize current ICES engagement**

Alain Vézina provided context on the current engagement of DFO in ICES and future plans to engage more strategically to foster a better alignment between Canada's and ICES' priorities. Jon Hare shared a similar overview for NOAA, emphasizing that half of the US members are NOAA employees and a desire to shift from passive to active engagement in ICES. The discussion focused on differences between the Canadian and US approaches and how Canada and U.S. can adjust their engagement in a way that would precipitate north American-relevant ICES products.

### **Opportunities for Organizational Linkages**

Based on the discussion above, we agreed on a strategy whereby NOAA and DFO work together to identify priority areas that they would like ICES to address, either through fostering the creation of new WGs aligned with these priorities, influencing the TORs of existing WGs, or proposing Workshops on specific issues. The process and timelines for driving this through SCICOM / ACOM leadership were clarified. The intent would be to get a few new or revised WGs/WKs going (3-5) and monitor the outcomes. Potential priorities identified include: Atlantic mackerel, coordination of research surveys and integration of trawl data, coordination of ocean observing activities, genomics / e-DNA and offshore wind and other marine renewables.

**ACTION:** Jon Hare and Alain Vézina to talk in advance of the ASC to firm up a list of priorities for discussion with ACOM and SCICOM Chairs on the margins of the ASC.

Canada and US participation in ACOM (advisory services) was discussed and ICES was complimentary towards our efforts. It was noted that U.S. academics participate in rolling assessments of ICES' advisory processes, and could look into increase participation.

### **Aquaculture**

Mike Rust of NOAA was on the phone and led this item. He described the U.S. context for aquaculture, their priority issues and interactions with Canada (Regulatory Coordination Committee). We also discussed the international context (AORA, ICES, Quadrilat) and tried to pinpoint their respective roles, although this can be hard to do. It was proposed that ICES may be the place to coordinate the science and that AORA was better suited to identify research needs and bring them to funding agencies. AORA's various working groups were noted and the question was raised of what happens to these groups when AORA concludes. The discussion led to the need for DFO and NOAA to follow up to better define their bilateral relationship and coordinate their international engagement on aquaculture science.

### **Providing science advice**

ICES made a presentation on its advice services (attached).

DFO explained its CSAS system and the ongoing review. ICES was invited to contribute to the review. One important objective of the review is to move from process-based to outcome-based indicators of success and better define and operationalize the principle of inclusiveness. ICES experience in those areas and others would be valuable. ICES expressed that they would like to be more involved in CSAS processes as they are with the U.S. Council of Independent Experts (CIE) system.

NOAA Fisheries described its advisory process. The process varies to some degree among NOAA Science Centers and specific details refer to the Northeast US. Stock assessments are prioritized over a 5-year planning horizon. Every review meeting is open to public but the assessment is done only by designated experts. The CIE is used for research assessments which are the rough equivalent of framework assessments for DFO and benchmarks for ICES. NOAA Fisheries proposed that they consider using ICES as part of their independent peer-review process. This possibility will be considered more by NOAA.

There was also a discussion of ICES providing advice to Canada or U.S. or both. We reviewed the current situation where ICES provides advice to international organizations or member states and agreed that this is something that can be looked at internally in DFO and/or NOAA Fisheries.

### **UN Decade of Ocean Science Preparation**

Cisco Werner debriefed on the North Pacific Regional Workshop and presented lessons learned for the North Atlantic Ocean Regional Workshop that is being planned for January 2020. One main take away is that the meeting may have been too short at 3 days given the scope of the agenda (1/2 day plenary, 6 hours for developing reports for each break out group, 3 hours closing plenary). Also, careful pre-planning is critical as well as much advanced work is needed to gain broad participation (gender balance, NGOs, industry). Testimonials at the end produced few firm commitments, except possibly for China who committed to establishing a “National UN Ocean Decade Committee”, access to ship-time, and personnel support to Ocean Decade priorities and hosting meetings. The key organizing role of PICES is noted. ICES has produced a paper on its participation in the UN Decade and discussions have occurred between Arran McPherson and Anne Christine Brusendorff regarding ICES role in this workshop and will be ongoing.

### **Training and Education**

ICES presented their current focus on short-term training to meet skill development needs. That program is productive (8-12 courses per year) and receives good feedback from member states. It is noted that some courses already are held in North America and more can be done to bring ICES training to these shores.

ICES is now turning its attention to long-term capacity building to support member states and ICES' future needs for experts.

The NOAA QUEST (Quantitative Ecology and Socioeconomics Training) Program – (NOAA) may be an example to emulate and there was considerable interest in the recently initiated Graduate School on stock assessments at Memorial University. To complement and link these initiatives, ICES is looking to develop graduate education opportunities through collaboration among universities in ICES member countries. ICES is planning a workshop to bring together interested education institutions, possibly during the first half of 2020, to develop virtual education offerings. There would be funding from U.S. Department of State and ICES. DFO may be able to help as well.

### **Data management and data exchange**

DFO indicated that they just started a working group under its national data management governance looking to identify a long term solution to share its fishery survey data. ICES' fishery survey database (DATRAS) is among the possibilities being investigated. NOAA has not looked at this yet and is interested in the results of the Canadian exercise.

ICES indicated that their data center is seeking accreditation through Core Trust Seal (CTS). They looked at the IODE but decided against it for the time being, although accreditation through CTS does not preclude IODE accreditation in the future.

ICES is also looking at the global sharing platform Creative commons as a foundation for its data policy.

### **Next Steps/Future Meetings**

The participants agreed that this meeting was useful and that it should be repeated on an annual frequency at least.





## Science Committee Summary Report for Council (2019)

### Background

This paper is a summary report based on the full 2019 report from the Science Committee (SCICOM) to the ICES Council. It provides a shorter analysis of the scope, scale and impact of ICES science, implementation of the ICES Science Plan, and plans for future science delivery.

## 1 Introduction

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The ICES Science Committee continues to strive to increase the scope, scale and impact of ICES science. The general objectives of the Science Committee are to work with the ICES community and Secretariat to keep the ICES science programme dynamic, internationally relevant, and impactful; to ensure seamless links between science, data and advice and to engage with scientists in ICES member countries and beyond by planning an annual cycle of meetings and workshops as well as the Annual Science Conference. Notable activities in 2019 have included (i) release of the ICES Science Plan and science implementation plan, (ii) a stronger focus on supporting expert groups, (iii) rapid increases in ICES engagement in aquaculture science, the social and economic sciences and technology, with many new scientists participating in the ICES community, (iv) an increased frequency and strategic emphasis on science communication, (v) the initiation of a new publication series for expert group reports to increase visibility of, and access to, ICES science, (vi) implementation of a system within which all expert groups are parented by steering groups to more strongly link science and advice and create efficiencies, (vii) broadening the scientific scope of the Annual Science Conference and (viii) maintaining and developing international collaborations. These activities have taken place alongside the recurrent delivery of science outputs and publications, and running an annual programme of conferences.

One hundred and fifty-two expert groups, supported by six steering groups, were active in 2019. Recently founded expert groups focusing on new aquaculture topics, on social and economic sciences and on machine learning attracted 76 individuals to their first ICES expert group meeting, and demonstrated the potential of ICES to grow beyond its existing constituency. The ASC engaged 763 participants from 38 countries, including 175 early career scientists. There were 18 theme sessions, during which 291 talks and 103 posters were presented.

Eight ICES Co-operative Research Reports (CRR) were published since the last SCICOM report to Council; four of these during the 2019 calendar year. A further nine reports are being prepared for publication in future years. The first Plankton ID Leaflet for over 15 years was published at the start of 2019, with two more likely to be published in 2019. Another four Plankton ID Leaflets are in preparation. Two Identification (ID) Leaflets for diseases in fish and shellfish were published in 2019, and four leaflets are currently in preparation. One Techniques in Marine Environmental Sciences (TIMES) was published and

four others are at earlier stages of the publication process. Efforts are ongoing to reinvigorate the TIMES series.

Four ICES training courses have been run to date in 2019, with three still to be held. Topics have been relatively broad and include spatial planning, genetics, and mapping/ spatial analysis, in addition to stock assessment.

The Data and Information Group (DIG) took a decision to start accreditation of ICES data management processes with the CoreTrustSeal (CTS) certification, with a view to applying for accreditation (for datasets managed within the Data Centre) in 2020. CoreTrustSeal is based on requirements established by the World Data Systems (WDS) and the Data Seal of Approval (DSA), and certifies core characteristics of trustworthy data repositories.

Inter-institutional collaborations in 2019 have included running or setting up joint expert groups, including with PICES, IOC, IMO and PAME. At other levels, and with some inputs from SCICOM, ICES has also been engaging in international processes linked to the Arctic, the UN Decade of Ocean Science and science and advice in Areas Beyond National Jurisdiction. ICES has co-sponsored five international symposia in 2019 and four are planned for 2020, with partners including PICES, FAO, PAME, CAFF, AMAP, Arctic Council, Nordic Council of Ministers, OSPAR and IOC. Topics addressed by these symposia cover 6 of the 7 ICES science priorities.

Further progress with implementing the ICES Science Plan is being supported by ongoing and emerging projects to restructure ICES website, to introduce more consistent and more concise resolutions forms, to improve and quality control expert group descriptions and terms of reference and to develop a resolutions database. The main priorities beyond this are detailed in the implementation plan and include efforts (i) to promote ICES science to a wider international constituency and to early career scientists (through collaborations and training, broadening of expert groups, targeted early-career and new topic events at the ASC and ICES co-sponsored symposia, changes to the website, increased use of science highlights and an active communications strategy, development of impact case studies, and broader ASC formats), (ii) to provide clear and accessible paths for engagement with ICES, (iii) to continue to strengthen links between science and advice and (iv) to put in place and embed all processes for monitoring implementation of the Science Plan (especially collation and reporting of science information and statistics across all expert groups in a consistent way).

## **2 Science Plan implementation**

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The Science Plan and an associated implementation plan were launched in January 2019.

The Science Plan “Marine ecosystem and sustainability science for the 2020s and beyond” describes the scientific priorities and goals of ICES, their rationale, and the science and other tasks to be undertaken to meet them. The Science Plan is a public document with an audience comprising the marine science community in ICES countries and beyond. ICES science, as described in the plan, is currently brigaded under seven priorities. These are now being used for guiding the scientific direction of ICES and mapping ICES science activities to topics (e.g. expert group terms of reference, symposia, training courses) and for presenting our work (e.g. ICES 2018 Annual Report). The

priorities in the Science Plan are being used to guide selection and structuring of the sessions at the 2020 ASC.

The seven ICES science priorities are:

*1. Ecosystem science*

Advance and shape understanding of the structure, function and dynamics of marine ecosystems — to develop and vitalize marine science and underpin its applications

*2. Impacts of human activities*

Measure and project the effects of human activities on ecosystems and ecosystem services — to elucidate present and future states of natural and social systems

*3. Observation and exploration*

Monitor and explore the seas and oceans — to track changes in the environment and ecosystems and to identify resources for sustainable use and protection

*4. Emerging techniques and technologies*

Develop, evaluate and harness new techniques and technologies — to advance knowledge of marine systems, inform management and increase scope and efficiency of monitoring

*5. Seafood production*

Generate evidence and advice for management of wild-capture fisheries and aquaculture — to help sustain safe and sufficient seafood supplies

*6. Conservation and management science*

Develop tools, knowledge and evidence for conservation and management — to provide more and better options to help managers set and meet objectives

*7. Sea and society*

Evaluate contributions of the sea to livelihoods, cultural identities and recreation — to inform ecosystem status assessments, policy development, and management

The implementation plan describes how the Science Plan is being implemented, how people and groups within ICES contribute to implementation, the tasks they undertake and how progress is measured and reported. Collectively, the Science Plan and implementation plan guide the conduct and delivery of science in support of the vision and mission of ICES. The audience for the implementation plan are the people and groups in ICES who are involved in implementing, monitoring and reporting on implementation of the Science Plan, principally the members of the Science Committee and associated groups and the ICES Secretariat.

Specific actions for parts of the ICES community are tabulated in the implementation plan. For actions involving the ICES Secretariat, the actions have been transposed to the joint work plan. A tracking spreadsheet submitted

as a background paper for the October 2019 Council meeting provides a point by point analysis of progress with implementing the Science Plan.

### **3 Supporting expert groups**

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One hundred and fifty-two expert groups, supported by six steering groups, were active in 2019. Expert groups are at the heart of ICES, engage the largest proportion of scientists in our community and are responsible for generating the majority of our science output including the basis of ICES advice. For these reasons, it is essential to ensure their work is valued, highlighted and accessible and that chairs are engaged with the ICES community and are effectively supported by other ICES groups.

Our work in 2019 has focused on engaging expert groups chairs through the WGCHAIRS forum and meeting, working with expert group chairs to further develop the “Guidelines for ICES groups” to meet their needs, and publishing all scientific output from the expert groups in a new “ICES Scientific Reports” series (from 1 January 2019, with DOI and ISSN).

Alongside the introduction of “ICES Scientific Reports”, we have introduced interim and final e-evaluation for fixed term working groups. The adoption of the e-evaluation process has allowed the removal of a lot of process-related content from the “ICES Scientific Reports” series (that often dominated interim reports) and also reduces the workload of the secretariat. ICES new approach to e-evaluation of fixed-term working groups provides sufficient information for the secretariat and steering group chairs to assess whether the working group is on track and to identify and rectify any concerns that need to be addressed. The completed e-evaluations are posted on the SCICOM share-point, so they also provide a quick and straightforward way for SCICOM national and ex-officio members to evaluate progress of the fixed-term groups.

In 2019 we have also refined the recommendations process to focus on exchange of the most important recommendations between expert groups and to exclude recommendations that cannot be addressed. The process will be moved entirely online from 2020.

ICES secretariat have been working with SCICOM and ACOM in 2019 to develop a unified resolution template (to replace at least 4 existing templates) and to ensure expert group terms of reference and texts get effective review and sign-off before posting on the web. This will ultimately provide the information to be fed to the resolutions database and enable searches of expert groups and terms of reference by people interested in, and engaging in, ICES work (fulfilling requests and expectations from our community, as often raised at WGCHAIRS). The new system will also enable mapping of terms of reference to science plan codes to support implementation of the science plan and to identify gaps and areas for improvement in the science programme.

### **4 Growing scientific engagement**

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Several new groups of scientists have been engaging with ICES in the last two years as a result of our commitment to establishing new expert groups to work on a wider range of aquaculture topics, the social and economic sciences and new technological developments. Scientists participating in these groups have also engaged with the ASC (and led sessions there) and begun to broaden the

appeal of ICES to the wider marine science community. Recently founded expert groups focusing on new aquaculture topics, social and economic sciences and machine learning attracting individual 76 scientists to their first ICES expert group meeting, showing the potential of ICES to grow beyond its existing constituency.

To help engage more participants in expert groups, SCICOM have been developing materials to highlight the benefits of joining ICES expert groups. The four main benefits of engaging in an ICES expert groups come from the opportunities they provide for participants to strengthen their science, develop their networks, to increase the impact of their work and to learn new skills. The ICES community also benefits from new expert group participants because they bring a greater diversity of ideas and approaches, grow the scope of the ICES community and ultimately strengthen marine science and advice. The material SCICOM developed has already been used at the 2019 ASC and will also be added to the restructured ICES website. The material on benefits has been complemented with a series of personal stories about how scientists benefitted from their engagement in ICES ("[What has ICES done for you](#)"), as developed by ICES Communications.

## 5 Science communication

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A clear process has been established, communicated and implemented to collate science highlights to be used in "news and events" and support the needs of the science and communications plans. Submissions of science highlights are welcomed from any scientist in the ICES network who wishes to report new and impactful work conducted by ICES scientists and groups. Since ICES is renowned for generating authoritative and impartial science, we emphasise that highlights should not compromise or unreasonably sensationalise the underlying science. As well as relying on open submissions, the secretariat communications team have been actively submitting some 'series' of contributions from expert groups on topics we wish to flag more strongly ("[Maintaining the continuity of long-term data sets](#)"; "The future of aquaculture" (in progress); "The changing Arctic" (planning stages) and ICES work related to the societal outcomes of the United Nations Decade of Ocean Science (planning stages)). In addition to these well-defined topical series, three ongoing series for broader participation by expert groups are under development, to be introduced at the 2020 WGCHAIRS meeting. The proposed topics are 'Biodiversity', 'In the field' and 'In Other Words' (reviving an old series that was devoted to clarifying important terms and phrases used in the ICES community).

We will also be adding more highlights focused on our early career support. This will be especially useful in the summer before the 2020 ASC, as this will serve to highlight both our ECS support and promotion of the ASC. These stories will be unified with repeated banner styling, include highlights of the scientific work, and can be used for both ASC and to highlight other ECS support that ICES provides for other co-funded symposia.

Substantial progress was also made in 2019 with planning for ICES website restructuring. The new plans provide a much more visible focus for ICES science, with science highlighted on the front page. Communications and SCICOM are working to develop content.

## **6 ICES Scientific Reports**

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Reports from all expert groups that generate scientific output are now being published in the “ICES Scientific Reports” series (from 1 January 2019). This series has both an ISSN and a new citation format, with the changes intended to increase use and recognition of expert group work.

The new reports focus more strongly on science content than describing processes in the expert groups, making the contents more attractive to readers outside the ICES community. They also give a higher profile for editors and authors, addressing concerns that have previously been raised by expert group chairs about the profile of ICES reports and contributors.

Making all the reports part of an “ICES Scientific Reports” series, in conjunction with the individual DOI and a higher profile for editors and authors, addresses the concerns that have previously been raised by expert group chairs about the profile of these reports and contributors. The new reports focus more strongly on science content than describing processes in the expert groups, making the contents more attractive to readers outside the ICES community.

As part of the process of introducing the “ICES Scientific Reports” series, the existing four templates used for formatting ICES expert group reports have been replaced with a single design. There have been some challenges with the transition and achieving consistency in the content and formatting of the opening pages and executive summaries of the new reports, but these are being addressed in the secretariat and through further communication of expectations to expert group chairs.

## **7 Linking science and advice**

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All ICES expert groups are now operating under a common steering group structure following decisions taken by ACOM and SCICOM in 2018. There are now six Steering Groups that are responsible for guiding and supporting the work of expert groups and helping to ensure their work is effectively coordinated, conducted and reported. With expert groups that were traditionally seen as ‘science’ or ‘advice’ all working within the same steering group structure, ACOM and SCICOM are further advancing towards a ‘one ICES’ approach to guiding their work and further strengthening links between science and advice. Practical examples of this are regular ACOM reporting to SCICOM on science needs to support advice, and on current and forthcoming special advice requests, as well as close collaboration on the development of fisheries and ecosystem overviews. The approach also introduces other efficiencies by allowing closer linkages between groups that gather and use data, co-ordination of science and advisory work in ACOM and SCICOM, a more consistent treatment and projection of all ICES expert groups (no longer strongly perceived as science and advice) and development of process understanding that spans science and advice by ICES Supporting Officers.

## **8 Annual Science Conference and future scope of this event**

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The 2019 Annual Science Conference was held in Gothenburg, Sweden from Monday 9 September to Thursday 12 September. The venue was the Gothia Towers Conference Centre. The ASC was attended by 763 participants from 38 countries, including 175 early career scientists. In the 18 theme sessions, 291

talks and 103 posters were presented. Plenary activities included a debate on the UN Decade of Oceans Science and achieving the Sustainable Development Goals and keynote presentations from Manuel Barange, Gretta Pecl and Cisco Werner. The ASC was excellently received, as evidenced in 250 questionnaire returns from attendees.

Plans for the science foci of the ASC 2020 are well advanced. We aspire to run an ASC that is attractive to marine scientists from ICES community and beyond, thus raising awareness of ICES and ICES science and providing many opportunities to participate. We recognise that funding support for ASC attendance is often conditional on presentation of a poster or talk. For these reasons, proposals for theme and network sessions on topics that are accessible to a broad range of marine scientists are now encouraged in our call for proposals. In practical terms, this means that we expect topics to be broad enough to cover at least one, and preferably more, of the sub-priorities in ICES Science Plan (indicated by bullets beneath the seven priorities: Ecosystem science, Impacts of human activities, Observation and exploration, Emerging techniques and technologies, Seafood production, Conservation and management science, Sea and society). To ensure a broad ASC programme, SCICOM introduced a new process for session selection in 2019 (for the 2020 ASC), which involved a first selection round that ranked proposals within science priority areas and took at least one session from each area (two in the case of seafood production: one fisheries and one aquaculture) before continuing with the selection process. This will build on the approach to achieving broad marine science appeal that was adopted in 2019.

We have also worked with WGCHAIRS to provide information and documentation on the properties of good theme and network sessions and to encourage submissions in line with the Science Plan. The scope and accessibility of the 2020 ASC has also been increased by introducing a contributed papers session (on a trial basis), with possibilities to subsequently theme sections of this session to highlight ICES scientific priorities that were not strongly represented in the submitted theme and network sessions (e.g. oceanography, aquaculture and marine chemistry in 2020 submissions). SCICOM have also re-emphasised the importance of selecting diverse keynotes to raise awareness of ICES as a broad marine science community.

## **9 International collaboration**

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ICES science is necessarily international, and our wider networks of collaboration help to strengthen our science and influence, and provide benefits for both ICES and partners. Through the science plan and associated implementation plan we are committed to working closely with regional and global partners.

We exchange knowledge and expertise with regional and global partners through collaborative projects, networks and training. We also engage with partners by developing joint expert groups, co-sponsoring conferences and conference sessions and contributing to overviews and assessments of the state and uses of the marine environment.

Collaborative activities in 2019 have included running or setting up joint expert groups including the ICES/ PICES Working Group on Small Pelagic Fish, the ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors, the ICES-

PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields and the ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean. We have also run joint sessions at annual meetings such as the 2019 ASC Session with PICES on “Understanding humans within ecosystems: Innovative tools, strategies, and research”, provided representation and engagement at the IMBER Annual Science Meeting and provided joint input from ICES and PICES experts to the IPCC Reports.

ICES has co-sponsored five international symposia in 2019 and four are planned for 2020, with partners including PICES, FAO, PAME, CAFF, AMAP, Arctic Council, Nordic Council of Ministers, OSPAR and IOC. Topics addressed by these symposia cover 6 of the 7 ICES science priorities. At other levels, and with inputs from SCICOM, ICES has also been engaging in international processes linked to the Arctic, the UN Decade of Ocean Science and science and advice in Areas Beyond National Jurisdiction.



# SCICOM PROGRESS REPORT 2019

ICES SCIENCE COMMITTEE

ICES CM 2019 Del-9.1.2

SCICOM:03 REF. COUNCIL

## SCICOM Progress Report 2019

An annual report to the ICES Council to describe the scope, scale and impact of ICES science, implementation of ICES Science Plan and the work of ICES Science Committee



**ICES**  
**CIEM**

International Council for  
the Exploration of the Sea

Conseil International pour  
l'Exploration de la Mer

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## 1 Summary

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The ICES Science Committee continues to strive to increase the scope, scale and impact of ICES science. The general objectives of the Science Committee are to work with the ICES community and Secretariat to keep the ICES science programme dynamic, internationally relevant, and impactful; to ensure seamless links between science, data and advice and to engage with scientists in ICES member countries and beyond by planning an annual cycle of meetings and workshops as well as the Annual Science Conference. The last year has seen positive and continuing progress towards cross-ICES projection and operation of science, as guided by the science plan “Marine ecosystem and sustainability science for the 2020s and beyond”. Coverage of science in ICES “news and events” has been high, with stories based on the new communications plan, clearly linked to ICES science priorities and highlighting the breadth of work in our expert groups.

Notable activities in 2019 have included (i) release of the ICES Science Plan and science implementation plan, (ii) a stronger focus on supporting expert groups, (iii) rapid increases in ICES engagement in aquaculture science, the social and economic sciences and technology, with many new scientists participating in ICES community, (iv) an increased frequency and strategic emphasis on science communication, (v) the initiation of a new publication series for expert group reports to increase visibility of, and access to, ICES science, (vi) implementation of a system within which all expert groups are parented by steering groups, to more strongly link science and advice, (vii) broadening the scientific scope of the Annual Science Conference and (viii) maintaining and developing international collaborations. These activities have taken place alongside the recurrent delivery of science outputs and publications, and running an annual programme of conferences.

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Four ICES training courses have been run to date in 2019, engaging 78 participants, with three courses still to be held. Coverage of topics has been relatively broad and topics have included marine spatial planning, genetics, and mapping/ spatial analysis, in addition to the core training linked to stock assessment.

The Data and Information Group (DIG) took a decision to start accreditation of ICES data management processes with the CoreTrustSeal (CTS) certification, with a view to applying for accreditation (for datasets managed within the Data Centre) in 2020.

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## 2 Introduction

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This introduction defines the purpose of the SCICOM Progress Report, and the role of SCICOM and associated groups. Much of the content of this Progress Report is compiled from submissions provided by ICES groups and the ICES secretariat. We are very grateful for the contributions these submissions have made to delivery of ICES Science Plan.

### 2.1 Purpose of the SCICOM Progress Report

The SCICOM Progress Report is an annual report to the ICES Council that summarises the scope, scale and impact of ICES science in 2019 and SCICOM plans for future science delivery. The primary purposes of the report are to update Council on the scope, scale and impact of ICES science, implementation of the ICES Science Plan and the work of SCICOM.

The report covers activity in the steering groups, expert groups, strategic initiatives, operational groups, and outcomes of the Annual Science Conference (ASC), as well as implementation of ICES Science Plan and progress by SCICOM in relation to the SCICOM work plan. It also summarises ICES contributions to co-sponsored conferences, training courses and publications. The report is relatively long because it also serves as a reference document for use of SCICOM members, the Secretariat and the ICES network more widely. For this reason, the full report is supplemented with a summary report that emphasises the main achievements of the ICES science community and SCICOM in 2019.

### 2.2 Role of the Science Committee

The Science Committee is the main scientific body in ICES and is ultimately responsible for the scope, scale and impact of ICES science. SCICOM works with the ICES community to set the direction for ICES science and to implement and monitor ICES science plans. Through planning of the work of ICES groups the science committee strives to ensure there are effective working relationships between all parties contributing to implementation of ICES Science Plan. SCICOM is empowered to speak on behalf of ICES on science priorities and strategies, and on the state of knowledge of topical marine issues. The empowerment is provided by national representation from member countries. SCICOM has the authority to establish and dissolve expert groups and subordinate governance bodies (strategic initiatives, operational groups) as deemed necessary to deliver ICES Science Plan.

The general objectives of SCICOM are:

- (1) To keep the science programme dynamic, internationally relevant, and impactful
- (2) To ensure seamless links between science, data and advice
- (3) To engage with scientists in ICES member countries and beyond by planning an annual cycle of meetings and workshops as well as the Annual Science Conference

The current priorities for SCICOM are to:

- (1) identify and promote science priorities within a science programme that is dynamic, internationally relevant and impactful, while fully taking account of national needs and providing added value to national programmes,

(2) collate information on ICES science outputs in accessible and searchable formats, to develop and publicise metrics of impact, and to ensure expert group outputs acknowledge ICES contributions,

(3) develop and regularly update website text relating to science, SCICOM, steering groups and personnel to increase awareness, visibility and impact of our people and work,

(4) develop and run an engaging training programme that achieves cost recovery and enables participants to develop their careers, broaden their knowledge base, widen their professional network and add value nationally,

(5) promote and support frequent and effective communication between expert groups, steering groups and SCICOM to increase network engagement and efficiency in all activities relevant to SCICOM,

(6) promote science activity and collaboration within and beyond the ICES network,

(7) ensure effective communication and seamless links between science, data collection, storage and processing, and advice.

Our previous role in leading the developments of ICES viewpoints has now been taken on by ACOM vice-chairs, with the agreement of ACOM and SCICOM.

## 2.3 Summary of groups contributing to the work of the Science Committee

Five types of groups contribute to the work of SCICOM and have roles in implementing ICES Science Plan. Other temporary groups are also formed to develop content for conferences and symposia and to address other transient actions.

The following descriptions of groups are also made available in the 'Guidelines for ICES groups' to help broaden community understanding of the ways in which different groups can, and do, contribute to delivery of ICES science. The Advisory Committee, the Data Centre and the ICES community also play vital roles in delivering science and implementing the Science Plan, but working in roles alongside SCICOM. Their roles are documented in the science implementation plan.

### Expert groups

Expert groups (EG) are groups of scientists who collaborate during scheduled meetings, and often intersessionally, to advance understanding of marine systems by tackling fundamental and applied scientific questions and developing analyses that underpin state-of-the-art advice on meeting conservation, management, and sustainability goals. The questions they address are defined by terms of reference that are reviewed and signed off by the science and advisory committees. Expert groups publish the outputs of their work in the series "ICES Scientific Reports".

### Steering groups

Steering groups (SG) address broad and enduring areas of science and advice and "parent" a number of expert groups. They are responsible for guiding and supporting expert groups and helping to ensure their work is effectively coordinated, conducted and reported.

### Operational groups

These groups develop ICES capability in areas beyond the remit of expert groups. Currently ICES has three operational groups: Data and Information Group (DIG), Science Impact and Publication Group (SIPG) and Training Group (TG).



*Data and Information Group*

The Data and Information Group (DIG) is an operational group reporting to the Science Committee that advises on all aspects of data management, including data policy, data strategy, data quality, technical issues, and user-oriented guidance. Their work is closely coordinated with the ICES Data Centre and helps to ensure that expert groups have access to data and the support for data handling that is essential to their work.

*Science Impact and Publication Group*

The Science Impact and Publication Group (SIPG) is an operational group reporting to the Science Committee that coordinates and supports the publication and dissemination of research conducted under the auspices of ICES. The group is responsible for guiding, monitoring, and sharing ICES publication output and increasing the reach and impact of ICES publications.

*Training Group*

The Training Group (TG) is an operational group reporting to the Science Committee that develops the structure and content of ICES training programme and then guides and supports the provision of training.

**Strategic initiatives**

Strategic initiatives (SI) report to the science committee and develop and co-ordinate cross-cutting science that impacts and interacts with the science of many expert groups. They also focus on building science collaborations outside ICES member countries.

The Strategic Initiative on the Human Dimension (SIHD) aims to develop strategies to support the integration of social and economic sciences into ICES work.

The Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME) coordinates ICES science that seeks to understand, estimate and predict the impacts of climate change on marine ecosystems.

**ICES Secretariat**

The ICES secretariat provides essential secretarial, administrative, logistical, scientific, and data handling support to the preceding groups and ICES community in general. This facilitates effective planning of meetings, reporting and external communication.

### 3 Science priorities, planning and delivery

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#### 3.1 Science Plan and Science Plan implementation

The ICES Science Plan “Marine ecosystem and sustainability science for the 2020s and beyond” describes the scientific priorities and goals of ICES, their rationale, and the science and other tasks to be undertaken to meet them. The Science Plan is a public document with an audience comprising the marine science community in ICES countries and beyond.

By successfully implementing the science plan ICES aims to generate ecosystem and sustainability science with a high and beneficial impact on society. The science conducted should therefore advance and shape understanding of marine ecosystems, improve assessments of the effects of human activities, improve observations of the seas and oceans and provide evidence and solutions to support conservation and management. Supporting tasks aim to increase the visibility and impact of this science, provide a rewarding and efficient working environment, engage new scientists, increase training and networking opportunities, and strengthen collaboration with regional and global partners.

ICES science, as described in the Science Plan, is currently brigaded under seven priorities. These are used for mapping all ICES science activities to topics (e.g. expert group terms of reference, symposia, training courses) and for presenting ICES work and outputs (e.g. ICES 2018 Annual Report). The seven science priorities are:

##### 1. Ecosystem science

Advance and shape understanding of the structure, function and dynamics of marine ecosystems — to develop and vitalize marine science and underpin its applications

##### 2. Impacts of human activities

Measure and project the effects of human activities on ecosystems and ecosystem services — to elucidate present and future states of natural and social systems

##### 3. Observation and exploration

Monitor and explore the seas and oceans — to track changes in the environment and ecosystems and to identify resources for sustainable use and protection

##### 4. Emerging techniques and technologies

Develop, evaluate and harness new techniques and technologies — to advance knowledge of marine systems, inform management and increase scope and efficiency of monitoring

##### 5. Seafood production

Generate evidence and advice for management of wild-capture fisheries and aquaculture — to help sustain safe and sufficient seafood supplies

##### 6. Conservation and management science

Develop tools, knowledge and evidence for conservation and management — to provide more and better options to help managers set and meet objectives

##### 7. Sea and society

Evaluate contributions of the sea to livelihoods, cultural identities and recreation — to inform ecosystem status assessments, policy development, and management

There are still some challenges to ensure all expert groups are linking terms of reference to ICES Science Plan but this is being addressed across ICES with the introduction of a new and consistent style of resolution form that provides the capability to harvest data directly (in place of the existing and heterogeneous word documents) and ultimately the resolutions database. It is encouraging to see these developments, as they are leading to more consistency in our working practices with expert groups and helping to emphasise that ICES Science Plan is for the whole of ICES and not just for SCICOM.

A separate implementation plan describes how ICES Science Plan is being implemented, how people and groups within ICES contribute to implementation, the tasks they undertake and how progress is measured and reported. Collectively, ICES Science Plan and implementation plan guide the conduct and delivery of science in support of the vision and mission of ICES. The intended audience for the implementation plan are the people and groups in ICES who are involved in implementing, monitoring and reporting on implementation of ICES Science Plan, principally the members of the Science Committee and associated groups and the ICES Secretariat.

The implementation plan defines objectives and actions in seven areas.

1. Catalyse, shape, facilitate and promote marine science which has a high and beneficial impact on society and addresses all priorities identified in the science plan
2. Ensure expert groups have flexibility to innovate and explore new topics and encourage and support cross-cutting science activity
3. Increase the visibility of, and access to, our science, data and advice and recognise, promote and use the science outputs from expert groups
4. Provide an efficient, collaborative, respectful and rewarding working environment for all scientists, as well as the resources and infrastructure needed by ICES groups to develop and share knowledge and expertise
5. Provide more and better networking and training opportunities and encourage engagement of a new and emerging generation of scientists with ICES and expert groups
6. Exchange knowledge and expertise with regional and global partners through collaborative projects, networks and training: to shape and advance marine science and advice and meet joint scientific goals
7. Monitor and report on progress towards meeting the goals of the science plan

Specific actions supporting these objectives are tabulated in the implementation plan and responsibility for these actions is widely distributed throughout ICES community. For actions involving ICES Secretariat, the actions have been transposed to the joint work plan. This report to Council summarises progress with implementation using metrics described in the implementation plan, although some systems still need to be put in place to report some metrics.

### **3.2 Science collaboration, including symposia**

ICES science is necessarily international, and our wider networks of collaboration help to strengthen our science and influence and provide benefits for both ICES and partners. ICES Science Plan and the associated implementation plan commit ICES to working closely with regional and global partners. Relationships with partners extend the reach of ICES science into the Mediterranean, Black Sea, Arctic, North Pacific Ocean

and globally. Partnerships bring mutual benefits, because they strengthen the contribution of regional expertise to larger-scale and global processes and because they contribute to shaping and delivering marine science and advice beyond the ICES region. ICES community exchange knowledge and expertise with regional and global partners through collaborative projects, networks and training. ICES also engages with partners by developing joint expert groups, co-sponsoring conferences and conference sessions and contributing to overviews and assessments of the state and uses of the marine environment. Specifics of these interactions are described throughout this report, but some key activities related to our international collaborations are:

Joint expert groups including the ICES/ PICES Working Group on Small Pelagic Fish, the ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors, the ICES-PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields and the ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean.

Joint sessions at annual meetings such as the 2019 ASC Session with PICES on “Understanding humans within ecosystems: Innovative tools, strategies, and research” and the 2019 PICES Annual Meeting Sessions with ICES “Creating More Effective Integrated Ecosystem Assessments (IEAs) in PICES Countries” and “Integrating economic and social objectives in marine resource management.”

Activities driven by Strategic Initiatives provided representation and engagement at the IMBER Annual Science Meeting, joint input from ICES and PICES experts to the IPCC Reports and engaged many scientists from outside ICES countries at a series of workshops and meetings.

Co-sponsorship of five international symposia in 2019 and four planned for 2020, with partners including PICES, FAO, PAME, CAFF, AMAP, Arctic Council, Nordic Council of Ministers, OSPAR and IOC. Topics addressed by these symposia cover six of the seven ICES science priorities.

At other levels, and with some inputs from SCICOM, ICES has also been engaging in international processes linked to the Arctic, the UN Decade of Ocean Science and science and advice in Areas Beyond National Jurisdiction.

### **3.3 Interactions with the expert groups**

Expert groups are at the heart of ICES, engage the largest proportion of scientists in our community and are responsible for generating the majority of our science output including the basis of ICES advice. For these reasons, it is essential to ensure their work is valued, highlighted and accessible and that chairs are engaged with the ICES community and effectively supported by other ICES groups. Since the specific scientific foci and activities of our expert groups are described elsewhere in this report, this section focuses on cross-cutting actions and system modifications that are being used to engage and guide chairs and to strengthen the co-ordination and impact of expert groups and their science.

#### **3.3.1 Engaging expert group chairs**

To supplement the significant interaction between expert group chairs and the steering group chairs and supporting officers in the secretariat, SCICOM have continued to work with ACOM to communicate more closely with expert group chairs and to better

support their work. The main approaches used by the committees have been to establish a WGCHAIRS forum and to further expand and develop the content of the WGCHAIRS meeting.

The establishment of the WGCHAIRS forum has enabled consistent messaging across all ICES expert groups, usually with posts jointly signed by ACOM and SCICOM, and thus helping to promote a “one-ICES” perspective. The forum has also been valuable for receiving feedback from chairs on topics such as the development of the “ICES Scientific Reports” series and the e-evaluation process.

The WGCHAIRS meeting continues in an expanded format, with agenda items of relevance to all expert group chairs as well as items focused on chairs of groups addressing science and advice-related terms of reference. The meeting format is arranged to that it is initially focused on expert groups with a predominance of advisory terms of reference, then on issues of relevance to all chairs and finally on expert groups with a predominance of science terms of reference. Chairs can therefore attend the whole meeting or a shorter part of the meeting focused on the issues of greatest relevance to their groups.

The 2019 WGCHAIRS meeting included agenda items on the guidelines for ICES groups, implementation of the ICES Code of Conduct, best practices for data handling, the ACOM guidelines, reform of the steering group structure, the ICES Strategic and Science Plans, ICES viewpoints, highlighting ICES science, authorship of expert group reports, mentoring chairs, the development of fisheries and ecosystem overviews and evaluation and e-evaluation of expert groups. There were also breakout sessions for expert groups linked to steering groups, to co-ordinate their work and consider implementation of ICES Science Plan. Many actions were taken from this meeting continue to be used to further improve the “Guidelines for ICES groups” by ensuring they address issues that the chairs wish to know about (leading to changes in editions 2019-1 and 2019-2), and to co-ordinate the work of expert groups.

### 3.3.2 Guidance for expert group chairs

The “[Guidelines for ICES groups](#)” were developed in 2017-8 as a guide for anyone involved in ICES work, with a focus on the members and chairs of expert groups, operational groups, strategic initiatives, advice drafting groups, the Advisory Committee and the Science Committee. Large sections in the “Guidelines for ICES groups” focus on meeting the needs of expert groups.

The guidelines describe how to establish, run and report on the work of an expert group, the roles of members and chairs and the code of conduct for scientists contributing to ICES. The wider purpose of the guidelines is to ensure the same up to date messages on the expert groups reach all parts of the ICES community and lead to greater consistency and more efficiency in working practices.

Update 2019-1 of the “Guidelines for ICES groups” was published in the first quarter of 2019 (available [here](#)). The next edition (2019-2) is due to be released shortly after the Council meeting to include updates related to handling of resolutions, the interim e-evaluation process, submission of materials to “ICES Scientific Reports” series, and updated guidance on submitting science highlights. SCICOM have increasingly solicited feedback from the community on content of the guidelines, through steering groups, meetings of expert group chairs, and ACOM and SCICOM. The 2019-2 and subsequent releases of the “Guidelines for ICES groups” will be accompanied by a quick reference document to highlight changes in each new edition. ICES secretariat have also continued to work with ACOM and SCICOM to produce an introductory

presentation, based on the “Guidelines for ICES groups”, that expert group and other chairs can use to induct new members and explain ICES work.

### 3.3.3 Encouraging participation in expert groups

If ICES is to flourish it is essential that ICES continues to attract new participants into our expert groups, and in particular to effectively reach out to scientists and institutes that have not previously been part of the ICES community. For these reasons, SCICOM undertook a project to define the benefits of engaging with ICES. The full benefits identified are described in Annex 5. Material describing the benefits of engaging in our expert groups was used in handouts at the 2019 ASC and will be added to the updated ICES website in 2020. The material has been complemented with a series of personal stories about how scientists benefitted from their engagement in ICES (“[What has ICES done for you](#)”), as developed by ICES Communications.

The four main benefits of engaging in an ICES expert groups come from the opportunities they provide for participants to strengthen their science, develop their networks, to increase the impact of their work and to learn new skills. SCICOM members are committing to widely communicating these benefits nationally and in their networks, and seek wider support from ICES community to do this. The ICES community ultimately benefits from new expert group participants because they bring a greater diversity of ideas and approaches, grow the scope of the ICES community and thus strengthen ICES marine science and advice.

### 3.3.4 Expert group reporting

Reports from all expert groups that generate scientific output are now being published in the “ICES Scientific Reports” series (from 1 January 2019). This series has both an ISSN and a new citation format, with the changes intended to increase use and recognition of expert group science. Making all the reports part of an “ICES Scientific Reports” series, in conjunction with the individual DOI and a higher profile for editors and authors, addresses the concerns that have previously been raised by expert group chairs about the profile of these reports and their contributors. The new reports focus more strongly on science content than describing processes in the expert groups, thus making the contents more attractive to readers outside the ICES community. As part of the process of introducing the “ICES Scientific Reports” series, the existing four templates used for formatting ICES expert group reports have been replaced with a single design. There have been some challenges with the transition to the new report series, and with achieving consistency in the content and formatting of the opening pages and executive summaries of the new reports, but these are being addressed in ICES Secretariat and through further communication of expectations to expert group chairs.

A very small number of expert groups in the ICES system undertake activities other than science (e.g. WGCHAIRS focuses on supporting expert groups chairs to manage their groups and does not undertake science, and WGDIAAD co-ordinates work on diadromous fishes to support the Fisheries Resources Steering Group). These groups do not use the “ICES Scientific Reports” template and submit a report using the template for business meetings. This template will be refined and harmonised across ICES Secretariat during 2020.

### 3.3.5 Interim and final e-evaluation of fixed-term working groups

Expert groups meeting since 1 January 2019 have published their reports in a series “ICES Scientific Reports” with ISSN, DOI and a specified citation format. Reports in this series must include significant science and analytical content and not just a description of expert group processes. For this reason, fixed-term working groups have now been given the option to submit only an interim e-evaluation (not published as part of the report series), rather than an ICES Scientific Report, if they do not have science content to publish in their initial years of work. The interim e-evaluation is completed in interim years, whether or not the ICES Scientific Report is also published. The option not to publish an ICES Scientific Report does not, however, apply to fixed-term groups providing material that is related to an advice request: any fixed-term working group addressing advice-related terms of reference in any interim year must publish an ICES Scientific Report including, at least, the output linked to these terms of reference (as this will form the background to the advice).

The adoption of the e-evaluation process has allowed the removal of a lot of process-related content from the “ICES Scientific Reports” series (that often dominated interim report in previous years) and also reduces the workload of the secretariat who do not have to undertake extensive formatting work on reports with little or no science content.

A final e-evaluation is always required at the end of the term from any fixed-term working group, as this is one of the sources of information used to assess whether the group is dissolved or continued. The final e-evaluation is requested in addition to the ICES Scientific Report that the expert group will produce. All fixed-term working groups must also publish their final report in the “ICES Scientific Reports” series.

ICES new approach to e-evaluation of fixed-term working groups provides sufficient information for the secretariat and steering group chairs to assess whether the working group is on track and to identify and rectify any concerns that need to be addressed. The completed e-evaluations are posted on the front page of the [SCICOM SharePoint](#) site, so they also provide a quick and straightforward way for SCICOM national and ex-officio members to evaluate progress of the fixed-term working groups.

### 3.3.6 Expert group recommendations

Recommendations are requested from expert groups to ensure that other expert groups, steering group chairs, ICES Secretariat, ICES Data Centre, ACOM, and SCICOM are aware of information from the expert groups that influences work in other parts of the network. Expert group chairs are now being asked to put all recommendations directly into the recommendations database, but only after they have checked that any recipient expert group is aware of the intention to submit a recommendation and considers it feasible to address. To avoid the proliferation of requests that there is insufficient capacity to address, the expert groups are now asked to list no more than five recommendations that they deem to be of high priority.

These refinements to the recommendations process encourage expert groups to focus on exchange of the most important recommendations and to exclude recommendations that cannot be addressed by ICES. The process will be moved entirely online from 2020. The review frequency for recommendations is being increased from once to at least 3× each year from 2020 to enable more rapid transfer of information within ICES community.

### 3.3.7 Expert group resolutions

ICES Secretariat have been working with SCICOM and ACOM to develop a unified resolution template (to replace at least 4 existing templates) and to ensure expert group terms of reference and texts get effective review and sign-off before posting on web. The new template is provided as a pdf form, and this allows data to be harvested directly from the fields and passed to the database. This is a significant step forward from an existing system where information was collated on heterogeneous word documents and could not readily be used for analysis and evaluation of expert group activity and performance. Once the information from the forms is fed into the resolutions database it will enable searches of expert groups and terms of reference by people interested in, and engaging in, ICES work (fulfilling requests and expectations from ICES community, as often raised at WGCHAIRS). The new system will also enable mapping of terms of reference to science plan codes to support implementation of the science plan and to identify gaps and areas for improvement in the science programme. The work on the resolution forms is being conducted as part of a wider overhaul of the resolutions process, and this is discussed in greater detail in Section 7.

## 3.4 Raising awareness of ICES science

An important aspect of the implementation of ICES Science Plan is to raise awareness of the science conducted by ICES. Opportunities to raise awareness of science outputs have been increased by the adoption of a new report series with ISSN for the publication of expert group reports, creation of a preliminary web-based and searchable ICES bibliography ([here](#)) and the adoption of a science highlights process to share science highlights with the communications team. Significant web material has been developed on ICES science, science symposia and engaging with ICES. Some has been incorporated in the existing website, other texts are to be fed in to the restructured and refreshed website as it develops during 2020. Other opportunities to project our science and engage new scientists are also provided by the web restructuring project, and new sections of the website will include clear documentation on routes to engage with ICES, a revised process for collating and reviewing expert group summary texts (through the new resolutions form) and, in the longer term, enhance the capacity for scientists seeking collaborations and information on our work to easily search group texts and terms of reference by topic. The web interface for the bibliography / publications database will also be further developed to provide more advanced search facilities and summary graphics, but these tasks have been postponed at present to allow IT focus on development of the resolutions database.

### 3.4.1 Science highlights: processes and examples

A clear process has been established and communicated to collate science highlights to be used in “news and events” and support the needs of the science and communications plans. Submissions of science highlights are welcomed from any scientist in the ICES network who wishes to report new and impactful work that is conducted by ICES scientists and groups. Scientists are encouraged to use a short (provided) template for this purpose, and the completed template and any supporting materials can be uploaded to the [science highlights SharePoint](#) page. Since ICES is renowned for generating authoritative and impartial science, we emphasise that science highlights should not compromise or unreasonably sensationalise the underlying science. As well as relying on open submissions, the secretariat and communications team have been actively submitting some ‘series’ of contributions from expert groups on topics to be flagged more strongly, such as monitoring.



ICES Secretariat has been developing several topical science highlights series to draw attention to the work of our expert groups (Annex 4). In addition to these well-defined topical series, three ongoing series for broader participation by expert groups are under development, and the plan is to introduce them at the 2020 WGCHAIRS meeting. Most expert groups should be able to participate in at least one of these series. The proposed topics are 'Biodiversity', 'In the field' and 'In Other Words' (reviving an old series that was devoted to clarifying important terms and phrases used in the ICES community).

### **3.4.2 ICES website restructure**

To improve the usability and findability of ICES website, ICES Secretariat has been working together with a website usability expert to restructure ICES website, with a view to implementing changes in 2020. The purpose of the project is to (i) clean up content and structure (eliminate content which doesn't fit the purpose and target groups, pages without visits, and content that is not up to date) and (ii) to restructure the content on the website (new menu, section landing pages, and sub menus) and change some design elements on some of the pages. SCICOM input through a sub-group led by Sarah Bailey and through the participation of the SCICOM chair in meetings of the restructuring project in the Secretariat. Project outcomes are positive for improved projection and recognition of ICES science, with "Science" proposed to be featured directly on the front page alongside "About ICES", "Data", "Advice" and "Join us". The levels below "Science" will lead the user into "Expert groups", "Science priorities" and "Publications" while "Join us" will directly show prospective participants in ICES how to get involved in expert groups and other activities and the benefits they provide. The restructuring of the website should really raise the profile of ICES science and support the wishes of SCICOM to focus the website more strongly on informing and engaging new participants.

The proposal for the "Science" front page will include boxes featuring:

Workshops and training courses: a link list with teaser to upcoming workshops and courses, ideally displayed several weeks in advance to allow time for potential participants to enquire and join.

Science plan: a link list to our science priorities

Scientific reports: flagging the latest reports and providing a link to the full and searchable set of reports in the library

A link section: linking to "join us", "find an expert group" (searchable, based on terms of reference and group texts), "ICES publications" and "Project collaborations"

### **3.4.3 Science content of the ASC**

ICES aspires to run an ASC that is attractive to marine scientists from ICES community and beyond, thus raising awareness of ICES and ICES science and providing many opportunities to participate. Funding support for ASC attendance is often conditional on presentation of a poster or talk, and for this reason, proposals for theme and network sessions on topics that are accessible to a broad range of marine scientists are now encouraged in the call for proposals. In practical terms, this means that topics should be broad enough to cover at least one, and preferably more, of the sub-priorities in ICES Science Plan (indicated by bullets beneath the seven priorities: Ecosystem science, Impacts of human activities, Observation and exploration, Emerging techniques and technologies, Seafood production, Conservation and management science, Sea and

society). Theme and network sessions based solely on the work of a single project consortium or expert group, for example, are now flagged as not suitable and discouraged, unless the sessions are described in a way that openly encouraged submissions from scientists outside the project or expert group and working internationally on related topics.

Theme sessions provide the main forum for talks and poster presentations at ASC and showcase new and emerging marine science. They are the main way of projecting the breadth of our science. The topics of the theme sessions, with one exception, are defined by proposals solicited from ICES community, so SCICOM now give a strong steer about expectations as detailed above. From 2020, on a trial basis, SCICOM have reserved one theme session for contributed papers on any marine science topic relevant to ICES. The contributed papers session also provides an opportunity to flag underrepresented areas of science, with possibilities to later theme sections of this session to highlight ICES scientific priorities that were not strongly represented in the submitted theme and network sessions (e.g. oceanography, aquaculture and marine chemistry in 2020 submissions).

To ensure a broad ASC programme, SCICOM introduced a new process for session selection in 2019 (for the 2020 ASC), which involved a first selection round that ranked proposals within science priority areas and took at least one session from each area (two in the case of seafood production: one fisheries and one aquaculture) before continuing with the selection process. To accommodate more presenters and to at least stabilise the current rejection rate for spoken presentations (running at c 50%), SCICOM also recommend that future ASC venues should be able to accommodate at least five parallel sessions.

SCICOM also re-emphasised the importance of selecting diverse keynotes (subject area, nationality, gender) to raise awareness of ICES as a broad marine science community.

## 4 Steering Groups

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### 4.1 Overview

Steering Groups address broad and enduring areas of science and advice and “parent” a number of expert groups. Following decisions taken by ACOM and SCICOM in 2018 there are now six Steering Groups that are responsible for guiding and supporting the work of all expert groups in ICES and helping to ensure their work is effectively coordinated, conducted and reported. With expert groups that were traditionally seen as ‘science’ or ‘advice’ all working within the same Steering Group structure, ACOM and SCICOM are further advancing towards a ‘one ICES’ approach to guiding expert group work and further strengthening links between science and advice. Practical examples of this are the contributions of many expert groups outside FRSG to the basis of advice, and regular ACOM reporting to SCICOM on science needs to support advice and on current and forthcoming special advice requests.

The following Steering Group reports introduce the purpose of each Steering Group, their terms of reference, working practices and progress in relation to the terms of reference during 2019. The reports also highlight the science being conducted in the groups and other issues relevant to implementation of the ICES Science Plan.

In 2019, the chairs of the Integrated Ecosystem Assessments Steering Group (Mette Skern-Mauritzen), the Ecosystem Processes and Dynamics Steering Group (Silvana Birchenough) and the Ecosystem Observation Steering Group (Sven Kupschus) all took the option to extend their terms by one year to the end of 2020.

## 4.2 Aquaculture SG (Mike Rust, USA, term started in June 2017)

### 4.2.1 Introduction

The Aquaculture Steering Group (ASG) is responsible for guiding and supporting expert groups that are working on science and advisory topics contributing to the sustainable development of aquaculture.

Topics covered include:

- evaluating the social and economic dimensions of aquaculture operations
- types, transmission and prevalence of diseases affecting cultured species and actions that can be taken to address them
- understanding positive and negative environmental impacts of aquaculture, approaches to monitor and mitigate them and methods of aquaculture risk assessment
- carrying capacity and relative efficiencies of alternate aquaculture systems
- genetics of cultured species, and application of molecular techniques to aquaculture questions
- projecting the future development of aquaculture and its implications for the food system and food security

### 4.2.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	Mike Rust attended first meetings of WGOOA and WGEIA and second meeting of WGSPA. He met with Chair of WGEIA in Norway and discussed increased ICES involvement with Canada and Norway at separate meetings. He obtained financial support and assisted with planning for WKEMOP and discussed the development of advice products for aquaculture with ACOM.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	The SG chair worked with new and existing EG Chairs to ensure ToR were deliverable and that groups were working towards delivering them. The major focus has been on the new groups just getting started. The SG has been reducing the emphasis on viewpoints in favor of papers until it can fully flesh out the content of aquaculture advice products.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	The SG is developing opportunities for groups to work together and to articulate a vision to structure ASG. The SG is exploring an ecosystem approach to marine aquaculture to provide a common vision. Aquaculture was the focus of a session at ASC 2018, and will be advanced by a session at ASC 2019.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	Reviews are on-going as EG meetings occur. The SG is exploring linkages to other organizations which are in need of scientific inputs on aquaculture, such as FAO

	and OIE. The SG will focus on advice deliverables in 2020.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	Seven EGs and two WGs are now functional and contributing to implementation of the ICES Science Plan. Further focus will be on the science to advice linkage and looking at developing a WG on Aquaculture and Climate Change. Some interest in expanded economic and trade-off modelling is emerging.
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	The SG is proposing a survey and workshop to articulate process and needs for aquaculture advice products. That effort may identify gaps in ICES ASG.
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	The ASG is mostly expanding at this time. No overlaps, however there may be some opportunities for shared ToR between groups. Planning for a new WG on Aquaculture and Climate Change is underway.
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	On-going. Few products are available yet as most groups are new. Encouraging publication in peer-reviewed literature.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	The SG has run some joint EG chair calls and meetings. EG chairs from different groups were co-conveners at ASC 2018 and ASC 2019. Members from WGSEDA are also actively interacting with the WGSOCIAL and WGECON to help ensure aquaculture is a part of these groups discussions. Planning an ASG webinar series to improve communication among EGs.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	SG chair attended meeting at ASC 2017, Spring 2018, Spring 2019, and ASC 2019. Unexpectedly had to miss meeting at ASC 2018.
ToR k) Establish a core group of ASG Expert Group Chairs who, together with the ASG Chair, will share responsibility for implementing the work of ASG	The SG chair is working with existing and new chairs to develop a coordinated SG with a common vision. Process is on-going, but I need to work harder on this.
ToR l) Generate a position paper on the contribution of ASG to ICES science, data and advice	SG chair is formulating the outline for the paper. Structure and text will follow an ecosystem approach to aquaculture.

#### 4.2.3 Expert groups

The ASG expert groups are listed in Annex 2.

#### 4.2.4 Science highlights

- Workshop on Emerging Mollusc Pathogens (WKEMOP). The emergence of 'microvar' variants of the ostreid herpesvirus OsHV-1, which have caused significant Pacific oyster mortality from Europe to Australia and New Zealand, is the most significant mollusc disease development in decades. Preventing further spread of these pathogens and mitigating damage in

affected areas are twin challenges of OsHV-1 management today. This workshop identified strategies to prevent OsHV-1 microvariant dispersal to North American member countries, presently free of the microvars, and to maintain commercial production should an epizootic emerge. It also considered more broadly the OsHV-1 microvar emergence as a case study in response to emerging viral and bacterial pathogens, to identify general strategies for future responses and potential pitfalls with regard to their application. ICES is showing leadership here with this workshop and it resulted in connections being re-established between ICES and OIE. Report in preparation.

- Working Group on Environmental Interactions of Aquaculture (WGEIA). In the process of aligning the legal and management approaches for shellfish and finfish aquaculture among countries, to allow sharing of best practices and highlight areas that need more work. This is a large effort with data tables covering all impacts of marine aquaculture and how different countries are dealing with them. Included representation from China as well as ICES countries.
- Working Group on Pathology and Diseases of Marine Organisms (WGPDMO). Publishing an annual summary of new and emerging disease trends in wild and cultured fish and shellfish in the ICES area, the most comprehensive synopsis of marine disease trends for any region. Published two new leaflets on pathology and diseases of marine organisms, on *Piscirickettsiosis* (caused by the bacterium *Piscirickettsia salmonis*) and *Tenacibaculum maritimum*
- Working Group on Social and Economic Dimensions of Aquaculture (WGSEDA). Has two review papers coming out. "Applying Indicators to Capture the Social Dimensions of Aquaculture"; and "Availability and usefulness of economic data on the effects of aquaculture: A North Atlantic comparative assessment". WGSEDA will turn its attention to examining the effectiveness of knowledge transfer approaches across the ICES region.
- Working Group on Scenario Planning on Aquaculture (WGSPA). Meeting global vs. EU aquaculture targets: This project aims to understand how international targets for aquaculture growth (2x) compare to EU country targets for growth – industry and government. The differences will help illuminate if/how EU member nations will be able to contribute to global targets, or conversely how much they (implicitly) expect other parts of the world to expand aquaculture to achieve global targets.

#### 4.2.5 Communication with EG

The SG chair attended meetings of 3 WG's in person and one by Skype, and also met one on one with three Chairs at various non- ICES meetings.

Conducted a survey among SG to establish a webinar series. The likely plan is to run one webinar per month rotating among the chairs to introduce the activities of their WG. No Web meeting during September due to the ASC, nor July, Aug or Dec due to holidays, leaving 8 months open. One for each WG plus an extra per year. Plan to start in January 2020.

SG chair is proposing to engage all WG Chairs to develop advice products for aquaculture.

#### 4.2.6 Summary of new EG proposals and EG closing

The Working Group on Ecological Carrying Capacity in Aquaculture (WGECCA) chaired by Dr Jeff Fisher met for the first time in Copenhagen in April 2019.

The Workgroup on Open Ocean Aquaculture (WGOOA) chaired by Dr. Bela Buck met for the first time in Copenhagen, in March 2019.

Preliminary discussion with Chairs of SICCME have taken place around the pros and cons of developing a WG on Aquaculture and Climate Change. The ASG chair will draft a “strawman” resolution and will seek a committed chair to develop.

#### 4.2.7 Forward look

Efforts will continue to structure the ASG in order to define and support an Ecosystem Approach to Aquaculture Management. This requires the EG to interact. The process started at ASC 2018 and continued at ASC 2019, and in 2020 will be supported by an ASG webinar series to foster cross-group understanding and to develop a common vision. This topic will form the basis for the position paper in SG ToR L.

In 2020 the SG will focus on working with the ASG members and ACOM to explore advice products for aquaculture.

There has also been recent interest by PICES in developing an aquaculture focused working group, and the ASG chair will present a recorded presentation for the PICES ASM which will be held in Canada in October. The ASG chair has offered to continue discussion with PICES upon request.

Resolutions will be proposed to address the issue of replacing viewpoints with peer review papers in several WG ToR and to add an additional chair (Cornelia Kreiss) to WGSEDA. Other WG have requested minor work changes to ToRs.

The SG chair will continue to seek an individual who can lead development of a new working group on aquaculture and climate change.

### 4.3 Ecosystem Processes and Dynamics SG (Silvana Birchenough, term started January 2017)

#### 4.3.1 Introduction

The Ecosystem Processes and Dynamics Steering Group is responsible for guiding and supporting Expert Groups that study the state and resilience of marine ecosystems and food webs, as well as the life histories, diversity and interactions of component biota.

Topics covered include:

- oceanographic characteristics of marine systems and their influences on population, food web and ecosystem dynamics
- origins and transformations of matter in biogeochemical and production cycles.
- measuring, understanding, reporting and forecasting the dynamics of populations, food webs and ecosystems
- life histories, diversity and ecology of microbes, phytoplankton, zooplankton, benthic invertebrates, crustaceans and fish
- ecosystem services
- ecosystem resilience

### 4.3.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	On track. Regular correspondence with EG chairs and with the ICES secretariat to support production of text and deliverables (e.g. production of annual reports, self-evaluations documents, setting new ToRs) as needed. Quarterly catch up with Supporting Officer Maria Lifentseva over Skype or email to ensure EPD ToR, reports and self-evaluations are submitted and checked on time.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	On track. Regular e-mail discussions with EG chairs on ToR, report and deliverables. In some instances, Skype meetings are organised to ensure EG chairs are fully aware of ICES requests.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	Ongoing. Regular correspondence with EG chairs. SG chair communicating with EG chairs mainly to inform and encourage the use of ICES Communication team, Tweeter and press release opportunities for wider publicity of scientific outputs.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	Ongoing. Regular feedback provided on annual reports, ToR and e-evaluation documents to improve visibility, influence, realistic delivery and products.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	SG chair attended the Chairs meeting in January 2019 and SCICOM meeting in March, as well as online meetings requested by EG chairs. SG chair submitted an overview background document to highlight and encourage the development and submission of theme sessions for future ASC. This document was approved by SCICOM.
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	Ongoing. There are clearly more opportunities for integration between EG across ongoing initiatives (e.g. ecosystems overviews, advisory requests), in joint open sessions and through developing viewpoints. Some further discussions will help to generate new viewpoints and publications (across common topics of interest).
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	Ongoing. New ideas for integration between Aquaculture SG and EPDSG (for example under ICES/IOC HABS there was a joint theme session during ASC 2019). Several new avenues for collaboration will be explored with the HAPISG chair. An international shipping session was run at the 2019 ASC.
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	Reports and documents are regularly reviewed.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs,	Active discussions spanning ICES and PICES EG were used to promote and foster integration and to support development of new scientific outputs, workshops and EGs.

opportunities for internal and external collaboration	
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	Completed. EPD chair also represented ICES at the recent UN event "Ocean Science and the United Nations Decade of Ocean Science for Sustainable Development", this was the twentieth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, New York, (10 to 14 June 2019).
ToR k) Establish a core group of EPDSG Expert Group Chairs who, together with the EPDSG Chair, will share responsibility for implementing the work of EPDSG	On track. There is a core of 4-5 EGs Chairs that are always supportive, active and engage on dedicated requests, correspondence and feedback.
ToR l) Generate a position paper on the contribution of EPD to ICES science, data and advice	Task not started. Need to explore ideas and a relevant topic of common interest.

#### 4.3.3 List of EG (provided by Secretariat)

The EPD expert groups are listed in Annex 2.

#### 4.3.4 Science highlights (as bullets with references)

##### Papers and special issues:

- Van Hoey, G., Wischniewski, J., Craeymeersch, J., Dannheim, J., Enserink, L., Guerin, L., Marco-Rius, F., O'Connor, J., Reiss, H., Sell, A.F, Vanden Berghe, M., Zettler, M.L., Degraer, S., Birchenough, S.N.R. (2019). Methodological elements for optimising the spatial monitoring design to support regional benthic ecosystem assessments. Environmental monitoring and assessment DOI: 10.1007/s10661-019-7550-9
- Gogina, M., Zettler, M.L., Vanaverbeke, J., Dannheim, J., Van Hoey, G., Desroy, N., Wrede, A., Reiss, H., Degraer, S., Van Lancker, V., Foveau, A., Braeckman, U., Fiorentino, D., Holstein, J., Birchenough, S. (submitted) Interregional comparison of benthic ecosystem functioning: community bio-turbation potential in four regions along the NE Atlantic shelf". Ecological Indicators.
- Clare Greathead, Paolo Magni, Jan Vanaverbeke, Lene Buhl-Mortensen, Ursula Janas, Silvana Birchenough, Mats Blomqvist, Johan Craeymeersch, Jennifer Dannheim, Alexander Darr, Steven Degraer, Nicolas Desroy, Annick Donnay, Yessica Griffiths, Ivan Guala, Laurent Guerin, Hayley Hinchin, Celine Labrune, Henning Reiss and Gert Van Hoey (in prep.) Exploring the use of a generic framework to illustrate the importance of benthic marine ecosystems to the effectiveness of MPAs. Aquatic Conservation.
- ICES Theme Special issue entitled "Decommissioned offshore man-made installations" is now closed. A total of 14 accepted papers will be published in October (2019). Silvana Birchenough and Steven Degraer are special editors for this volume.
- Leon, P., *et al* (2019) Shell integrity of pelagic gastropods and its potential relationship with carbonate chemistry. ICES JMS. This work was developed following the award by the ICES Science Fund programme.



- A joint ICES/PICES Ocean acidification session entitled: “Taking stock on ocean acidification research for provision of future efforts” was submitted for consideration for the ICES ASC 2020.
- IOC/ICES WGHAB chair was invited to the international workshop “Global HAB: Evaluating, reducing and mitigating the cost of harmful algal blooms: a compendium of case studies” to be held in Victoria, British Columbia, Canada from October 17-19, 2019.
- WGHABD will have a joint meeting with WGBOSV and WGITMO in 2020 (2-4 March, Gdynia, Poland)

#### 4.3.5 Communication with EG (summary paragraph of activities undertaken)

The EGs under EPD have been planning, working and achieving their proposed ToRs. There are no major issues in the work identified and delivered by the EGs. Issues to be considered are associated with the numbers of attendees at some EG. There have been some delays by some chairs in submitting reports and evaluations. The EPD chair has been contacting chairs to encourage timely completion. Several new EG and a workshop have been suggested and the documents will be submitted for SCICOM consideration.

#### 4.3.6 Summary of new EG proposals and EG closing:

A series of proposed new EGs and workshops are outlined below, the documents have been drafted for SCICOM consideration, these are:

- ICES-PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields (WGGRIFY), chaired by C. Tara Marshall, UK (ICES), Paul Spencer, USA (PICES), Alan Baudron (ICES) and John Morrongiello, Australia (Guest);
- Joint ICES/PICES Working Group on Small Pelagic Fish (WGSPF) (Myron Peck *et al.*). Resolution submitted;
- ICES/PICES Working Group on Ocean Negative Carbon Emission (WGONCE) which was formerly the ICES/PICES Working Group on Climate Change and Biologically-driven Ocean Carbon Sequestration (WGCC-BOC). A new resolution is being developed in consultation with PICES;
- ICES Workshop on Scallop Aging (WKSA); on age reading of the king scallop (*Pecten maximus*) in Aberdeen, Scotland, 9–13th March 2020, resolution submitted.

#### 4.3.7 Forward look

There are several activities planned to support EGs under EPD, for the SG Chair to represent ICES, to help link work across the EGs and to explore areas to work with other SG chairs. These activities include:

- Joint theme session between HAPISG and EPDSG, entitled: “Global impacts of shipping” (conveners: Sarah Bailey, Canada and Silvana Birchenough, UK) held during ICES ASC 2019.
- EPD chair will be presenting an overview of ICES work to CIESM 7–11th October in Cascais, Portugal.
- EPD chair contributed to OSPAR ICG- Ocean acidification meeting from 10–11th September in Gothenburg; to draft technical specification sheet for an ocean acidification assessment(s) as a contribution to the QSR 2023.

## 4.4 Human Activities, Pressures and Impacts SG (Sarah Bailey, term started January 2019)

### 4.4.1 Introduction

The Human Activities, Pressures, and Impacts Steering Group is responsible for guiding and supporting Expert Groups that seek to describe the diversity of pressures affecting marine ecosystems and the impacts that follow.

Topics covered include:

- describing and projecting trends in human pressures and impacts on marine ecosystems, including analysis of historical change
- understanding and quantifying multiple impacts of human activity on populations and ecosystems, and proposing options for mitigation
- prevalence and effects of contaminants, invasive species, shipping, noise, renewable energy, fishing, climate, acidification and habitat loss
- estimating the vulnerability of marine ecosystems to pressures and impacts, including risk assessment and identification of limits and thresholds
- developing indicators of pressure and impact and testing their role in management systems
- assessing human impacts on ecosystem goods and services and developing approaches to mitigate undesirable impacts

### 4.4.2 Summary of progress in relation to Terms of Reference

TERM OF REFERENCE	PROGRESS
ToR a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES	Work carried out on routine basis by email correspondence, as needed. Participation at WGCAIRS to engage with EG Chairs.
ToR b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products)	Communication with EG Chairs prior to each SCICOM meeting asking them to submit science highlights and priorities. Regular reporting to SCICOM meetings in accordance with deadlines. Facilitated submission of Feature Article: <i>Climate change opens new frontiers for marine invaders in the Arctic</i> (WGBOSV and WGITMO) Facilitating submission of biofouling Viewpoint to International Maritime Organization.
ToR c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy	Reviewed and provided feedback into the restructuring of ACOM EGs under SG structure. Reviewed and provided feedback on the ICES submission to UN Decade of Ocean Science.
ToR d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability	MCWG has reported shortage of experts able to attend meetings. This led to SCICOM sub-group on web projection to provide recommendations for how ICES can improve web pages and better publicize new/existing expert groups to a wider set of individuals. Communication with EG Chairs (WGML, WGBEC, WGCEAM, WGSIP) to suggest development of Viewpoint proposals. With SCICOM Chair, have identified potential need for experts to assess shipping impacts – now

	facilitating development of new EG on impacts of shipping on the marine environment (WGSIP).
ToR e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate	Ongoing work to establish new EG on impacts of shipping on the marine environment (WGSIP) ; working to avoid overlap with WGBOSV and WGSFD. SG chair has supported establishment of WGCEAM coming out of WKCEAM. No other gaps or overlaps identified to date. Ongoing work to establish renewal of WGMRE.
ToR f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	<p>Communication with Chairs of WGBEC, MCWG and WGMS to facilitate participation in AMAP/OSPAR/ICES workshop to develop harmonization of (time-series statistical analyses) systems being used to support contaminants temporal trend assessment work under AMAP and OSPAR. Communicate possible links with WGEXT, WGMRE and WGMPCZN with WGCEAM.</p> <p>Communication with incoming WGSIP Chairs concerning possible linkages with other EGs under API.</p> <p>Facilitate submission of biofouling viewpoint documents to the International Maritime Organization, via WGBOSV and ACOM.</p> <p>Facilitate communication between WGBOSV and WGITMO and ICES Q concerning proposal for thematic session at IUCN World Congress 2020.</p> <p>Participation in ICES web structure redesign through Skype interview with project consultant. Communications with ICES staff about web structure design and database needs to facilitate communication between EGs and SG Chair.</p>
ToR g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	No requests received nor insufficient practices identified at this time.
ToR h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work	Ongoing work to improve the scientific content within final report of WGMRE.
ToR i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice	Communication with EG Chairs (WGEXT, WGML, WGBEC, WGSIP) to encourage proposals for new Viewpoints.
ToR j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work	Assisted incoming WGSIP Chairs to formulate draft ToR and Resolution to establish new EG on impacts of shipping in the marine environment. Routine review of ToR related to EG renewals, advisory requests and WK proposals.
ToR k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated	No input on work plans required to date. ave provided rapid review of new advisory ToR for WGARP. Monitoring WGBYC, WGECCO, WKTRADE2 to assist/support as required.

to EGs and addressed adequately and within the advisory request timeframe	
ToR l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed	WMBRED, WGMRE and WGSFD have received special requests in 2019; the requests have been successfully addressed in close cooperation with advisory staff.
ToR m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests	Support provided as required.
ToR n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC	Attendance at 2019 WGCHAIRS, spring SCICOM meeting, and ASC, including participation at Early Career Scientist breakfast.

#### 4.4.3 List of Expert Groups

The HAPISG expert groups are listed in Annex 2.

#### 4.4.4 Science Highlights

##### WGBOSV:

- Chan F, *et al.* (2019) Climate change opens new frontiers for marine species in the Arctic: current trends and future invasion risks. *Global Change Biology* 25:25-38. <https://doi.org/10.1111/gcb.14469>

##### WGITMO:

- ICES. 2019. ICES VIEWPOINT: Biofouling on vessels – what is the risk, and what might be done about it? In Report of the ICES Advisory Committee, 2019, vp.2019.01. <https://doi.org/10.17895/ices.advice.4679> (jointly with WGBOSV)

##### WGMEDS:

- Uhlmann S, C Ulrich and ScKennelly (eds). 2019. The European Landing Obligation: Reducing Discards in Complex, Multi-Species and Multi-Jurisdictional Fisheries. Springer International Publishing. <https://www.springer.com/us/book/9783030033071>
- ICES cooperative Research Report: “ICES Guidelines on Methods for Estimating Discard Survival” is forthcoming
- Journal article under revision: A critical review of European discard survival assessments

##### WGDEC:

- Continued to review how to best define Good Environmental Status for deep-sea habitats such as Vulnerable Marine Ecosystems, and identified that testing of methods developed through WGFBIT, building upon the ICES 2017 indicators and assessment framework, would be beneficial, building collaboration between the two working groups

- Met jointly with WGMHM this year to support improved collaboration on the use of predictive modelling techniques to provide wider coverage of potential VME distribution across the North Atlantic

#### **WGMPCZM:**

- Gee K, *et al.* 2019. Can tools contribute to integration in MSP? An assessment of selected tools and approaches. *Ocean & Coastal Management* 179: 104834. <https://doi.org/10.1016/j.ocecoaman.2019.104834>
- Abspoel L, *et al.* 2019. Communicating Maritime Spatial Planning: The MSP Challenge approach. *Marine Policy* (in press). <https://doi.org/10.1016/j.marpol.2019.02.057>
- Schupp MF, *et al.* 2019. Toward a Common Understanding of Ocean Multi-Use. *Frontiers in Marine Science*. <https://doi.org/10.3389/fmars.2019.00165>
- Cormier R, A Kannen. 2019. Managing risk through marine spatial planning, in: Zaucha, J., Gee, K. (Eds.), *Marine Spatial Planning Past, Present, Future*. Palgrave MacMillan, pp. 353–373. <https://doi.org/10.1007/978-3-319-98696-8>

#### **MCWG:**

- MCWG met jointly with, and actively cooperated in several ToRs of WGMS
- TIMES publication on chlorophyll a analysis is nearly complete

#### **4.4.5 Communication with EG**

Regular email communication by HAPISG Chair with EG Chairs to share major outcomes from WGCHAIRS, to solicit viewpoints and science highlights, and to identify/facilitate linkages between EGs under HAPI as well as those under other SG. The EG under HAPI have been actively working and achieving their proposed ToR. There are no major issues on the work identified and delivered by the EG, although there are delays with the submission of annual reports/self-evaluations by some EG. One of the new chairs of WGSHP resigned late Aug 2019 as unable to commit to the time/travel required; HAPISG Chair will support remaining chair and work together to determine if a replacement is needed.

#### **4.4.6 Summary of new EG proposals**

- Working Group on Cumulative Effects Assessment Approaches in Management (WGCEAM)
- Working Group on Shipping Impacts in the Marine Environment (WGSHP)

#### **4.4.7 Recent actions and forward look**

- Joint Network Session held at 2019 ASC with EPD and HAPISG Chairs as co-conveners entitled: Global impacts of shipping
- Laura Robson (chair of WGDEC), Cova Orejas and Patricia Puerta convened a session on vulnerable marine ecosystems (VMEs): key structural and functional elements in the deep-sea at 2019 ASC, bringing together experts from the Atlantic, Mediterranean and Pacific to identify ongoing work, key gaps in knowledge and application of new methods and technologies to detect, map, define and assess impacts on VMEs, and explore how Good Environmental Status could be achieved for these ecosystems

- HAPI Chair to attend PICES Annual Meeting as co-Convener for joint ICES/PICES session: The impacts of marine transportation and their cumulative effects on coastal communities and ecosystems (Victoria, Canada, October)
- WGCEAM and WGSHP to hold inaugural EG meetings in late 2019
- WGBOSV Chair and ACOM Chair to attend IMO meeting (PPR 7) to formally submit biofouling Viewpoint and participate in review of international biofouling guidelines (February 2020)
- Workshop proposal for IUCN World Congress 2020, Filling gaps in marine conservation: Best practices and solutions to tackle invasive alien species, supported by WGBOSV and WGITMO (selection decision pending)

## 4.5 Integrated Ecosystem Assessments SG (Mette Skern-Mauritzen, term started January 2017)

### 4.5.1 Introduction

The Integrated Ecosystem Assessments SG Steering Group is responsible for guiding and supporting Expert Groups that develop ecosystem modelling and assessment methods, contribute to state of the environment reporting and underpin guidance on meeting ecological, social and economic objectives.

Topics covered include:

- Development of integrated ecosystem assessments for the Arctic, Baltic, Barents, Celtic, North, northwest Atlantic and Norwegian seas
- Comparative analyses of marine ecosystems
- Ecosystem modelling
- Methods and application of ecosystem-based management and risk assessment
- Linking ecological, economic and social models and analyses to understand interactions and trade-offs between management objectives
- Defining data needs to support integrated ecosystem assessment
- Development of integrated advice to support ecosystem-based management

### 4.5.2 Summary of progress in relation to ToR

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	IEASG chair has engaged in defining EG ToR and linking them to the ICES Science Plan, reviewed EG output and reports, and facilitated communication across EGs and between EGs and ICES Secretariat. The chair organised a very well attended IEASG meeting during the ASC to continue supporting the good communication already established across IEASG EGs.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	The IEASG chair has engaged in the drafting of ToRs for several EGs to be approved in 2019
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and	The IEASG chair has identified science highlights (see below). Through cochairing the WKEO3 the IEASG chair lead the process of identifying science highlights of high relevance to stakeholders and that may be candidate

priorities and demonstrating the impact of their science	topics for inclusion in next generation ecosystem overviews.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	Scientific products from IEASG EGs and others were reviewed and discussed as part of the WKEO3, with a focus on stakeholder interests and relevance. As cochair of WKCONSERVE, the SG chair took part in surveying the use and need for data and approaches to include the human dimension in IEASG EGs, and discussing and assessing opportunities and challenges in meeting their needs.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	<p>IEASG EGs are working on topics relevant to most science priorities in the science plan, and are key to bridging between priorities.</p> <p>The WKEO3 report identified some priorities related to EO and advisory products to support EBM: management objectives, fisheries impact on seabed, climate predictions and projections, productivity changes in marine systems, identifying and mapping vulnerable areas, linking and quantifying pressures to ecosystem functions and processes.</p> <p>Workshops or working group on work processes related to stakeholder involvement and cocreation of knowledge were identified as valuable, to ensure high scientific quality also in this part of the process.</p> <p>The IEASG and FRSG chairs has initiated a discussion on how to improve the scientific support from IEAs to stock assessments, with the aim of organizing a WK on this topic in 2020.</p>
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	Within the IEASG, and with the support from SIHD, there are no major gaps in skills to address the IEASG objectives. The focus should be on bridging disciplines already available in the ICES community. However, there is a limited competence in stakeholder involvement and cocreation processes.
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	<p>There is limited overlap between the EGs. WGs and WGs are organized for topics of interest across groups; eg. IEA methods (WKINTRA, WGCERP, WKCONSERVE) and ecosystem modelling (WGIPEM) for supporting IEAs. The IEASG chair is cochairing WKCONSERVE, bringing together chairs of IEA EGs, WGSOCIAL and WGECON to support bridging social and natural science in EG work.</p> <p>With increasing focus on scoping for IEA, and on products to support EBM, there are more interactions with stakeholders. A WK on stakeholder interactions and relevant approaches could increase the quality of communication with stakeholders. This was recognized as a central factor for translating science into advice by WKSCIENCE2ADVICE.</p>
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	Reviews as described in relation to previous ToR.

ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	This ToR is addressed more or less continuously in discussions with EG chairs, and specifically during IEASG meetings and while supporting relevant WKS. EGs also have back-to-back meetings with others to provide a joint focus and address shared interests and challenges. Several IEA EGs and the IEASG chair are involved in an EU proposal on a whole-Atlantic IEA.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	The IEASG chair participated in the 2019 SCICOM and leadership meetings.
ToR k) Map the EGs and their ToR against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritized	IEASG EGs are targeting most priority areas in the Science Plan, as well as related areas such as Arctic research, Ecosystem overviews (EO), IEAs and MSFD. Some collaborate with SIHD to bring in the human dimension. There is less focus on data needs and feedback to ecosystem monitoring, and further collaboration with ecosystem modelling EGs is required for inclusion of forward projections (with testing of management strategies) into the IEA framework.
ToR l) Promote the development of the Regional Ecosystem Descriptions in standardized formats along the lines proposed by WKECOVER, and WKDECOVER. Propose additions and improvements to those guidelines in collaboration with constituent EG	The IEASG chair cochaired WKECO3 on the next generation Ecosystem Overviews in spring 2019. This WK i) prioritized among scientific products to be included in the next generation EOs based on stakeholder views and scientific maturity, ii) proposed an EO pipeline for new products, iii) identified the need for a WK to revise the risk assessment framework underlying the conceptual figure, iv) proposed a strategic initiative on science communication to support further development of the web based presentation of EOs. Also, the IEASG chair ensured that the revision of EOs was included in ToRs of IEA groups.
ToR m) Promote the development of outline Integrated Ecosystem Assessments with the IEA EG. It is recognized that a variety of approaches to IEA exist, and different approaches will be appropriate to the different IEA EG based on skill sets and local conditions. IEASG will promote innovative approaches including using partial component based analyses, and use of combination quantitative and expert judgement approaches	The IEASG chair co-chaired a session on 'assessing ecosystem vulnerabilities to multiple drivers and stressors' at the ASC 2019, and will co-chair WKCONSERVE on challenges and opportunities for including human dimension in IEAs in October 2019. The IEASG chair is also supporting the work in WGCOMEDA, WGCERP and WKINTRA on IEA methods, and has engaged in an WGIPEM initiative proposing a session on ecosystem modelling for IEAs and management advice for the 2020 ASC.
ToR n) Maintain a watching brief over initiatives in IEA in the wider community beyond ICES. This should include new approaches or methods for IEA, and broadening of the IEA concept to potentially include economic and social drivers and impacts	The IEASG participated in the Open Science Meeting at BIO, Halifax, to promote WGNARS and discuss ICES and NOAA IEA approaches. The IEASG chair presented IEAs in an ICES perspective at the Science for Ocean Action conference in Bergen. The IEA chair is a lead author in both IPCC and UN World Ocean Assessment, and will bring ICES perspectives into these process, as well as IPCC and WOA perspectives back to the IEASG.
ToR o) Promote the development within EGs of standards and guidelines for good practice and Quality Assurance in the collation	There is variable use of data from the ICES Data Center among the IEA groups. The IEASG chair is trying to motivate the EG chairs to increase the use of and communication with the ICES Data Center. It is a



and use of data. This should extend to the maintenance of archived data used in the IEAs, and documentation of all the steps taken to arrive at a conclusion for a given IEA, and the possible involvement of the ICES Data centre	challenge for several IEA groups that much data is stored nationally and not in ICES databases.
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#### 4.5.3 Expert groups

The IEASG expert groups are listed in Annex 2.

#### 4.5.4 Science highlights

- The Open Science Meeting on IEAs, organized by WGNARS at Bedford Institute of Oceanography, successfully brought together both managers and scientists (also outside the IEA community) in a joint discussion on IEAs from both NOAA and ICES perspectives
- The ICES (WGICA)/PICES/PAME Second International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic was held in June in Bergen, focusing on Ecosystem Approach to Management of Arctic Marine Ecosystems: Integrating information at different scales in the framework of EA implementation
- R library and a shiny app for Integrated Trend Analysis by Frelat and Mollmann
- Frelat *et al.* in review. Does size matter? Influence of size synchrony on fish community stability using big data across large marine ecosystems. An output of WGCAMEDA.
- Koutsidi *et al.* in review. Trait-based ecological niches and potential inter-specific competition in Mediterranean nekton. Journal of Applied Ecology. An output from WGCAMEDA.
- Papapanagiotou *et al.* in review. A trait-based approach to an ecosystem model. Journal of Marine Systems. An output from WGCAMEDA.
- Baudron, AR, Serpetti, N, Fallon, NG, Heymans, JJ and Fernandes, PG, 2019. Can the common fisheries policy achieve good environmental status in exploited ecosystems: The west of Scotland demersal fisheries example. Fish Res 211: 217–230. An output from WGEAWESS
- Bentley, JW, Serpetti, N, Fox, C, Heymans, JJ & Reid, DG. (2019) Fishers knowledge improves the accuracy of food web model predictions for the Irish Sea. ICES J Mar Sci. doi/10.1093/icesjms/fsz003/5304545. An output from WGEAWESS

#### 4.5.5 Present priorities and intended actions for 2019–20

In addition to working with EG and fulfilling generic ToR, the IEASG chair will, in the remainder of 2019 and in 2020, focus on

- Co-chairing of WKCONSERVE to bridge IEA with WGECON and WGSOCIAL
- Contributing to the ICES/PICES/PAME symposium on Ecosystem Approach in the Arctic
- Following up on the Arctic fisheries viewpoint

- Following up on the recommendations from WKSCIENCE2ADVICE
- Continuing discussion with the FRSG chair on IEA support to the stock assessment processes

## 4.6 Ecosystem Observation SG (Sven Kupschus, term started January 2017)

### 4.6.1 Introduction

The Ecosystem Observation Steering Group is responsible for guiding and supporting Expert Groups that are meeting immediate data demands and contributing to the running and further development of effectively co-ordinated, integrated, quality assured and cost-effective monitoring in the ICES region and beyond.

Topics covered include:

- Evaluating and optimising survey design to meet the needs of member countries and support advisory requests
- Design, planning and co-ordination of egg and larval, acoustic and trawl surveys
- Identifying and evaluating new technologies for observation and monitoring
- Advising on the design, deployment and efficiency of sampling methods and gears and the use of resulting data for assessment and advice
- Aging and estimating life history parameters of sampled fauna
- Developing monitoring to meet emerging data, science and advisory needs, with a focus on integrated ecosystem assessment and ecosystem-based management

### 4.6.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	This is still difficult for the SG, due to the large and increasing number of EGs with comparatively low attendance at the ASC and WGCHAIRS (3 out of 100+ chairs).  The SG chair has reached out to EG chairs to develop a common vision as to how communication between EGs can be improved and has organised a WK to discuss the process as part of a scientific realignment.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	The SG chair has worked with 14 expert groups, (8WG, 6WK) to prepare their TORs since January 2019. He has used this opportunity to communicate with the chairs and develop a common vision around the SG and its place in ICES, as well as ensuring the TORs are coherent and complementary between EGs.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	WGFTFB: A new topic group was initiated to examine issues in passive gear, especially in its relation to avoiding bycatch of protected species. Another topic group, currently in its second year, focused on the use of artificial lights for bycatch mitigation.  WGFAST: Wideband systems are expected to replace the current standard narrowband scientific

	<p>echosounders, and recent research quantified the impact of this change on abundance surveys.</p> <p>A joint session was held with the South Pacific Regional Fisheries Management Organization (SPRFMO) Habitat Modelling Working Group. The Ambassador of Peru to Ireland, Ms Ana Sánchez, visited during the meeting.</p> <p>WKNSIMP: Data quality was seen more critically by the data collectors than by the data users, probably because details about consistency problems were not fully known to the data users. However, not all problems encountered by the survey scientists have an effect on the data use and this, of course, depends on the purpose of its use. There was agreement on both sides that communication between data collectors and users on potential issues of data quality needs to be improved.</p>
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	4 SISP manuals were published (2 updated) and two entirely new ones had full external peer review. A further manual is awaiting comments from 2 <sup>nd</sup> reviewer.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	<p>The SG chair participated in all SCICOM meeting and fed back to SCICOM when he had concerns or lacked knowledge about the extent to which EG were meeting ICES needs (science and advisory) in their work.</p> <p>The SG chair fed back on the relevance of the science conducted by EOSG to ACOM, and participated in the development of the QAQC process for advice more generally.</p> <p>The SG chair gave a presentation to ACOM on plans to align data collection with data usage within the SG. He received support from the EG and from ACOM to develop more detailed options.</p>
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	<p>EOSG expert groups are generally adequately resourced to perform the current ToR. Limits become apparent when trying to develop new and scientifically more challenging tasks often resulting in avoidance of setting such ToR. There is room for more cooperative workshops to solve the issue and the SG chair has actively supported these.</p> <p>Data collection WGs are generally poorly attended by data users or others with extensive analytical skills. This is hampering data evaluation and new developments in data collection.</p>
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	<p>The SG chair has worked to develop a strategy towards realigning the SG tasks with a greater 'customer' focus. As part of the upcoming WKREO the SG will be looking at rationalisation across EGs (with their input).</p> <p>The SG chair has made EG aware of similar or at least abutting topics being worked on elsewhere in the ICES system. Differences in timing of the EGs seem to</p>

	make response times in inter EG communication very slow.
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	Most EG work to report on data collection for which there is an extensive QA QC procedure and appropriate documentation in place. Other more science oriented groups seem to be operating at a more scientifically rigorous level with significant peer to peer review within the group (symposium style). The SG chair has helped to ensure that this is highlighted in the TORs, the development of which provides for the most frequent form of communication with EG chairs.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	The SG chair has used knowledge of the ICES structure to aid communication by highlighting similarities and synergies between EG. In particular, he has focused on the ACOM groups which have been comparatively isolated from the science elements. There are now EOSG EGs that are connecting with benchmark groups (WGISDAA, WGCATCH) and assessment groups (WGBEAM, IBTSWG). Success so far has been achieved at the level of the individual rather than the group but it is hoped that this will develop more broadly.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	The SG chair has attended both meetings and represented the EGs interests at these meetings.
ToR k) Map the EGs and their ToR against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritised (SP1.1).	ToR are mapped against the science plan headings at the time of inception. The SG chair has contributed to the resolutions database development, based on experience with EOSG, to help ensure that it is able to provide information in a usable format. The Science and Advisory plans provide no information on prioritisation between either the plans or the topics within plans. It is therefore not possible to prioritise the information or data needs.
ToR l) Promote continued improvements and innovation in the design and technology of surveys and other data collection schemes implemented in support of stock assessments and ecosystem studies, leading to gains in survey efficiency, increased diversity and resolution of data collected, and improvements in the interpretation, quality, utility and impact of the data in ICES advice (SP2.1, 2.2).	<p>The survey groups continue to evaluate new technologies that would help to perform existing tasks more efficiently and are generally well-placed to evaluate these appropriately.</p> <p>WGIPS: A session was held in 2019 to assess auxiliary pelagic ecosystem surveying techniques currently used on surveys coordinated by WGIPS.</p> <p>WKMESOMETH2: IBWSS survey program has the capacity to report the relative abundance of mesopelagic fish without disrupting core work program. Additional time and resources are required to allow for targeted biological sampling using a dedicated sampling gear.</p> <p>WGTIFD: Existing electronic tools and the data that they can provide on a vessel during a normal fishing operations were examined. The review will form the basis of future recommendations.</p>

	<p>WGISUR / WKNSIMP have looked at cooperating with RCGs to collect better information under the DCF.</p> <p>The SG chair has given presentations to the two ICES relevant RCGs on how ICES can provide them the advice for developing better surveys. This is being developed further as part of a new data collection evaluation.</p>
<p>ToR m) Determine how at-sea surveys can be adapted in the most cost-effective way to collect key information on ecosystem states and processes in support of the EAM, whilst maintaining the integrity of existing time-series of abundance estimates or indices used for stock assessments and advice.” (SP1.2,SP3.1)</p>	<p>WKESIG and WKICDAT have both evaluated model-based approaches to using survey data which should increase survey efficiency as well as provide ecosystem level information to be integrated.</p> <p>WKNSIMP (joint IBTSWG / WGISUR) have looked at monitoring approaches for better ecosystem survey implementations.</p>
<p>ToR n) Evaluate methods to mitigate the impacts of fishing on marine ecosystems through innovative gear design and technology, with a particular focus on by-catch reduction and development of fishing and survey gears which minimise fuel consumption and habitat damage; (SP2.1)</p>	<p>WGFTFB and WGELECTRA are the main EGs dealing with this ToR. The former is one of the most scientifically prolific EGs with a diverse expertise and range of backgrounds.</p> <p>WGFTFP has developed a new focus on options to avoid the by-catch of PETs in fisheries.</p>
<p>ToR o) Encourage cooperation and collaboration with the fishing industry and other stakeholders in addressing ToR l), m), and n) and develop specific ToR as appropriate</p>	<p>WGFTFB is the main group with permanent connections to the fishing industry. It seems there is other industry work (WKSCINDI) that is, as yet, not well connected to work in the SG.</p> <p>WGRFS works with the recreational fishermen and two WK (the other being WKHDR) are in development in this area for later in the year.</p>
<p>ToR p) Promote the development within EGs of standards and guidelines for good practice in data collection covering the design and implementation of surveys, fishery and other related data collection programmes, the archiving and interpretation of data and samples, the analysis of data, provision of data quality indicators, and the documentation of procedures.” (SP3.1)</p>	<p>The work on SISPs is continuing with new versions and entirely new manuals published this year. The WGBEAM SISP is finally published and the IBTSWG SISP has been reviewed and is awaiting final corrections. The entirely new WGNEPHS manual is in review. Two additional survey manuals on egg and larval surveys have been published this year. Most EGs are now routinely updating the information annually and full reviews are usually done at the end of a EG term unless there are major changes. PGDATA (as part of their new ToR) has adopted some responsibility for documenting and reviewing methodologies, acting as a repository of past information and assisting EGs with advising on statistical approaches.</p>
<p>ToR q) Organize SG meetings which will take place during the ASC and WebEx's, as appropriate, to discuss EG accomplishments and plans, with a focus on the overarching ToR specified above.</p>	<p>The SG chair attended WGCHAIRS and the ASC and the associated events, providing opportunities to communicate with the EG chairs. Webex has proven to be an inefficient means of communicating across EOSG, as the group is too large to get a significant number of chairs to engage. There is currently insufficient overlap / cooperation between EG to make this effective. EG chairs still see their role primarily in organising the EG meeting and writing the report.</p>

### 4.6.3 List of EGs

A full list of EOSG expert groups is provided in Annex 2.

### 4.6.4 Science highlights

As usual the EOSG EGs have done an excellent job in providing the assessment groups with the necessary scientific evidence to conduct their work. Data quality checks have been performed giving greater confidence in the assessments. Work continues on updating survey manuals and one new manual has been added this term with another undergoing update revisions. Significantly, work on manuals has become a routine part of working group activity when discussing or changing methods, thus suggesting the QAQC process has bedded in well.

EOSG is unique in amongst the traditional science steering groups in that its output provides the evidence base for most of the science and advice. As such output is an intermediate product it is difficult to demonstrate its significance in the ICES process through science highlights. For this reason the SG chair is especially pleased with the efforts that the data collection EG-chairs have put into a new science highlight series organised and produced by Julie Kellner and Celine Byrne called “Maintaining the continuity of long-term data sets: challenges and solutions”. It demonstrates that the groups have the commitments to ICES and pride in their important work, as well as publicising their role in science and advice.

In 2019 the first meetings of two new multi-annual WG dealing with cutting-edge methodologies were held. WGTIFD was looking at electronic monitoring methods for fisheries. NOAA has placed a lot of emphasis on this work as have some European institutes, so this EG is a great place to assess progress of the field to date and to decide what works where. In the long-term the group is hoping to come up with some standard methods and practices to ensure regional monitoring compatibility. WGMLEARN is an EG established following the success of a machine learning workshop last year. The group is looking at machine learning as a method of achieving efficiency and repeatability in analytical classification, as well as looking at ways to more comprehensively analyse the large marine data sets that are becoming available. The group has attracted a new set of scientists into the ICES community.

In addition, the WGs WGFTFB and WGFAST had record-breaking years for attendance and international visibility.

### 4.6.5 Communication with EG

EOSG parents more workshops than other SGs. Part of the reason is that the WGs have a substantial workload completing the routine tasks and very little time to deal with science and / or cross group questions- which are often better picked up by WK. The SG chair has actively encouraged cross EG cooperation and this is having a positive impact. Some EG work more freely with others and those are the ones where chairs see their role as wider than just running an EG meeting and preparing a report. Other EG communicate with the rest of the system through shared individuals, this seems particularly prevalent in the pelagic monitoring where survey groups attend the assessment groups and provide their input directly. Concerns for EOSG are that this approach is not prevalent in the demersal groups, and also that communication between pelagic and demersal monitoring is insufficient to make progress on the ecosystem approach. The EOSG chair has spoken to many of the data collection EG chairs to

examine options for making more directed progress and a WKREO has been set up to examine options in more detail with the support of ACOM. This is an important and unfortunately rare opportunity to come together as a SG, and get bottom up feedback on opportunities and risks.

#### **4.6.6 Summary of new EG proposals and EG closing**

EOSG has expanded with significantly more EGs being proposed than closed. There is need for the expansion into new work areas, especially by WK that foster communication. Most of the workshops are one-offs to deal with a specific topic for individual or joint WG. New to the system are two working groups (3-year fixed term) that are examining emergent technologies in improving data collection and data analysis (WGM-LEARN and WGTIFD as previously described).

#### **4.6.7 Forward look**

Solving the communication issues within the SG is still the most important challenge looking forward. Mechanisms for communication exist and are supported by the SG chair, but EOSG needs the right incentives and conditions to get uptake and support.

Organisation of the WKREO will hopefully bring together many of the chairs of the SG and allow groups to feed their knowledge and perspectives into the process. It is intended that this involvement will bring the buy-in needed. It will be important to respect the input provided by the groups when making decisions on SG size and workflows and the SG chair will take the results of WKREO back to ACOM and SCICOM.

The size of the SG needs to be addressed as does its operation at the ICES secretariat level.

### **4.7 Fisheries Resources SG (Patrick Lynch, term started February 2019)**

#### **4.7.1 Introduction**

The Fisheries Resources Steering Group (FRSG) is responsible for guiding and supporting expert groups that are working on advisory-related and science topics contributing to the management of wild-capture fisheries.

Topics covered include:

- single-species and multi-species stock assessment, including data-limited methods.
- management strategy evaluations, addressing uncertainty, and improving the transparency, robustness, efficiency and repeatability of stock assessment
- operationalisation of ecosystem-based fishery management and maximum sustainable yield concepts and their application in mixed, multispecies and emerging fisheries
- fisheries spatial dynamics, mixed fishery interactions and responses to management measures.

#### 4.7.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
a) Engage with and work with Chairs of EG, SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES;	Ongoing via remote correspondence, an in-person meeting during the 2019 ASC, and attendance/participation in ACOM and SCICOM.
b) Review and report on the science being undertaken within EG to SCICOM and ACOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science, including how science was used in ICES advice (method development, advisory products);	Ongoing through this report, participation at ACOM, SCICOM, and FRSG meetings, and the EG summary table on SharePoint.
c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;	Ongoing via collection of research priorities on FRSG SharePoint site and reporting at ACOM and SCICOM.
d) Identify shortfalls in expert availability, skills and knowledge needed to achieve ICES objectives within the SG area and work within the SG and through SCICOM, ACOM, Strategic Initiatives and operational groups to develop capacity and capability;	This has not been explicitly addressed; although the group summarizes operational issues, which may include those related to expertise and capacity.
e) Identify gaps and overlaps in the work of EGs, and propose consolidation, rationalization or forming of new EGs to SCICOM and ACOM as appropriate;	Gaps and overlaps have not yet been evaluated by the SG.
f) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other parts of ICES and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration;	Ongoing via regular operations (remote correspondence, meetings, etc).
g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;	Ongoing via working with ACOM on quality control policies.
h) Review EG reports and activities and, in dialogue with the SCICOM chair and ACOM leadership, provide feedback on ways to improve the impact, communication and influence of their work;	Ongoing, largely through participation in ACOM Leadership meetings.
i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;	This has not yet taken place in FRSG, as the SG is currently compiling needs and priorities, which would inform these proposals.
j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;	Ongoing with FRSG review occurring prior to submission to ACOM or SCICOM.
k) For advisory ToR: to work closely with the ICES secretariat, ACOM leadership and the EG chairs in preparing the research and advisory work plans for the upcoming year to ensure the advisory ToR are allocated to EGs and	Ongoing via development of a 2020 work plan.



Terms of Reference	Progress
addressed adequately and within the advisory request timeframe;	
l) To give Special Requests received during the year immediate and rapid attention to inform the decision about whether or not the Special Request can be accepted and addressed;	Ongoing as Special Requests are received.
m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;	This has not been addressed specifically by the SG, but will as the need arises.
n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.	Ongoing with participation at all mentioned meetings, except WGCHAIRS, which has not yet met during the SG's existence.
o) Represent fisheries assessment and management science in SCICOM and ACOM and work with other SG Chairs and Chairs of EGs to ensure that ICES maintains active and impactful research on these topics.	Ongoing via participation in SCICOM, ACOM, ACOM Leadership meetings, and communication within the SG.
p) Ensure that the development of ICES science is informed by knowledge of current and emerging advisory needs.	Ongoing through communication of advisory needs and priorities directly to SCICOM.
q) Provide feedback to ACOM and advisory services to ensure they are well informed of current and emerging science with potential to meet their needs.	Ongoing through participation in ACOM and ACOM Leadership meetings and fora.
r) Provide feedback to SCICOM and research-oriented group to ensure they are well-informed of developments in advisory request with potential to meet their needs.	Ongoing via this report and participation in SCICOM meetings.
s) Contribute to the development of an ICES culture where other SGs and all EGs better understand advisory needs and have the potential to support advice.	Ongoing through collaboration with other SG chairs and communication within FRSG.
t) Work with ACOM leadership to review suggestions from EG for benchmark processes and present to ACOM and SCICOM an annual plan for benchmark processes for the coming three years.	Ongoing, but not driven by FRSG; rather, FRSG participates in the ACOM benchmark prioritization process.
u) Steer the development and implementation of methods to assess the state of fisheries resources and account for the fisheries impacts in advisory/management perspective.	In the early stages, given that information collected on needs and priorities will inform research and development of methods.

#### 4.7.3 Science Highlights

##### Arctic Fisheries Working Group (AFWG)

AFWG provided scientific advice to support the management of cod, haddock, saithe, redfish, Greenland halibut and capelin in subareas 1 and 2. Taking the catch values provided by the Norwegian fisheries ministry for Norwegian catches, and raising the total landed value to the total catches gives an approximate nominal first-hand landed value for the combined AFWG stocks of ca. 20 billion NOK in 2018 (ca. 2 billion EUR).

#### **Herring Assessment Working Group for the Area South of 62 deg N (HAWG)**

The HAWG met in March 2019 to assess the state of five herring stocks and three sprat stocks. HAWG also provided advice for seven sandeel stocks but reported on those in February. The working group conducted update assessments for the five herring stocks. An analytical assessment was performed for the combined North Sea and Division 3.a sprat, and data limited assessments (ICES category 3 and 5) were conducted for English Channel sprat (spr.27.7de) and sprat in the Celtic Sea (spr.27.67a–c.f–k).

#### **Joint NAFO/ICES Pandalus Assessment Working Group (NIPAG)**

The NIPAG met at the NAFO Secretariat, Dartmouth, Canada from 17 to 22 October 2018 and March 2019 to review stock assessments referred to it by the Scientific Council of NAFO and by the ICES Advisory Committee.

#### **North Western Working Group (NWWG)**

The NWWG met in Copenhagen in Spring 2019 to assess the stock status of some of the demersal fish stocks (cod, haddock, saithe, and Greenland halibut) found in the areas around Greenland, Iceland, and the Faroe Islands as well as two pelagic fish stocks in Icelandic waters (summer spawning herring and capelin). In addition, both demersal and pelagic stocks of redfish were assessed, with some of these stocks being found in the Irminger Sea south of Iceland and Greenland.

#### **Assessment Working Group on Baltic Salmon and Trout (WGBAST)**

The WGBAST met in Saint Petersburg, Russia, 27 March–4 April 2019. The group was mandated to assess the status of salmon in Gulf of Bothnia and Main Basin (subdivisions 22–31), Gulf of Finland (subdivision 32) and sea trout in subdivisions 22–32, and to propose consequent management advices for fisheries in 2020.

#### **Baltic Fisheries Assessment Working Group (WGBFAS)**

The WGBFAS met in April to assess the status and produce a draft advice of the following stocks: Sole in Division 3.a, SDs 20–24; Cod in Kattegat, Cod in SDs 22–24, Cod in SDs 24–32; Herring in SDs 25–27, 28.2, 29 and 32; Herring in SD 28.1 (Gulf of Riga); Herring in SDs 30–31 (Gulf of Bothnia); Sprat in SDs 22–32; Plaice in SDs 21–23, Plaice in SDs 24–32; Flounder in SDs 22–23 (no catch advice); Flounder in SDs 24–25 (no catch advice)

#### **Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE)**

The WGBIE assessed the status of 23 stocks distributed from ICES Divisions 3.a–4.a through to Subarea 9, mostly distributed in Subareas 7, 8 and 9. The group was tasked with conducting assessments of stock status for 23 stocks using analytical, forecast methods or trends indicators to provide catch forecasts and a first draft of the ICES advice for 2019. For two of the *Nephrops* stocks updates were provided on catch data with the advice release delayed until October after the completion of the surveys used for the assessment.

#### **Working Group for the Celtic Seas Ecoregion (WGCSE)**

The WGCSE met in Belgium in spring 2019, and will meet by correspondence in fall 2019 to assess the main demersal stocks in Rockall, West of Scotland, Irish Sea, West of Ireland, Western English Channel, Bristol Channel, Celtic Sea and Southwest of Ireland.

**Working Group on the Biology and Assessment of Deep Sea Resources (WGDEEP)**

The WGDEEP met in 2019 to develop draft advice for half of the 29 deep water stocks, including roundnose grenadier, black scabbardfish, orange roughy, ling, greater fork-beard and blackspot seabream.

**Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species (WGDIAD)**

The annual meeting of WGDIAD was held on 25 September 2018 during the ICES Annual Science Conference in Hamburg, Germany. The Annual Meeting received reports from ICES Expert Groups and workshops working on diadromous species, and considered their progress and future requirements.

**Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL)**

The WGEEL met in Gdańsk, Poland, from 28 August to 2 September 2018 to report on developments in the state of the European eel (*Anguilla anguilla*) stocks, their fisheries and other anthropogenic impacts, and to generate draft advice.

**Working Group on Elasmobranch Fishes (WGEF)**

The WGEF met 18 to 27 June in Lisbon, Portugal to assess elasmobranch stocks. Advice for these stocks will be released on 4 October 2019.

**Working Group on Southern Horse Mackerel, Anchovy, and Sardine (WGHANSA)**

The WGHANSA met by correspondence, 3–7 June 2019 to assess the status and to provide short-term catch scenarios for the stocks of anchovy in Division 9.a (components west and south) and for horse mackerel in Division 9.a. Assessments and short-term forecasts were updated according to the stock annexes

**Working Group on North Atlantic Salmon (WGNAS)**

The WGNAS met in Norway in spring 2019 to consider questions posed to ICES by the North Atlantic Salmon Conservation Organisation (NASCO) and also generic questions for regional and species Working Groups posed by ICES.

**Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)**

The WGNSSK met in Norway in spring 2019 and will meet by correspondence in September to assess and develop draft advice for the main demersal stocks in the North Sea, Skagerrak, and Eastern English Channel, including commercial gadoid species (cod, haddock, whiting, saithe, and Norway Pout), flatfish (sole and plaice), and shellfish (Nephrops and prawn). WGNSSK also increasingly includes analyses for a number of other bycatch species such as turbot, pollack, grey gurnard, and striped red mullet.

**Working Group on Widely Distributed Stocks (WGWIDE)**

The WGWIDE will be developing draft advice in September 2019 for blue whiting, Western and North Sea horse mackerel, North East Atlantic mackerel, Norwegian spring spawning herring, and boarfish.

## **Workshops**

There were also at least 12 different workshops in 2019, including benchmark stock assessments and other scientific work related to fisheries resources (WKBALTCOD, WKBEDLOSS, WKBEDPRES2, WKDLSSL, WKEELDATA2, WKFORBIAS, WKIRISH6, WKNEPHROPS2019, WKROCKMSE, WKSARMP, WKSCINDI, and WKSALMON)

### **4.7.4 Communication with EG**

The EGs remain very active in conducting stock assessments and developing draft advice for ICES/ACOM. The FRSG has been in operation for less than one year. The Steering Group continues to get organized, identify its role within ICES, and establish its operating procedures. The primary mode of communication among this group is SharePoint. The EGs will provide operating concerns affecting their group, as well as science priorities, in their individual SharePoint pages. These concerns and recommendations will be summarized on the FRSG SharePoint site, which will facilitate efficient communication to ACOM, SCICOM, and the ICES community. The group also held an in-person meeting at the 2019 ASC and has decided to hold in-person meetings every year at the ASC in future as well as at WGCHAIRS.

### **4.7.5 Summary of new EG proposals and EG closing**

The FRSG will include two more EGs going forward (WGHARP and WGTRUTTA); although. These are not new EG, but reassignments from other SG.

### **4.7.6 Forward look**

Given its scope of work, the FRSG is well-positioned to coordinate on strategic and research directions that are advice-relevant. Given that the SG is in its early stages, the group's forward looking activities are also in their early stages. The FRSG is currently coordinating with the Integrated Ecosystem Assessments Steering Group in planning a workshop on evaluating and optimizing the use of ecosystem overviews in the advisory process. The SG is also sponsoring and coordinating a proposed session for the 2020 Annual Science Conference on structural uncertainty in fishery stock assessments. In addition to these efforts, the SG is actively compiling and prioritizing its science needs to facilitate more organized communication and action-based responses to priority needs.

## 5 Operational Groups

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### 5.1 Data and Information Group (DIG)

#### 5.1.1 ICES Data Management Update

A number of activities have progressed significantly, both in terms of concrete information, and an ongoing improvement programme for managing data collections across ICES. Nonetheless, data management cannot afford to stay still, and the work of DIG with the Data Centre to progress data governance, accreditation and to continuously review our policies, licencing and services around data are showing that there is still a great deal of work to do.

In the period since the last update to SCICOM, the main activities, progressed in collaboration between DIG and ICES Data Centre, are:

- Completed governance evaluation for TAF, and planned out further evaluations.
- Discussed and agreed approach to data centre accreditation
- Updated the future opportunities and challenges tracker for data and technology related issues
- Work on data policies and data licensing
- Harmonising and opening up data guidelines
- Updated Terms of References and recommendation for DIG chair

#### 5.1.2 Data Governance

The ICES Data Centre and DIG, together with the relevant expert groups have been working on establishing governance groups for each of the main systems that support data flowing into/out of the advisory processes. These groups are/will work to a standard set of ToR's which encompass:

- Establish a governance framework setting out a forward looking plan, including objectives of [*Data Workflow*], responsibilities, processes and resources.
- Provide a platform for user feedback to [*Data Workflow*]. Appropriate actions to be taken with assigned responsibilities and resource requirements will be listed and prioritised
- Oversee and advise on the interpretation and prioritisation of recommendations for [*Data Workflow*]
- Oversee development of user guidance and training for [*Data Workflow*]

Dedicated governance groups have been established for DATRAS and SmartDots applications (Trawl data and Otolith reading respectively) while existing groups are or will be adopting the governance functions in other areas (e.g. SC-RDB for RDB/RDBES WGBYC for bycatch data).

In 2019, three new governance group resolutions are going to be presented for Acoustic Portal, TAF, and spatial fisheries data.

DIG designed a structured governance evaluation that allows individual data workflows to be evaluated for their maturity and capability. This approach asks 43 questions across 10 categories, with each question and answer also logging a maturity rating, identified improvements, and remedial actions. All 43 questions may not necessarily

be applicable to all data workflows or systems, but covers a broad base of best practise in data management.

The maturity ratings are solely used to compare categories internally within an evaluation to highlight areas that represents areas for improvement. The key outcomes of the process are dialogue based, and it is the subsequent improvements and actions that will deliver actual improvements.

Using the approach on the Transparent Assessment Framework provided a basis for the TAF project team to identify particular areas that were already performing well, and areas that could be strengthened. Often, improvements can be as simple as providing documentation for an approach or method, while at other times, concrete changes in approach may be required. As TAF is still in development, it is fully expected that the governance evaluation will be updated to reflect changes and improvements.

This year, DIG will progress a number of governance evaluations in collaboration with other expert groups and the ICES Data Centre:

- Spatial Fisheries Data workflow
- Marine environment database (DOME)
- Vulnerable Marine Ecosystems

Further systems will be examined for feasibility, or the process will be initiated, but might not complete within the year:

- Bird database (ESAS) application
- Bycatch Database

Each governance evaluation will follow a similar structure:

- 1) Initial evaluation, following the categories and questions
- 2) Reviewer scoring and identifying broad improvement areas
- 3) Share initial findings with developers and groups governing the data structure to reach consensus on the state/scoring and identified improvements
- 4) Governance structure identifies actions to prioritise improvements and takes forward the improvement programme
- 5) DIG revisits governance evaluation, specifically to see how categories/questions with identified improvements have been progressed (1–3 years later)

### 5.1.3 ICES Data Centre Accreditation

The issue of accreditation, a process where the overall ability of an institute is assessed objectively and independently against a predefined checklist of criteria, was highlighted in Bureau [Doc 2125](#) and discussed in Bureau in February in relation to a move to an overall quality assurance framework for ICES. This was followed up with a combined (ACOM, SCICOM, Data) document to ACOM “[Towards a Quality Assurance Framework for ICES Advice](#)”<sup>1</sup>. From this, there were clear implementation tasks to move ICES, through its Data Management systems, towards an accreditation and to ensure that all advice products are based on data that adhere to the FAIR principals.

The Data Centre prepared a briefing on accreditation to aid the DIG discussion on which accreditation route to take in the first instance. Following the DIG meeting, a decision on accreditation route was reached:

It should also be noted that DIG identified ICES Data Management accreditation as a medium potential to disrupt in the tracker now used for following changes that may impact ICES data management. This means that there are some challenges in terms of staff resources required to meet this task, as well as opportunities in gaining recognition and increasing confidence in ICES data and advice products.

Overall there was agreement that either of the accreditation schemes would serve ICES well in preparing the evidence for processes. DIG also observed that the accreditation process itself focusses on the existing processes, and does not in itself guarantee best data management practises. But it initiates a programme of work that will identify areas in need of improvement and areas of strength – much like what has been initiated with the governance work. Going through a formal process provides clarity and a need to deliver – but it is equally important to use the information developed in the accreditation process to develop an improvement programme.

The final DIG decision is to start accreditation with the Core Trust Seal (CTS) process.

#### **5.1.4 Next steps**

The Data Centre is now starting to analyse in detail the requirements of the CTS and determine where it will need to improve or collate information in regards to answering the requirements. In short, to gain accreditation an institute would need to score 3 or above on each of the 16 requirements. The current self-assessment highlights that we have potentially 3 requirements where effort needs to be invested to bring ICES up-to-standard. The Data Centre is aware that not all data flows are at this standard, and much of the work now will be focussed on harmonizing documentation, workflows and references to ensure that everything that ICES Data Centre manages is in a consistent form. Further, the intention of the CTS is to have a continuous improvement in fulfilling the criteria, which requires that ICES consider an overall plan detailing how to improve the rating beyond the initial 3 year accreditation.

Based on this, ICES should expect to be in a position to apply for accreditation (for datasets managed within the Data Centre) in 2020.

#### **5.1.5 Future challenges and opportunities**

The ability to identify potential pressure or new tools that can provide effective data management solutions is important for ICES. DIG has initiated a future challenges and opportunities tracker, which will be reviewed regularly. Over the previous year, the initial horizon scanning exercise was turned into a more formal tracker that allow categorisation and evaluation of technologies and developments that might pose challenges or present opportunities for more efficient solutions – or both. During the meeting, DIG reviewed the initial entries, updated wording, categories and in some instances the potential impact, which is termed the potential to disrupt. Not all of the concepts tracked by DIG will necessarily come to fruition, and the register may not necessarily cover every conceivable technical challenge or opportunity for the future. But it is composed by the collective expert knowledge of DIG members, and the respective groups that these members also serve both within and out with ICES. Currently, DIG has identified 15 broad topics, most of which represents both opportunities and challenges. These are summarised in Figure 1. The DIG report to SCICOM for 2019 contains a more detailed discussion of the rationale of each topic.

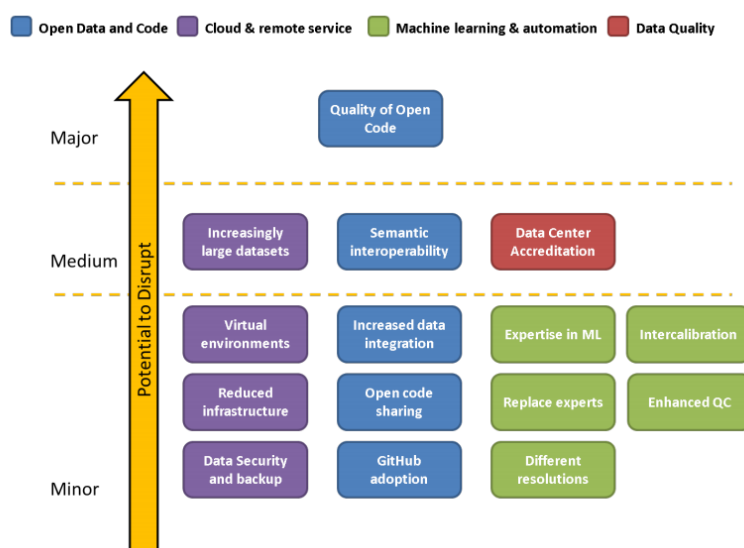


Figure 1. Future challenges and opportunities

### Data Policy and licensing

DIG routinely performs a review of the ICES Data Policy. This is done to ensure that the data policy reflects current considerations and reflects changes in ways to access or work with data. There are now additional data policies that cover areas where the default open access cannot be provided due to the sensitive or commercial nature of the data being used in certain workflows. These data policies were also reviewed in order to ensure there is alignment and consistency in the use of terminology across the policies.

Looking ahead, DIG believes a separation of license and data policy will be better and clearer, and will also better align with current practises elsewhere. As a result, DIG will draw up an overview of existing open data licensing models and evaluate their benefits and drawbacks in the ICES context. This will also better align with aspects of the ICES Data Centre Accreditation.

#### 5.1.6 Harmonising and opening up Data Guidelines

Through the last year, DIG has been defining a method for signposting and describing data guidelines, conventions, and standards. WGFAST has provided valuable input to this process on the basis of their experiences with working up metadata conventions and high definition data storage formats. The work started with a collection of 13 data guidelines that DIG have maintained in its previous composition as an expert group for oceanographic data management. Now the membership of DIG is wider, and more focussed on broader, strategic issues for all of ICES Data. So the decision was made to look for alternative expert groups and external organisations to become maintainers for these guidelines. Work will progress over the coming year to ask other groups if they are willing to look after the data guidelines, and the Marine Environmental Data and Information Network (MEDIN) in the UK have agreed to collaborate on maintaining data guidelines. The format for signposting data guidelines and formats is defined based on descriptive fields commonly used in open source code development.

It is envisaged that the existing webpage for data guidelines will be replaced with a table that lists the titles, maintenance status, link to most recent major version, and link



to a more detailed page that lists the full information about each guideline. This approach can subsequently be extended to include the WGFAST metadata and high definition data formats, and conceptually all other guidance developed to governance groups, other expert groups, and ICES Data Centre to document data guidance. However, the first step is to get the structure established and updated with the existing data guidelines over the coming year.

#### **5.1.7 Updated Terms of References and recommendation for DIG chair**

DIG updated its terms of references to reflect changes to new strategies and make more explicit the work to support and facilitate data governance work. The new terms of reference proposed are:

- a ) Provide guidance and feedback to the ICES Data Centre
- b ) Advise on data regulations and their impact on ICES Strategy, ICES Data Policies, and license considerations.
- c ) Facilitate data governance by performing evaluations and encouraging dialogue between expert groups, governance groups, DIG, and the ICES Data Centre to adopt best practises in data management.
- d ) Evaluate and monitor current and future challenges and opportunities in data management and new technologies for ICES.

Finally, the 3-year term of the current DIG chair is coming to an end in 2019. At the DIG meeting, recommendations from members were sought for a new chair. Given the current work on developing governance, and a lack of volunteers, the group recommended a one year extension of the current chair, Jens Rasmussen (UK). The current chair has indicated willingness to extend the chairmanship for the one year period, and the proposal was endorsed by SCICOM at the 2019 ASC.

## **5.2 Training Group (TG)**

### **5.2.1 Introduction to Training Group**

The Training Group develops the structure and content of the ICES training programme and then guides and supports the provision of training. The ICES training programme was initiated in 2009 to help build capacity in ICES and to support the scientists involved in the advisory process.

ICES offers training courses by high-profile scientists and instructors to ensure that those involved in advisory process, have the skills necessary to complete such work. The objective of ICES involvement in training is quality assurance in the advisory process. Over 30 courses have been offered on a range of topics, including stock assessment (introductory and advanced), ecosystem modelling, model building, management strategy evaluation, Bayesian inference, fisheries advice, trawl survey design and evaluation, integrated ecosystem assessment, analysis and visualization of Vessel Monitoring Systems, communication of science and advice, and how to lead an effective technical meeting. Each course was taught within the context of the ICES science and advisory system to demonstrate best practices as well as state-of-the-art technical skills. More than 700 students have attended ICES courses from over 30 countries. Most students have been from ICES member countries, representing all member countries but one. Many students and several instructors are from other countries and co-operating organizations.

### 5.2.2 Training in 2019

In 2019, seven open training courses were planned. Four are now completed.

- Template Model Building (TMB) for advanced fish stock assessment  
28 January–1 February 2019, Halifax, Canada (31 participants)
- Marine Spatial Planning processes  
18–22 February 2019, Copenhagen, Denmark (15 participants)
- Bio-Economic Management Strategy Evaluation using FLBEIA  
25 February–1 March 2019, Copenhagen, Denmark (14 participants)
- Genetics in support of fisheries and aquaculture management  
17–19 September 2019, University of Algarve, Portugal (18 participants)
- Introduction to Stock Assessment  
21–25 October 2019, ICES HQ, Copenhagen, Denmark
- Introduction to CPUE standardization and development of annual indices of stock abundance  
4–8 November, 2019, ICES HQ, Copenhagen, Denmark
- Introduction to mapping and spatial analysis with R  
25–29 November, 2019, ICES HQ, Copenhagen, Denmark

The first four of these courses are complete and attracted 78 participants. Training Group will meet in October to select training courses for 2020.

### 5.2.3 Promotion of training courses

E-mails are sent to specific WGs and EGs in the ICES community, who may benefit from the courses. In addition, one course is featured in each of the ICES newsletters. Information on course offerings is always available on the ICES website training pages. National representatives to SCICOM and ACOM are encouraged to disseminate information about ICES training courses in their own organisations.

Through participation in H2020 projects, ICES training is also contributing to training opportunities, in cooperation with other project contributing partners

PANDORA project: Paradigm for Novel Dynamic Oceanic Resource Assessments.

ICES is lead partner in implementation of courses across all the projects work packages. Topics are to be defined by stakeholders at regional workshops. Broadly, courses will include survey sampling techniques, data required for assessments, training on state-of-the-art tools and stock assessment challenges.

ClimeFish: Co-creating a decision support framework to ensure sustainable fish production in Europe under climate change. ICES is contributing partner in provision of hands on training, to provide new ClimeFish tools.

All projects are offered the option to submit training course proposals online, which are then passed through the training course selection process. If the project is able to provide funding for training of project participants, ICES training can support the training activity, with handling applications, administration, SharePoint etc. This is to ensure that training activities, be it through projects or standard ICES training, adhere to the aim of cost neutrality.

Some training courses have been fully funded by projects, and have not been subject to the training group selection process.

LME Learn training courses: seeking to improve global ecosystem-based governance of Large Marine Ecosystems

ICES, NOAA and UNDP Cap-Net have jointly organised three training courses on Ocean Governance:

- For the West African Region 5-6 September in Dakar, Senegal
- For the Latin America and Caribbean Region 3-4 October Panama
- For the Asian Region 23-24 January 2019, China

### **5.3 Science Impact and Publication Group (SIPG)**

#### **5.3.1 Introduction to SIPG**

The Science Impact and Publication Group (SIPG) was established in 2017 and coordinates and supports the publication and dissemination of research conducted under the auspices of ICES. The group is responsible for guiding, monitoring and sharing ICES publication output and increasing the reach and impact of ICES publications. SIPG is chaired by Nils Olav Handegard (since September 2019) and has five external members and three members from the ICES Secretariat.

#### **SIPG Terms of Reference**

- a) Monitor publication output and provide advice to SCICOM, ACOM, the ICES Secretariat and network on increasing the reach and impact of ICES publications and science, including grey literature (EG reports).
- b) Catalogue and report on the types and quantity of published outputs facilitated by the ICES network
- c) Develop and apply methods to assess the impact of all types of publications generated by the ICES network.
- d) Develop descriptions of the societal impact of ICES science for reporting and outreach.
- e) Propose approaches for increasing the impact of ICES publications and identify target audiences for communicating science, advice, data and training products.
- f) Develop and recommend policies governing scientific publications as requested by SCICOM.
- g) Review and provide recommendations on Category 1 requests for ICES publications prior to SCICOM meetings and intersessionally.
- h) Review and provide guidance (to SCICOM, ACOM, the ICES Secretariat and network) on the evolution of Science publication and communication and the opportunities and risks it presents for ICES.

#### **5.3.2 Progress in relation to terms of reference**

1. Development of ICES bibliography (ToR a and b). An ICES bibliographic database has been established to record peer-review papers that result from activities conducted in expert groups and more widely under the auspices of ICES. This will have multiple functions, to include reporting on ICES impact, the provision of a web-based tool to search for peer reviewed papers produced by ICES groups and to publicise ICES outputs and impact.

During 2019, a restructuring of the database has been conducted in order to improve data collection and output possibilities. The database is currently being updated to include all data from 2016 to 2019. The next steps will be to: (i) extend the bibliography back in time, with an initial target of 2010, (ii) update how the bibliography database is shown on ICES website, and (iii) develop guidelines on how to provide new entries for the database to ICES Editorial office. Work in support of step (ii) will be coordinated with the development of the general ICES publication website (see below).

2. Development of ICES publications website (ToR a and b). The ICES publications website will be restructured in 2020, based on planning undertaken in 2019. The goals are to: (i) increase the visibility and accessibility of ICES own publications for both scientists and the general public; and (ii) collect and highlight publications produced by ICES EG and their impact.

3. Improving the visibility and assessing the impact of ICES own publications (ToR a, b and c). Through 2019 SIPG have been continuing to develop approaches to increase the visibility of, access to, and impact of ICES publications (Cooperative Research Reports (CRR), Techniques in Marine Environmental Sciences (TIMES) and identification (ID) Leaflets for plankton and diseases). In 2019, all ICES publications have been assigned DOI and had their associated metadata significantly expanded (e.g. addition of keywords). This will make it easier for users to find them, and make it easier for ICES to track their use when e.g. assessing impact. In support of this we are continuing to (i) improve ICES own publication websites (see above), and (ii) assess which additional platforms could be used for uploading and disseminating ICES own publications (e.g. listing in Scopus).

4. Further goals from 2020: In 2020 and subsequent years, we intend to (i) develop descriptions of the societal impact of ICES science for reporting and outreach (ToR a, c and e), (ii) work on identifying target audiences for communicating science, advice, data and training products (ToR a, c and e), (iii) review and provide guidance on the evolution of Science publication and communication and the opportunities and risks it presents for ICES (ToR e).

### 5.3.3 Review of ICES Publications

#### TIMES

The ICES Techniques in Marine Environmental Sciences (TIMES) Series offers peer-reviewed, open-access, detailed descriptions of state-of-the art methods and procedures relating to the marine environment. TIMES is intended for use at the laboratory bench, in the field, or on research vessels.

There has been one TIMES report published since the 2018 ASC, and 4 are in diverse stages of the publication process. A full report on the TIMES series is provided in Annex 3. Overall, since 2000, there have been many years in which no TIMES, or very few TIMES, were published. This pattern may partly be due to the use of TIMES by a narrow range of ICES EG, meaning the author base is small, the topic scope is narrow and the series not broadly well recognised.

Potential exists to broaden the scope of TIMES, opening it up to other ICES EG and a broader range of topics. For example, ICES Survey Protocols (SISP) and ICES User Handbooks could be incorporated to the series. SIPG and the new TIMES editor (Tatiana Tsagarakis, hired 2019) will assess different options with the target of achieving 4 – 5 TIMES published per year.

*List of Published TIMES published in 2019*

No.59 Biological effects of contaminants: Stress on stress (SoS) response in mussels. J. Thain, C. Martinez Gomez, and B. Fernandez Galindo. January 2019. 16 pp. C. Res. 2012/1/SSGHIE10

**CRR**

The Cooperative Research Report (CRR) Series is an outlet for ICES expert groups and ad-hoc groups to present syntheses of their work. All CRR are peer-reviewed and open access. The series editor is Emory Anderson.

The CRR series is very healthy, with a continued high number of reports proposed and published, covering a wide range of topics. There have been 8 CRR published since the 2018 ASC, 4 of which have been within the 2019 calendar year. A further 9 reports are in diverse stages of the publication process.

*List of published CRR in 2019:*

No.349 ICES Report on Ocean Climate 2018. Prepared by the Working Group on Oceanic Hydrography. 119 pp. Multiyear resolution – C. Res. 2013/1/SSGEF05

No.348 Data-limited diadromous species – review of European status. Editors: K. Wilson, L. Veneranta. 284 pp. C. Res. 2017/1/EPDSG07

No.347 Moving towards integrated ecosystem monitoring. Editor: I. de Boois. 34 pp. C. Res. 2016/1/SSGIEOM06

No.346 Handbook of fish age estimation protocols and validation methods. Editors: F. Vitale, L. W. Clausen, G. N. Chonchúir. 191 pp. C. Res. 2013/1/ACOM04

**Plankton ID Leaflet Series**

Plankton Identification (ID) Leaflets aid identification of various marine plankton species. They are peer-reviewed and open access. The series editors are Antonina dos Santos and Lidia Yebra.

The first Plankton ID Leaflet in over 15 years was published at the start of 2019. Six more leaflets are in diverse stages of the publication process, with two more anticipated to be published in 2019. Thus, the current Series Editors are on track with the goal of bringing the publication level back to 2-3 ID Leaflets published per year.

*List of published Plankton ID leaflets in 2019*

No.188 Oithona. Maria Grazia Mazzocchi. May 2019. 19 pp.

**Diseases in Fish and Shellfish ID Leaflet Series**

The Identification (ID) Leaflets for diseases in fish and shellfish provide diagnostic aids for identifying the most important diseases and parasites of fish and shellfish in the North Atlantic and adjacent seas. The series is peer-reviewed and open-access. The series editor is Neil Ruane.

The Series continues to be actively supported. There have been two Leaflets published in 2019, and four leaflets are currently in diverse stages of the publication process.

*List of published Disease ID Leaflets in 2019*

No.69 Piscirickettsiosis. Simon R. M. Jones. January 2019. 9 pp.

No.70 *Tenacibaculum maritimum*, causal agent of tenacibaculosis in marine fish. Revision of ID Leaflet No. 55 by Simon R. M. Jones and Lone Madsen. January 2019. 9 pp.

## 6 Strategic Initiatives

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### 6.1 Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME)

#### 6.1.1 Introduction to SICCME

SICCME is a joint ICES - PICES strategic initiative that was established in 2011 to examine and evaluate consequences of long-term climate change and short-term climate variability on marine ecosystems across the northern hemisphere.

SICCME activities are contributing to both the ICES and PICES Science Plans. This strategic initiative is chaired by Drs. Jackie King (Canada, PICES), Shin-ichi Ito (Japan, PICES), Myron Peck (DE, ICES) and John Pinnegar (UK, ICES). A detailed, 3-year (Phase 3 – 2018-2020) plan was submitted to PICES and ICES at the end of March 2018. The plan included slight modifications and additions to the SICCME mission and activities in light of the success of Phase 2 (2015-2017), including identifying and aligning climate change research activities in regional nodes across the northern hemisphere and elsewhere.

Both Myron Peck and John Pinnegar will finish their term as SICCME Chairs at the end of 2019. From 2019 onwards the SICCME chairs, as endorsed by SCICOM in September 2019, are Christian Möllmann (Germany) and Geir Ottersen (Norway).

#### 6.1.2 SICCME activities 2019

4–9 March 2019: Fourth Lead Author meeting for the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC), Kazan, Russian Federation. Two SICCME members selected to participate. 31 May 2019 final draft submitted to IPCC Technical Support Unit; 14 June–9 August, final government review; 20–23 September, 51st Session of the IPCC: approval of the Summary for Policymakers, and the underlying report.

11–13 March 2019. Scenarios Forum 2019, Denver Colorado (<https://www.scenariosforum2019.com/>). Session on “Scenarios for the Future Ocean”, co-conveners: Tyler Eddy (University of South Carolina), Jörn Schmidt (University of Kiel), Alan Haynie (NOAA), John Pinnegar (CEFAS). This session made extensive use of outputs from the ICES-PICES Workshop on Political, Economic, Social, Technological, Legal and Environmental scenarios used in climate projection modelling (WKPESTLE), 9th June 2018 (report now completed)..

25–29 March 2019. The Working Group on Integrative Physical-biological and Ecosystem Modelling (WGIPEM) met at the Institute of Marine Research, Bergen, Norway. Chair: Solfrid Sætre Hjøllø, Norway, and Marie Maar, Denmark. Discussed recent advances in biological-physical modelling approaches and how to make best use of complex models.

14–19 July 2019: IPCC WG II - AR6 2nd Lead Author Meeting (Kathmandu, Nepal). Attended by John Pinnegar (lead author – Small Islands chapter); Kirstin Holsman (lead author – North America chapter); Shin-ichi Ito and Mette Skern-Mauritzen (lead author – ‘Ocean and coastal ecosystems and their services’ chapter), Christian

Möllmann (lead author – ‘Europe’). Reviewed initial comments on ‘zero-order’ draft of AR6 report.

26–30 August 2019. The 3rd meeting of the ICES Working Group on Seasonal-to-Decadal Prediction of Marine Ecosystems (WGS2D) took place at ICES Headquarters in Copenhagen, Denmark. The group is chaired by Mark Payne (DK) and considers ocean predictions on timescales from seasons to decades in order to support marine resource management. The group contains 26 members from 10 countries.

09–12 September 2019. ICES Annual Science Conference (ASC), Gothenburg, Sweden: SICCME was consulted by conveners of three theme sessions: Session A (Advances in habitat models to inform ecosystem-based management: From theory to practice), Session D (Assessing ecosystem vulnerability to multiple drivers and pressures), Session F (Management objectives, trade-offs and strategies in a changing ocean), and one of the networking sessions (Stakeholder involvement and social aspects of climate change adaptation in fisheries and aquaculture). In addition, two of the keynote presentations explicitly focused on climate change: Gretta Pecl - Climate-driven redistribution of ocean life and its implications for society; Cisco Werner - Re-examining physical-biological linkages in a changing ocean: what will we need to know by 2030?

### **6.1.3 Planned Activities, late 2019 and 2020**

16–27 October 2019. PICES-2019 Annual Meeting, Victoria, British Columbia, Canada - Session S5: Trends in ocean and coastal ecosystems and their services and its future, co-chaired by Shin-ichi Ito (Japan), Angelica Peña (Canada), Kirstin Holsman (USA), Igor Yashayaev (Canada); Session S11 - Incorporating ecosystem variability and climate change into fisheries management: Progress and challenges for EBFM in the 21st century, co-chaired by Kirstin Holsman (USA).

20 October 2019: SICCME business meeting (at PICES annual meeting). During this event, the vision of the group through 2020 will be reviewed and updated including contributions to AR6 and preliminary, longer-term planning for contributions to AR7.

18–21 November 2019: John Pinnegar has been requested to serve as a panelist for a session on “Fisheries Management in the face of a changing climate” at the International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus, to be held at the Food and Agriculture Organization of the United Nations Headquarters in Rome, Italy.

## **6.2 Strategic Initiative on the Human Dimension (SIHD)**

### **6.2.1 Introduction to SIHD**

The Strategic Initiative on the Human Dimension (SIHD) aims to develop strategies to support the integration of social and economic science into ICES work. The human dimension encompasses the social, cultural, economic and governance issues of relevance to the vision and mission of ICES. The current SIHD chairs are Alan Haynie, Eva-Lotta Sundblad, and Jörn Schmidt.

### **6.2.2 SIHD network communication**

SIHD network members are active in various ICES EG, linking work on social and economic aspects within and outside ICES. In addition to regular email communication, a new SIHD Forum was established for discussing topics such as the Roadmap (SIHD forward plan) and issues that arise during the year.

### The SIHD Roadmap

To promote an ongoing discussion about how ICES can become a more active and influential contributor to social and economic science, SIHD co-chairs produced a document, “The SIHD Roadmap” and opened a SIHD Forum on the ICES website in September 2018. The roadmap contains information on planned activities for both the next two years and ideas about SIHD activities over the coming decade. SIHD update the Roadmap as priorities and activities evolve.

#### 6.2.3 Recent SIHD Activities within ICES

SIHD co-chairs met following the SCICOM meeting in March 2019 and planned activities for the remainder of 2019. They also discussed how the SIHD ToR should be modified for 2020 and beyond.

To support ICES, SIHD has been active in supporting the development of new EG and coordinating and communicating with existing EG to support the ICES strategic and science plans, especially the new scientific priority ‘Sea and Society’. SIHD co-chairs have had regular meetings with the WGSOCIAL and WGECON chairs, and with prospective WGBESIO co-chairs and others to coordinate activities.

**WGSOCIAL** held its second meeting at FAO headquarters in Rome 2019, chaired by Lisa Colburn, Marloes Kraan and Amber Himes-Cornell. This EG is making progress on the development of social indicators with an immediate aim of contributing to the ecosystem and fisheries overviews. Data quality is not consistent across all regions.

**WGECON** held its second meeting in Paris June 2019 at the OECD. WGECON, chaired by Hazel Curtis, Olivier Thébaud, and J. Rasmus Nielsen. This EG has attracted a diverse group of economists from across ICES countries. They have identified data and models, skills and institutional arrangements that would be needed for ICES economists to provide impact assessments, advice on optimal benefits of commercial fishing and create models that member countries could populate with their own data and use to provide their own economic advice. A large number of the economists expressed interest in contributing to ICES IEA groups.

**BESIO.** A workshop was held November 2017 (WKSIED-BESIO) to clarify what economic, social, and institutional objectives of marine management are contained in national and European management documents. A follow-on EG would be useful to establish a framework for further work and regions. SIHD has established contact with two potential chairs for such an EG and work with ToRs is ongoing.

**Viewpoint development.** SIHD chairs participated in the WGECON meeting 2019 and discussed the development of a viewpoint with socioeconomic content.

**WKCONSERVE Planning.** Together with the SGIEA chair, the SIHD chairs planned a workshop on Challenges, Opportunities, Needs and Successes in including human dimensions in IEAs (WKCONSERVE). The workshop will assess the status of socioeconomic integration in the IEA groups and develop a roadmap for each IEA group on the next steps towards including socio-economic content. The workshop will be held at the ICES Secretariat 8-10 October, 2019.

**WKECO3.** SIHD chair Jörn Schmidt attended the Workshop on the design and scope of the 3rd generation of ICES Ecosystem Overviews (WKECO3), presenting SIHD



thoughts and experiences on what and how to best include socioeconomic aspects in ICES Ecosystem Overviews.

#### **6.2.4 Activities outside ICES to promote ICES and SIHD**

**IPCC Special Report.** SIHD chair Jörn Schmidt served as contributing author to chapter 5 of the IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels.

**PICES Annual Meeting Plenary Talk - October-November 2018 - Yokohama, Japan.** SIHD chair Alan Haynie gave a plenary talk: "Reaching our audience: How do we better communicate interdisciplinary marine science?" Alan also attended the PICES HD Committee working meetings, presented SIHD activities, and discussed current and future opportunities for ICES/PICES human dimensions collaboration.

**"Our Atlantic Ocean for Growth and Well-Being" - November 2018 - Cabo Verde.** SIHD chair Jörn Schmidt attended the high-level event and presented on a Local Ocean Solution Hub (Dialogue Forum for local scientists and stakeholders with international scientists and stakeholders) and developed new links for ICES.

**Swedish national ICES seminar - January 2019 - Gothenburg Sweden.** SIHD chair Eva-Lotta Sundblad arranged a seminar for Swedish researchers, experts, and agency and ministry employees to promote ICES, and the processes leading toward ecosystem based management.

**United Nations Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects - January 2019 - New York, USA.** SIHD chair Jörn Schmidt attended the multi-stakeholder dialogue and capacity-building partnership event in support of the World Ocean Assessment and presented ICES work, especially work on Integrated Ecosystem Assessments and the Training Programme.

**WKPESTLE, the ICES/PICES workshop on Political, Economic, Social, Technological, Legal and Environmental scenarios used in climate projection modelling,** was organized by SICCME and SIHD chairs. The workshop discussed how to develop frameworks to guide scenario development as input for fisheries and ecosystem models. In addition, plans were made for a session on Ocean Scenarios for the Scenarios Forum in March 2019 in Denver, Colorado, US.

**IMBER Open Science Meeting - June 2019 - Brest, France.** SIHD chairs co-organized several SIHD-related sessions. The conference made a valuable contribution to interdisciplinary marine science and was a great display of the progress made in the field in recent years.

**MARE conference - June 2019 - Amsterdam, Netherlands.** This is the largest gathering of social scientists working in the marine realm. All sessions are relevant for SIHD and ICES and this year the policy day specifically linked to SIHD, WGSOCIAL and WGECON work and provided a good opportunity to increase the visibility of these activities within the scientific community and with stakeholders.

**Meeting of the Group of Experts for the World Ocean Assessment - August 2019 - New York, USA.** SIHD chair Jörn Schmidt attended a five-day workshop to work on the report for the 2nd cycle of the World Ocean Assessment.

**ICES 2019 ASC Session:** "Understanding humans within ecosystems: Innovative tools, strategies, and research." PICES co-sponsored the session.

### 6.2.5 Additional Planned Activities after September 2019

**MSEAS symposium. To be held May 2020 in Yokohama, Japan.** Work is underway to plan the second ICES/PICES MSEAS Symposium. SIHD chairs are co-convening several sessions and serving on the MSEAS scientific committee.

**MSEAS Network.** After the MSEAS symposium in 2016, efforts were undertaken to establish an international network on Marine Socio-Ecological Systems. A Memorandum of Understanding has been developed and is under discussion in NOAA, CSIRO, IFREMER, Kiel University and the Marine Institute in Galway. Further action will be taken at or before MSEAS 2020.

**PICES Annual Meeting Sessions, Oct 2019.** SIHD chair Alan Haynie is co-convening two sessions, “Creating More Effective Integrated Ecosystem Assessments (IEAs) in PICES Countries” and “Integrating economic and social objectives in marine resource management.”

The **Workshop on Global Ocean Social Sciences (WKGLOSS)**, chaired by Denis Bailly, France, Olivier Thébaud, France, and Jörn Schmidt, Germany, will be organized in collaboration with the Ocean University Initiative in Brest, France, on 5<sup>th</sup> and 6<sup>th</sup> November 2019 to identify central issues and conditions for the involvement of the social sciences in the UN initiative on the Decade of Ocean Sciences for Sustainable Development (2021-2030).

### 6.2.6 SIHD Leadership

The terms of chairs Eva-Lotta Sundblad and Jörn Schmidt will end at the end of 2019, so the search is underway for new SIHD chairs. Discussions are currently underway with several potential chairs who span economic and social science disciplines.

## 7 Resolutions database

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ICES Secretariat has focused on developing a plan for handling ICES resolutions and better serving the needs of our community as identified at previous WGCHAIRS meetings and by SCICOM and ACOM. A new approach to developing and handling resolutions and the data they contain will help to brigade ICES science in a more consistent way, move towards a “one ICES” approach to developing and handling the web texts and terms of reference for expert groups, and ensure that data from the forms are easily harvested and can be used to search, manage and present the ICES work portfolio.

This plan for better handling resolutions involves a number of steps:

- 1 ) Review of the resolution form content
- 2 ) Selection of a new form platform
- 3 ) Development of a database to host the data collected from the resolution forms
- 4 ) Development of a searchable user-friendly interface to the database
- 5 ) Development of a processing workflow from the start of the drafting of the resolution through to the approval

The resolution form content is now out for review with the Secretariat, SG chairs and a number of EG chairs. After the review, the next step will be the production stage and testing of the form, and finally revision of the instructions for the completion of resolutions in the “Guidelines for ICES Groups”. The Secretariat is aiming for adoption of

the new form by all expert groups in January 2020, with detailed information provided at the WGCHAIRS meeting.

Several options have been considered for the new form platform and the pros/cons of some of these options have been presented and discussed. It was decided to use Adobe PDF for form creation because of the robustness of exportability and the usability of a PDF form on any platform. PDF has held up to strongly to these tests. Track changes on forms is not an option on all platforms evaluated (including Microsoft Word forms), but Adobe PDF has good commenting options which allow for feedback during resolution development.

The resolutions database will be developed using Microsoft Dynamics as this platform provides the necessary flexibility, is supported with in-house expertise and server resources, and does not require additional financial investment for a database platform.

The workflow process for handling resolutions will be the focus of Secretariat activity during the next months, and the plan is to work closely with the supporting officers and SG chairs to identify a well-defined path for authorship, review, approval, and archival of resolutions.

Microsoft PowerBI will be used for the user interface with the databases. This platform allows for the development of customized dashboards and interactive reports for different audiences (e.g., steering group chairs, SCICOM, ACOM, supporting officers, etc.). Such dashboards will be a hugely valuable tool for monitoring implementation of the Science Plan and for searching and reporting on activity across many EG.

## **8 Annual Science Conference 2019**

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### **8.1 ASC 2019 overview**

The 2019 Annual Science Conference was held in Gothenburg, Sweden from Monday 9 September to Thursday 13 September (four days). The venue was The Swedish Exhibition and Congress Centre, Svenska Mässan, in Gothenburg.

The theme sessions, opening ceremony, open sessions and presentations took place in the purpose built, modern conference venue, with four lecture theatres used to run the 18 theme sessions, three network sessions, and several side events and workshops. The poster exhibit and session took place in the large, central hall, facilitating lots of networking and providing good visibility for the 103 exhibited posters.

#### **8.1.1 Opening and Keynote speakers**

The opening of the conference was held on Monday morning, facilitated by ICES General Secretary Anne Christine Brusendorff and President, Fritz Köster. The ICES community was welcomed to Gothenburg by Jennie Nilsson, Swedish Minister for Rural Affairs.

The Outstanding Achievement Award was awarded by Carl O'Brien to Ann Bucklin.

The opening session was followed immediately by the first opening session and panel debate; Science policy needs and challenges for achieving SDG14. The panel consisted of Elisa Morgera, University of Strathclyde, Glasgow, UK, Katherine Richardson, Sustainability Science Centre, University of Copenhagen, Denmark, Manuel Barange, Food and Agriculture Organization of the United Nations (FAO) and Vladimir Ryabinin, The Intergovernmental Oceanographic Commission of UNESCO. The panel was moderated by Jakob Granit, Swedish Agency for Marine and Water Management.

The second keynote was held on the Tuesday morning, The future of -fish and its role in securing food for a 9-billion world, by Manuel Barange, Food and Agriculture Organization of the United Nations (FAO).

The third was held on Wednesday morning, Climate-driven redistribution of ocean life and its implications for society, by Gretta Pecl, Centre for Marine Socioecology (CMS), Australia.

The fourth and final keynote was on Thursday afternoon, Re-examining physical-biological linkages in a changing ocean: what will we need to know by 2030?, by Cisco Werner, NOAA Fisheries, USA.

### **8.1.2 Poster session**

The poster session was held on Tuesday evening 10 September, in the central H hall of the venue. It was well attended, and has received positive feedback.

### **8.1.3 Travel funds**

10,000 DKK travel funds were allocated to 15 early career scientists. First-time participation at the ASC was especially encouraged.

### **8.1.4 Early Career Scientists**

As well as the travel funds, we also offered a range of activities aimed at ECS participants, including (i) a breakfast meet-up chaired by Simon Jennings called “when, what, who” about how to get involved in the ICES community, (ii) a pop-up scientist event with Howard Browman speaking about how to get published, and (iii) our very popular mentor programme with eight mentor groups covering a range of subjects. In total 175 early career scientists attended the conference.

### **8.1.5 Conference programme and folder**

The conference programme has been available online since May. There was a hard version of the conference programme as a pocket-sized folder. We did not make use of a designated mobile phone app, due to budget constraints.

### **8.1.6 Registration**

The registration system opened in March. The conference fees are at the increased rate, following the SCICOM decision of 2015. Fees included a vegetarian lunch for four days. In total we had 763 registrations to the conference.

### **8.1.7 Abstracts**

As per the decision of 2015, we did not require the submission of extended abstracts. Authors could, if required by their institute, submit an extended abstract or full paper.

The abstracts are available online as PDF files, by clicking on the titles in the timetables. They will all go online as part of the CM document collection.

Poster authors have been asked to submit their posters electronically in August, for inclusion in the abstract collection and later CM document collection.

## **8.2 Theme Session reports**

Eighteen theme sessions were held at the 2019 ASC. Reports from the theme sessions will be linked to the titles below as they become available (all links are unlikely to be active before the 2019 Council meeting, but will be updated as theme session reports are submitted and edited).

**8.2.1 Theme session A: Advances in habitat models to inform ecosystem-based management: from theory to practice**

**8.2.2 Theme session B: Marine aquaculture in a changing ocean**

**8.2.3 Theme session C: Machine learning in marine science**

**8.2.4 Theme session D: Assessing ecosystem vulnerability to multiple drivers and pressures**

**8.2.5 Theme session E: Integrating information on population structure and migration into fisheries stock assessment and management**

**8.2.6 Theme session F: Management objectives, trade-offs and strategies in a changing ocean**

**8.2.7 Theme session G: Understanding ecosystem structure and functioning through the use of traits**

**8.2.8 Theme session H: Drivers of sustainability in fisheries for non-quota and data-poor species**

**8.2.9 Theme session I: Understanding humans within ecosystems: Innovative tools, strategies, and research**

**8.2.10 Theme session J: Harmful algal blooms and jellyfish: Impacts on ecosystems and ecosystem services**

**8.2.11 Theme session K: New approaches to the understanding of energy transfer through the foodwebs**

**8.2.12 Theme session L: Fish adaptive strategies to changes in environment and fishing pressures**

**8.2.13 Theme session M: Quantifying human footprints, indicators and reference points for seabed impacts**

**8.2.14 Theme session N: Advances in data-limited assessment methodologies for marine and diadromous stocks**

**8.2.15 Theme session O: Vulnerable marine ecosystems (VMEs): key structural and functional elements in the deep-sea**

**8.2.16 Theme session P: Desirable and undesirable consequences of mixed fishery management. Effective strategies for reducing discards and choke effects while increasing overall quota utilisation**

#### **8.2.17 Theme session Q: Balancing the social, economic, and ecological impacts of small-scale and recreational fisheries**

#### **8.2.18 Theme session R: Oceanography and ecosystems in the North Atlantic: science and operational services**

### **8.3 Network Session reports**

Three network sessions were held at the 2019 ASC. Reports from the network sessions, will be linked to the titles below as they become available (all links are unlikely to be active before the 2019 Council meeting, but will be updated as network session reports are submitted and edited).

#### **8.3.1 Global impacts of shipping**

#### **8.3.2 Stakeholder involvement and social aspects of climate change adaptation in fisheries and aquaculture**

#### **8.3.3 Natura 2000**

### **8.4 Review of new session formats and options for future ASC**

#### **8.4.1 Guidelines for ICES Annual Science Conference**

These guidelines are being developed to provide one source of essential information for anyone involved in the organisation and running of the ICES Annual Science Conference (ASC), with a focus on work conducted by ICES Science Committee and ICES Secretariat. The guidelines have been developed to keep essential information for anyone involved in the organisation and running of the ICES Annual Science Conference in one place and to ensure this information is subject to a defined and systematic review cycle. An advanced draft of version 2019-1 is being circulated for comment, with expectation this will be released later in Q3 2019 and updated twice per year thereafter. The development of these guidelines will ensure that any agreed changes to ASC arrangements and process are made promptly, in one place and will be accessible to all, rather than requiring reference to SCICOM papers, for example.

#### **8.4.2 Session selection at the ASC**

For ASC 2020 a modified process for selecting ASC theme and network sessions will be adopted to increase breadth of science coverage at ASC, to align with science plan and to provide opportunities for accepting excellent papers on any marine science topic (introduction of a contributed papers session). Further, to seek to achieve a gradual reduction in paper rejection rates, SCICOM recommended five rather than four parallel theme sessions would be held. There would also be a synthetic keynote to begin each day and we would seek to accommodate any poster that was offered (subject to scientific norms). These are progressive rather than radical changes because SCICOM recognise overall feedback on the ASC, albeit from participants rather than any potential participants who missed out, remains positive. Discussions on rejection rates and their effects would be better informed if we had information on whether the rejection of an individuals' paper is linked to non-attendance at the meeting.

SCICOM also took decisions to introduce a 'contributed papers' session at future ASC (to be convened by SCICOM members and to provide opportunities to submit work on any marine science topic relevant to our strategic and science plans) as well as to

modify the process for selecting theme and network sessions to ensure more equitable coverage of topics in the science plan by theme sessions. In future it will be recommended to accommodate five parallel theme sessions at the ASC and also to adopt the default assumption that all submitted posters meeting scientific norms should be accepted. Guidance on the ASC was signed-off at or shortly after the SCICOM meeting and will be included in the first edition of a new “Guidelines for ICES Annual Science Conference”.

The new process was applied to select sessions for the Copenhagen ASC

## **8.5 ASC 2020**

The 2020 Annual Science Conference will be held at DGI-Byen, Øksne-hallen, in Copenhagen, Denmark, from Monday 7 to Thursday 10 September 2020 with five parallel theme session rooms available.

## **9 ICES Co-sponsored Symposia**

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The following symposia were selected by SCICOM for ICES co-sponsorship in 2019 and 2020:

### **9.1 ICES co-sponsored symposia held in 2019**

- Shellfish - Resources and Invaders of the North  
5–7 November 2019, Tromsø, Norway
- International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus  
18–21 November 2019, Rome, Italy
- NASCO Symposium: Managing the Atlantic salmon in a Rapidly Changing Environment – Management Challenges and Possible Responses  
3–4 June 2019, Tromsø, Norway
- Challenging the scientific legacy of Johan Hjort: Time for a new paradigm shift in marine research?  
12–14 June 2019, Bergen, Norway
- Second International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic  
25–27 June 2019, Bergen, Norway

### **9.2 ICES co-sponsored symposia to be held in 2020**

- International Symposium on Plastics in the Arctic and Sub-Arctic Region  
21–23 April 2020, Reykjavik, Iceland
- Oceans Past VIII Conference  
10–13 May 2020, Bruges, Belgium
- Marine Socio-Ecological Systems (MSEAS 2020) - Navigating global change in the marine environment  
25–29 May 2020, Yokohama, Japan
- World Fisheries Congress 2020

11–15 October 2020, Adelaide, Australia

All symposia are linked to the ICES science priorities as identified in the ICES Science Plan, and the symposia selected for co-sponsorship in 2019 and 2020 address six of our seven science priorities. Further details of symposia are provided in Annex 6.

Symposia	Science priorities						
	Ecosystem science	Impacts of human activities	Observation and exploration	Emerging techniques and technologies	Seafood production	Conservation and management science	Sea and society
Shellfish - Resources and Invaders of the North (2019)	*				*	*	
International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus (2019)		*			*	*	*
NASCO Symposium: Managing the Atlantic salmon in a Rapidly Changing Environment – Management Challenges and Possible Responses (2019)	*	*			*	*	
Challenging the scientific legacy of Johan Hjort: Time for a new paradigm shift in marine research? (2019)					*	*	
Second International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic (2019)			*			*	*
International Symposium on Plastics in the Arctic and Sub-Arctic Region (2020)		*	*				
Oceans Past VIII Conference (2020)		*				*	



Marine Socio-Ecological Systems (MSEAS 2020) - Navigating global change in the marine environment (2020)							*
World Fisheries Congress 2020 (2020)		*			*	*	*

### 9.3 Future handling of symposium resolutions

Following a decision taken at the September 2019 SCICOM meeting, proposals for symposia to be held in 2021 will be reviewed at the SCICOM March meeting in 2020. This approach, where all symposia proposals are reviewed at the same time on an annual basis, will also be followed in future. The approach will lead to more equitable treatment of submissions, as the previous process had favoured a 'first come first served' approach and the risk that available funds were allocated before all potential symposia had been considered.

The Secretariat/Communications will be working towards increasing the prominence of ICES support for Early Career Scientists via news articles and interviews with ECS attending ICES co-sponsored symposia.

## Annex 1: List of ICES Expert Groups that were dissolved, established, changed committee or were renamed

### *Change of Chairs (ACOM, SCICOM, Steering Groups (SG)/Operational Groups (OG)/Strategic Initiatives (SI)*

AFFILIATION	GROUP NAME	CHAIR – OUTGOING	CHAIR – INCOMING
SCICOM OG	Science Impact and Publication Group (SIPG)	Simon Jennings, UK	Nils Olav Handegard, Norway
SCICOM SI	Strategic Initiative on the Human Dimension (SIHD)	Jörn Schmidt, Germany and Eva-Lotta Sundblad, Sweden	TBA
SCICOM SI	ICES-PICES Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME)	Myron Peck, Germany, and John Pinnegar, UK	Christian Möllmann (Germany) and Geir Ottersen (Norway)

### *Established Expert Groups*

AFFILIATION	GROUP NAME	CHAIR – OUTGOING	CHAIR – INCOMING
EOSG	Working Group on Northwest Atlantic Ecosystem Observations (WGNWAEO)		Jonathan Hare, USA and Alain Vézina, Canada
EPDSG	ICES/ PICES Working Group on Small Pelagic Fish (WGSPF)		Myron Peck, Germany (ICES), Ignacio Catalan, Spain (ICES), Ryan Rykaczewski, USA (PICES), and Akinori Takasuka, Japan (PICES)
EPDSG	ICES-PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields (WGGRFY)		C. Tara Marshall, UK (ICES), Paul Spencer, USA (PICES), Alan Baudron, UK (ICES) and John Morrongiello, Australia
FRSG	Working Group on Transparent Assessment Framework Governance (WGTAFGOV)		Nils Olav Handegard (Norway)
HAPISG	Working Group on Cumulative Effects Assessment Approaches in Management (WGCEAM)		Vanessa Stelzenmüller, Germany, Roland Cormier, Germany, and Gerjan Piet, the Netherlands
HAPISG	Working Group on Shipping Impacts in the Marine Environment (WGSHIP)		Cathryn Murray, Canada
HAPISG	Working Group on Offshore Wind Development and Fisheries (WGOWDF)		Andy Lipsky, USA; and Chair (TBD), Europe
IEASG	Working Group on Integrated Ecosystem Assessment of the Greenland Sea (WGIEAGS)		Jesper Boje, Denmark/Greenland, and Colin Stedmon, Denmark

### *Expert Groups that changed Steering Group*

AFFILIATION	EXPERT GROUPS	OLD AFFILIATION (SG)	NEW AFFILIATION (SG)
	Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species (WGDIAD)	Ecosystem Processes and Dynamics Steering Group (EPDSG)	Fisheries Resources Steering Group (FRSG)
	Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout ( <i>Anadromous Salmo trutta</i> ) Populations (WGTRUTTA)	Ecosystem Processes and Dynamics Steering Group (EPDSG)	Fisheries Resources Steering Group (FRSG)
	ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals (WGHARP)	Human Activities, Pressures and Impacts Steering Group (HAPISG)	Fisheries Resources Steering Group (FRSG)

### *Change of Chairs*

AFFILIATION	EXPERT GROUPS	CHAIR – OUTGOING	CHAIR – INCOMING
EPDSG	Working Group on Integrated Morphological and Molecular Techniques (WGIMT)	Naiara Rodriguez-Ezpeleta, Spain (outgoing co-chair)	Jasmin Renz, Germany
EPDSG	Working Group on Cephalopod Fisheries and Life History (WGCEPH)	Jean-Paul Robin, France (outgoing co-chair)	Ana Moreno, Portugal; and Daniel Oesterwind, Germany
FRSG	Herring Assessment Working Group for the Area South of 62°N (HAWG)	Susan Mærsk Lusseau, UK (outgoing co-chair)	Afra Egan, Ireland,
FRSG	Baltic Salmon and Trout Assessment Working Group (WGBAST)	Stefan Palm, Sweden	Martin Kesler, Estonia
FRSG	Working Group for the Bay of Biscay and Iberian waters Ecoregion (WGBIE)	Lisa Readdy, UK (outgoing co-chair)	No incoming, the Group will continue with one Chair.
FRSG	Working Group for the Celtic Seas Ecoregion (WGCSE)	Timothy Earl, UK (outgoing co-chair)	Mathieu Lundy, UK
FRSG	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)	Pascal Lorange, France (outgoing co-chair)	Ivone Figueiredo, Portugal
FRSG	Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL)	Alan Walker, UK	Tbc
FRSG	Working Group Elasmobranch Fishes (WGEF)	Samuel Shephard, Ireland and Paddy Walker, the Netherlands	Jurgen Batsleer, The Netherlands and Pascal Lorange, France
FRSG	ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals (WGHARP)	Mike Hammill, Canada	tbc
FRSG	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)	José De Oliveira, UK	Tanja Miethe, UK

AFFILIATION	EXPERT GROUPS	CHAIR – OUTGOING	CHAIR – INCOMING
HAPISG	Working Group on Marine Planning and Coastal Zone Management (WGMP CZM)	Matt Gubbins, UK (outgoing co-chair)	Catriona Nic Aonghusa, Ireland
HAPISG	Working Group on Ecosystem Effects of Fishing Activities (WGECO)	Jeremy Collie, USA; and Stefán Áki Ragnarsson, Iceland	Tobias van Kooten, NL and Brian Smith, USA
IEASG	Working Group on Ecosystem Assessment of Western European Shelf Seas (WGEA-WESS)	Steven Beggs, UK, and Eider Andonegi, Spain	Marcos Llope, Spain and Debbi Pedreschi, Ireland
IEASG	Working Group on Comparative Ecosystem-based Analyses of Atlantic and Mediterranean marine systems (WGCOMEDA)	Christian Möllmann, Germany, Marta Coll, Spain, Manuel Hidalgo, Spain, Hilmar Hinz, Spain	Sofia Henriques, Portugal, M. Cristina Mangano, Italy, Paris Vasilakopoulos, Italy and Romain Frelat, Netherlands
IEASG	Working Group on Integrative, Physical-biological, and Ecosystem Modelling (WGIPEM)		Sonja van Leeuwen, Netherlands
IEASG	Working Group on Integrated Assessment of the Norwegian Sea (WGINOR)		Anna Olafsdottir

### 2019 workshops

AFFILIATION	WORKSHOP NAME	CHAIRS	COMMENTS
ASG	Workshop on Emerging Mollusc Pathogens (WKEMOP)	Janet Whaley - Ryan B. Carnegie	
ASG	Stakeholder Workshop on the Value of Genetic and Genomic Tools for identifying species in mixed landings, fish products and by-products (WKGenoTools)	Claudia Junge - Jann Thorsten Martinsohn	
EOSG	Workshop on Herring Acoustic Spawning Surveys (WKHASS)	Pablo Carrera	
EOSG	Workshop on Index Calculation based on DATRAS (WKICDAT)	Holger Haslob	
EOSG	Workshop on the development of practical survey methods for measurements and monitoring in the mesopelagic zone (WKMESOMeth)	Ciaran O'Connell - Gavin Macaulay	
EOSG	Workshop on Impacts of planned changes in the North Sea IBTS (WKNSIMP)	Kai Ulrich Wieland -	
EOSG	Workshop on the Realigning of the Ecosystem Observation Steering Group (WKREO)	Sven Kupschus, Matthias Kloppmann - Colm Lordan	
EOSG	Workshop on scrutinizing of acoustic data from the IESSNS survey (WKSCRUT2)	Jan Arge Jacobsen - Age Høines	
EOSG	Workshop on unavoidable survey effort reduction (WKUSER 2019) (Will meet in 2020)	Stan Kotwicki	
EOSG	Workshop on age validation studies of small pelagic species (WKVALPEL)	Kélig Mahé - Javier Rey - Pierluigi Carbonara	

AFFILIATION	WORKSHOP NAME	CHAIRS	COMMENTS
EOSG	Workshop on Whiting biological Quality Indicators (WKWHIQI) (Will meet in 2020)		
EOSG	Workshop on sardine ( <i>Sardina pilchardus</i> ) Age reading of otoliths (NE At-lantic and Mediterranean) (WKARAS 2)	Eduardo Soares - Pedro Torres	
EOSG	Workshop on Age estimation of Norwegian Spring Spawning Herring ( <i>Clupea harengus</i> ) (WKARNSSH)	Jane Godiksen	
EOSG	Workshop on Elasmobranchs maturity (WKSEL3 2018)	Maria Cristina Folles - Pierluigi Carbonara	
EOSG	Third Workshop on Optimization of Biological Sampling (WKBIOPTIM3)	Ana Cláudia Fernandes - Eirini Mantzouni	
EOSG	Workshop on Integrating human dimensions into the management of marine recreational fisheries (WKHDR)	Christian Skov - Kieran Hyder - Harry Vincent Strehlow	
EOSG	Third Workshop on Age Reading of European and American Eel (WKAREA3)	Françoise Daverat - Isabel Domingos - Kélig Mahé	
EOSG	Workshop on Scale, Otolith Biochronology Archives (WKBioArc)	Deirdre Brophy - Martha Robertson	
EOSG	Workshop on evaluating survey information Celtic Sea gadoids (WKESIG)	David Stokes	
EOSG	Workshop on Elasmobranchs maturity (WKSEL3)	Maria Cristina Folles - Pierluigi Carbonara	
EOSG	Workshop on Better Coordinated Stomach Sampling (WKBECOSS)	Izaskun Preciado - Stefan Neuenfeldt	
EOSG	Workshop on Elasmobranchs maturity (WKSEL3)	Maria Cristina Folles - Pierluigi Carbonara	
FRSG	Workshop on scoping of physical pressure layers causing loss of benthic habitats D6C1– methods to operational data products (WKBEDLOSS)		
FRSG	Workshop to evaluate and test operational application of human activities causing physical disturbance and loss to seabed habitats (D6C1-C4) (WKBEDPRES2)	Phillip Boulcott	
FRSG	Workshop on the design and scope of the 3rd generation of ICES Ecosystem Overviews (WKEO3)	Mette Skern-Mauritzen - Henn Oja-veer	
FRSG	Workshop on a Research Roadmap for Mackerel (WKRRMAC)	Carl O'Brien - Mark Dickey-Collas	
FRSG	Workshop on Data Limited Stocks of Short-Lived Species (WKDLSSLS)		
FRSG	Workshop on Designing an Eel Data Call 2 (WKEELDATA2)		

AFFILIATION	WORKSHOP NAME	CHAIRS	COMMENTS
FRSG	Workshop for the review of the scientific basis for a UK non-detriment finding (NDF) for the international trade in European eel, in relation to CITES legislation (WKEELNDF)	Eugene Nixon	
FRSG	Data Evaluation meeting for the Benchmark Workshop for Flatfish stocks in the North Sea and Celtic Sea (WKFlatNSCS)	-	
FRSG	Benchmark Workshop on sharing information on the Irish Sea ecosystem, stock assessments, and fisheries issues, and scoping needs for assessment and management advice (WKIrish6)	Daniel Howell - Matthew Lundy	
FRSG	Ninth Workshop on the Development of Quantitative Assessment Methodologies based on LIFE-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks (WKLIFE IX)	Carl O'Brien - Manuela Azevedo	
FRSG	Workshop on Methodologies for Nephrops Reference Points (WKNephrops)	Michael Bell	
FRSG	Benchmark Workshop on Rockall Haddock had.27.6b (WKROCK1)	Helen Dobby	
FRSG	Second Benchmark Workshop on Rockall Haddock had.27.6b (WKROCK2)	-	
FRSG	Workshop for North Atlantic Salmon At-Sea Mortality (WKSalmn)	Gerald Chaput and tbd	
FRSG	Workshop on the Iberian Sardine Management and Recovery Plan (WKSARMP)	Manuela Azevedo	
FRSG	Workshop on the benchmark assessment and management plan evaluation for Icelandic haddock and saithe (WKICEMSE)	-	
FRSG	Workshop on North Sea Management Strategy Evaluation (WKNSMSE2)	José De Oliveira	
FRSG	Workshop on Science with Industry Initiatives (WKSCINDI)	Steven Mackinson - Jon Elson	
FRSG	Workshop on incorporating discards into the assessments and advice of elasmobranch stocks (WKSHARK5)	Paddy Walker	
FRSG	Workshop on Training for the Transparent Assessment Framework: North Sea and Celtic Seas (WKTAF-NSCS)	Arni Magnusson - Colin Millar	
FRSG	Benchmark Workshop on Baltic Cod (WKBALTCOD)	Johan Lövgren, Joakim Hjelm, Michele Casini	
FRSG	Workshop on the Ecosystem Based Management of the Baltic Sea (WKBALTIC)	Rüdiger Voss - David Reid	
FRSG	Workshop on catch forecasts from biased assessments (WKFORBIAS 2018)	Larry Alade - Christopher Legault	
FRSG	The second Workshop on guidelines for management strategy evaluations (WKGMSSE2)	Carmen Fernandez	
FRSG	Workshop on Estimation with the RDBES data model (WKRDB-EST)	Nuno Prista - Kirsten Birch Håkansson	

AFFILIATION	WORKSHOP NAME	CHAIRS	COMMENTS
FRSG	Workshop on Populating the RDBES data model (WKRDB-POP)	David Currie - Edvin Fuglebakk	
FRSG	Workshop on standardized data formats for input to assessment models (WKSTOCKADE)	James Thorson - Anders Nielsen	
FRSG	The joint ICES/Probyfish Workshop on identification of target and bycatch species (WKTARGET)	Youen Vermard	
HAPISG	Workshop on cumulative effects assessment approaches in management (WKCEAM)	Vanessa Stelzenmuller - Roland Cormier - GerJan Piet	
HAPISG	Workshop on Tradeoffs Scenarios between the Impact on Seafloor Habitats and Provisions of catch/value (WKTRADE2)	François Bastardie - Jochen Depestele	
HAPISG	Workshop on Global Ocean Social Sciences (WKGLOSS)	Denis Bailly - Olivier Thébaud - Jörn Schmidt	
IEASG	Workshop for the production of the Oceanic North East Atlantic Ecoregion Ecosystem Overview (WKABNJ)	Francis Neat - Odd Aksel Bergstad	
IEASG	Workshop for the production of the Azorean Ecoregion Ecosystem Overview (WKAZOREco)	Mário Rui Pinho - Maria de Fatima Borges	
IEASG	Workshop on Challenges, Opportunities, Needs and Successes in including human dimensions in IEAs (WKCONSERVE)	Alan Haynie - Jörn Schmidt - Mette Skern-Mauritzen - Eva-Lotta Sundblad	
IEASG	Second Workshop on integrated trend analyses in support to integrated ecosystem assessment (WKINTRA2)	Saskia Otto - Benjamin Planque	
IEASG	Workshop on Kattegat Ecosystem Modelling Scenarios with Stakeholder Participation (WKKEMSSP)	Erik Olsen - Andrew Kenny - Andrea Belgrano	
IEASG	Workshop on ecological valuing of areas of the Barents Sea (WKBAR)	Adriaan Rijnsdorp - Markku Viitasalo - Mariano Koen-Alonso	
IEASG	Workshop on methods to develop a swept-area based effort index (WKSABI)	Kai Ulrich Wieland	

*2020 workshops (one off meetings)*

AFFILIATION	WORKSHOP NAME	CHAIRS	COMMENTS
FRSG	Benchmark Workshop for Demersal species (WKDEM)	ICES Chair Daniel Howell - external Chair (tbc)	
FRSG	Benchmark Workshop for Flatfish stocks in the North Sea and Celtic Sea (WKFlatNSCS)	External Chair Meaghan Bryan - ICES Chair Timothy Earl	
FRSG	Benchmark Workshop on Greater Silver Smelt (WKGSS), chaired by	External Chair (tbc) and ICES Chair (tbc)	
FRSG	Benchmark Workshop on herring ( <i>Clupea harengus</i> ) in the Gulf of Bothnia (WKCluB)	Noel Holmgren	
FRSG	ICES-JRC Workshop on Model Ensembles for Stock Assessment and Advice (WKENSEMBLE)	Liz Brooks - C��il��n Minto - Ernesto Jardim	
FRSG	Workshop on guidelines and methods for the evaluation of rebuilding plans (WKREBUILD)	Martin Pastoors - Vanessa Trijoulet	
FRSG	Workshop on Atlantic chub mackerel ( <i>Scomber colias</i> ) (WKCOLIAS)	Alexandra Silva - Teresa G. Santamar��a	
FRSG	Workshop on the Ecosystem Based Management of the Baltic Sea (WKBALTIC)	Rudi Voss - David Reid	
FRSG	Workshop on the Review and Future of State Space Stock Assessment Models in ICES (WKRFSAM)	Noel Cadigan	
EPDSG	Workshop on Scallop Aging (WKSA)	David Palmer - Karen Vanstaen	
IEASG	Workshop on methods and guidelines to link human activities, pressures and state of the ecosystem in Ecosystem Overviews (WKTRANSPARENT)	Henn Ojaveer - Mette Skern-Mauritzen	
EOSG	Workshop on Age reading of Sea bass ( <i>Dicentrarchus labrax</i> ) (WKARDL2) (Will meet in 2021)	TBA	



## Annex 2: Full list of ICES Expert Groups

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### Expert Groups under Aquaculture Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
1	<a href="#">Working Group on Pathology and Diseases of Marine Organisms</a>	WGPDMO	Ryan Carnegie, USA	2019	2021	12	9
2	<a href="#">Working Group on Social and Economic Dimensions of Aquaculture</a>	WGSEDA	Gesche Krause, Germany	2018	2020	12	7
3	<a href="#">Working Group on Application of Genetics in Fisheries and Aquaculture</a>	WGAGFA	Jann Martinsohn, Italy	2018	2020	38	9
4	<a href="#">Working Group on Scenario Planning on Aquaculture</a>	WGSPA	Ben Halpern, USA	2018	2021	18	7
5	<a href="#">Working Group on Environmental Interactions of Aquaculture</a>	WGEIA	Terje Svåsand, Norway	2018	2020	17	6
6	<a href="#">Working Group on Ecological Carrying Capacity in Aquaculture</a>	WGECCA	Jeffrey Fisher, Ireland	2019	2021	8	5
7	<a href="#">Working Group on Open Ocean Aquaculture</a>	WGOOA	Bela Buck, Germany	2019	2021	10	8
8	<a href="#">Workshop on Emerging Mollusc Pathogens</a>	WKEMOP	Ryan Carnegie, United States	2019	2019	16	10

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
9	<a href="#">Stakeholder Workshop on the Value of Genetic and Genomic Tools for identifying species in-mixed landings, fish products and by-products</a>	WKGenoTools	Claudia Junge, Norway Jann Martinsohn, Italy	2019	2019	Pending meeting	Pending meeting

### Expert Groups under Ecosystem Processes and Dynamics Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
1	<a href="#">Working Group on Biodiversity Science</a>	WGBIODIV	Christopher Lynam, UK, and Andrea Belgrano, Sweden	2019	2021	13	6
2	<a href="#">Working Group on Integrated Morphological and Molecular Taxonomy</a>	WGIMT	Naiara Rodriguez-Ezpeleta, Spain, and Elaine Fileman, UK	2017	2019	17	7
3	<a href="#">Benthos Ecology Working Group</a>	BEWG	Silvana Birchenough, UK	2018	2020	18	9
4	<a href="#">Working Group on Phytoplankton and Microbial Ecology</a>	WGPME	Marie Johansen, Sweden and Rowena Stern, UK	2019	2021	12	8
5	<a href="#">Working Group on Crangon fisheries and life history</a>	WGCRAN	Claudia Günther, Germany	2019	2021		
6	<a href="#">Working Group on Zooplankton Ecology</a>	WGZE	Sophie Pitois, UK, and Lidia Yebra, Spain	2018	2020	36	14
7	<a href="#">Working Group on Oceanic Hydrography</a>	WGOH	Paula Fratantoni, USA, and César González-Pola, Spain	2018	2020	22	13
8	<a href="#">Working Group on the Biology and Life History of Crabs</a>	WGCRAB	Martial Laurent, France	2017	2019	pending meeting	pending meeting
9	<a href="#">Working Group on Resilience and Marine Ecosystem Services</a>	WGRMES	Sebastian Villasante, Spain, and Andrea Belgrano, Sweden	2018	2020	10	4

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
10	<a href="#">ICES IOC Working Group on Harmful Algal Bloom Dynamics</a>	WGHABD	Eileen Bresnan, UK	2018	2020	20	13
11	<a href="#">Working Group on Cephalopod Biology and Life History</a>	WGCEPH	Graham Pierce, Spain, and Jean-Paul Robin, France	2017	2019	pending report	pending report
12	<a href="#">Working Group on Fisheries-Induced Evolution</a>	WGEVO	Bruno Ernande, France	2019	2021	pending meeting	pending meeting
13	<a href="#">Working Group on Operational Oceanographic Products for Fisheries and the Environment</a>	WGOOFE	-	-	-	pending resolution	pending resolution
14	<a href="#">Working Group entitled "Towards a EUROpean OBServatory of the non-indigenous calanoid copepod <i>Pseudodiaptomus marinus</i>"</a>	WGEUROBUS	Marco Uttieri, Italy, and Arantza Iriarte, Spain	2019	2021	pending meeting	pending meeting
15	<a href="#">Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (<i>Anadromous Salmo trutta</i>) Populations</a>	WGTRUTTA	Johan Höjesjö, Sweden, and Alan Walker, UK	2017	2019	pending report	pending report
16	<a href="#">Working Group on Seasonal-to-Decadal Prediction of Marine Ecosystems</a>	WGS2D	Mark Payne, Denmark	2017	2019	pending report	pending report
17	<a href="#">Scallop Assessment Working Group</a>	WGScallop	Lynda Blackadder, UK	2019	2021	pending meeting	pending meeting
18	<a href="#">Working Group on Marine Mammal Ecology</a>	WGMME	Anders Galatius, Denmark, and Anita Gilles, Germany	N/A		34	13
19	<a href="#">OSPAR/HELCOM/ ICES/Working group on Seabirds</a>	JWGBIRD	Ian Mitchell, UK; Nele Markonnes, Germany; Volker Dierschke, Germany	N/A		pending meeting	pending meeting
20	Workshop on Scallop Aging	WKSA	David Palmer, UK, and Karen Vanstaen, UK	N/A		pending meeting	pending meeting
21	ICES/ PICES Working Group on Small Pelagic Fish	WGSPF	Myron Peck, Germany (ICES), Ignacio Catalan, Spain (ICES), Ryan Rykaczewski, USA	2020	2022	pending meeting	pending meeting

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
22	ICES-PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields	WGGRAFY	(PICES), and Akinori Takasuka, Japan (PICES) C. Tara Marshall, UK (ICES), Paul Spencer, USA (PICES), Alan Baudron, UK (ICES) and John Morrongiello, Australia	2020	2022	pending meeting	pending meeting
23	ICES/ PICES Working Group on Ocean Negative Carbon Emission	WGONCE		2020	2022	pending resolution	pending resolution

#### Expert Groups under Human Activities, Pressures and Impacts Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
1	<a href="#">Working Group on Marine Benthos and Renewable Energy Developments</a>	WGMBRED	Jan Vanaverbeke, Belgium, and Joop Coolen, the Netherlands	2019	2021	18	5
2	<a href="#">Working Group on Marine Renewable Energy</a>	WGMRE	Marijke Warnas, the Netherlands	2017	2019	8	7
3	<a href="#">Working Group for Marine Planning and Coastal Zone Management</a>	WGMP CZM	Matthew Gubbins, UK, and Andrea Morf, Sweden	2017	2019	pending report	pending report
4	<a href="#">Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem</a>	WGEXT	Ad Stolk, The Netherlands	2017	2019	pending report	pending report
5	<a href="#">Working Group on Biological Effect of Contaminants</a>	WGBEC	Juan Bellas, Spain, and Steven Brooks, Norway	2019	2021	19	9
6	<a href="#">Marine Chemistry Working Group</a>	MCWG	Koen Parmentier, Belgium	2019	2021	13	9
7	<a href="#">Working Group on Marine Sediments in Relation to Pollution</a>	WGMS	Maria Belzunce, Spain, and Claire Mason, UK	2018	2020	21	8

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
8	<a href="#">Working Group on Economics</a>	WGECON	Hazel Curtis, UK, Rasmus Nielsen, Denmark, and Olivier Thebaud, France	2018	2020	26	11
9	<a href="#">Working Group on Marine Litter</a>	WGML	Thomas Maes, UK; Francois Galignani, France; and Andy Booth, Norway	2018	2020	pending meeting	pending meeting
10	<a href="#">ICES Working Group on Introduction and Transfers of Marine Organisms</a>	WGITMO	Cynthia McKenzie, Canada	2019	2021	49	21
11	<a href="#">ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors</a>	WGBOSV	Lisa Drake, USA	2019	2021	48	15
12	<a href="#">Stock Identification Methods Working Group</a>	SIMWG	Lisa Kerr, USA	2017	2019	pending report	pending report
13	<a href="#">Working Group on the value of Coastal Habitats for Exploited Species</a>	WGVHES	Olivier Le Pape, France, and David Eggleston, USA	2019	2021	9	5
14	<a href="#">Working Group on Spatial Fisheries Data</a>	WGSFD	Roi Martinez, UK, and Neil Campbell, UK	2019	2021	20	11
15	<a href="#">Working Group on Marine Habitat Mapping</a>	WGMHM	James Strong, UK	2018	2020	4	3
16	<a href="#">Methods Working Group</a>	MGWG	Arni Magnusson, ICES, and Christopher Legault, USA	2017	2019	pending report	pending report
17	<a href="#">Working Group on the History of Fish and Fisheries</a>	WGHIST	Ruth Thurstan, Australia and Emily Klein, USA	2018	2020	8	3
18	<a href="#">Working Group on Multispecies Assessment Methods</a>	WGSAM	Sarah Gaichas, USA, and Alexander Kempf, Germany	2019	2021	pending meeting	pending meeting
19	<a href="#">Working Group on Methods for Estimating Discard Survival</a>	WGMEDS	Tom Catchpole, UK, and Sebastian Uhlmann, Belgium	2017	2019	pending meeting	pending meeting
20	<a href="#">Working Group on Fisheries Benthic Impact and Trade-offs</a>	WGFBIT	Tobias van Kooten, Netherlands; Ole Ritzau Eigaard, Denmark; and Gert van Hoey, Belgium	2018	2020	pending meeting	pending meeting
21	Workshop on Cumulative Effects Assessment Approaches in Management	WKCEAM	Vanessa Stelzenmüller, Germany, Roland Cormier, Germany, and Gerjan Piet, the Netherlands	N/A		16	9

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
22	<a href="#">Working Group on Cumulative Effects Assessment Approaches in Management</a>	WGCEAM	Vanessa Stelzenmüller, Germany, Roland Cormier, Germany, and Gerjan Piet, the Netherlands	2019	2021	pending meeting	pending meeting
23	Workshop on Tradeoffs Scenarios between the Impact on Seafloor Habitats and Provisions of catch/value	WKTRADE2	Jochen Depestele, Belgium, and François Bastardie, Denmark	N/A		24	7
24	<a href="#">Working Group on Shipping Impacts in the Marine Environment</a>	WGSHP	Cathryn Murray, Canada	2019	2021	pending meeting	pending meeting
25	<a href="#">Working Group on Bycatch of Protected Species</a>	WGBYC	Kelly Macleod, UK and Sara Königson, Sweden	N/A		20	12
26	<a href="#">ICES/NAFO Joint Working Group on Deep-water Ecology</a>	WGDEC	Laura Robson, UK	N/A		21	9
27	<a href="#">Working Group on the Ecosystem Effects of Fishing Activities</a>	WGECO	Jeremy Collie, USA, and, Stefán Áki Ragnarsson, Iceland	N/A		17	9
28	<a href="#">ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals</a>	WGHARP	Mike Hammill, Canada	N/A		14	6
29	Workshop on Global Ocean Social Sciences	WKGLOSS	Denis Bailly, France; Olivier Thébaud, France; and Jörn Schmidt, Germany	N/A		pending meeting	pending meeting
30	Working Group on Offshore Wind Development and Fisheries	WGOWDF	Andy Lipsky, USA and Chair (TBD), Europe	2020	2022	pending meeting	pending meeting

#### Expert Groups under Integrated Ecosystem Assessments Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
1	<a href="#">Working Group on Comparative Analyses between European Atlantic and Mediterranean marine ecosystems to move towards an</a>	WGCOMEDA	Marta Coll, Spain, Manuel Hidalgo, Spain, Hilmar Hinz, Spain and Christian Möllmann, Germany	2017	2019	11	6

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
2	<a href="#">Ecosystem-based Approach to Fisheries Working Group on Ecosystem Assessment of Western European Shelf Seas</a>	WGEAWESS	Steven Beggs, UK and Eider Andon-egi, Spain	2017	2019	17	7
3	<a href="#">ICES/HELCOM Working Group on Integrated Assessments of the Baltic Sea</a>	WGIAB	Matilda Valman (HELCOM), Sweden, Laurene Pécuchet, Denmark, Saskia Otto, Germany and Martin Lindegren, Denmark	2019	2021	18	8
4	<a href="#">Working Group on the Integrated Assessments of the Barents Sea</a>	WGIBAR	Elena Eriksen, Norway and Anatoly Filin, Russia	2017	2019	23	2
5	<a href="#">ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean</a>	WGICA	John Bengtson (ICES), USA, Sei-Ichi Saitoh (PICES), Japan, and Hein Rune Skjoldal (PAME), Norway	2019	2021	Pending report	Pending report
7	<a href="#">Working Group on the Integrated Assessments of the Norwegian Sea</a>	WGINOR	J. Óskarsson, Iceland, and Per Arneberg, Norway	2019	2021	pending meeting	pending meeting
8	<a href="#">Working Group on Integrated Assessments of the North Sea</a>	WGINOSE	Andy Kenny, UK and Erik Olsen, Norway	2017	2020	8	4
9	<a href="#">Working Group on Integrative, Physical-biological, and Ecosystem Modelling</a>	WGIPEM	Morgane Travers-Trolet, France and Marie Maar, Denmark	2019	2021	30	11
11	<a href="#">Working Group on Maritime Systems</a>	WGMARS	Patricia M. Clay, USA and Johanna Ferretti, Germany	2017	2019	15	6
12	<a href="#">Working Group on Northwest Atlantic Regional Sea</a>	WGNARS	Geret DePiper, USA and Robert Gregory, Canada	2017	2019	Pending report	Pending report
13	<a href="#">Working Group on SOCIAL indicators</a>	WGSOCIAL	Lisa L. Colburn, USA, Amber Himes-Cornell, FAO, Marloes Kraan, the Netherlands	2018	2020	19	8
16	<a href="#">Workshop on integrated trend analyses in support to integrated ecosystem assessment</a>	WKINTRA2	Saskia Otto, Germany, Benjamin Planque, Norway	2019	2019	Pending report	Pending report
17	<a href="#">Workshop on methods to develop a swept-area based effort index</a>	WKSABI	Kai Wieland, Denmark	2019	2019	12	6

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
18	<u>Workshop on Kattegat Ecosystem Modelling Scenarios with Stakeholder Participation</u>	WKKEMSSP	Andrea Belgrano, Sweden, Andrew Kenny, UK, and Erik Olsen, Norway	2019	2019	17	4
19	<u>Workshop on the design and scope of the 3rd generation of ICES Ecosystem Overviews</u>	WKEO3	Mette Skern-Mauritzen, Norway, and Henn Ojaveer, Denmark	2019	2019	26	9
20	<u>Workshop on ecological valuing of areas of the Barents Sea</u>	WKBAR	Mariano Koen-Alonso, Canada, Adriaan Rijnsdorp, the Netherlands, and Markku Viitasalo, Finland	2019	2019	14	6
21	<u>Working Group on Common Ecosystem Reference Points</u>	WGCERP	Mary Hunsicker, USA, Xiujuan Shan, China, Benjamin Planque, Norway, and Saskia Otto, Germany	2019	2021	pending report	pending report
22	<u>Workshop for the production of the Azorean ecoregion Ecosystem Overview</u>	WKAZOREco	Mário Rui Pinho, Portugal and Maria de Fatima Borges, Portugal	2019	2019	pending report	pending report
23	<u>Workshop for the production of the Oceanic North East Atlantic ecoregion Ecosystem Overview</u>	WKABNJ	Francis Neat, UK and Odd Aksel Bergstad, Norway	2019	2019	pending report	pending report
24	<u>Workshop on Challenges, Opportunities, Needs and Successes in including human dimensions in IEAs</u>	WKCONSERVE	Alan Haynie, USA, Jörn Schmidt, Germany, Mette Skern-Mauritzen, Norway, and Eva-Lotta Sundblad, Sweden	2019	2019	pending meeting	pending meeting
25	<u>Working Group on Integrated Ecosystem Assessment of the Greenland Sea</u>	WGIEAGS	Jesper Boje, Denmark/Greenland, and Colin Stedmon, Denmark	2020	2022		



**Expert Groups under Ecosystem Observation Steering Group**

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
1	<a href="#">International Bottom Trawl Survey Working Group</a>	IBTSWG	Ralf van Hal, Netherlands, and Pascal Lafargue, France,	2019	2021	pending report	pending report
2	<a href="#">Planning Group on Data Needs for Assessments and Advice</a>	PGDATA	Joël Vigneau	2018	2020	pending report	pending report
3	<a href="#">Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VII, VIII and IX</a>	WGACEGG	Maria Santos, Spain and Mathieu Doray, France	2017	2019	pending meeting	pending meeting
4	<a href="#">Working Group on Atlantic Fish Larvae and Eggs Surveys</a>	WGALES	Patrick Polte, Germany, Richard D.M. Nash, Norway	2019	2022	pending report	pending report
5	<a href="#">Working Group on Beam Trawl Surveys</a>	WGBEAM	Holger Haslob, Germany	2017	2019	pending report	pending report
6	<a href="#">Baltic International Fish Survey Working Group</a>	WGBIFS	Olavi Kaljuste, Sweden	2018	2020	21	10
7	<a href="#">The Working Group on Biological Parameters</a>	WGBIOP	Pierluigi Carbonara, Italy, Cindy van Damme, Netherlands and Julie Davies, Denmark	2018	2020	pending meeting	pending meeting
8	<a href="#">Working Group on Commercial Catches</a>	WGCATCH	Kirsten Birch Hakansson, Denmark, and Ana Ribeiro Santos, United Kingdom	2017	2019	pending meeting	pending meeting
9	<a href="#">Working Group on Electrical Trawling</a>	WGELECTRA	Adriaan Rijnsdorp, NL, Maarten Soetaert, Belgium	2018	2020	pending report	pending report
10	<a href="#">Working Group on Fisheries Acoustics, Science and Technology</a>	WGFAST	Richard O'Driscoll, NZ	2017	2019	93	21
11	<a href="#">ICES-FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB)</a>	WGFTFB	Haraldur A. Einarsson, Iceland, and Pingguo He, FAO	2017	2019	120	23
12	<a href="#">Working Group on International Deep Pelagic Ecosystem Surveys</a>	WGIDEEPS	Kristjan Kristinsson, Iceland	2017	2019	pending meeting	pending meeting
13	<a href="#">Working Group of International Pelagic Surveys</a>	WGIPS	Bram Couperus, The Netherlands, and Michael O'Malley, Ireland	2019	2021	20	10

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
14	<a href="#">Working Group on Improving use of Survey Data for Assessment and Advice</a>	WGISDAA	Sven Kupschus, UK	2018	2020	pending meeting	pending meeting
15	<a href="#">Working Group on Integrating Surveys for the Ecosystem Approach</a>	WGISUR	Ralf van Hal, Netherlands	2018	2020	pending meeting	pending meeting
16	<a href="#">Working Group on Mackerel and Horse Mackerel Egg Surveys</a>	WGMEGS	Matthias Kloppmann, Germany and Gersom Costas, Spain	2018	2020	8	6
17	<a href="#">Working Group on Nephrops Surveys</a>	WGNEPS	Kai Wieland, Denmark, Adrian Weetman, Scotland	2019	2021	pending meeting	pending meeting
18	<a href="#">Working Group on Recreational Fisheries Surveys</a>	WGRFS	Kieran Hyder, UK and Keno Ferter, Norway	2017	2019	pending report	pending report
19	<a href="#">Workshop on Scale, Otolith Bio-chronology Archives</a>	WKBioArc	Deirdre Brophy, Ireland, and Martha Robertson, Canada	2019	2020	pending meeting	pending meeting
20	<a href="#">Working Group on SmartDots Governance</a>	WGSMART	Julie Coad Davies, Denmark and Jane Aanestad Godiksen, Norway	2018	2021	pending meeting	pending meeting
21	<a href="#">Workshop proposal: Integrating human dimensions into the management of marine recreational fisheries</a>	WKHDR	Christian Skov, Denmark, Harry V. Strehlow, Germany, and Kieran Hyder, UK	2019	2019	pending meeting	pending meeting
22	<a href="#">Working Group on DATRAS Governance</a>	WGDG	Ingeborg de Boois, Netherlands	2019	2019	5	4
23	<a href="#">Workshop on Better Coordinated Stomach Sampling</a>	WKBECOSS	Izaskun Preciado, Spain, and Stefan Neuenfeldt, Denmark	2019	2019	pending report	pending report
24	<a href="#">Working group on machine learning in marine science</a>	WGMLEARN	Ketil Malde, Norway, and Jean-Olivier Irisson, France.	2019	2021	19	11
25	<a href="#">Third Workshop on Optimization of Biological Sampling</a>	WKBIOPTIM3	Ana Cláudia Fernandes, Portugal and Eirini Mantzouni, Greece	2019	2019	pending report	pending report
26	<a href="#">Working Group on Technology Integration for Fishery-Dependent Data</a>	WGTIFD	Brett Alger, United States and Lisa Borges	2019	2021	30	13

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
27	<a href="#">Working Group on Surveys on Ichthyoplankton in the North Sea and adjacent Seas</a>	WGSINS	Norbert Rohlf, Germany	2019	2021	Pending	Pending
28	<a href="#">Workshop on Index Calculation based on DATRAS</a>	WKICDAT	Holger Haslob, Germany	2019	2019	pending report	pending report
29	<a href="#">Workshop on scrutinizing of acoustic data from the IESSNS survey</a>	WKSCRUT2	Jan Arge Jacobsen, Faroes and Age Høines, Norway	2019	2019	pending report	pending report
30	<a href="#">Workshop on Herring Acoustic Spawning Surveys</a>	WKHASS	Pablo Carrera, Spain,	2019	2019	pending meeting	pending meeting
31	<a href="#">Third Workshop on Age Reading of European and American Eel</a>	WKAREA3	Françoise Daverat, France, Isabel Domingos ,Portugal, and Kélig Mahé, France,	2019	2019	pending report	pending report
32	<a href="#">Workshop on the Realignment of the Ecosystem Observation Steering Group</a>	WKREO	Sven Kupschus, UK, Matthias Kloppmann, Germany, Olavi Kaljuste, Sweden, and Colm Lordan, Denmark	2019	2019	pending meeting	pending meeting
33	<a href="#">Workshop on unavoidable survey effort reduction</a>	WKUSER	Stan Kotwicki, US, Carl O'Brien, UK, and Wayne Palsson, USA	2020	2020	pending meeting	pending meeting
34	<a href="#">Workshop on evaluating survey information Celtic Sea gadoids</a>	WKESIG	David Stokes, Ireland	2019	2019	pending report	pending report
35	<a href="#">Workshop on Impacts of planned changes in the North Sea IBTS</a>	WKNSIMP	Kai Wieland, DK	2019	2019	14	7
36	<a href="#">Workshop on the development of practical survey methods for measurements and monitoring in the mesopelagic zone</a>	WKMESOMeth	Ciaran O'Donnell, Ireland, and Gavin Macaulay, Norway	2019	2019	37	16
37	<a href="#">Workshop on age validation studies of small pelagic species</a>	WKVALPEL	Javier Rey, Spain, Kelig Mahé, France, and Pierluigi Carbonara, Italy	2019	2019	pending meeting	pending meeting

**Expert groups under Fisheries Resources Steering Group**

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
1	<a href="#">Arctic Fisheries Working Group</a>	AFWG	Daniel Howell	2017		26	7
2	<a href="#">Herring Assessment Working Group for the Area South of 62° N</a>	HAWG	Valerio Bartolino - Susan Mærsk Lusseau	2018	2020 - 2019	35	8
3	Inter-benchmark protocol on Sole ( <i>Solea solea</i> ) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea)	IBP-Brisol	Noel Cadigan	2019	2019	7	5
4	Inter-benchmark Process for West of Scotland Cod in 6.a	IBPCod6.a	Poul Degnbol	2019	2019	11	3
5	Inter-benchmark of Hake ( <i>Merluccius merluccius</i> ) in subareas 4,6 and 7 and divisions 3.a,8a-b and 8.d, Northern Stock (Greater North Sea, Celtic Seas and the northern Bay of Biscay)	IBPHake 2019	Michel Bertignac	2019	2019	5	3
6	Inter-Benchmark Protocol for Herring in 6a,7bc	IBPher6a7bc	Richard Nash	2019	2019	10	5
7	Interbenchmark Protocol on assessment model changes for Cod ( <i>Gadus morhua</i> ) in	IBPNEACod 2019	Daniel Howell	2019	2019	7	4

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
	subareas 1 and 2 (Northeast Arctic)						
8	Interbenchmark Workshop on the assessment of north-east Atlantic mackerel	IBPNEAMac	Niels Hintzen	2019	2019	30	10
9	Interbenchmark protocol on saithe ( <i>Pollachius virens</i> ) in subareas 4, 6 and Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)	IBPNSsai	Daniel Howell	2019	2019	6	4
10	Inter-benchmark Process on sardine in the Bay of Biscay	IBPSardine	tbc	2019	2019	Pending meeting	
11	Inter-benchmark Protocol for sole in the Eastern English Channel	IBPsol7d	Raphael Girardin	2019	2019	8	4
12	Inter-Benchmark Protocol on reference points for Western Horse mackerel ( <i>Trachurus trachurus</i> ) in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c,e-k (the Northeast Atlantic)	IBPWHM	Andrew Campbell	2019	2019	Pending meeting	
13	<a href="#">Joint NAFO/ICES Pandalus Assessment Working Group</a>	NIPAG	Ole Ritzau Eigaard - Brian Healey	2019 – 2018	2021 - 2019	Pending meeting	
14	<a href="#">Northwestern Working Group</a>	NWWG	Kristján Kristinsson	2018	2020	19	4

EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
<a href="#">Assessment Working Group on Baltic Salmon and Trout</a>	WGBAST	Stefan Palm	2017	2019	26	9
<a href="#">Baltic Fisheries Assessment Working Group</a>	WGBFAS	Mikaela Bergenius	2019	2021	33	9
<a href="#">Working Group for the Bay of Biscay and the Iberian Waters Ecoregion</a>	WGBIE	Ching Villanueva - Lisa Readdy	2019 – 2017	2021 - 2019	22	6
<a href="#">Working Group for the Celtic Seas Ecoregion</a>	WGCSE	Sofie Nimmegeers - Timothy Earl	2019 - 2017	2021 - 2019	28	5
<a href="#">Working Group on the Biology and Assessment of Deep-sea Fisheries Resources</a>	WGDEEP	Elvar Halldor Hallfredsson - Pascal Lorange	2018 – 2014	2020 - 2019	21	8
<a href="#">Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species</a>	WGDIAD	Dennis Ensing - Hugo Maxwell	2018 - 2019	2020	7	4
<a href="#">Joint EIFAAC/ICES/GFCM Working Group on Eels</a>	WGEEL	Alan Walker	2013	2019	41	17
<a href="#">Working Group on Elasmobranch Fishes</a>	WGEF	Paddy Walker - Samuel Shephard	2017	2019	26	8
<a href="#">Working Group on Southern Horse Mackerel, Anchovy, and Sardine</a>	WGHANSA	Alexandra (Xana) Silva	2018	2020	Pending meeting	

EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
<a href="#">Working Group on Mixed Fisheries Advice</a>	WGMIXFISH-ADV	Claire Moore	2019	2021	Pending meeting	
<a href="#">Working Group on Mixed Fisheries Advice Methodology</a>	WGMIXFISH-METH	Claire Moore	2018	2020	15	7
<a href="#">Working Group on North Atlantic Salmon</a>	WGNAS	Martha Robertson	2018	2020	30	11
<a href="#">Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak</a>	WGNSSK	José De Oliveira	2016	2019	30	8
<a href="#">Working Group on Widely Distributed Stocks</a>	WGWIDE	Gudmundur J. Oskarsson	2017	2019	Pending report	
<a href="#">Benchmark Workshop on Baltic Cod</a>	WKBALTCOD	Johan Lövgren - Joakim Hjelm - Michele Casini	2019	2019	51	9
WK on Evaluation of certain provisions of a draft Baltic salmon MP	WKBaltSalMP	Stefan Palm - Timothy Sheehan	2019	2019	Pending meeting	
<a href="#">Workshop to scope the physical loss pressures on the seabed D6C1/C4- from methods to operational data products</a>	WKBEDLOSS	Steven Degraer	2019	2019	19	11

EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
<a href="#">Workshop to evaluate and test operational application of human activities causing physical disturbance and loss to seabed habitats (D6C1-C4)</a>	WKBEDPRES2	Philip Boulcott	2019	2019	Pending meeting	
Benchmark Workshop on Celtic Sea Stocks	WKCELTIC	Jonathan White - Ana Ribeiro Santos	2019	2020	19	5
Benchmark Workshop for Demersal Species	WKDEM	Daniel Howell	2019	2020	Pending meeting	
<a href="#">Workshop on Data-limited Stocks of Short-lived Species</a>	WKDLSSL	Andrés Uriarte - Mollie Elizabeth Brooks	2019	2019	21	5
<a href="#">The second Workshop on Designing Eel Data Call</a>	WKEELDATA2	Cedric Briand - Jan-Dag Pohlmann	2019	2019	8	3
Workshop for the review of the scientific basis for a UK non-detriment finding (NDF) for the international trade in European eel, in relation to CITES legislation	WKEELNDF	Eugene Nixon	2019	2019	7	5
Workshop on the design and scope of the 3rd generation of ICES Ecosystem Overviews	WKEO3	Henn Ojaveer - Mette Skern-Mauritzen	2019	2019	21	9
<a href="#">Benchmark Workshop for Flatfish stocks in the North Sea and Celtic Sea</a>	WKFlatNSCS	Timothy Earl - Meaghan Bryan	2019	2020	Pending meeting	



EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
<a href="#">Workshop on catch forecasts from biased assessments</a>	WKFORBIAS	Larry Alade - Christopher Legault	2019	2019	Pending meeting	
The second Workshop on guidelines for management strategy evaluations	WKG MSE2	Carmen Fernandez	2019	2019	34	15
Benchmark Workshop on Greater silver smelt	WKGSS	tbc	2019	2020	Pending meeting	
Workshop on evaluation of the adopted harvest control rules for Icelandic summer spawning herring, ling and tusk	WKICEMSE2019	Morten Vinther – Jim Ianelli	2019	2019	8	4
<a href="#">Workshop on an Ecosystem-based Approach to Fishery Management for the Irish Sea</a>	WKIrish6	Mathieu Lundy - Daniel Howell	2019	2019	Pending meeting	
<a href="#">Ninth Workshop on the Development of Quantitative Assessment Methodologies based on LIFE-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks</a>	WKLIFEIX	Carl O'Brien - Manuela Azevedo	2019	2019	Pending meeting	
Workshop on MSE development	WK MSEDEV	Daniel Howell	2019	2019	Meeting December	

EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
Workshop on Methodologies for Nephrops Reference Points	WKNephrops2019	Michael Bell	2019	2019	Meeting December	
Workshop on North Sea Management Strategy Evaluation	WKNSMSE2	José De Oliveira	2019	2019	30	9
Workshop on Estimation with the RDBES data model	WKRDB-EST	Nuno Prista - Kirsten Birch Håkansson -	2019	2019	Pending meeting	
Workshop on Populating the RDBES data model (WKRDB-POP)	WKRDB-POP	David Currie - Edvin Fuglebakk	2019	2019	30	17
Stakeholder workshop to disseminate the ICES deep-sea access regulation technical service, and scope the required steps for regulatory purposes	WKREG	Stakeholder workshop to disseminate the ICES deep-sea access regulation technical service, and scope the required steps for regulatory purposes	2019	2019	Meeting in October	
<a href="#">Benchmark Workshop on Rockall haddock had.27.6b</a>	WKROCK	Alexander Kempf - Helen Dobby	2019	2019	6	5
NEAFC Request for harvest control component of long-term MP for Rockall haddock	WKROCKMSE	Quang Huynh	2019	2019	6	5
Workshop on a Research Roadmap for Mackerel	WKRRMAC	Carl O'Brien - Mark Dickey-Collas	2019	2019	8	4

EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2019)	Number of countries (2019)
<a href="#">Workshop on methods to develop a swept-area based effort index</a>	WKSABI	Workshop on methods to develop a swept-area based effort index	2019	2019	11	6
<a href="#">Workshop for North Atlantic Salmon At-Sea Mortality</a>	WKSalm	Gérald Chaput - Niall Ó Maoiléidigh	2019	2019	24	8
<a href="#">Workshop on the Iberian Sardine Management and Recovery Plan</a>	WKSARMP	Manuela Azevedo	2019	2019	17	3
<a href="#">Workshop on Science with Industry Initiatives</a>	WKSCINDI	Steve Mackinson - Jon Elson	2019	2019	49	12
Workshop on incorporating discards into the assessments and advice of elasmobranch stocks	WKSHARK5	Paddy Walker	2019	2019	17	7
Workshop on standardized data formats for input to assessment models	WKSTOCKADE	James Thorson - Anders Nielsen	2019	2019	Pending meeting	
Workshop on Training for the Transparent Assessment Framework	WKTAF (Galway – Aberdeen)	Arni Magnusson - Colin Millar	2019	2019	24	2
The joint ICES/Probyfish Workshop on identification of target and bycatch species	WKTARGET	Youen Vermard	2019	2019	21	7

## Annex 3: ICES publications 2019

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### Science Impact and Publication Group (SIPG) Members

SIPG Chair: Nils Olav Handegard

Former SIPG Chair: Simon Jennings

### External members:

Frederic Serchuk - former National Marine Fisheries Service (NMFS), US

Tara Donaghy - Department of Fisheries and Oceans (DFO), Canada

Morgane Le Gall - Bibliothèque La Pérouse (IFREMER), France

Jan Jaap Poos - Wageningen University (WUR), Netherlands

Antonina dos Santos - Instituto Português do Mar e da Atmosfera (IPMA), Portugal

### Secretariat:

ICES Editor – Ruth Anderson; ICES Editorial Assistant – Ffion Bell; ICES Technical Editor – Søren Lund

### TIMES since 2000

The ICES Techniques in Marine Environmental Sciences (TIMES) Series offers peer-reviewed, open-access, detailed descriptions of state-of-the art methods and procedures relating to the marine environment. TIMES is intended for use at the laboratory bench, in the field, or on research vessels.

### Summary and potential room for improvement

TIMES publishes at very low levels overall.

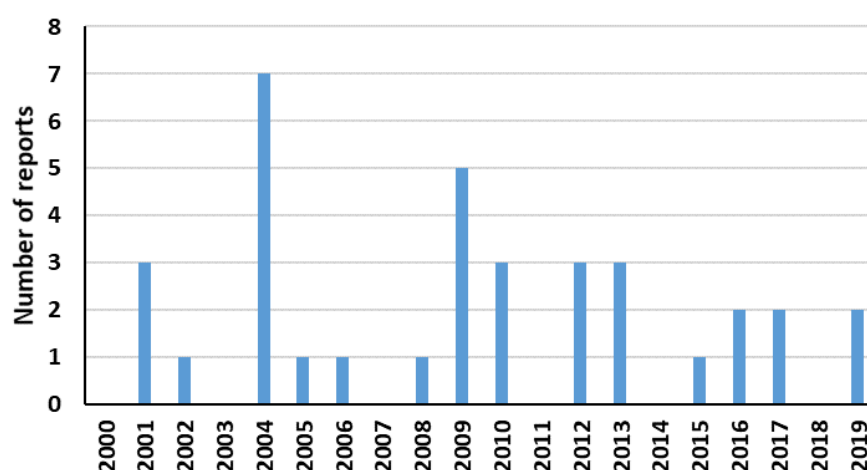
TIMES has historically only been used by a narrow range of ICES WG. This has resulted in a relatively narrow topic scope focused mainly on chemical and biological measurements. The two most frequent key-words are sediments and contaminants.

We should consider:

- A target publication level of 4-5 issues per year.
- Broaden the description of TIMES and advertise it as a publication outlet for other steering groups. TIMES is an ideal outlet for handbooks, protocols, guidelines and best practice manuals.
- Increase the visibility/appeal of TIMES. This will take place in line with the work on all other ICES publications (described in detail below)

### Publication levels

The series started in 1987. Since 2000, there have been 34 TIMES reports.

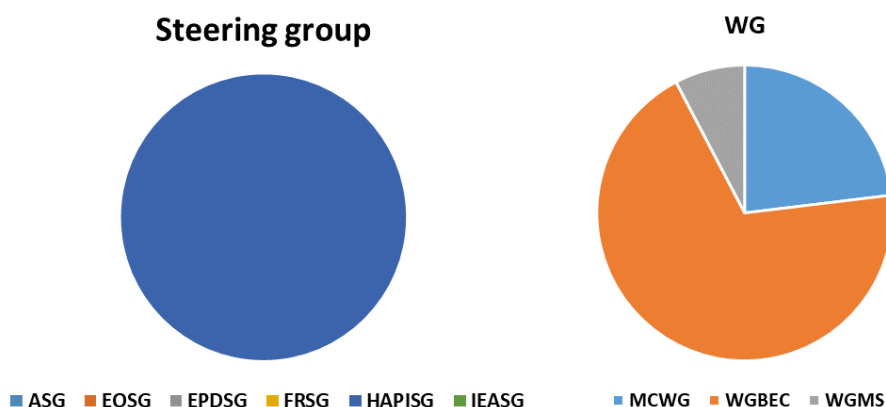


The TIMES Series publishes at very low levels overall. Most years the number of published reports are below levels where having a hired series editor is really warranted, including 6 years with no publications at all.

Proposed aim: raise the number of publications consistently to ca. 4–5 per year.

#### Authorship by ICES WG

Which WG produced the report can only be tracked since 2012 (17 reports). However, older report likely also mainly group within these WG. There is a very obvious current and historic author base for TIMES.



#### Authorship by author, country and institution since 2000

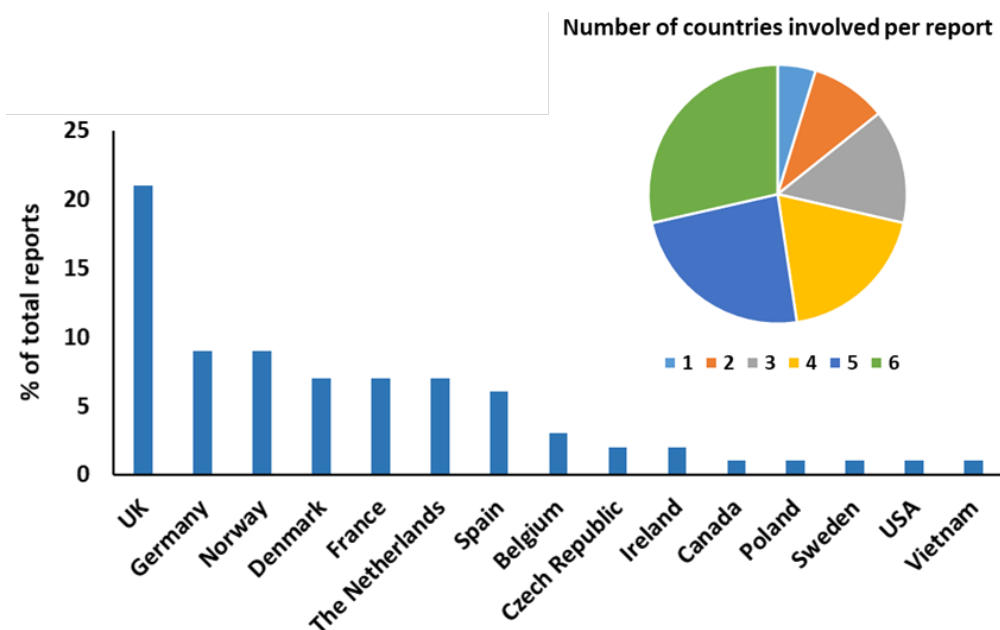
**Authors:** 132. Only 12% authors have authored more than 1 TIMES report.

**Author institutional affiliation:** 43 institutions. Top three: Cefas (16 reports), Marine Scotland (7 reports) and IFREMER (7 reports).

84 % of institutions have only been involved in one report. 80 % of reports resulted from the collaboration of 2+ institutions

**Countries:** 15. The UK clearly dominates the author base. More than half of ICES member countries have published few or no TIMES reports.

Reports tend to be the product of large international collaborations (4+ countries), or national efforts (authors belong to only 1 country).



## Impact

We don't currently have a way of reliably measuring how much TIMES reports are used by the scientific community, inside or outside of ICES. Informal enquiries have created a general impression that TIMES is not well known outside of ICES.

**Aim:** Increase visibility and use of TIMES, and concurrently establish ways of tracking usage.

**Already achieved:** TIMES reports have been assigned a doi and their metadata has been expanded to improve how easy they are to find in ICES library.

**Next steps:** (i) update the TIMES website to make it more useful to readers and potential authors; and (ii) assess which additional platforms could be used for uploading and disseminating TIMES (e.g. listing in Scopus, and/or ICES publications sites on Researchgate or Academia).



## Annex 4: Science highlights

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Science highlights are used to draw attention to the most impactful and societally relevant science from our ICES network. Highlights serve to raise awareness of the breadth and impact of our scientific activity and expertise and to demonstrate the importance of our science for understanding marine ecosystems and securing their sustainable use. Ideally, the highlights are newsworthy because they are based on a very recent or forthcoming finding and supported with accessible images and a short biography of the scientist(s) conducting the work. Highlights are used to promote ICES science on the web and in printed and spoken communication targeted to the network and beyond. Highlights are, for example, used by the Communications Team in ICES and by communications teams in national laboratories to develop stories, news releases and tweets on work in ICES network. Science highlights are directly solicited by the ICES Communications Team or provided via a SharePoint interface. In 2020, fixed-term working groups will also be asked to identify highlights in the interim and final e-evaluation forms.

ICES Secretariat have been leading the development of several topical science highlights series. Each series involves 5+ expert groups, and the contribution from each group is short format - one paragraph and a corresponding figure. ICES will aim to publish 3-4 of these well-defined topical series per year.

The first series in this new format "[Maintaining the continuity of long-term data sets](#)" was published in mid-July 2019 with 8 expert groups participating:

The second series "The future of aquaculture" is currently in progress, and we anticipate publication towards the end of 2019.

The third series in this new format is the "The changing Arctic" and contributions are being solicited and ICES is seeking to garner bottom-up support for the topic.

The fourth series is currently under development, and will focus on ICES work related to the societal outcomes of the United Nations Decade of Ocean Science.

In addition to these well-defined topical series, the Secretariat are also developing three ongoing series for broader participation by expert groups that we plan to introduce at the next WGCHAIRS meeting. These will be ongoing series with broad themes, so that most expert groups should be able to participate in at least one of these series. The proposed three topics are:

- Biodiversity – a showcase of the species that ICES groups study, from the microscale to the macroscale.
- In the field – unifying current stories that convey the broad range of ecosystems where ICES works and the technology that our groups use in the field.
- In Other Words – revival of an old series that was devoted to clarifying important terms and phrases used in the ICES community.

We will also be adding more highlights focused on our early career support. This will be especially useful in the summer before the 2020 ASC, as this will serve to highlight both our ECS support and promotion of the ASC. These stories will be unified with



repeated banner styling, include highlights of the scientific work, and can be used for both ASC and to highlight other ECS support that ICES provides for other co-funded symposia.

## **Annex 5: Benefits of engaging with ICES Expert Groups**

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It is essential to continue to attract new participants into our expert groups, and in particular to effectively reach out to scientists and institutes that have not previously been part of the ICES community. For these reasons, SCICOM undertook a project to define the benefits of engaging with ICES. The benefits identified are described in this Annex. The material that has been created was used in handouts at the 2019 ASC and will be added to the updated ICES website in 2020. The material has been complemented with a series of personal stories about how scientists benefitted from their engagement in ICES, as developed by ICES Communications.

### **Benefits of joining an ICES expert group**

#### **What are expert groups?**

Expert groups are international groups of scientists who work together to develop scientific ideas and run and review scientific analyses. Expert groups are at the heart of ICES and play a critical role generating the science and analyses that further understanding of marine ecosystems and provide the basis of ICES advice on the state and sustainable use of our seas and oceans.

#### **What will you do in expert groups?**

In expert groups you will work with other scientists from a range of institutes and countries to develop scientific ideas and run and review scientific analyses. The direction of your work will be guided by a series of pre-agreed questions and tasks known as terms of reference. Activities in the groups include solving scientific questions; reviewing scientific work conducted inside and outside the group; data collation, analysis and interpretation; developing and applying methods; and writing up and reviewing the groups' activities for papers and reports. You may also contribute to planning future activities and meetings of the group, and developing proposals or events linked to the expert group. Your contributions to the group are guided by the chair, based on your expertise and interests.

#### **How do you join an expert group?**

Please contact the current chair(s) of the expert group that interests you, or contact the ICES secretariat, and they will guide you.

#### **Who can join an expert group?**

Members of expert groups are predominantly scientists from ICES member countries, but scientists from other countries are often welcomed. These are scientific groups, so everyone who joins should act with scientific independence, integrity, and impartiality. ICES strives to be an inclusive organization, and expert groups have an important role increasing opportunity and providing mentorship, so group members are recognised for their expertise, behaviours, and contributions, rather than their affiliations.

### **How might you benefit from joining an expert group?**

The four main benefits of engaging in an ICES expert groups come from the opportunities they provide to strengthen your science, develop your networks, increase the impact of your work and learn new skills. The ICES community also benefits from new expert group participants because you bring a greater diversity of ideas and approaches, grow the scope of the ICES community and ultimately strengthen marine science and advice.

#### *Strengthening your science*

Expert groups help you to develop scientific ideas, learn new methods and approaches, provide international review and scrutiny of your science and understand state-of-the-art in many areas of marine science. Going forward you may have opportunities to steer the direction of future work of these international groups, perhaps supporting the development of new collaborations or events.

#### *Developing your networks*

Expert groups working in your areas of interest help you to quickly build an international network of collaborators, which will often simplify the development of future projects and funding proposals as well as providing career opportunities. More widely, by being part of ICES, you connect to a broad marine science community spanning 20 member countries and beyond.

#### *Publishing your science*

Expert group members often publish together. Outputs include reports co-authored by group participants and published in the “ICES Scientific Reports” series, as well as peer reviewed papers, ICES Co-operative Research Reports and code or technical publications. Many expert groups make specific commitments to publish in their terms of reference.

#### *Increasing your impact*

One of ICES main roles is to provide advice on meeting conservation, management and sustainability goals. The national and international recipients of this advice often have direct responsibility for management of human uses of the seas and oceans. Expert groups provide the science on which this advice is based, so the science done in your expert group can have substantial societal impact.

#### *Learning new skills*

Expert groups provide many opportunities to mentor, and to be mentored, and to exchange ideas and skills with a diverse international group. Expert groups provide opportunities to present, develop and defend scientific work in a collaborative, respectful and rewarding working environment, and to understand the wider significance of any step in knowledge development.

## Annex 6: ICES co-sponsored symposia

Year	Date	Title	Resolution no	Venue	Conveners	Co-sponsors	Support/Comment	publication	ICES SUPPORTS & work order
2020									
2020	11-15 October	World Fisheries Congress 2020	2018/3/HAPISG05	Adelaide, Australia	Bronwyn Gilanders (Australia) and Tim Ward (Australia)	Brand South Australia, PIRSA, SARDI, Adelaide Convention Bureau, Adelaide Convention Centre, FRDC, CSIRO, Austral Fisheries, AFMA, IMAS	Financial support of <b>€10,000</b> to fund travel support for early career scientists.  ICES IT support	The WFC2020 International Program Committee Chairs are currently exploring options for publishing proceedings from the Congress.	Julie Kellner & Anna Davies  (1071-49)
2020	25-29 May	Marine Socio-Ecological Systems - MSEAS 2020: Navigating global change in the marine environment with socio-ecological knowledge	2016/3/IEASG07	Yokohama, Japan	Rich Little (Australia), Marloes Kraan (Netherlands), Mitsutaku Makino (Japan), Doug Lipton (US) and Keith Criddle (US)	PICES, ICES	Financial support of <b>€10,000</b> to fund travel support for early career scientists.  ICES IT support	<b>IJMS not requested</b>	Wojciech Wawrzynski & Alondra Sofia Rodriguez  (1071-46)
2020	10-13 May	Oceans Past VIII Conference	2018/3/HAPISG04	Ostend, Belgium	Ben Fitzhugh (USA) & Ruth Thurstan (UK)		Subsidise travel and accommodation costs for 10 Early Career Scientists from ICES member countries (500 EUR each, total <b>€5,000</b> ); Support an ECS networking event during the	<b>IJMS not requested</b>	Julie Kellner & Malene Eilersen  (1071-50)

Year	Date	Title	Resolution no	Venue	Conveners	Co-sponsors	Support/Comment	publication	ICES SUPPORTS & work order
							conference (€2,000) and; Subsidise travel costs for two keynote speakers to attend from underrepresented countries further afield (€2,000)		
2020	21-23 April	International Symposium on Plastics in the Arctic and Sub-Arctic Region	2018/3/HAPISG01	Reykjavik, Iceland	Hrönn Jörundsdóttir, Matis, Reykjavik, and Thomas Maes, Centre for Environment, Fisheries and Aquaculture Science, Lowestoft	The Icelandic Ministry of Foreign Affairs, The Icelandic Ministry of the Environment and Resources, The Icelandic Ministry of Industry and Innovation, The Marine and Freshwater Research Institute, The Nordic Council of Ministers	Financial support of €10,000 to fund travel support for early career scientists.	<b>A special issue IJMS requested</b>	Vivian Piil, Wojciech Wawrzynski & Terhi Minkkinen  (10-71-45)
<b>2019</b>									
2019	19–21 November	International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus	2018/3/FRSG03	Rome, Italy	Manuel Barange (Italy, FAO)	The convener is actively identifying other partner institutions and co-sponsors and sent an email to the advisory committee requesting suggestions on 1/2/2019.	Travel and subsistence support is requested for SCICOM chair Simon Jennings, the new Fisheries Resources Steering Group chair and a keynote speaker. The Secretariat may be asked to provide general professional and secretarial support to the SCICOM chair and the new Fisheries Resources Steering Group	<b>IJMS not requested</b>	Julie Kellner, Anna Davies & Malene Eilersen  (1071-47)

Year	Date	Title	Resolution no	Venue	Conveners	Co-sponsors	Support/Comment	publication	ICES SUPPORTS & work order
							chair that will be attending the symposium. Financial support of €10,000.00 has been approved by SCICOM for early career scientists.		
2019	5-7 November	Shellfish - Resources and Invaders of the North	2017/3/EPISG02	Tromsø, Norway	Carsten Hvingel (Norway), Gordon Kruse (USA) and Bernard Sainte-Marie (Canada)	PICES, NAFO, NEAFC	Financial support of €10,000 to fund travel support for early career scientists as well as publication in a special edition of the ICES Journal.  IT Support: Secretariat support setting up a web page, handling abstract submissions and registration of participants, as well as general support for the symposium.	<b>IJMS requested</b>	Julie Krogh Hallin, Henrik Larsen, & Terhi Minkkinen  (1071-41)
2019	25-27 June	Second International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic	2018/3/ IEASG04	Bergen, Norway	Hein Rune Skjoldal (Norway), Lis L. Jørgensen (Norway) and Elisabeth Logerwell (USA)	The cost of the meeting will be covered by Norway through the local organizer (Institute of Marine Research in Bergen) with some contribution from PICES and possibly other sponsors (NOAA , PAME, AMAP,	It is anticipated that little extra support from the ICES Secretariat is needed.  Finished Report.	<b>IJMS not likely</b>	Julie Kellner & Malene Eilersen  (1071-48)

Year	Date	Title	Resolution no	Venue	Conveners	Co-sponsors	Support/Comment	publication	ICES SUPPORTS & work order
						CAFF).			
2019	12–14 June	Challenging the scientific legacy of Johan Hjort: Time for a new paradigm shift in marine research?	2016/3/SSGE PD06	Bergen, Norway	Olav Sigurd Kjesbu, Institute of Marine Research, Bergen, Norway; Iain Suthers, School of Biological, Earth, and Environmental Sciences, University of South Wales, Australia; Vera Schwach, NIFU, Nordic Institute for Studies in Innovation, Research and Education, Oslo, Norway, and Jennifer Hubbard, Department of History, Ryerson University, Toronto, Canada.	The symposium will be funded by a conference fee and support will be requested from the Norwegian Ministry of Fisheries and Coastal Affairs, ICES, and other organizations and governmental agencies, such as The International Commission for the History of Oceanography (ICHO) and the Research Council of Norway.	Financial support of €10,000.00 approved by SCICOM for early career scientists.  Finished Report.	<b>A special issue IJMS requested</b>	Maria Lifentseva & Anna Davies  (1071-41)
2019	3–4 June	NASCO Symposium: Managing the Atlantic Salmon in a Rapidly Changing Environment – Management Challenges and Possible Responses	2016/3/SSGE PD05	Tromsø, Norway		NPAFC and NASCO. NASCO and NPAFC have made budgetary provision to support the symposium	ICES support for the Book of Abstracts, travel and subsistence of ICES participants (HoSS, SCICOM, Secretariat).  Finished Report.	<b>IJMS requested</b>	Lotte Worsøe Clausen & Liese Carleton



**ICES**  
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International Council for  
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Conseil International pour  
l'Exploration de la Mer

Council Meeting

October 2019

CM 2019 Del-9.2

Agenda item 9.2

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## ICES ASC AND STATUTORY MEETINGS HELD IN ICES MEMBER COUNTRIES 2000 – 2021

*Council Delegates are invited to discuss interest in a future joint Annual Science Conference with PICES.*

*Member Countries are invited to consider hosting a future Annual Science Conference from 2022 and onwards. Belgium is invited to provide an update on their considerations for hosting the ASC in 2022.*

### **Considerations for a future joint meeting with PICES**

PICES has raised the idea of a joint ICES/PICES science/ASC meeting. This is still a very preliminary idea, however, some of the initial thinking on practical issues are outlined below:

1. The science meeting part/ASC cannot be longer than 5 days.
2. It would have to be hosted in North America to accommodate ICES and PICES.
3. Participation would have to be less than 1000 to be sensible. ICES had 762 participants in 2019, and PICES registration for 2019 is estimated 550–600.
4. Business meetings would need to simplify their agendas in order to allocate enough time for a joint discussion.

### **Potential benefits of a joint meeting:**

- Allow ICES and PICES to interact at a variety of levels, from the expert/science level, and across the organizational and business levels as well.
- Provide an opportunity to enhance global cooperation through greater knowledge exchange and networking across regions.
- Build on and enhance recent cooperation, including important areas such as climate change, and the Arctic, and opening up for new areas currently with limited interaction.



## ICES ASC AND STATUTORY MEETINGS HELD IN ICES MEMBER COUNTRIES 2000 – 2021

Year	Country	City	No. of meetings in total
2000	Belgium	Bruges	1
2001	Norway	Oslo	
2002	Denmark	CPH	
2003	Estonia	Tallin	1
2004	Spain	Vigo	
2005	UK	Aberdeen	
2006	Netherlands	Maastricht	4
2007	Finland	Helsinki	2
2008	Canada	Halifax	3
2009	Germany	Berlin	
2010	France	Nantes	5
2011	Poland	Gdansk	1
2012	Norway	Bergen	4
2013	Iceland	Reykjavik	3
2014	Spain	A Coruña	4
2015	Denmark	CPH	
2016	Latvia	Riga	1
2017	USA	Fort Laud.	3
2018	Germany	Hamburg	6
2019	Sweden	Göteborg	5
2020	Denmark	CPH	54
2021	UK	TBC	7

Belgium is investigating possibilities to host the 2022 ASC (To be confirmed).

Number of ASCs hosted since 2000:

**0 meetings:** Ireland, Portugal, Russia

1 meeting: Belgium, Estonia, Latvia, Poland, Finland, Netherlands, Canada, France, Iceland, USA, Sweden

2 meetings: Norway, Spain, Germany, UK

3 meetings: Denmark



**ICES**  
**CIEM**

International Council for  
the Exploration of the Sea  
Conseil International pour  
l'Exploration de la Mer

Council Meeting  
October 2019  
CM 2019 Del-10.1  
Agenda item 10

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### Annual Progress Report from the ACOM Chair

*Council is requested to take note and promote:*

- *the launch of the advisory plan in Dec 2019.*
- *provide guidance to maintain investment in key expertise areas central to advice: MSE, mixed fisheries, ecosystem approach.*
- *the benefits of accepting the position of ICES expert group Chair.*

This report contains four sections focusing on the implementation of the ICES Strategic Plan and improving effectiveness of ICES advice (ICES advisory plan)

1. Special requests, challenges and opportunities, impact of lack of expertise
2. Advisory plan – assuring quality and making progress
3. Practical measures for evidence provision for ecosystem-based management
4. Review of last 12 months

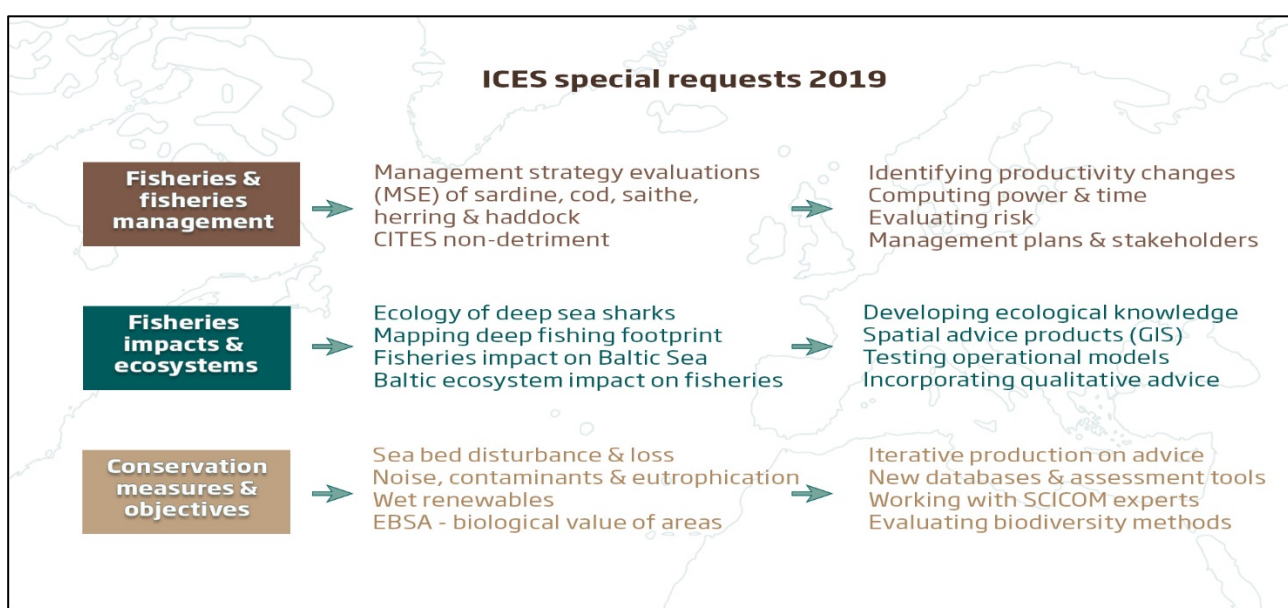
#### **Advice Activities over the last 12 months:**

1. Developed the ICES Advisory plan.
2. Published:
  - i. 196 fishing opportunities advice, and 3 other recurrent advice
  - ii. 6 ecosystem overviews
  - iii. 4 fisheries overviews
  - iv. 1 viewpoint on biofouling
3. Explored the concept of aquaculture overviews
4. Explained the advice at 38 external meetings and attended key meetings with recipients of advice throughout the year (DGMARE, DGENV, Iceland, Norway, UK, OSPAR, HELCOM, NASCO, NEAFC, Coastal States, European Parliament, ACs, regional fisheries management bodies, NOAA, DFO, NGOs, CBD, aquaculture and processors)
5. Ran MIRIA, MIACO and WGCHAIRS. Held 28 advice drafting groups and 2 ACOM and 1 ACOM consultations meetings.
6. Launched the Fisheries Resources Steering Group (FRSG)
7. Worked with secretariat on MoUs and Partnership agreements (DGMARE, Norway, UK, Iceland, NASCO, DGENV)

## 1 Special requests, challenges and opportunities, impact of lack of expertise

The creation of impartial evidence for responsible decision-making is a key component of the ICES strategic plan. That is why governments and intergovernmental agencies turn to ICES for advice for the management of the exploitation of natural resources and monitoring and reaching conservation targets.

The lack of investment in certain expertise is hindering ICES ability to provide advice, especially for special requests. Figure 1.1. highlights the key areas where ICES received and answered special requests in 2019. To date, ICES has answered 18 special requests and including 2 technical services in 2019 <https://www.ices.dk/community/advisory-process/Pages/Latest-Advice.aspx>.



*Figure 1.1. 2019 special requests: column 1 represents the broad areas, column 2 the specific research issues and column the new developments and challenges that ICES encountered by answering the requests.*

To help highlight research needs and gaps for the provision of knowledge for decision makers, ICES runs stakeholder workshops with managers, fishers, NGOs to develop research needs plans for a range of issues. Examples include:

- Assessment and management advice for Baltic Cod ([WKSIBCA](#), 2014)
- Assessment and management advice North East Atlantic mackerel ([WKRRMAC](#), 2019)
- Scoping research needs for Ecosystem Based Management of the Baltic Sea (WKBALTIC, 2020)
- Scoping next generation of mixed fisheries advice (WKMIXFISH, 2020)

Thus we are providing the input to highlight and help lobby for stronger investment in key areas. These areas cannot be considered “fringe” to the ICES advisory portfolio. They include MSE, multispecies and mixed fisheries and ecosystem approach.

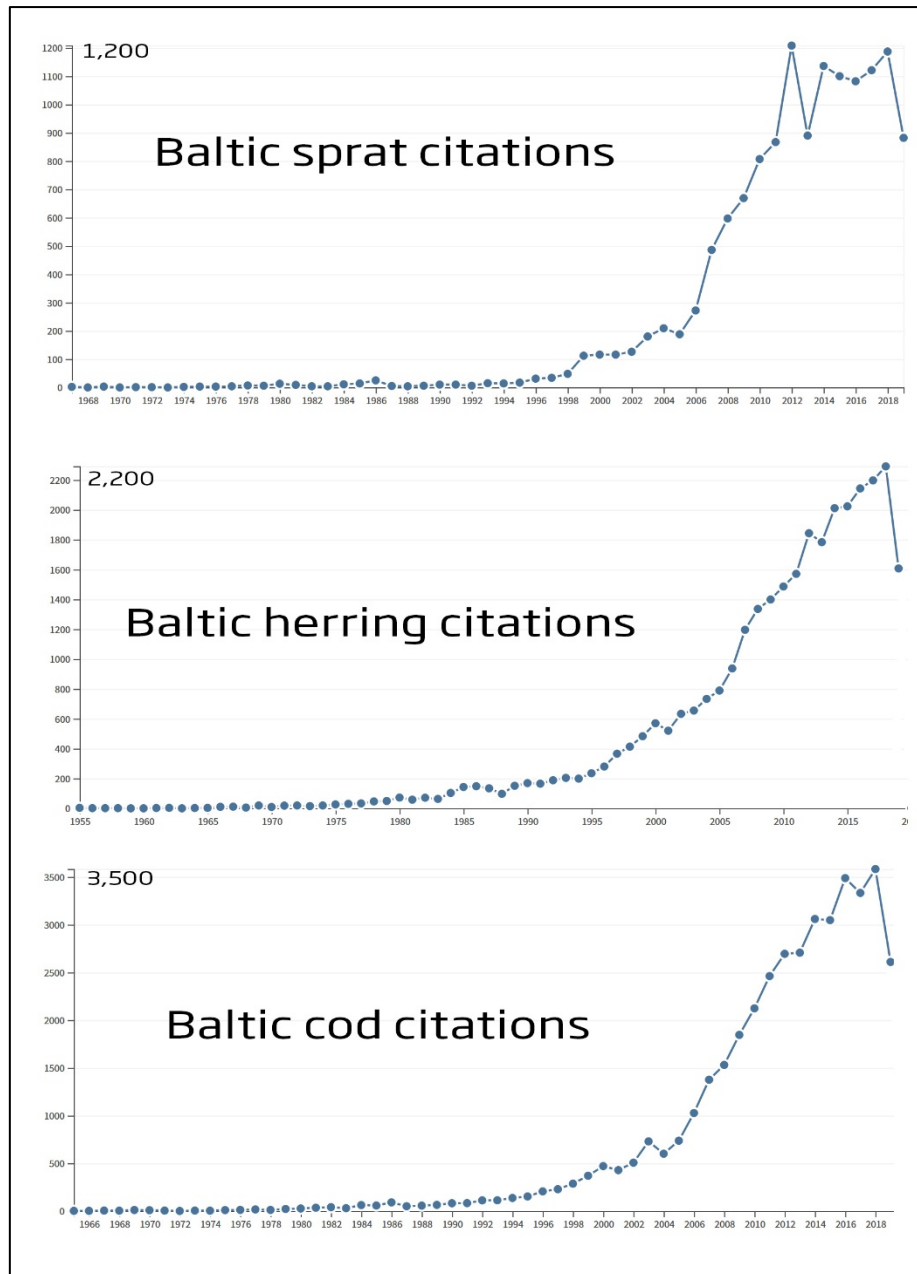
An example occurred in mid-2019, of a failure to link science through to applied science for fisheries management. ICES received a request from DGMARE to provide advice (Text box 1.1.). The request was in a key fisheries advice area (Baltic fisheries), and for many years ICES has advised that there is a need for spatial management of sprat and herring fisheries in the Baltic Sea to aid the management of Eastern Baltic cod. However after extensive investigation by the secretariat and ACOM leadership, ICES had to reject the request because

*“There is an apparent lack of scientific knowledge, data as well as expertise/human resources in the area of Baltic sprat and the interaction with Eastern Baltic cod fisheries. There are no operational tools currently available to help answer the request.”* (letter to DGMARE from ICES head of advisory support, 26 September 2019).

In essence there was a failure of the fisheries science framework to turn the large amount of research into operationally useful approaches for fisheries management (Figure 1.2).

Text box 1.1. Request to ICES from DGMARE which ICES rejected.

- 1) On the likely impact of spatial management measures for sprat with regards to the condition of cod ICES is asked to:
  - a. clarify in which subdivisions, in which months and by how much to reduce or to increase the effort in pelagic fisheries in the different ICES areas in the Baltic Sea with the objective of maximizing any beneficial effects on the eastern cod stock in terms of prey availability and
  - b. quantify the expected effects on the sprat stock in terms of stock biomass and individual condition/growth of eastern Baltic cod.
- 2) On the spatial distribution and overlaps of fish and fisheries ICES is asked to clarify how such an effort reallocation could impact the herring fishery in the relevant subdivisions?
- 3) On the predator/prey interactions between benthos, sprat, cod and seals ICES is asked to:
  - clarify what the relative importance of sprat in the diet of eastern Baltic cod is and if there are there differences from one subdivision to another;
  - clarify if the available sprat in SD 25-26 in terms of size and condition is an appropriate food that eastern Baltic cod is capable of preying and eating given that eastern Baltic cod is small and weak and
  - estimate any risk of a more sprat-dominated diet potentially increasing the “seal”-parasite infection of EBC.



*Figure 1.2. Annual citations of papers that have been published on Baltic Sea sprat, herring and cod (Web of Science extraction, 30 September 2019), illustrating that there isn't a lack of science activity on the three main commercial species fished in the Baltic Sea.*

**So the Chair of ACOM seeks guidance from Council how to ensure resources across the network and encourage the development of operational expertise. This is needed to maintain a tangible knowledge base keeping ICES advice resilient to existing and future management needs.**

## **2 Advisory plan – assuring quality and making progress**

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The ICES strategic plan states that we strive to continuously improve the quality and transparency of our advice and the processes. We use the data we collect and manage, and our scientific understanding of marine ecosystems to meet current and future demands for advice on the state and sustainable use of our seas and oceans. Future approaches for delivering advice will build on our longstanding experience as a leading provider of fisheries and environmental advice. The advisory plan highlights a number of priority areas that need attention (see document CM 2019 Del-4). The proposed allocation of tasks to deliver the plan is shown in Annex 1.

The advisory plan key priority 1 – assuring quality, documents a number of tasks. These include quality control of data (see CM 2019 Del-11) and quality assurance of the advisory process. Initial steps have been taken including the mapping of the entire advisory process with stress points and critical control points being investigated. This will be further developed in 2020. The quality control of data will be brought about through application for the core trust seal.

To deliver key parts of the advisory plan, ACOM is currently focusing on quality assurance, methods for stocks assessment, forecasting and management strategy evaluation, methods for overviews, automation of processes (TAF and databases), the benchmark process and developing a framework for ecosystem advice. Once the advisory plan has been formally launched, Council will be updated on progress and completion of the tasks.

## **3 Practical measures for evidence provision for ecosystem-based management**

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When providing the evidence for ecosystem-based management (EBM), and ecosystem-based fisheries management (EBFM), researchers are often criticised for remaining in the realm of concepts, and philosophical development. ICES must show practical progress, and lead the call for iterative implementation for EBM and EBFM.

In terms of EBFM, the requesters of advice are expecting ICES to provide advice that is robust. ICES is the science adviser to NEAFC and answers annual requests from OSPAR. NEAFC and OSPAR work together through their “collective arrangement”. ICES is a key science advisor to both EU DGMARE (CFP) and EU DG ENV (MSFD and Habitats & Birds Directives), and we need to ensure that all our advice is consistent to all of these requesters. Thus ACOM is developing the framework for ecosystem advice.

There are four main areas where practical progress is being made by ICES as an evidence provider to EBFM:

## **Accounting for the influence of a dynamic ecosystem on fisheries**

Where appropriate, ICES must account for productivity changes in stocks (recruitment, growth, natural mortality) in stock assessments, forecasts & reference points. An audit of how variable productivity is incorporated into our fishing opportunities advice will take place in 2020. The challenges associated with changes and overlaps in distribution of stocks also needs to be addressed. There is little activity in this area at the ACOM level, and it must be addressed. In contrast, ACOM advice is already considering alternative productivity scenarios in management strategy evaluations (MSEs). We must also account for the consequences of catches from mixed fisheries in advice and improving the analysis and communication of our mixed fisheries advice is a priority for ACOM in 2020.

## **Impact of fisheries on the ecosystem**

ICES is in the process of developing metrics and reporting on the occurrence and impact of bycatch in fisheries, and on fisheries impact on and services from seabed, including vulnerable marine ecosystems (VMEs). We are synthesizing the status of fish stocks by ecoregion in our fisheries overviews. ACOM acknowledges that more effort is required on the issue of bycatch and it has tasked itself with creating a bycatch road map to set objectives and build momentum.

## **Put fisheries into context of other maritime activities & pressures**

Through our ecosystem overviews, we are determining the priority anthropogenic pressures in an ecoregion and developing metrics and reporting on trends in species biodiversity and ecosystem structure. We provide information and methods for Ecologically or Biologically Significant Marine Areas (EBSAs) designation and contribute to assessments of threatened/endangered species & habitats. In our ecosystem overviews we also report the occurrence and spread of invasive species.

## **Consequences of trade-offs between management objectives**

The integrated ecosystem assessment groups are exploring suites of management objectives in each ecoregion. Our network has developed tools for comparing the consequences for trade-offs between objectives and management scenarios. We are running successful stakeholder engagement workshops that explore methods, ideas and the consequences of management decisions. All of these are now flowing into practical application via our advice on MSE of fisheries management plans, seabed impact, MSFD and mixed fisheries.

## **4 Review of last 12 months**

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### **Participation in core advice activities (expert groups and advice drafting).**

The last year has been busy, intense and productive. The expert groups have been well attended (Figure 4.1) and all ICES countries have contributed to the expert groups (Figure

4.2). Almost each fisheries assessment working group had at least one stock assessment that required further work, usually through an interbenchmark process. It was impossible to predict the causes, or the stock likely to require extra work.

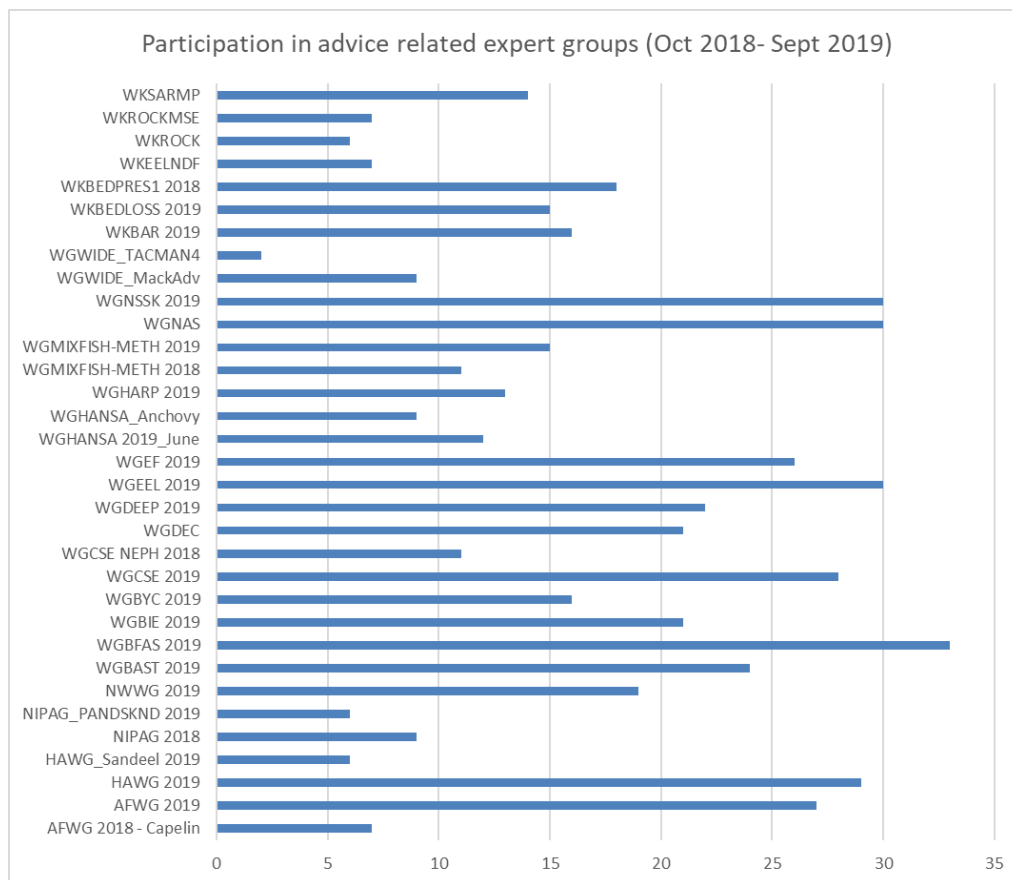


Figure 4.1. Participation in ACOM related expert group (Oct 2018 –Sept 2019). WGWIDE is not included.



Figure 4.2. Participation in ACOM related expert groups by country from Oct 2018-Sept 2019. WGWIDE is not included.



There were 28 advice drafting groups between October 2018 and September 2019 (Figure 4.3). In November 2018, ACOM enacted a new system of allocation of experts to ADGs. This was supported by Bureau. The system appears to be working well. Although two more environmental ADGs were poorly populated (High seas MPAs and haploops), the remaining groups functioned as expected. Certain countries contribute greater to the ADG process than other (Figure 4.4).

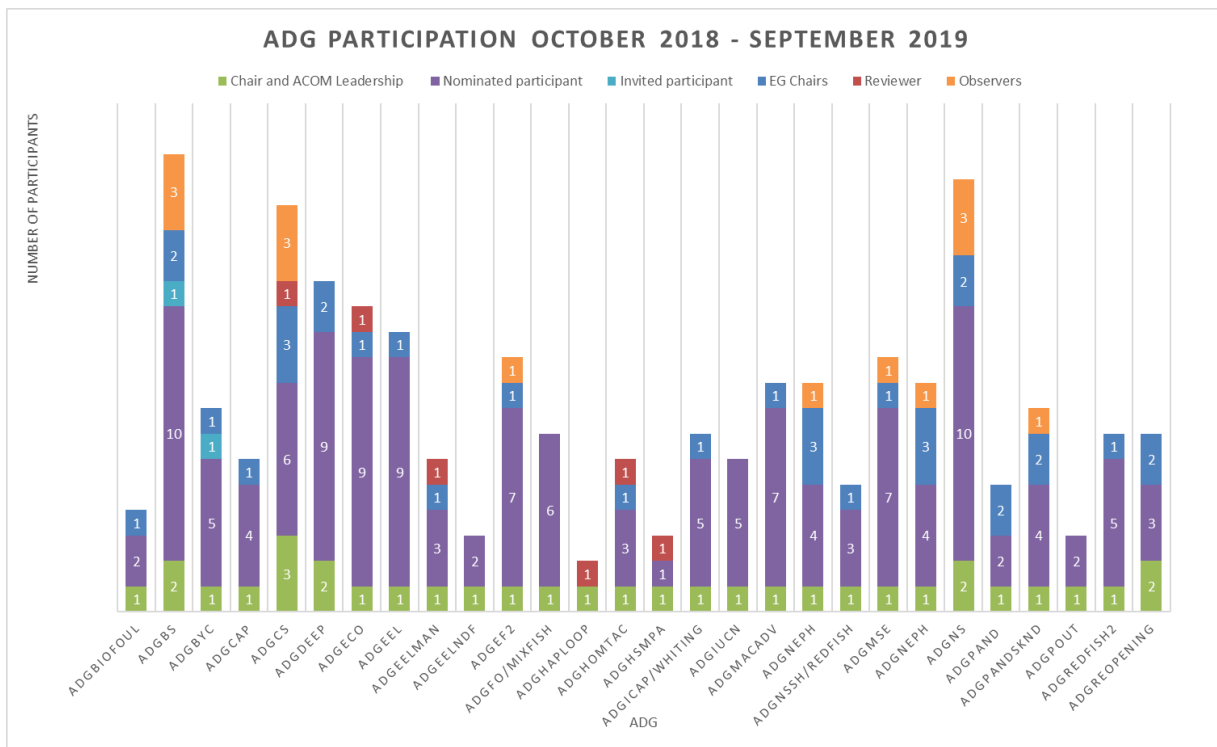


Figure 4.3 Population of advice drafting groups from October 2018 to September 2019.

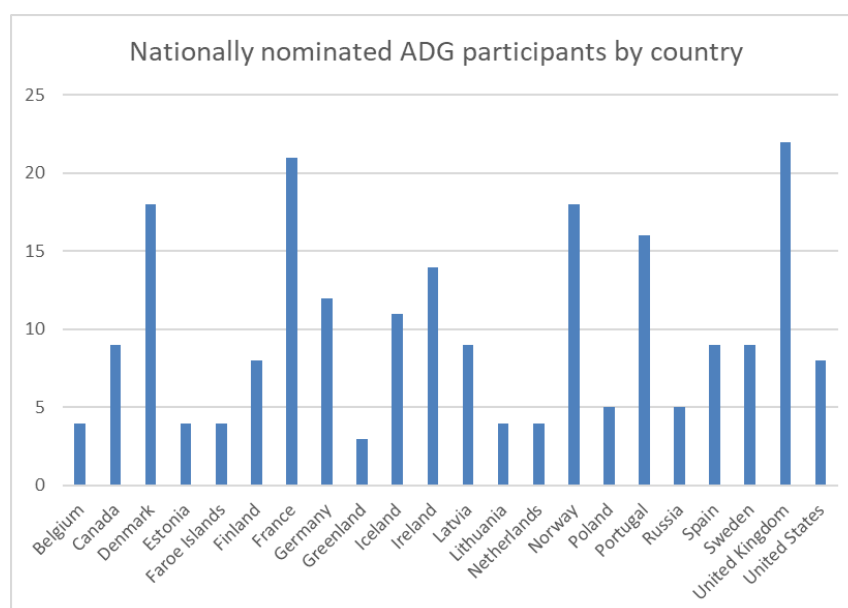


Figure 4.4. Participation in ADG by country from Oct 2018-Sept 2019.

**Chairs – reluctance to accept the position.**

The system is under strain, and the network is shouting about workload and broadening of expectations. One obvious problem in 2018/2019 was the reluctance of individuals to step forward to become Chairs of Expert Groups. ACOM leadership and the secretariat are finding this a challenge (examples include the North Sea and eel working groups). The role is seen as too challenging by junior researchers, and as not rewarding by senior researchers. ACOM would like Council to consider how to make the role of Chair attractive and a natural career step for researchers in the ICES network.

**Working across pillars – a success story.**

It is worth highlighting to Council that the pillars of ICES (data, science and advice) appears to be working closer together and more integrated than previously. This reflects a breakdown in the silo mentality and an increased awareness that the delivery of the ICES Strategic plan is dependent on teamwork across the network. The working relationship between ACOM and the secretariat has been excellent in 2019. The secretariat advisory services are extremely effective and helpful.

**Annex 1. Making the advisory plan operational.** Proposed allocation the tasks for each priority area to bodies within ICES.

Priority area		Tasks	Responsible
<b>Assuring quality</b>	1.1	As part of the quality assurance framework (QAF), map out process flows and critical control points and feedback loops in the advisory system and begin to address identified critical control points.	ACOM/ secretariat
	1.2	Seek international quality accreditation for the ICES advisory system.	ACOM/ secretariat
	1.3	Develop a comprehensive ICES quality management system for advice including implementing RDBES, TAF, etc.	secretariat
	1.4	Where possible ensure that all advice products are based on data that adhere to the FAIR principals.	ACOM/SCICOM
	1.5	Application and ongoing development of the ICES benchmark system, to ensure the advice is fit for the evolving advisory demands.	ACOM
<b>Incorporating innovation</b>	2.1	Scan and evaluate new knowledge, from inside and outside the ICES community, to assess if it can support state of the art advice on meeting conservation, management and sustainability goals	ACOM
	2.2	Review and report on best practices in other agencies and management systems to inform future development of advice	ACOM
	2.3	Support translation of mature science into viewpoints or ecosystem overviews (if ICES priority but no recipient request) and into requested advice (if recipient request)	ACOM/SCICOM
	2.4	Engage stakeholders and advice recipients to develop current and future advice products	ACOM
	2.5	Engage funding agencies to develop/ recommend approaches to project calls and design that increase uptake of science into advice	SCICOM/Council
<b>Profiling approach</b>	3.1	Prepare a communication strategy with SCICOM and the secretariat outlining the strengths and future direction of the ICES advisory system clarifying the message that ICES is an organisation that operates as a science network with functional, knowledge brokering and boundary organisation activities.	ACOM/ SCICOM/ secretariat
	3.2	Highlight the ecosystem approach in existing ICES advisory products and communicate this to new audiences and publicise future developments of the integration of ecosystem approach in ICES advisory products	ACOM
	3.3	Communicate the synergy between ICES Data, Science and Advice by revising ICES website in terms of target audience, levels of detail and clarity. Link this to the visualisation of advice on the website.	secretariat
	3.4	Raise the profile of ICES with marine sectors (commercial, managers and policy makers) not currently engaged with ICES such as energy and shipping.	ACOM
	3.5	Broaden the participation in the ICES Science community by promoting participation from academia in the Advisory process – the ASC is an important event in this respect	ACOM/ SCICOM

Priority area		Tasks	Responsible
	3.6	Identify and target specific audiences of advice when concerns are expressed about ICES advice process and begin dialogue to resolve such issues	ACOM
	3.7	Expand the terms of references for MIRIA and MIACO to use these meetings as part of the communication strategy	ACOM
<b>Sharing evidence</b>	4.1	Improve and ensure branding of all ICES advice products	ACOM/ secretariat
	4.2	In dialogue with clients to design and develop a user friendly and dynamic web platform for ICES advice (either through the ICES website, or in parallel)	ACOM/ secretariat/ external projects
	4.3	Develop web-based advice that includes several levels/layers (incl. popular advice, forecast options, full advice) and also enables presentation of advice in an effective and consistent format	ACOM/ secretariat/ external projects
	4.4	Work with the fishing industry to develop a mechanism to bring commercially derived sample data into the RDBES	ACOM
	4.5	Improve the mechanism for sharing alternative perceptions of the state of stocks and fisheries.	ACOM
	4.6	Simplify the headline advice, but connect to the underlying basis and data in an interactive way	ACOM
	4.7	Ensure that ICES advisory highlights are made available to society in a user-friendly way	ACOM/ secretariat
	4.8	Ensure corrections in advice and updates in the advisory products will be transparent and easily tracked by the clients.	ACOM/ secretariat
	4.9	Improve the advice profile in the ICES document archive, encourage the creation of an ICES online library for all documents	ACOM/ secretariat
<b>Evolving advice</b>	5.1	Map with recipients their current and potential future policy initiatives and management objectives and document their potential impact on the provision of advice from ICES	ACOM
	5.2	Develop an ecosystem advice framework	ACOM
	5.3	Identify and develop new clients for ICES advice e.g. marine energy and spatial planning.	ACOM
	5.4	Develop a stronger base in scoping and stakeholder engagement	ACOM/ SCICOM
	5.5	Investigate mechanisms and examples of assuring independence of advice in systems with increasing stakeholder participation, more consultation and iterations with client.	ACOM/ SCICOM
	5.6	Identify associated data and information needs related to policy developments, the concept of risk and thresholds for ecosystem health	ACOM/ SCICOM
<b>Identifying needs</b>	6.1	Conduct an objective stock assessment prioritization and data-gap analysis	ACOM
	6.2	Collate a list of future research and data requirements from benchmarks, overviews and expert group reports in an existing database on an annual basis, across expert groups, steering groups and SCICOM	ACOM

Priority area		Tasks	Responsible
	6.3	Continuously review training courses run by ICES with the potential to increase the programme for key areas.	Training Group
	6.4	Identify key under-populated areas of expertise and clearly communicate the current needs in expert groups to institutes and conduct an independent review of the gaps in expertise related to the anticipated advisory needs.	ACOM
	6.5	Identify potential programme of funding and training in disciplines that are relevant to the institutes and engage funding agencies and recipients of advice to highlight research to meet future advice needs	SCICOM
	6.6	Once the database on surveys, RDBES and the inclusion in stock assessments is concluded, communicate with the institutes and regional data groups about gaps and modifications that will augment the surveys and monitoring utility.	ACOM/ secretariat
	6.7	Identify disciplines and institutions that could collaborate with ICES with the view to improving and adding context to ICES advice e.g. socio-economics and marine planning	ACOM/ SCICOM

## Data and Information Services

### 1 Summary

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Awareness of, and attention to, good data management have proliferated across the ICES community in recent years. Both SCICOM and ACOM have played an important role in delivering buy-in across the expert groups and committees. The data management handbook for expert groups, and the mantra of [FAIR](#) that is now embedded in advice and science presentations are positive examples of this.

Data management cannot afford to stay still, and the work of DIG with the Data Centre to progress data governance, accreditation and to continuously review our policies, licencing and services around data are showing that we still have a great deal of work to do.

Progress on data accreditation and data governance are important milestones for Council to note, as is the overall effort on quality assurance that is being tasked across ACOM, SCICOM and Data.

### 2 Data Centre Accreditation

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The issue of accreditation, a process where the overall ability of an institute is assessed objectively and independently against a predefined checklist of criteria, was highlighted in Bureau Doc 2125<sup>1</sup> and discussed in Bureau in February in relation to a move to an overall quality assurance framework for ICES. This was followed up with a combined (ACOM, SCICOM, Data) document to ACOM “Towards a Quality Assurance Framework for ICES Advice”<sup>2</sup>. From this, there were clear implementation tasks to move ICES, through its Data Management systems, towards an accreditation and to ensure that all advice products are based on data that adhere to the FAIR principals.

The Data Centre prepared a briefing on accreditation (see Annex 1: ICES data centre accreditation explained) to aid the DIG discussion on which accreditation route to take in the first instance. DIG met in May 2019 and the decision on accreditation was as follows:

*It should also be noted that DIG identified ICES Data Management accreditation as a medium potential to disrupt in the tracker now used for following changes that may impact ICES data management. This means that there are some challenges in terms of staff resources required to meet this task, as well as opportunities in gaining recognition and increasing confidence in ICES data and advice products.*

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<sup>1</sup> [http://community.ices.dk/Committees/Bureau/2019/Bureau\\_meeting\\_256\\_Feb/Meeting\\_docs/2019-02\\_Bur\\_Doc\\_2125\\_Data.pdf](http://community.ices.dk/Committees/Bureau/2019/Bureau_meeting_256_Feb/Meeting_docs/2019-02_Bur_Doc_2125_Data.pdf)

<sup>2</sup> [http://community.ices.dk/Committees/Bureau/2019/Bureau\\_meeting\\_257\\_June/Meeting\\_docs/2019-06\\_Bur\\_Doc\\_2134\\_Quality\\_Assurance\\_Advice.pdf](http://community.ices.dk/Committees/Bureau/2019/Bureau_meeting_257_June/Meeting_docs/2019-06_Bur_Doc_2134_Quality_Assurance_Advice.pdf)

*Overall there was agreement that either of the accreditation schemes would serve ICES well in preparing the evidence for processes. DIG also observed that the accreditation process itself focusses on the existing processes, and does not in itself guarantee best data management practises. But it initiates a programme of work that will identify areas in need of improvement and areas of strength – much like what has been initiated with the governance work. Going through a formal process provides clarity and a need to deliver – but it is equally important to use the information developed in the accreditation process to develop an improvement programme.*

*The final DIG decision is to start accreditation with the Core Trust Seal (CTS) process.*

## 2.1 Next steps and challenges

In the initial accreditation application, ICES will restrict the scope to datasets and data products currently managed by the ICES Data Centre. The Data Centre is now starting to analyse in detail the requirements of the CTS and determine where it will need to improve or collate information in regards to answering the requirements. In short, to gain accreditation an institute would need to score 3 or above on each of the 16 requirements. Our current self-assessment (see Table 1 Evaluation of preparedness for accreditation) highlights that we have potentially 3 requirements where we will need to invest effort in bringing up-to-standard. The Data Centre is aware that not all data flows are at this standard, and much of the work now will be focussed on harmonizing documentation, workflows and references to ensure that we have everything that ICES Data Centre manage in a consistent form (for an example see Annex 2 – Data delivery deadlines). Furthermore, the intention of the CTS is to have a continuous improvement in fulfilling the criteria, which requires that we think of an overall plan of how we will improve the rating beyond the initial 3 year accreditation.

Based on this, we expect to be in a position to apply for accreditation (**for datasets and data products currently managed within the Data Centre**) in 2020.

The reason for highlighting that we will first only seek accreditation for data and data products currently managed within the ICES data centre is that the greatest challenge, and what has been highlighted by the document “Towards a Quality Assurance Framework for ICES Advice”, lies in bringing all data and data products used in ICES advice within scope. For example, there are survey indices used in assessment that are not part of DATRAS or Acoustic, or datasets that do not formally receive an accession number in the ICES data ingestion system. Cataloguing, evaluating and documenting these will be a challenge and require commitment from ACOM, the expert groups and the Secretariat to achieve this. We would therefore have some time (up to 3 years) to work on this before we are due to renew the accreditation and bring these into scope.

**Table 1 Current overall self-assessment of preparedness for accreditation against 16 criteria**

<b>Organizational Infrastructure</b>			<b>Compliance</b>
<b>R1.</b>	Mission/Scope	The repository has an explicit mission to provide access to and preserve data in its domain.	4 (Implemented)
<b>R2.</b>	Licenses	The repository maintains all applicable licenses covering data access and use and monitors compliance.	2 (Plans to implement)
<b>R3.</b>	Continuity of access	The repository has a continuity plan to ensure ongoing access to and preservation of its holdings.	4 (Implemented)
<b>R4.</b>	Confidentiality, Ethics	The repository ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.	3 (In implementation phase)
<b>R5.</b>	Organizational infrastructure	The repository has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.	4 (Implemented)
<b>R6.</b>	Expert guidance	The repository adopts mechanism(s) to secure ongoing expert guidance and feedback (either inhouse, or external, including scientific guidance, if relevant).	4 (Implemented)
<b>Digital Object Management</b>			
<b>R7.</b>	Data integrity and authenticity	The repository guarantees the integrity and authenticity of the data.	4 (Implemented)
<b>R8.</b>	Appraisal	The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.	4 (Implemented)
<b>R9.</b>	Documented storage procedures	The repository applies documented processes and procedures in managing archival storage of the data.	3 (In implementation phase)
<b>R10.</b>	Preservation plan	The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.	4 (Implemented)
<b>R11.</b>	Data quality	The repository has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.	4 (Implemented)
<b>R12.</b>	Workflows	Archiving takes place according to defined workflows from ingest to dissemination.	4 (Implemented)
<b>R13.</b>	Data discovery and identification	The repository enables users to discover the data and refer to them in a persistent way through proper citation.	4 (Implemented)
<b>R14.</b>	Data reuse	The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.	4 (Implemented)
<b>Technology</b>			
<b>R15.</b>	Technical infrastructure	The repository functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.	4 (Implemented)
<b>R16.</b>	Security	The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.	4 (Implemented)



### 3 Data Governance

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The ACOM document “Towards a Quality Assurance Framework for ICES Advice” also calls for the implementation of a comprehensive ICES quality management system for advice including implementing RDBES, TAF, etc. The ICES Data Centre and DIG, together with the relevant expert groups have been working on establishing governance groups for each of the main systems that support data flowing into/out of the advisory process. These groups are/will work to a standard set of ToR’s which encompass:

- Establish a governance framework setting out a forward looking plan, including objectives of *[Data Workflow]*, responsibilities, processes and resources.
- Provide a platform for user feedback to *[Data Workflow]*. Appropriate actions to be taken with assigned responsibilities and resource requirements will be listed and prioritised
- Oversee and advise on the interpretation and prioritisation of recommendations for *[Data Workflow]*
- Oversee development of user guidance and training for *[Data Workflow]*

To date, governance has been established for:

- RDB/RDBES (SC-RDB)
- DATRAS (WGDG)
- SmartDots (WGSMART)

It is planned by the end of 2019, governance will also be in place for:

- Acoustic portal
- TAF
- VMS/AIS spatial fisheries data<sup>3</sup>

The draft resolutions for these groups, as well as reports from the existing governance groups were presented at DIG in May. Further to this, DIG is supporting efforts to evaluate these systems against data management principles to highlight gaps, which will in turn feed into the accreditation and governance processes. In their 2020 work programme, DIG have committed to evaluate Spatial Fisheries Data workflow, Marine Environment Data flow (DOME), and the Vulnerable Marine Ecosystem portal (VME).

Each governance evaluation will follow a similar structure:

1. Initial evaluation, following the categories and questions
2. Reviewer scoring and identifying broad improvement areas
3. Share initial findings with developers and groups governing the data structure to reach consensus on the state/scoring and identified improvements
4. Governance structure identifies actions to prioritise improvements and takes forward the improvement programme
5. DIG revisits governance evaluation, specifically to see how categories/questions with identified improvements have been progressed (1-3 years later)

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<sup>3</sup> WGSFD/Secretariat are currently responsible for this but have taken the decision to setup a dedicated governance group for these data types

### 3.1 Best practice for Data Management Handbook

DIG and ICES Data Centre developed a user handbook on Best practice for Data Management (doi 10.17895/ices.pub.4889) in preparation for the WGCHAIRS meeting in January 2019. The handbook has generally been well received, and is already in use for guidance. For example, the handbook was referenced in the ACOM-SCICOM Data Quality document “Towards a Quality Assurance Framework for ICES Advice”. The handbook has also been referenced in various workshops since its release.

DIG will continue to review the handbook to ensure it stays relevant.

### 3.2 Data policy and licensing

DIG together with the ICES Data Centre routinely performs a review of the ICES Data Policy. This is done to ensure that the data policy reflects current considerations and reflects changes in ways to access or work with data. There are now additional data policies that cover areas where the default open access cannot be provided due to the sensitive or commercial nature of the data being used in certain workflows. These data policies were also reviewed in order to ensure there is alignment and consistency in the use of terminology across the policies.

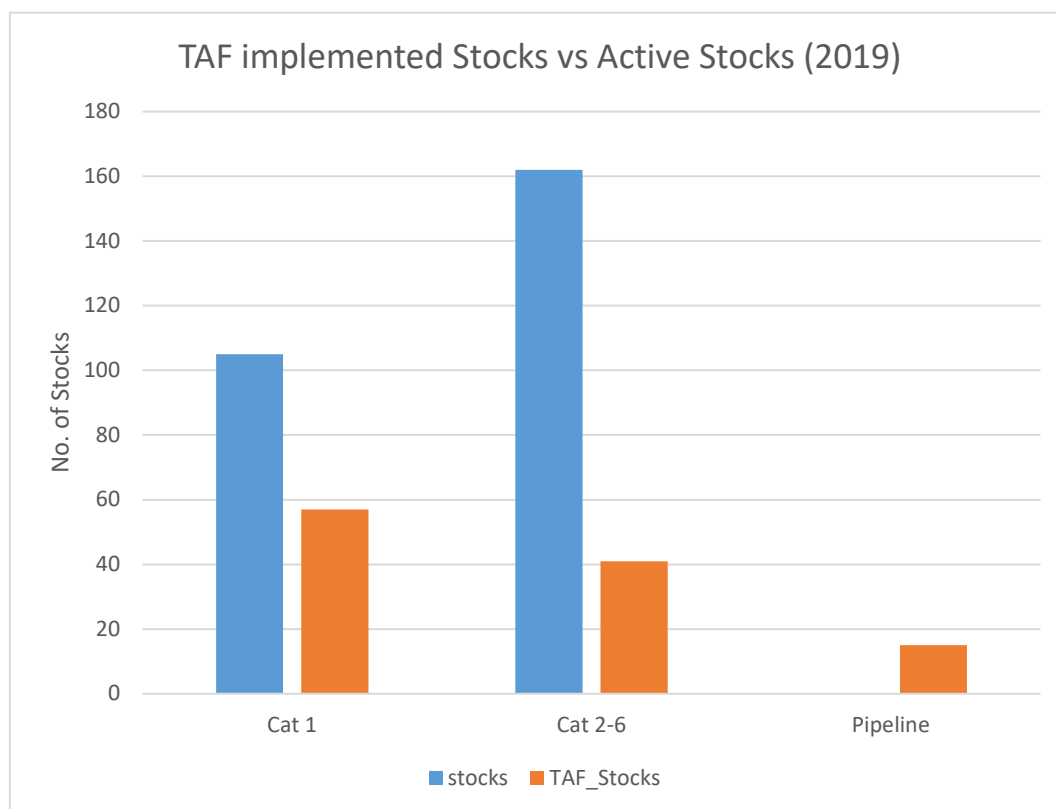
Looking ahead, a separation of license and data policy will be easier to manage and clearer for data users. At the same time, this will allow ICES to look to align to an externally recognised standard of licencing which will have other advantages i.e. alignment with contracting parties and advice recipients data sharing models. In 2020, based on an overview drawn up by DIG of existing open data licensing models, and an evaluation of their benefits and drawbacks in the ICES context, a proposal for the revision of the ICES Data Policy will be presented to Council. This will also better align with aspects of the ICES Data Centre Accreditation.

## 4 Transparent Assessment Framework ([TAF](#))

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The focus in 2019 has been on ensuring adoption and building competence in the ICES assessment community. Five training workshops have been held, 3 in ICES with online attendees via WebEx, and two regional training workshops covering the Celtic Sea and North Sea regions. Workshops for the Bay of Biscay and Iberian Coast and the Baltic Sea are planned for 2020. The workshops attracted stock assessors and stock assessment data coordinators, with the benefit being that several TAF analyses that document processes involving catch data at a national level and survey indices have started to be developed.

TAF is also being used by some WGs to document quality checking and processing of data received from the fisheries data call. This is an area where a greater focus will be placed as ICES moves into a Quality Assurance Framework.



## 5 Regional Database and Estimation System (RDBES)

On the 13th September, the new updated version of the RDBES (v1.17) was published. The number of different generic sampling schemes that have been identified for countries has increased from 8 to 13, not including the lower more detailed sampling level. The participants of the WKRDB-EST (estimation workshop) 30th Sep. to 4th Oct. should use the RDBES for their data, all national data uploaders can also have access to the new version of the RDBES. The data relevant for landings and effort data have been specified, and the sample data have been further developed. All documents and information is on a public [GitHub site](#).

With reference to the separate Council document on a proposal for investments of ICES equity, where the RDBES is one of the recipients of this, Council should take note that efforts have been made to gain funding for its development through the European Commission. Previously, proposals have been sought via specific budget lines in the European Maritime and Fisheries Fund (EMFF) which are reserved either for regional capacity building or so called 'study proposals'. This proposal was based on Member States directly allocating money from their share of the EMFF budget to the development of the RDBES. The proposal was tabled by the chair of the SC-RDB to the Regional Coordination Groups (RCG's) of the EU Data Collection Framework. This was positively endorsed and then taken to the meeting of the National Correspondents for agreement in September. The national correspondents were unable to reach agreement on the mechanism for funding, even though they agreed the RDBES was an important tool for their coordination.

## 6 Activities Dashboard

Table 2: 2019 Dashboard: Inputs and outputs to assessments and products

Activity	Project or System	Source funding	Current Status	Comments
Pre-input assessment to	<b>SmartDots platform</b> Otoliths Exchange	Institutes own investment, although WGSMA RT is exploring funding opportunities via EMFF	On track	<a href="http://ices.dk/marine-data/tools/Pages/smartdots.aspx">http://ices.dk/marine-data/tools/Pages/smartdots.aspx</a> <b>WGSMA RT</b> (governance) in full operation since Autumn 2018. Web app and documentation delivered under an EU technical service at the end of 2018 <a href="https://doi.org/10.17895/ices.pub.4673">https://doi.org/10.17895/ices.pub.4673</a> Headline stats: <ul style="list-style-type: none"> <li>- 52 age reading events</li> <li>- 25 countries involved</li> <li>- 264 participants</li> <li>- 800 000 + annotations</li> </ul>
Quality assurance of input data to assessment	<b>DATRAS</b> fisheries independent data	DG MARE Special request (for 2018)/ Council investment (2017-18)	On track	2 workshops achieved for i) <a href="#">Bay of Biscay, Iberian</a> ii) <a href="#">North and Celtic seas</a> in 2018
Indices for assessment input			On track	Workshop ( <a href="#">WKSABI</a> ) completed in 2019 to examine methods to develop a swept-area based effort index that can be used across the survey types in DATRAS

Activity	Project or System	Source funding	Current Status	Comments
				Smaller workshop with the OSPAR biodiversity lead in August 2019 to align processes.
Governance of data products			On track	WGDG formally established in 2018 and meeting regularly
Quality assurance of input data to assessment	<a href="#">Acoustic portal</a> Fisheries independent data	H2020 AtlantOS project (ends July 2019)/ICES Core funding	Some delay	Some surveys still missing from Norway, although data are starting to be prepared/included, as well as Iberian and Bay of Biscay surveys yet to be included.
Indices for assessment input			On track	Portal live and populated for a number of North East Atlantic and Baltic Surveys including HERAS, PELGAS, BIAS and BASS.  <a href="http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx">http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx</a>  Discussions have been ongoing between the REDUS (Norway) project and TAF to bring these into a fully transparent and standard workflow.
Governance of data products				ToR's drafted and discussing with working groups on a suitable chair to lead this work. On track to have a group established in late 2019

Activity	Project or System	Source funding	Current Status	Comments
Raising and estimation of commercial catch data for input to assessment	<b>Regional Database and Estimation System (RDBES)</b> Fisheries dependent data	Council Investment (2017-2018)/ DG MARE Special request (for 2018);	Behind schedule	<p>13th September, the new updated version of the RDBES (v1.17) was published. Number of different generic sampling schemes that have been identified for countries has increased from 8 to 13.</p> <p>All documents and information is on a public <a href="#">GitHub site</a></p> <p>Funding: the national correspondents were unable to reach agreement on the mechanism for funding, even though they agreed the RDBES was an important tool for their coordination</p>
Protected species bycatch estimates	<a href="#">Bycatch database</a> (PETS) WGBYC	ICES core/DCF	On track	<p>Bycatch data format and portal (<a href="http://bycatch.ices.dk/">http://bycatch.ices.dk/</a>) fully established. The 2019 data call received data from 21 countries in Europe.</p>
<b>(ICES Area):</b> Various spatial/tabular data products for analysis of fishing effort and impact	<b>VMS and Logbook</b> Fisheries dependent data	Various	Potential for data provision issues	<p>This is now established as a core ICES data call, QC process and data flow.</p> <p>Spain has successfully submitted data for the 2019 data call, having sent a test dataset in the 2018 cycle. Russia and Greenland are still non-responsive to the data calls for VMS/Logbook data.</p> <p>The VMS/Logbook conditions of use <a href="#">licence</a> was reviewed by DIG in their 2019 meeting</p>

Activity	Project or System	Source funding	Current Status	Comments
				and was agreed by WGSFD; to avoid confusion with this years cycle the updated licence will be released at the end of 2019.
<b>(NEAFC Area):</b> Various spatial/tabular data products for analysis of fishing impact		NEAFC MoU	On track	Technical issues largely addressed in inter-sessional period between bilateral meetings in 2017 and 2018. ICES would like to explore with NEAFC whether we can further optimise the QC (via scripted checks) as an additional improvement.
Repeatable and documented assessments, quality control of inputs and outputs to assessment	Transparent Assessment Framework (TAF)	Council Equity, until March 2020	On track	<p>TAF officially launched the <a href="#">online web application</a> at the Mediterranean <a href="#">FishForum</a> in December 2018. The side event generated a lot of interest across the international fisheries science community.</p> <p>The focus in 2019 has been on ensuring adoption and building competence in the ICES assessment community. Five training workshops have been held, 3 in ICES with online attendees via WebEx, and two regional training workshops covering the Celtic Sea and North Sea regions. Workshops for the Bay of Biscay and Iberian Coast and the Baltic Sea are planned for 2020.</p> <p>On the ground level:</p> <ul style="list-style-type: none"> <li>- 57 category 1 stock assessments implemented</li> </ul>

Activity	Project or System	Source funding	Current Status	Comments
				<ul style="list-style-type: none"> <li>- 41 category 2-6 stocks</li> <li>- 15 currently in the pipeline</li> </ul>
	Stock Assessment Graphs (Database) SAG	ICES Core/DG MARE Special request	On track	Both systems formed part of the response to the 2018 <a href="#">advice request</a> on moving the outputs of advice beyond PDF documents. In May 2019 the Data Centre met with the European Atlas of the Seas (a DGMARE initiative) to discuss how the <a href="#">interactive services developed</a> can be shown on the EU Map Portal – this is still being explored as simplification is needed for a map based product.
	Stock Information Database	ICES Core	On track	
Repeatable and documented assessments, quality control of inputs and outputs to assessment	Contaminants Assessment Tool	OSPAR, HELCOM and (AMAP)	On track	The <a href="#">OSPAR online tool</a> has been delivered, the HELCOM tool will be finalised by the end of June; both will be available on the ICES and RSC's websites before the summer. AMAP will hosted a workshop at ICES in June, where the AMAP tool will be further discussed.
	Eutrophication Assessment Tool	HELCOM, OSPAR	On track	The HELCOM tool continues to grow and develop, HELCOM are currently looking at funding models for supporting this work. OSPAR have a special request for the further development of the Eutrophication



Activity	Project or System	Source funding	Current Status	Comments
				assessment using the online tool developed at ICES.

## 7 Annex 1: ICES data centre accreditation explained

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### 7.1 Summary

Data accreditation is not a new discussion topic at ICES. In 2014, the ICES Data Centre and the Data and Information Group (DIG) discussed pursuing data accreditation based on the newly established IODE quality management framework. They concluded at that time, the effort needed to achieve accreditation was too great in relation to the systems and documentation that the ICES Data Centre had in place. There has been increasing interest from stakeholders and clients to ICES to look more systematically at the overall quality assurance to ICES outputs, with data governance and management being a keystone of this. The Head of Data and Information was challenged by ICES Council in 2018 to look into the ICES approach to data governance, and in February 2019 a report<sup>1</sup> was made to Bureau outlining governance aspects in ICES, and also accreditation.

Therefore, having discussed with the Chair of DIG inter-sessionally, the ICES Data Centre will pursue an accreditation.

### 7.2 Accreditation

The main reasons for seeking data accreditation in the ICES context:

- a) Having clear and consistent documentation, processes and guidelines on how ICES manage data,
- b) benchmarking the data centre against known criteria (and other data centres) to understand the maturity of the services that the Data Centre provide,
- c) reducing errors and uncertainty in the processes of delivering data through the ICES system – a clear link to the overall quality management system that ICES is considering, and
- d) funding bodies for research, or even ICES clients, may, in the future, require ICES to have such accreditation in order to bid for, or deliver services.

Furthermore, having data flows properly documented would make the training of new employees less time consuming. Protocols would also facilitate cooperation between co-workers by clearly detailing who are the custodians for each data type.

The ISO 9000 series of standards is the world's most popular quality management system, and it has become the standard for data accreditation. The two most applicable implementations of this are the Intergovernmental Oceanographic Commission (IOC)/International Oceanographic Data and Information Exchange (IODE) Quality Management Framework Accreditation<sup>2</sup> and the World Data System (WDS) – Core Trust Seal Certification (CTS)<sup>3</sup>. The IODE accreditation follows the ISO 9001 standard for Quality Management and the CST accreditation has three subtypes following different standards, described below. Both accreditations are part of the ICSU WDS. A brief description of the requirements for both these accreditations follows below.

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<sup>1</sup>[http://community.ices.dk/Committees/DIG/DIG%202019/02.%20Background%20documents/2019-02\\_Bur\\_Doc\\_2125\\_Data\(2\).pdf](http://community.ices.dk/Committees/DIG/DIG%202019/02.%20Background%20documents/2019-02_Bur_Doc_2125_Data(2).pdf)

<sup>2</sup> [https://iode.org/index.php?option=com\\_content&view=article&id=385&Itemid=34](https://iode.org/index.php?option=com_content&view=article&id=385&Itemid=34)

<sup>3</sup> <https://www.coretrustseal.org/about/>

### 7.3 IODE Quality Management Framework (QMF)

IODE is a programme of the IOC of UNESCO. The IODE QMF is part of the IODE programme. IODE's main target client for accreditation are National Oceanographic Data Centres, although repositories with other data types may apply, as long as the requirements are met. There are a total of 14 requirements across 4 categories (Annex 1).

Repositories have a period of 2 years to apply for accreditation. The procedure consists of:

- a) submission of the accreditation request (including the IODE Accreditation Requirements and Report Format) and associated documentation to the SG-QMF through its Chair;
- b) review of the documentation referred to under a) by the Steering Group within three months after submission;
- c) formulation of recommendation regarding accreditation for consideration by the IODE Committee (within two months after b);
- d) decision by the IODE Committee (during IODE Committee Session), and
- e) report to applicants and publication on IODE web site (within two months after IODE Committee Session).

This process can take a time of up to 7 months after submission of the accreditation request. In case of an unsuccessful application, the applicant has 1 year to correct the failures. If a year is not enough, a new application must be made at a later time. Therefore the accreditation process can take up to 1 year and 7 months from application submission. The IODE accreditation process can be even lengthier, depending on when the application is submitted, since the IODE committee only meets every two years. If ICES decides to pursue the IODE accreditation, it will, when successful, be awarded the status of "Accredited IODE National Oceanographic Data Centre", independently of the existence of other data types in its database.

### 7.4 Core Trust Seal (CTS)

Unlike the IODE, the CTS accreditation was not built with a specific data type in mind, the main concern behind this accreditation is repositories complying to certain standards to ensure data quality, usefulness and archiving. This accreditation has three subtypes of accreditation, and applications for each are evaluated using different standards:

- a) Core certification, which follows community-based norms granted to repositories which obtained the Data Seal of Approval or WDS membership;
- b) Extended certification, which follows DIN 31644/nestor Seal standards, and
- c) Formal certification, which follows ISO 16363 standards.

Repositories applying for certification, apply to the core certification and can pursue a higher certification at a later time. The structure of the CTS accreditation is, however, under revision and this might soon change. The current accreditation process consists of:

- a) requesting an application;
- b) submitting questions to the secretariat - these are not meant to be a pre-evaluation of the application;
- c) submitting an application and paying a 1 000 € processing fee;
- d) peer review of application by two people (within 2 months of payment), and
- e) receiving certification granted and made public, or

- f) receiving feedback from peer reviewers and re-submitting the application (for a maximum of 5 times, and each response taking up to 1 month), and finally
- g) receiving certification granted and made public, or having it rejected.

In case all 5 rounds of feedback are used and the 1 month deadline is respected, certification could take up to 7 months, from submission. The accreditation process does not involve a site visit, therefore the requirements should be supported by links to public evidence, when possible. When publicly sharing information is impossible due to, for example, security reasons, provisions within the accreditation process are made to ensure that sensitive information remains confidential. Repositories must be re-assessed every three years and the processing fee must be paid for each re-assessment.

The CTS accreditation has sixteen requirements across four categories (Annex 2) and for a repository to be granted this accreditation, all requirements must be either fully implemented or, at least, in the implementation phase.

## 7.5 Discussion points

Even though the ICES Data Centre would need to make an investment of effort to meet some of the requirements of either accreditation, most of the protocols needed to be granted accreditation are already in place in various forms. Proper documentation of these protocols will have to be made before the ICES data centre applies for accreditation. This will require additional effort, which remains unquantifiable at this stage.

The two accreditations under consideration have similar standards, and both have their advantages and disadvantages. The IODE requires no processing fee and has already been obtained by some of the ICES partners who could provide guidance during the application preparation process. However, the IODE can take significantly more time from submission to accreditation and the application process is not transparent as the information is hard to find and is scattered across many web pages. Furthermore, this accreditation is very data type focused and, even though that is not a reason to fail in being granted accreditation, this might affect the perception of data owners who deal with data that are neither oceanographic nor biological (eg. VMS data).

Where the IODE might be weaker is where the CTS accreditation is probably strongest. The application process is extremely transparent with the CTS and potentially more responsive, with the maximum timeline from application to submission, granted that deadlines are followed, taking one year less than the IODE equivalent timeline. In the CTS web page, successful applications can be found and consulted prior to submission. The CTS accreditation has been obtained by some of the ICES partners, and advice during the application preparation process could be given by them. Further doubts regarding requirements can also be submitted to the CTS secretariat during the application process, before submission. The CTS is data type independent, being a measure of overall data quality, re-usability and archival abilities, and thus potentially having a broader definition of what the standards should be. However, the CTS accreditation requires paying a 1 000€ fee.

It should be noted that whichever accreditation ICES chooses to pursue, this does not preclude the subsequent pursuit of another accreditation option. These are not mutually exclusive and the choice made should only be viewed as a first step in having the ICES data centre accredited.

## 7.6 Key points for DIG input

- What is the perceived quality of each accreditation?
- Should application response time be a consideration?
- Is transparency of the application process important to ICES?
- The merits of CTS being data type independent vs IODE being oceanography (and now biology) data focused, and the impact it might have on possible new clients.
- Does the CTS processing fee affect the perception of this accreditation?

Table 1. IODE accreditation requirements

Organizational framework		
R1.1.	Quality management system	The NODC shall establish and maintain a quality manual that includes the scope of the quality management system, documented procedures established for the quality management system, and a description of the interaction between the processes of the quality management system. Details of any QMS accreditation attained should be stated.
R1.2.	Proof of expertise and reputation in the area of oceanographic data management	The NODC shall describe the range and length of expertise of both the organisation and their staff. Details of datasets and products available from the NODC should also be provided. Any appropriate affiliations (e.g. national or international bodies, etc.) should be noted.
R1.3.	Commitment to provide sufficient resources for NODC operations	The NODC shall provide evidence that it is hosted by a recognized institution to ensure long-term stability and sustainability. Sufficient funding, including staff resources, IT resources and a budget for attending meetings, should be provided, ideally for a 3 to 5 year period.
R1.4.	Commitment to return data holdings to originators or lodging with an alternative repository, if the NODC becomes unsustainable	A long-term stewardship plan should be available including a statement on how the NODC is funded and for how long and also an action to be taken in the event that the NODC becomes unsustainable.
R1.5.	Provide national reports to the IODE Committee	The NODC shall provide a national report to each session of the IODE Committee in accordance with the standard format provided.
Quality control and maintenance		
R2.1.	Adherence to IODE standards and best practice	The NODC must provide evidence of adherence to IODE recommended standards and best practice to ensure the quality of exchanged data. For more information see IODE/JCOMM Ocean Data Standards and the JCOMM Catalogue of Best Practices and Standards.
R2.2.	Maintain a discovery metadata catalogue	The NODC shall maintain a discovery metadata catalogue that will store metadata about their datasets. ISO 19115 (Geographic Information - Metadata) is the international standard that sets out a number of metadata fields for describing spatial information datasets. ISO 19139 (Geographic Information - Metadata XML schema implementation) is the standard that aims to define an XML encoding for the metadata elements defined in ISO 19115. The ISO 19115 metadata standard (or a profile) is to be used to generate metadata records.
R2.3.	Ensure data are collected according to defined quality principles and accepted procedures	The NODC should be able to advise on data collection procedures and should be able to direct data collecting organisations to appropriate standards, where these exist. Provide details of data guidelines used for the collection of data.
R2.4.	Description of quality control procedures applied to data	The NODC should provide descriptions of quality control procedures and algorithms that are used to preprocess data. This should include references to the quality flag system used.
User access and communication		
R3.1.	Committed to, and focused on, customer service	The NODC should be committed to customer service and should provide information on response times to enquires for data and information; description of aimed service level for responding to user requests (if unavailable online); whether an enquires or help desk is available, and details of surveys of customer satisfaction undertaken.
R3.2.	Committed to raising awareness of the holdings and promoting the use of the data	Describe facilities available at the NODC for the data Discovery-Access-Retrieval including details of how the data can be searched. Furthermore, the NODC should provide information on the data products available; the linkages with other organisations who use the data for generation of products; the current projects aimed to increase and promote data use, and statistics/metrics indicating data usage.
R3.3.	Published data policy and adherence to the IOC Oceanographic Data Exchange Policy	The NODC should have a policy on data access. In general, the NODC should aim to make data and metadata freely available, although it is recognised there may be restrictions on access to data for a number of reasons. The data access policy should include details of what data are accessible; licensing arrangements; the format(s) the data can be provided in; the media used for providing data (if not online); any costs associated with data provision, including cost of media, as well as staff time. Adherence to the IOC Oceanographic Exchange policy is mandatory.
Technical infrastructure		
R4.1.	Description of hardware and software systems used to manage and archive data	The NODC shall provide documentation on the data centre's operating environment (hardware, software). This should be appropriate to the services provided to its customers.
R4.2.	Security Policy outlining the infrastructure for protection of the facility and its data, products and services	The NODC should have a security policy describing how the data holdings are protected from both malicious and accidental loss. A policy should include details on how the holdings are physically protected; access to the network - what is the access policy, and details on virtual security of the network; policy when staff leave the organisation, and description of the data archival system including backup and off-site storage procedures. Note that the security policy should exist, but should not be made public, as it potentially exposes vulnerabilities.

Table 2. CTS accreditation requirements

Background Information		
R0.	Context	Repository Type.
		Brief Description of the Repository's Designated Community
		Level of Curation Performed.
		Outsource Partners, if applicable.
		Other Relevant Information
Organizational Infrastructure		
R1.	Mission/Scope	The repository has an explicit mission to provide access to and preserve data in its domain.
R2.	Licenses	The repository maintains all applicable licenses covering data access and use and monitors compliance.
R3.	Continuity of access	The repository has a continuity plan to ensure ongoing access to and preservation of its holdings.
R4.	Confidentiality/Ethics	The repository ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.
R5.	Organizational infrastructure	The repository has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.
R6.	Expert guidance	The repository adopts mechanism(s) to secure ongoing expert guidance and feedback (either inhouse, or external, including scientific guidance, if relevant).
Digital Object Management		
R7.	Data integrity and authenticity	The repository guarantees the integrity and authenticity of the data.
R8.	Appraisal	The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.
R9.	Documented storage procedures	The repository applies documented processes and procedures in managing archival storage of the data.
R10.	Preservation plan	The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.
R11.	Data quality	The repository has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.
R12.	Workflows	Archiving takes place according to defined workflows from ingest to dissemination.
R13.	Data discovery and identification	The repository enables users to discover the data and refer to them in a persistent way through proper citation.
R14.	Data reuse	The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.
Technology		
R15.	Technical infrastructure	The repository functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.
R16.	Security	The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.

## 8 Annex 2: Data delivery deadlines

Note all databases offer continuous data delivery, however deadlines are set for specific end use needs to ensure data are available.

Dataflow <sup>1</sup>	Portal	J	F	M	A	M	J	J	A	S	O	N	D
Bottom Trawl Survey (Biotic)	DATRAS												
Bottom Trawl Survey (Seafloor litter)	DATRAS												
Pelagic survey (Acoustic)	ACOUSTIC												
Pelagic survey (Biotic)	ACOUSTIC												
Catch Data (Detailed Commercial)	RDB												
Catch Data (Detailed/Aggregated Commercial)	InterCatch												
Catch Statistics (Aggr. preliminary Commercial)	REC12												
Catch Statistics (Aggr. Commercial)	CATCHES												
Bycatch of protected species	BYCATCH												
Oceanic hydrography	OCEAN												
Seabird biodiversity	BIODIVERSITY												
Marine contaminants	DOMES												
Biological Community	DOMES												
Eggs and Larvae	EGGS												
Underwater Noise (Impulsive)	NOISE												
Vulnerable Marine Ecosystems (VME)	VME												
VMS/Logbook	VMS												

<sup>1</sup> Yellow colour denotes externally controlled delivery deadlines



**ICES**  
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International Council for  
the Exploration of the Sea  
Conseil International pour  
l'Exploration de la Mer

Council Meeting 2019

October 2019

CM 2019 Del-Doc 12

Agenda item 12

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## Secretariat report to Council

*Council is asked to take note of the information, and specifically to:*

- *Note the developments within administrative systems, including the resolutions database and delegates dashboard/nomination portal.*
- *Note the activities of the Communications department*
- *Note the HR and other administrative developments, and specifically steps taken to ensure equal treatment of all ICES employees, despite nationality and residence. Delegates are invited to inform of contact persons in their country whom to contact for upstarting discussion on an agreement between have specific agreements between all ICES Contracting Parties and ICES, on privileges and Immunities*

### Administrative systems

(ICES Joint Work Plan, Objective 1 Strengthen, support, & build capacity in the ICES community to deliver data, science, and advice, and sub-objective 1.2 Support and build capacity in the ICES community - tools, work processes, product delivery, resource planning, and coordination)

### Resolutions Database

The Secretariat has been working closely with the Chairs of ACOM and SCICOM to develop a streamlined process for submission and tracking of resolutions. The team has been/is working through a process of:

1. Definition and review of resolution form content
2. Selection of a new form platform
3. Development of a database to host the data collected from the resolution forms
4. Development of a searchable user-friendly interface to the database
5. Development of a processing workflow from the start of the drafting of the resolution through to the approval

This work is on-going and the new resolutions database is planned to come into use in 2020. The new database will allow for improved reporting, tracking, searching, and identifying links between groups.

### Delegates Dashboard



The Delegates Dashboard - a portal for the nomination of experts in the Resource Coordination Tool (RCT; see Annex 1) was discontinued after being launched in early 2019. Testing failed to identify some critical issues for safe-guarding the data held within the database. Development of a new nomination portal is on hold while the Resolutions Database is prioritised. In the meantime, Member country nominations of experts will continue via [nominations@ices.dk](mailto:nominations@ices.dk).

## Communications

(ICES Joint Work Plan: Objective 3 Provide and improve core/recurrent products and services within advice, data, science, and secretariat, sub-objective 3.7 Increase ICES impact through communication and publication)

Digital communications remains to be the main focus for ICES communications activities: all news articles, event announcements, training courses, etc., are published on [the ICES website](#) and shared in social media. All news and events are also shared via social media. We are currently active on three social media channels: [Twitter](#) (10840 followers), [LinkedIn](#) (7274 members), and [Facebook](#) (4965 likes) – numbers are as of 26 September 2019.

In order to improve the usability and the findability of the ICES website, the Secretariat has this year been working together with a website usability expert to restructure the site. Changes and implementation (read more in Annex 2).

[The bi-monthly e-newsletter](#) includes in-depth feature articles, written by scientists in our network. It is sent via e-mail to 1648 subscribers. The communications department has started producing fact sheets on strategically important topics for ICES, such as [the areas beyond national jurisdiction \(ABNJ\)](#). Another new outreach product is “Science highlights”, a series of news articles that highlight the work of our expert groups. The first articles in such series showcased [how ICES expert groups involved in ecosystem observation tackle impediments to data collection](#).

Aided by an in-house designer, the communications department is also responsible for outreach for the ASC, including early career scientist activities, outreach for symposia, training courses as well as creating infographics and outreach products, such as [the Strategic Plan](#) and [the Annual Report](#).

Since ASC 2015, the communications department has organized a networking meeting with member institute communications colleagues. The purpose of the meetings is to exchange ideas on how to improve communications within and between ICES and the institutes. This year in Gothenburg the meeting attracted 13 participants from seven countries (Belgium, Denmark, Finland, Norway, Sweden, and the US).

## Human Resources

(ICES Joint Work Plan: Objective 3 Provide and improve core/recurrent products and services within advice, data, science, and secretariat Sub-objective 3.6 Support ICES work force)

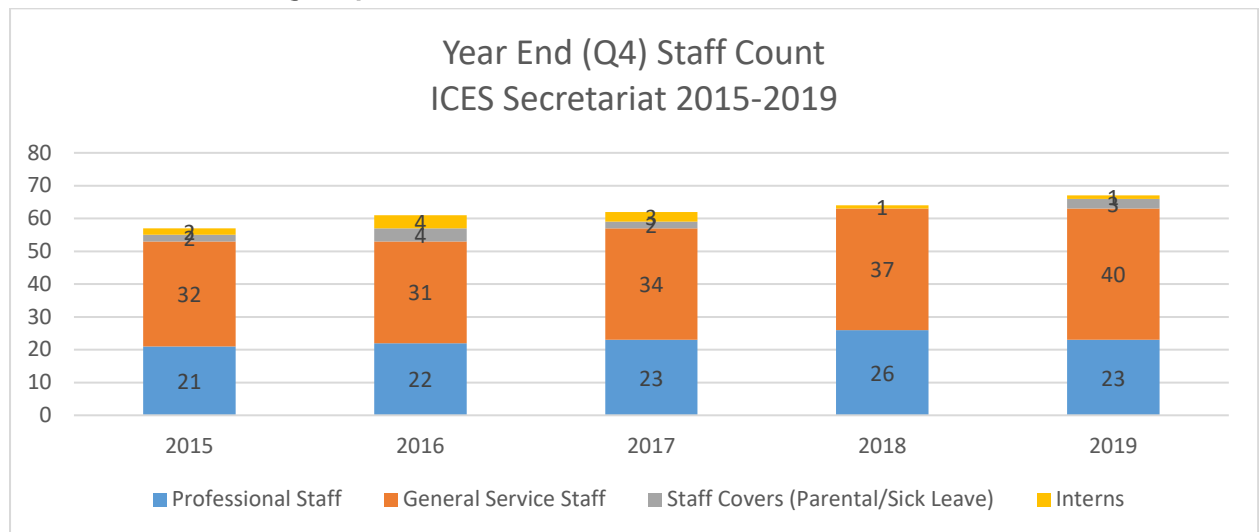
### Grade Assessments

A revised version of the grade assessments have been a work in progress since early 2019. Currently there are two drafts, one for C-staff and one for P-Staff, and the last half of the year there has been a focus on the latter. There has been continuous meetings among the General Secretary, Line Managers and HR where we have made some well thought through progress.

### Recruitments

The Secretariat staff has continued to grow in 2019: we have had two maternity cover recruitments, one supporting officer, one data officer, one professional officer, one line manager and one intern recruitment. Ongoing recruitments include the finance officer and a temporary part time student software developer.

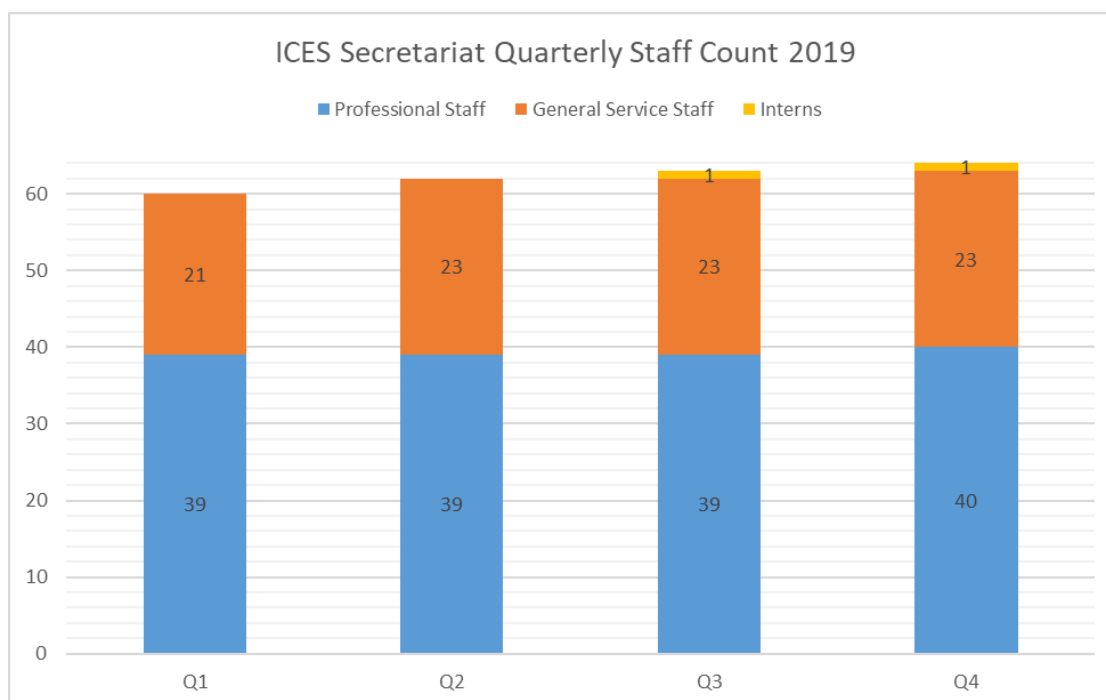
### Secretariat Staffing Report – 5 Year Trend



Over the last 5 years, the Secretariat staff count has remained relatively stable, with an average of approximately 56 regular staff members. Note that there are currently 2 Professional Staff and 1 General Service Staff whose contracts are funded by equity.

## Secretariat Staffing Report – Year 2019

### Secretariat Quarterly Staff Counts



In the final quarter of 2019, there were a total of 63 staff at ICES, in addition to 1 intern.


There was a majority of 40 women and 24 men working at the Secretariat.

### New Staff Starting in 2019

Start Date	Name, Title	Note
2 Jan 2019	Ruth Anderson Editor	4 year contract
19 Jan 2019	Julie Kellner Professional Officer, Science	4 year contract
4 Feb 2019	Asli Bankaci HR Officer	Maternity Cover, 11 month contract
1 April 2019	Joana Ribeiro Data Officer	4 year contract

Start Date	Name, Title	Note
6 May 2019	Alondra Rodriguez Supporting Officer, Science	4 year contract
24 Jun 2019	Malene Eilersen Supporting Officer, Science	Maternity Cover, 12 month contract
5 Aug 2019	Thomas Dragø Head of Finance & Administration	3 year contract
TBD	TBD, Finance Officer	4 year contract
TBD	TBD, Student Software Developer	Part-time student position
1 January 2020, or ASAP	SCICOM Chair	3 year contract, with a possibility for a three year prolongation

### Interns Starting in 2019

	Start Date	Name	Note
	1 Apr 2019	Vera Mjöll Kristbjargardóttir	Wage subsidized cross departmental internship focused on the ASC until 26 September 2019

### Contracts Ending in 2019

End Date	Name, Title	Note
25 Sept 2019	Kirsten Gudmadsen Finance Officer	Resigned

### Challenges for internationally-recruited staff

At the 2017 Council meeting we reported on the new decision by the Danish Ministry of Foreign Affairs giving EU/EEA citizens the possibility to register as regular European migrant workers. Hereby staff and accompanying family members avoid a so-called “administrative” registration status, complicating every-day life. So far, three staff with EU citizenship have taken advantage of this new option.

### **New developments needed to secure equal treatment of all ICES employees**

The [host agreement](#) with Denmark grants staff specific privileges, however not all staff are resident in Denmark (e.g. experts or Vice-Chairs) resulting in unequal treatment between employees of the Council. Issues also arise for some staff members when they leave their position, and f.i. want to transfer their pension savings. Other inter-governmental organizations have specific agreements between all contracting parties and the Commission/Council (e.g. HELCOM). The Secretariat will raise the issue with the Danish Ministry for Foreign Affairs, and eventually with all contracting parties in order to provide the same conditions to all staff regardless of their country of origin/residence.

### **IJMS –Plan S and the E-i-C**

A more flexible approach to re-appointments of the Editor-in-Chief and the in-house editors has been agreed within Bureau for reappointment. Following 3 successive terms, an internal review will be established

- for the Editor-in-Chief consisting of the ICES President, SCICOM Chair, and General Secretary
- for the in-house editors consisting of the Head of Science Support, and the Editor in Charge of Publications,

as to whether to continue the contract or if the position will be advertised through an open and competitive recruitment procedure.

The outcome of the internal review will for the Editor-in-Chief be presented to Bureau for approval, and for the in-house editors to the General Secretary for approval.

### **Location of ICES headquarters**

(ICES Joint Work Plan: Objective 3 Provide and improve core/recurrent products and services within advice, data, science, and secretariat 3.8 Services at ICES HQ)

Following the negotiations during the second half of 2018, and beginning of 2019 on relocation of ICES and EuroFish to a new building, there has been no new information on a new headquarter.

This move was part of the Danish government's initiative to better utilize the state-owned office spaces which have become vacant, following the decision to move governmental agencies outside the Copenhagen region.

Although the dialogue was initiated based on ICES needs and requirements, including meeting room capacity and easy access for visitors, to ensure that we would relocate to a building providing at least the same, if not better facilities than are available now, a move is a big challenge on top of current work.

Council delegates will be kept informed of developments as more information becomes available.

## Annex 1: Resource Coordination Tool (RCT)– an overview

The RCT consists of the following modules:

- A customer relationship management (CRM) system, recording key information on ICES Community and activities (this includes information from the former “Address Manager” database)
- A Sharepoint based system, supporting the calendar overview of the ICES activities, the recommendations database, and Resolutions database (in development)).

The RCT enables the creation of a variety of products, including:

Reactive products:

1. Overview of total participation in ICES work  
(Countries/institutes/working groups/processes/experts/expert working days)
2. Overview of active participation by Member Country per year (as here - 2017:  
[https://community.ices.dk/Committees/nominations/\\_layouts/15/start.aspx#/Active%20EG%20Membership%20December%202017%20per%20member%20coun/Forms/AllItems.aspx](https://community.ices.dk/Committees/nominations/_layouts/15/start.aspx#/Active%20EG%20Membership%20December%202017%20per%20member%20coun/Forms/AllItems.aspx) –
3. From the above a variety of analyses can be made; groups with many/few experts, groups with a wide/narrow country representation, groups with academic/country representation beyond ICES member countries, list of chairs, etc.

Proactive products:

4. Coordination of use of human resources based on last year’s overviews
5. Direct nomination by the Member Countries of experts to the Expert Working Groups

Operational products:

6. A direct link between RCT and the website, allowing automatic updates to membership of Expert Working Groups on the website (As here:  
<http://ices.dk/community/groups/Pages/Members.aspx?Acronym=COUNCIL>)
7. Creation of various lists, for various purposes (chairs, members, etc)

## Annex 2: Website restructuring

### ICES website restructuring project

In order to improve the usability and the findability of the ICES website, the ICES Secretariat has been working together with a website usability expert to restructure the ICES website.

#### **The purpose of the project:**

- 1) to clean up content and structure (eliminate content which doesn't fit the purpose and target groups, pages without visits, and content that is not up to date)
- 2) to restructure the content on the website (new menu, section landing pages, and sub menus) and change some design elements on some of the pages

#### **Project timeline:**

The project is set to run from March till December with the aim of having the new website structure in place by January 2020.

#### **Project format:**

The usability expert has been working on the new structure in close contact with the communications department and our SharePoint developer. In order to further understand user needs, the consultant also conducted user interviews with 8 stakeholders (primarily from the management group), 3 Secretariat staff members, and 4 community members, including 2 early career scientists and 1 NGO scientist. Sarah Bailey from the SCICOM web subgroup was also interviewed. The Coordination Group has been consulted during the development as well as finalization of the new structure.

#### **Current status:**

The consultant proposed a new structure, which was approved by the Coordination Group (see annex 1). The Secretariat is currently working with the web designer to finalize some new design elements.

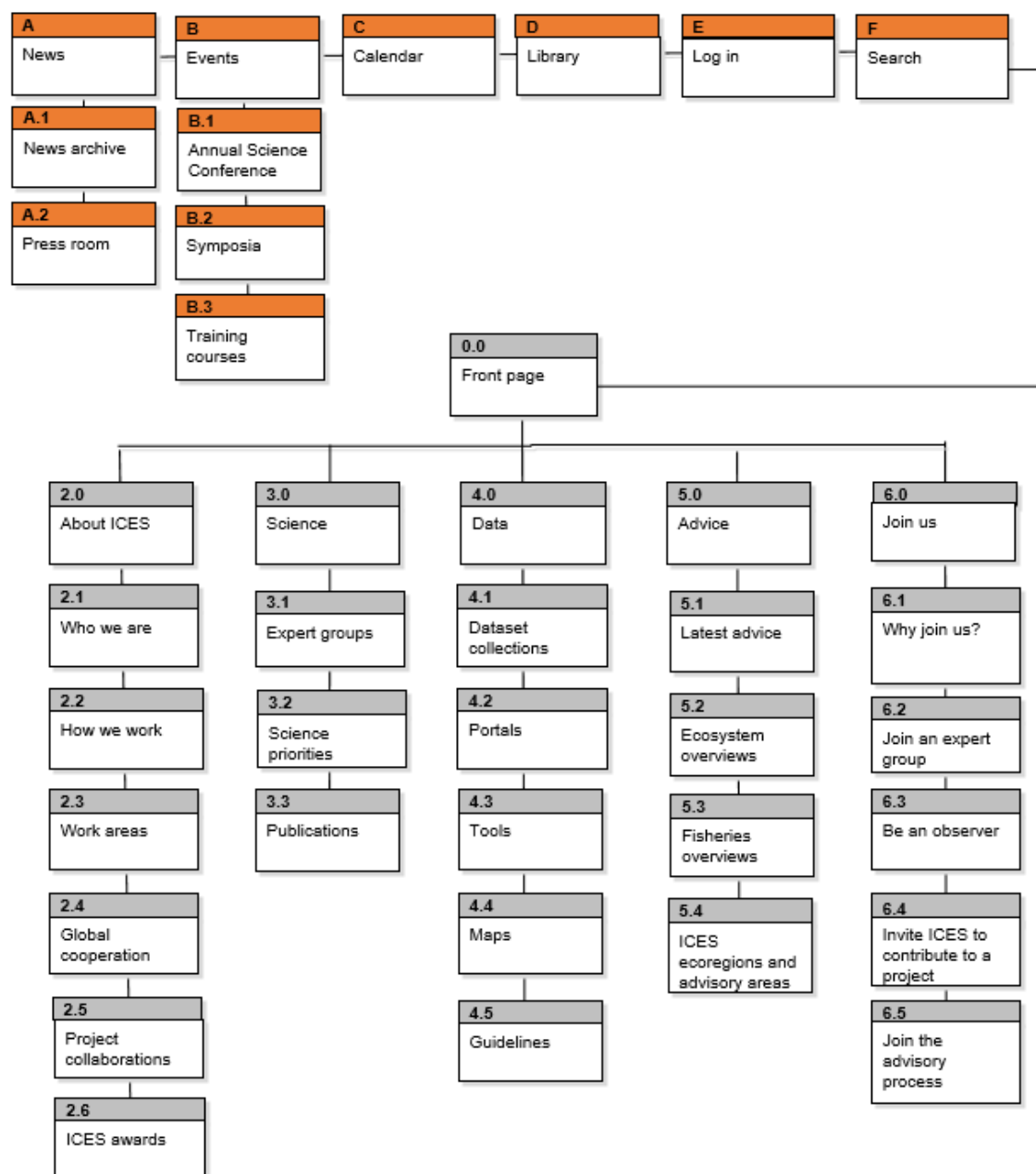
After the ASC, the Secretariat SharePoint developer will start working on the technical development together with our SharePoint consultants. In the meantime, the communications department will work on mapping content from the old to the new site, as well as create new content as needed.

#### **Future developments:**

There has been a lot of feedback and ideas gathered during the project, such as changes to the meeting calendar and the display of expert groups. Some of these can be considered in the future, depending on financial and human resources.

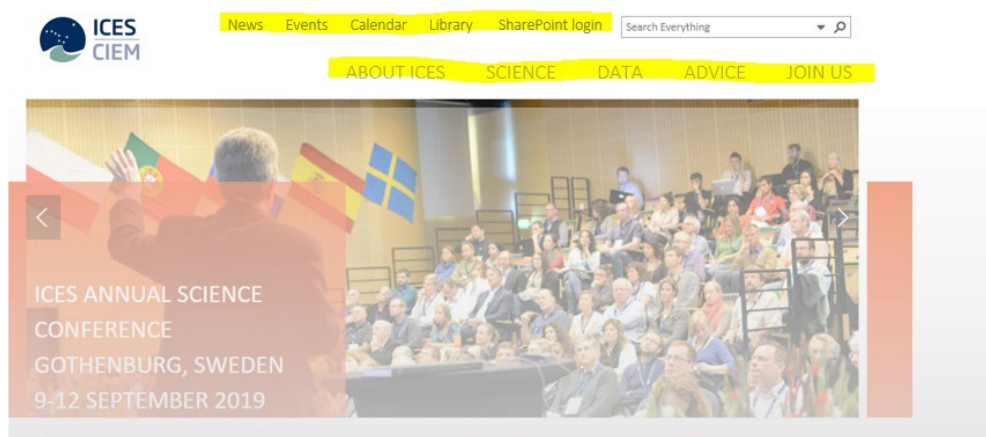
New website structure for [www.ices.dk](http://www.ices.dk)

## Overall structure





## The look of the new top navigation





**ICES**  
**CIEM**

International Council for  
the Exploration of the Sea  
Conseil International pour  
l'Exploration de la Mer

Council Meeting

October 2019

CM 2019 Del-13.1

Agenda item 13.1

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## ICES CO2 Footprint Characterization and Reduction Initiative

### *Status Report to Council Regarding the Development of a Strategy for Characterizing and Reducing ICES CO2 Footprint*

During the June, 2019 Bureau Meeting, participants discussed recent communications from Bill Turrell (UK: Scotland) regarding challenges and opportunities for ICES related to the climate crisis and the need to reduce our CO2 footprint. Since then, we have sketched out the following initial steps:

1. Setting up an informal discussion with interested individuals during the 2019 ASC
2. Drafting TORs for a potential strategic initiative
3. Working with SCICOM on ways we could highlight the climate change agenda at next year's ASC
4. Looking for ways to bring innovative ideas forward through broader engagement
5. Proposing a Network Session to enable community discussions at the 2020 ASC (which has been accepted)

Discussions held during the 2019 ASC (through the informal discussion mentioned above and during the Bureau meeting) highlighted the following:

- There are three distinct but overlapping sets of challenges we face as an organization. The first concerns the global climate crisis and the importance of ICES taking a leadership role in reducing our own carbon footprint and working with other organizations in a collaborative manner. The second involves the need to understand and mitigate the risk to ICES relative to our own business model which is highly dependent on travel and in-person participation in conferences, meetings and workshops. The third involves our leadership role in delivering the science to support emission reductions.
- As an organization we have already made a substantial investment in technology to facilitate remote meetings and will continue to develop this capacity. Progress to date and future plans should be recognized.
- As we analyze current activities and plan for change, we must recognize and take into account activities which are directly within ICES purview and those that are carried out nationally in support of ICES work. Our initial focus should be activities within ICES purview.
- Even though a medium- and long-term strategy is required, there is a need for immediate (or short-term) action which should include:
  - o Improving remote access capacity for networking, meetings and workshops

- Improving remote access and participation for oral and poster presentations
- Seeking opportunities to consolidate meetings and otherwise reduce need for participants to travel
- Consider multi-hub meetings to reduce international travel
- Be mindful of inclusivity challenges – if travel budgets are reduced this could make it harder for early career scientists to become established. On the other hand, improved remote participation should enable a broader range of individuals to become involved in ICES activities
- For in-person meetings which involve catering, favor vegetarian choices
- Recognize that institutional and individual actions will be necessary
- ICES should be taking a leadership role and should be visible, but we must avoid lobbying. It might be helpful to develop and state an overarching ICES Philosophy for Carbon Footprint Reduction.
- Ensure participation in this process from the entire ICES organization, including staff, early career scientists, etc.
- Costs associated with actions taken under this initiative should be tracked and reported

We have drafted the following TORs for consideration by Council:

1. Develop a strategy for estimating and publishing the ICES community CO2 footprint at an appropriate level of resolution
  - a) Investigate the possibility of using an existing guide/framework such as the one available from the Carbon Trust
  - b) Focus first on defining the “ICES Community”, i.e. activities that are organized directly by ICES
2. Survey member countries and other organizations to determine if they have:
  - a) Conducted CO2 footprint audits
  - b) Developed targets and strategies for short- and long-term reduction of their CO2 footprints
3. Draft a CO2 footprint reduction strategy for ICES which:
  - a) Sets short-and long-term targets
  - b) Establishes overall CO2 budget reduction trajectories for Science, Advice, Secretariat, and Leadership
  - c) Seeks input from throughout the organization (top-down and bottom-up)
  - d) Encourages and resources innovations that reduce ICES related travel, improve remote meeting capabilities, develop remote networking, etc

- e) Considers and consolidates accomplishments under TORs 4,5,6 and 7 below
- 4. Consider and evaluate the potential for developing the capacity to advise member countries and others on CO2 footprint reduction strategies
- 5. Together with other relevant organizations, consider approaches for auditing and reducing the CO2 footprint of research vessels and develop guidance as appropriate (recognizing that ICES cannot do this alone)
- 6. Together with other relevant organizations, consider approaches for auditing and reducing the CO2 footprint of fishing and aquaculture operations and develop guidance as appropriate (recognizing that ICES cannot do this alone)
- 7. Work with partner organizations such as PICES and OSPAR, to develop joint policies and procedures and take a leadership role in CO2 reduction strategy development and implementation