

# Minutes from the 2021 Annual Meeting of the International Council for the Exploration of the Sea

VOLUME 2 | ISSUE 1

ICES BUSINESS REPORTS



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

H. C. Andersens Boulevard 44–46  
DK-1553 Copenhagen V  
Denmark  
Telephone (+45) 33 38 67 00  
Telefax (+45) 33 93 42 15  
[www.ices.dk](http://www.ices.dk)  
[info@ices.dk](mailto:info@ices.dk)

Cover Image: © Crown Copyright / Marine Scotland. All rights reserved.

This document has been produced under the auspices of an ICES Expert Group or Committee. The contents therein do not necessarily represent the view of the Council.

© 2022 International Council for the Exploration of the Sea.

This work is licensed under the Creative Commons Attribution 4.0 International License (CC BY 4.0). For citation of datasets or conditions for use of data to be included in other databases, please refer to ICES data policy.



# ICES Business Reports

## Volume 2 : Issue 1

### Minutes from the 2021 Annual Meeting of the International Council for the Exploration of the Sea

#### Recommended format for purpose of citation:

ICES. 2022. Minutes from the 2021 Annual Meeting of the International Council for the Exploration of the Sea. ICES Business Reports, Vol. 2: Issue 1. 27 pp. <http://doi.org/10.17895/ices.pub.19361969>

# Contents

i	Expert group information .....	ii
1	Introduction.....	1
	Welcome .....	1
2	Bureau Council Sub-group COVID-19 .....	2
3	ICES in a net-zero emission world .....	4
4	The Secretariat .....	5
	General Secretary Recruitment Process.....	5
	Secretariat report .....	7
5	Elections, appointments, and Voting .....	8
	President, First Vice-President, and Vice-President .....	8
	Finance Committee .....	8
6	Finances.....	9
	Report from Finance Committee.....	9
7	Report from Science Committee .....	12
8	Strategic Project Participation.....	14
9	Education Initiative.....	15
10	Report from Data and Information .....	16
11	Report from Advisory Committee .....	18
12	Strategic Issues .....	20
	UN Decade of Ocean Science for Sustainable Development, Arctic, and cooperation with PICES.....	20
	Gender equality, diversity, equity, and inclusion .....	21
	Code of Ethics and Professional Conduct .....	22
13	Any Other Business.....	23
	13.1 Reporting from member countries on national level ICES activities: .....	23
	13.2 Farewell to the President.....	23
	13.3 Next meeting .....	23
Annex 1:	List of Actions.....	24
Annex 2:	List of Participants.....	26



## i Expert group information

<b>Committee name</b>	International Council for the Exploration of the Sea
<b>President</b>	Fritz Köster, Denmark
<b>Meeting venue(s) and dates</b>	16-28 October 2021, Online meeting (48 participants)

# 1 Introduction

## Welcome

Fritz Köster, ICES President, welcomed meeting participants to the second online Council meeting, physical meetings continue to be limited due to travel restrictions and disruptions caused by the ongoing COVID-19 pandemic.

All meeting participants were provided the opportunity to introduce themselves, a list of participants is included in Annex 2 of this report. New Council delegates, observers, and first-time meeting participants, were extended special welcome to the meeting. All member countries were represented during the course of the meeting.

The President noted that during 2021, there were additional Bureau meetings, to accommodate shorter online meetings required to allow adequate time to address the ongoing and emerging issues. There were also two additional meetings dedicated to address the resignation and absence of the General Secretary (see section 4).

The President reviewed the follow-up, in relation to actions decided at the 2020 Council meeting as outlined in the President's review **CM 2021 Del-Doc 1.3**, noting that work conducted in 2021 continued to be influenced by the COVID-19 pandemic. The organization has been successful in meeting its obligations thanks to the dedication and flexibility of staff and the entire network. The pandemic has put stress on the Secretariat, and has been especially challenging given the leadership transition. However, as in 2020 all advisory products were delivered and the successful completion of the first online Annual Science Conference is especially noteworthy.

In June, the General Secretary submitted her resignation effective 31 December 2021, much earlier than planned. Since then, she has been on leave. As a result, the secretariat and the entire organization has operated without a General Secretary, with increased stress and demands placed on staff and the Bureau wish to recognize their resilience.

Transatlantic cooperation continues to be of central importance to the organization with continued efforts evident in the work of expert groups, projects, and committees, with specific focus on the UN Decade of Ocean Science for Sustainable Development, the Arctic, and cooperation with PICES, but not least the education initiative. Recognising this, there is no specific agenda point addressing Transatlantic cooperation as in previous Council meetings.

Meeting participants noted that all items decided at the 2020 meeting have been followed up or are scheduled to be addressed during the course of the meeting.

## 2 Bureau Council Sub-group COVID-19

The Bureau Council Sub-group COVID-19 (BCSGC19) worked during 2021 to develop clear recommendations on how to prepare ICES for a post COVID19 era. Paul Connolly, Irish delegate, ICES Vice-President, and Chair of BCSGC19 presented the work of the group, and main outputs to allow Council to engage in a discussion around responsive organizational development. The presentation noted:

- The group conducted work via short online meetings with intersessional homework done by group members based on collation of existing information.
- The introduction to the report explores 15 linked issues around COVID-19.
- The specific Terms of Reference of the Group and resulting recommendations.
- The report and recommendations were subject to a consultation process with the ICES community.
- Comments provided during the consultation will be considered in the implementation phase.
- Implementation of the recommendations are important for helping the organization transition in this period of change.
- Critical training needs have been identified.

The Chair of BCSGC19 acknowledged the important contributions of group members, with delegates providing critical inputs from national institutes, Secretariat, Chairs of ACOM and SCICOM providing key insights into the impacts of the COVID-19 response on the organization. Bureau was updated on progress and provided support throughout the year.

Comments from members of BCSGC19:

Ellen Johannesen, Coordinating Officer noted that the outputs/recommendations are critical for continued growth of community through support to the Secretariat and helping the transition to new ways of working. Many of these changes were already in development, and COVID-19 has accelerated the need. The COVID19 sub-group provided the opportunity to reflect on the immense surge capacity the community has drawn on, and especially in the Secretariat to ensure the work gets done, as well as highlighting gaps and opportunities for improvement. The group has helped bring these developments together under a coherent forward strategy.

Matt Gubbins, UK Delegate noted that the experience of contributing to the group and working at international level, also reflects the issues happening in home institutes. ICES is working in a changed world, and it is now time for change implementation. The work was conducted in a challenging period, and the group managed to break down the work into manageable components.

Mark Dickey-Collas, ACOM chair fully supported the recommendations of the group and the additional leverage offered by the proposals. He was also heartened by the response to the survey and feedback received from across the network.

During the discussion the following points were noted:

Council members thanked the group for the work, supported and endorsed the report and recommendations.

The report focuses on the organizational changes needed as an organization, the pandemic has highlighted the urgency of the needs and recommendations. All recommendations should be supported, they provide a guiding light for ICES to move forward.

The reduction in travel costs has been accounted for in budget planning, the discussion on available finances for the recommendations will be taken separately during the specific agenda item on Finances.

The work was supported and endorsed, noted the recommendation on the Transparent Assessment Framework (TAF) and the role of Delegates in ensuring that TAF is utilised by the experts from national institutes. The framework is there, but requires the community to use it for it to be functional and effective in improving the quality of ICES Advice.

The report and recommendations also need definitions of success, and defined outcomes, to track that the investment and spend have created the desired impact. For instance, develop a plan for the next three years for each recommendation and develop performance indicators.

Given the recommendations involve quite a bit of work, it was questioned if it would be possible to prioritize, or identify a natural ordering, so that some of the recommendations could potentially be implemented over a longer time frame. It was clarified that the recommendations are all linked and aligned to each other to help ICES improve post-pandemic. In the context of a change agenda, conscious of the demands on funding, and if the system is strained, it might be important to focus on ensuring the expert network can function, over investing in the ASC.

The SCICOM Chair underlined that the ASC is critical to the organization and different formats are challenging engagement. SCICOM Chair noted the paradigm of shift of expert group work is already happening, and it is increasingly difficult to keep people motivated to contribute. Investments must target the broad needs of the network and different parts of the network/groups have different needs.

The Head of Data and Information noted that there is no implied prioritization, all recommendations are necessary, although regardless of funding availability, it is not realistic to implement in parallel. For many of the recommendations, support from the community will also be necessary to achieve the desired impact, and that might also be difficult.

ACOM Chair noted that there are ongoing challenges with TAF implementation and uptake from the community, which is being exacerbated by remote work. Experts are multitasking and attending online meetings in parallel, which limits development and new ways of working, this is also evident in TAF, which is critical for ensuring the quality of ICES Advice.

Council noted the interconnectedness of the seven BCSGC19 recommendations and that all are required, and that no one recommendation can be prioritized over the others. However, further consideration is needed on how to implement effectively over 3 years.

Action: Council endorsed the report of the Bureau Council Sub-Group COVID-19, noting the summary, recommendations, and training needs. Council supported the recommendations (in principle) for implementation in the next three years, (with further consideration for timing and funding through equity). Council noted the specific resources needs for the recommendations will be discussed under agenda item 7.2.

### 3 ICES in a net-zero emission world

Bill Karp, ICES 1st Vice-President presented an update on the net-zero initiative that has been in development, but waiting on the outcome of BCSGC19 (**CM 2021-Del-Doc 3**).

The ICES net-zero emission initiative recognizes:

- A need to adapt ICES business model in a changing world
- Organizational carbon footprint small but highly dependent on travel
- Intent to maintain and enhance functionality, creativity and responsiveness while reducing travel to the extent possible
- Action necessary to demonstrate leadership and commitment to addressing climate change
- Changes in business model also related to pandemic response and expected national budget constraints – recent experience relevant
- Recognize ICES/SCICOM role in addressing scientific questions related to reduction of emissions, carbon sequestration, offsets by both the ICES network, the member states and the maritime industry, etc.

During the discussion the following points were noted:

The initiative requires new leadership and members. Gerd Kraus (DE) agreed to Chair the group, Matt Gubbins (UK), Geir Huse (NO), and Ciaran Kelly (IE), agreed to serve as members. Jörn Schmidt, SCICOM Chair will participate until another SCICOM representative can be identified to participate.

An organizational carbon footprint is difficult to audit, while awareness is important, the initiative should recognize the needs of member states.

Net-zero emissions may be a difficult goal to reach. The current Terms of Reference are too broad and group members, including Secretariat representation should work to revise the ToRs. The ToRs should be developed as a roadmap with a long-term perspective, and aiming to generate collaboration with other organizations, and to what extent ICES should engage with industry.

Member countries also need to implement measures to reduce emissions, and work towards greater sustainability. Science needs are being identified and developed. SCICOM will investigate potential to develop science on a suite of related topics including carbon sequestration, reduction of emissions associated with surveys, etc.

There are complex issues to consider e.g. ICES radiated vessel noise recommendations for RVs were developed many years ago and may lead to increased emissions by RVs.

It is timely and serendipitous to have had the time to learn, before moving the initiative forward given lessons learned during the pandemic.

Action: Council supported the continuing work on the net-zero initiative, with new groups members, Gerd Kraus (Chair) and Matt Gubbins, Geir Huse, and Ciaran Kelly given the mandate to revise the ToRs based on the Council discussion.

## 4 The Secretariat

Fritz Köster, ICES President, provided Council with a further update on the resignation of the General Secretary, effective 31 December 2021. This resignation information was initially provided to Council via the Council forum June 2021. There is no official statement on the grounds for resignation, but assumptions are that it is related to workload and personal reasons.

Anne Christine Brusendorff, out-going General Secretary has led many changes in the organization and has been an effective leader, advancing ICES in an unprecedented way during the past decade.

Bureau held discussions with Secretariat leadership after the resignation. These discussions led to the decision not to implement a temporary General Secretary. This was based on the confidence in the remaining leadership team that could keep things running, but also due to the breadth of the role and difficulty of onboarding someone for an interim position.

The General Secretary has shouldered a heavy administrative burden compared to strategic issues. There is a complicated situation in dealing with clients, and the organization needs to improve on budgetary transparency for financial reporting. This has been addressed by bringing on a new Head of Finance. The already difficult job of General Secretary was made even more demanding during COVID-19. The reorganization, and move to full-time Chairs done in 2015 has also led to an increase of workload at the Secretariat. While Bureau did not find a need to further follow up on the reorganization, a need to review resources and priorities in the near future is understood.

A workplace assessment was initiated in 2020, a standard Danish practice, not previously done in the international Secretariat context, to investigate physical and psychological working environment.

In the interim period, Line Management has been re-arranged to make sure all staff have a reporting line. Bill Karp, ICES 1<sup>st</sup> Vice-President has also made himself available to the Secretariat for assistance.

### General Secretary Recruitment Process

Bill Karp, presented the work he has led, with Bureau and support from the Secretariat to initiate the recruitment process for a new General Secretary as outlined in **CM 2021 Del-Doc 4.2**.

Steps taken to date

- Consultation with Secretariat, Chairs, and Bureau to develop a profile and define necessary qualities and experience
- Bureau agreement on process and selection panel membership – for discussion and approval by Council
- Retained services of an executive search company to assist in preparing draft vacancy announcement and recruitment brief – will continue to work with this company throughout recruitment process

Proposed Recruitment Process

- Council reviews announcement and agrees to support process (this meeting)
- Panel members appointed (this meeting or soon thereafter: Panel will be updated on progress as process evolves, major work of panel begins when shortlist is available)

- Consultancy finalizes announcement and begins formal search (November- early December)
- Candidate Assessments (December – early January)
- First round of interviews (mid-late January)
- Second round of interviews (if necessary: early February)
- Recommendation to Council (February 2022: online extraordinary meeting)
- Council requested to approve that the agreed process has been followed, and endorses the selection
- Negotiation and agreement with selected candidate
- New General Secretary takes office (May 2022 or later)

Unforeseen delays may occur

#### Proposed Selection Panel

- Two Bureau Members
- Two non-Bureau Council Members
- One Line Manager
- One Staff Representative
- President or First Vice President

#### Comments:

One additional point for the vacancy notice could be to include a management experience relevant to the upcoming Secretariat relocation.

Once the new Gen Sec is in place, there should be further consideration in Bureau, in consultation with the Secretariat leadership team, regarding the possible need to create a new position within the Secretariat to fill the role of Deputy General Secretary/Chief Operating Officer.

The vacancy announcement describes a broad role, that does not appear much different than that done by the out-going General Secretary. There is hope that the organization is being strengthened in this process and the ongoing workplace assessment, as well as resource allocation from BCSGC19 recommendations. Finding some solutions to these areas/stressors will hopefully make the job easier.

The profile of the successful candidate will determine the paths of the Secretariat management and Chairs and scope of tasks and prioritization. The description was left broad on purpose in order to not exclude any potential candidates. There is no expectation that all aspects are taken on right from the start, but layout a role to grow into.

The Chairs of ACOM and SCICOM are not represented in the recruitment panel, given the aim to limit the size of the panel, their close link to Bureau, and that there are people in Council/Bureau who are closely involved in ACOM/SCICOM work and can speak to the activities of the committees.

Diplomacy is an important part of the new Gen Sec role and strategic relations will be very important. Important that the panel observes both geographical and gender balance in composition.

Action: Council approved the recruitment process as outlined in CM 2021 Del-Doc 4.2. The proposed recruitment panel composition was also approved, (specific membership to be communicated to Council once the appropriate gender, geographic, and knowledge of ICES have been identified), as was the vacancy announcement as drafted.

## Secretariat report

On behalf of management and staff, Ellen Johannesen, Coordinating Officer presented major activities and issues addressed by the Secretariat the past year as presented in **CM 2021 Del-Doc 4.3**. Noting 2021 was challenging period for Secretariat staff with the ongoing pandemic, remote work, supporting a network across time zones, and leadership changes as contributing to the need for further focus on the health and wellbeing.

The workplace assessment, as well as updates, development, and maintenance of financial and administrative systems, and communications have all been major areas of work the past year. The Danish government is still committed to moving ICES headquarters, but the new building requires renovations, and the move is not expected before 2023.

Action: The Council noted the information provided in the Secretariat and the important links to the recommendations for investment submitted by the BCSGC19. The Council further commended the work of the Secretariat, and staff during a difficult period. Also noting that many of the challenges are being addressed through on-going initiatives such as the workplace assessment.



## 5 Elections, appointments, and Voting

Ellen Johannesen, Coordinating Officer reviewed the elections and approvals process (CM 2021 Del-Doc 5.0).

### **President, First Vice-President, and Vice-President**

The elections were run in accordance with the [Rules of Procedure](#), with nominations for ICES President and ICES First Vice-President accepted respectively, in advance of the meeting. An additional nomination procedure was run during the course of the meeting for the remaining Vice-President vacancy.

The nominations were submitted using the e-voting tool and accepted until 11 October 2021. The tool was configured so that submitted nominations are anonymous/confidential in line with the RoPs, Rule 5, 3.2. Fritz Köster, ICES President confirmed with nominees their willingness to stand for election. Nominees willing to stand for election to the position of ICES President and First Vice-President were requested to submit a short-written statement (less than 300 words) declaring their interest. These documents were made available on the Council Share-Point site and the information about candidates was communicated to all Council delegates via the Council forum. For Vice-President, nominees were given the opportunity to make a short verbal statement during the meeting, prior to voting.

#### **Elections results:**

William (Bill) Karp, US was elected ICES President  
Carl O'Brian, UK was elected ICES First Vice-President  
Piotr Margonski, PL was elected ICES Vice-President

### **Finance Committee**

In the absence of a forthcoming Chair for Finance Committee, outgoing ICES President Fritz Köster accepted the suggestion that he take on the role. By e-voting procedure, Council approved a one-time exception to the Rules of Procedure, to allow Fritz Köster to serve as Finance Committee Chair (2022–2024), though he will not serve as Danish delegate in that period.

Paul Connolly, (IE) and Gerd Kraus (DE), were appointed members of Finance Committee. An additional member will be welcomed, when a willing volunteer is identified.

## 6 Finances

### Report from Finance Committee

Ari Leskelä, Chair of Finance Committee, presented the report of the Finance Committee (**CM 2021 Del-Doc 7.1**). The report detailed a five-year overview of revenue and expenses, Final Accounts 2020, Proposed budget 2022, and Forecast budget 2023, ongoing projects, projects in the pipeline and contracts, Capital Reserve Fund and Equity, as well as reviewing the Bureau Statement on the economy of the organization.

Given the continued remote work and limited travel expenses, equity funds allocated by previous Council decisions have not been used in the period 2020, and are not expected to be used in 2021. Recurrent Advice costs are now fully accounted for and costs shared among recipients of Advice as of 2021.

An equity fee is established related to some advice recipients to ensure that investments from equity are included in the calculation of total cost recovery.

At their May meeting, Finance Committee discussed, approved, and agreed to sign the Final Accounts, as well as Audit book comments on the Final Accounts and report.

#### Statement of Bureau on the Economy of the Organization

An **overall assessment by Bureau** of the economy of the organization

Overall the organisation is demonstrating healthy economic development

Finalization of new agreements with advice requesters for recurrent and special requests; notably the UK

Evidence of a balance between costs and income indicates progress towards 100% cost recovery for recurrent advisory products

All advice requesters, with the exception of NASCO, receiving recurrent advice in 2021 have been invoiced according to the weighted number of stocks for which they receive recurrent advice

Secretariat managed well during COVID-19

COVID-19 implications on the years to come resulting in less travel might be absorbed by other budget lines to cover cost from additional resources needed in the Secretariat

Based on above, Bureau recommends 1.7% inflation regulation of 2023 national contributions

During the discussion the following points were noted:

Increasing salaries (step-increase and inflation regulation) of time-limited Secretariat positions must be accounted for in financial planning and management. Salary expenses are dynamic, linked to staff changes, and contribute to structural salary increase. It is important to consider long-term sustainability of time-limited positions financed from equity. Past changes and additions (Chairs of Committees) have been balanced by reorganizing responsibilities and regrading management positions in the Secretariat.

The financial implications of creating a new position within the Secretariat (Deputy/COO) have yet to be considered and will be taken into account when this possibility is considered by Bureau, after the new General Secretary takes office

## Equity Projection

	1,003,709	All Amount in DKK			
	2021	2022	2023	2024	TOTAL
<b>Remaining Council approved equity investments</b>					
Quality Assurance 2- Data, Advice and Finance		2,764,876	2,080,417	216,500	5,061,793
UN Decade of Ocean Science		174,704			174,704
Bring academic leaders from member countries		400,000	100,000		500,000
Review of remote meeting facilities		75,000			75,000
Training regarding remote meetings		100,000	50,000		150,000
4th ICES/ICES Early Career Scientist Congress (co-funding: ECS travel support – competitive awards, invited speakers and representatives)		500,000			500,000
<b>APPROVED EQUITY INVESTMENTS AS OF END SEPTEMBER 2021</b>	-	4,014,580	2,230,417	216,500	6,461,497
<b>Request for new initiatives for Council October 2021</b>					
Office Move		2,728,709			2,728,709
50 COVID initiatives		2,433,333	2,433,333	2,433,334	7,600,000
<b>Expected cost of Equity investments including new requests</b>	-	9,176,622	4,663,750	2,646,834	16,490,206 1)
<b>Balance of Equity</b>					
			Available end 2020		14,870,903
			Estimate 2021 - surplus		959,000
			Budget 2022 - small surplus		30,000
			Proposed Forecast 2023 - deficit	-	2,247,000
			Available end 2023		13,612,903 2)
			Excess disposition		2,877,303 2)-1)

During the discussion the following points were noted:

- The lump sum amount for projected costs related to the office move is a reserve amount and does not reflect specific identified costs, but rather the sum allocated in 2021 from equity for quality assurance expected not to be used as covered from ordinary budget.
- Given the current dynamic financial situation, including uncertainty around equity development, need for investments, and uncertainty of associated costs, it was suggested that Bureau be mandated to review and manage and prioritize equity expenditures in a manner consistent with relevant Council guidance.
- The Head of Advisory Department was commended for her role in securing agreements on equity payments from requesters of advice.
- A minimum level of equity (specific level to be agreed) should be reserved for unforeseen costs. It was suggested that this should be in the range 2 to 2.5 million DKK.
- Bureau should consult with the Finance Committee and Line Managers when prioritizing and allocating equity funding for investments. Council should be apprised accordingly.

- The “owners” of each of the BCSGC19 recommendations must begin work on implementation and develop performance indicators to monitor progress.

---

Action:

By e-voting procedure, with the required 2/3 majority (19 “yes” votes, 1 country having not registered their position) Council:

- Approved the 2020 Final Accounts including Audit book.
  - Approved the proposed budget for 2022, noting that the national contributions have already been agreed.
  - Agreed to conduct the voting on the level of national contributions for 2023 by separate e-voting procedure in December/January, with each member country providing an indication of current status and required documentation to vote on an increase as presented by Finance Committee.
  - Approved that Bureau may decide on the implementation of equity funds in surplus of 2.5 million DKK to implement investment recommendations that have been endorsed or recommended by the Council, and any other essential investments for the organization (Understanding that Council will be provided with regular updates on progress).
-

## 7 Report from Science Committee

Jörn Schmidt, Chair of Science Committee (SCICOM), presented an update as provided in the (draft) SCICOM progress report **CM 2021 Del-Doc 8**.

The chair noted positive engagement with the science committee during the remote work period, and presented some of the important science highlights from 2021 that have been identified by the community, and are disseminated broadly with support from the Secretariat.

Emerging science needs include carbon sequestration and storage; research vessel design, marine protected areas and other spatial measures, as well as productivity in fish stocks. Science cooperation continues with a range of organizations, through joint groups, affiliate institutes, project participation, and other initiatives.

SCICOM has been involved and supports proposals on a new data policy and licence, BCSGC19 recommendations, and also requests further support of the science network by the Secretariat, including strategic leadership on projects.

A new Strategic Initiative on the Integration of Early Career Scientists has been launched this year that aims to bring new people to the network. Early career scientists, do not always have funding needed to participate, and can be supported by national funding to participate in ICES activities.

The Annual Science Conference 2021 was run as a fully online conference and was well attended and a great success. The Annual Science Conference 2022 will be hosted by Ireland in Dublin, specific dates to be confirmed, given an overlap with another major event causing issues with hotel bookings.

During the discussion the following points were noted:

Science is the critical underpinning of advice, part of the process of helping to feed science outputs into advice, has been trying to help expert groups that do not have Advice related Terms of Reference to understand the process of developing advice products. Incentives for science side participation is based on peer reviewed publications, and this literature base also helps to feed the science into the advisory process. There are big commitments from ACOM, SCICOM, and Secretariat to help fulfil what is set out in the Science and Advice plans. Viewpoints, Overviews are important examples of how science is brought into the advice, linking also to improved data flows. A review of reference points, and ensuring requests for advice embrace ecosystem approaches, as well as aquaculture are all examples of ongoing work areas which are being advanced through collaboration across the community.

The SCICOM report highlights the breadth, scope, and relevance of ICES science. Societal needs for science highlight the important interrelation between science and advice. Great progress has been made building science costs into requests for advice, but additional resource needs are also evident.

---

Action:

Council noted the requests from SCICOM to:

- Acknowledge the need for further support of the science network from the Secretariat, including strategic leadership on projects.
- Continue and further extend the support of national experts as chairs and members of Expert, Operational and Steering Groups as well as Strategic Initiatives to strengthen the scientific network

- Support national activities linked to ICES science priorities to increase the pool of experts for ICES activities
  - Support the Strategic Initiative on the Integration of Early Career Scientists
-

## 8 Strategic Project Participation

Wojciech Wawrzynski, Head of Science Department, presented an overview of ICES participation in projects, as presented in **CM 2021 Del-Doc 9**.

In response to the changing landscape of project funding programmes and schemes, and the different roles that ICES has had in projects in the past, during 2021 the Bureau initiated a discussion on a new ICES projects strategy. The sub-group established has proposed to work throughout 2022, based on the points outlined below:

- scrutinize the benefits gained from project participation and their impact on the implementation of the ICES Strategic Plan, as well as factors hampering participation in research development and programming;
- improve ICES secretariat capacity to guide participation and administer projects;
- strengthening of ICES science-cooperation based on project participation;
- to improve the effective collaboration of ACOM with projects, leading to improved take up of project findings into advice;
- position ICES as an important player with different roles in the changing international research coordination and programming landscape in a long-term perspective.

During the discussion the following points were noted:

- The main focus of group will be to look at the role ICES can play to contribute to science programming, and not looking specifically at how project financing contributes to ICES budget, or competition issues with member states, which has previously been addressed through ICES project policy, and through the expanded mandate to pursue projects where the role is focused on coordination, and not science per se.
- The group should consider marine science broadly, and the impact it could have on future research funding. ICES should reflect the science priorities of the member countries, identify commonalities and/or priorities to influence programming.
- The top-down political situation in the US has changed, there will be new opportunities to build/rebuild cooperation across the Atlantic on topics of international importance (mutual needs).
- It will be important for ICES to adapt to the new funding landscape and situation.
- The Advice and Data sides of ICES have an established track-record of using projects to accomplish tasks of unique value to the organization, and all member countries. The unique value of ICES to member countries on the science side is more challenging to define and should be considered in the work of the group.
- Take into account the policy dimensions of member countries to embrace ICES broad North Atlantic context, consultation with member country Research & Innovation departments a great idea that should be followed up on. The aim should be to align ICES strategy on research and science to the needs of member countries to strengthen the position of the organization to influence programming and funding.
- ICES branding for Advice and Data projects requests have increased, operational project approaches to help structure a role for ICES also need to be followed-up in the work of the group.

Action: The Council supported the initiative to look into strategic project participation, according to the actions timeline presented in the document and reporting back to the Council meeting in October 2022.

## 9 Education Initiative

Bill Karp reviewed the work of the ICES Education Initiative, as described in **CM 2021 Del-Doc 10**, noting this is related to the ICES Council Strategic Initiative (CSI) Resources that aims to identify resources necessary to support current and future advisory needs, including by capacity building through education. An online workshop was conducted in December 2020, with follow-up meetings to agree on tasks and work plan.

The aim is to provide a platform for increased coordination among North American and European universities to develop transdisciplinary, multi institutional coursework, research opportunities and scientific personnel exchanges that will build capacity for meeting future science based advisory needs. The Initial focus is on ICES needs. The initiative encourages further participation in ICES activities by North American academics. The first step workshop (WKEDU) brought together academic leaders from across the ICES member countries, who expressed a strong interest in working collaboratively to address the goals of this initiative, recognized additional benefits including increased academic participation in ICES, especially from North America.

New Chairs, Gavin Faye (US) and Margarida Castro (PT) have kindly agreed to lead the initiative as Bill Karp (US), Tim Essington (US) and Steve Cadrin (US) step down. They will work with the group and SCICOM to develop a proposal for a Strategic Initiative on Education, potentially revising the Terms of Reference to narrow the focus, and reflecting a longer-term commitment.

Council recognised this as an important initiative to help to educate the next generation of scientists, and also critical for the organization to encourage recruitment of experts from academia. The longer-term perspective could help to establish ICES as a platform for academia to participate in transatlantic collaboration, recognizing the current landscape is uncoordinated.

Action: Council acknowledge the work of the Education Initiative conducted to date and supported the continuation of this work under new leadership.



## 10 Report from Data and Information

Neil Holdsworth, Head of Data & Information presented the report from Data and Information as outlined in **CM 2021 Del-Doc 13**. Reviewing progress and developments on data licencing, data management accreditation, the Transparent assessment framework, regional database, infrastructure, as well as projects and contracts.

Clear and equitable access to data hosted at ICES is core to the ICES Strategic, Advisory and Science Plans. Council was invited to approve a package of updates to the over-arching ICES Data policy, and licences related to open access and controlled access datasets. SCICOM reviewed the package in March 2021, and recommended them for adoption at Council. A package of the finalized version of the new data policy and restricted data licenses developed in collaboration with the respective governance groups was provided to Council in advance of the meeting for review. Council unanimously approved the data policy and data licencing package.

In March 2021, ICES Data Centre had its application for accreditation for life cycle data management accepted by the CoreTrustSeal. The full accepted application is available on the CoreTrustSeal website, and is valid for a period of 3 years. This is an on-going process with still some work left to do.

A Data Profiling Tool (<https://www.ices.dk/data/tools/Pages/Data-profiler.aspx>) has been developed to give a standardized way to gather information about datasets and visualisations being requested to maintain/host/review by ICES Data Centre. The tool will function as a set of questions that the person or group who wishes to either evaluate their data/data products against a set of standards or use the services of the ICES Data Centre will need to answer about the dataset/product. The results from this tool will be used in the decision-making process needed for these requests.

During the discussion the following points were noted:

Restricted licenses are not machine readable, and there are very few web services for restricted data. There are plans to make things more automated, but this is not currently highest priority.

Attribution of data downloaded will be done through the use of DOIs, and these will be an important way to measure the impact of ICES data in the wider community. The Data and Information Group (DIG) will be further considering these issues.

The Regional Database and Estimation System (RDBES) continues to develop, however, the related WKRDB-RAISE&TAF that was postponed from 2020 is still without a chair, and is therefore not scheduled for this year. When requested via the Council forum, where relevant information on specific processes, provision of ToRs, and information on the type of knowledge and skills needed to chair such a workshop will be provided when resources cannot be located, Council is requested to submit any relevant persons who may be able to act in the capacity of Chair.

It was suggested that the Council forum could be used to further highlight the need for resources inter-sessionally. Any request should include a clear description of the skills needed. It is increasingly more difficult to identify experts with sufficient time to allocate to the role of chair, with other responsibilities like externally financed work being first priority for experts in national labs.

During the pandemic it has been increasingly difficult to get people to lead initiatives, with some recent experience of last-minute inability to fulfil commitments. While, it is important for member countries to honour commitments, the Secretariat will continue to follow the diplomatic

route, and when needed seeking help from Council delegates. Where resources to lead or work on initiatives cannot be secured, some work may not get done.

Action: Council commended the work of Data and Information and noted the important progress on data governance, the regional database and estimation system, infrastructure changes, projects, contracts, and sub-contracts of note. Council approved the Data policy and Data licencing package (**CM 2021 Del-Doc 11**).

## 11 Report from Advisory Committee

Mark Dickey-Collas, Chair of ICES Advisory Committee (ACOM), presented the report as provided in **CM 2021 del-doc 14**. The presentation summarised advice/activities in 2020, noting that, ICES was one of the few providers of marine scientific advice that delivered all their commitments in 2020, and this is thanks to the massive effort contributed by the entire network and Secretariat.

Issues relevant to Council were also highlighted including the need for a stakeholder engagement strategy in support of ICES advice; as well as the need for Council to actively support a commitment to ICES initiatives, e.g. the Transparent Assessment Framework (TAF), where ICES is an important leader, but implementation is currently lagging. Council was also requested to pay greater attention to diversity, equity & representation on ACOM & across the advice system.

During the discussion the following points were noted:

The framework for advice and the principles that guide the advisory framework are highly valuable, and timely. Stakeholder involvement is also required.

The issues with uptake of the TAF will require a sustained commitment, as it is difficult to change established ways of working. This is an issue of resources, but also of culture change, that delegates can help with by communicating the urgency to the expert network to start using TAF in the assessment work.

The TAF capacity development workshops were really useful, it supported a sense of common purpose, remote work has been a challenge for international level work, and in the current context TAF perceived as double work, as no group has entirely transitioned to working in TAF exclusively. Delegates, in close cooperation with ACOM members could be provided with the list of stocks to be added to TAF.

Reinvigorating the ICES network is necessary for several reasons and, if done well, would encourage better and more comprehensive use of TAF. A further help could be automated approaches with code and scripts that can be shared, while some already exists within TAF.

It was suggested that TAF uptake could be advanced by identifying an assessment working group where progress is slow in the use of TAF – and encourage delegates to participate in this group, to get an improved understanding of how to better encourage TAF uptake and implementation. This approach could be done going group by group. Including delegates to the assessment works could also be the source of needed additional energy.

The stakeholder engagement process and timeline are timely and needed, to help define the nature and role of stakeholders. Further consideration should be given to how to allow for organizational learning, there may be scope for training Chairs on how to facilitate stakeholder engagement, also with the aim of consistency of approaches and implementation.

It was suggested to consider developing a charter of stakeholder engagement to help the network to understand and clarify expectations.

The outputs of the 2020 advice season are very impressive given the conditions, noting some issues with the perception of the quality of the advice. For 2021, although there was some shortage of data (missing surveys), the Advice is still based on an appropriate evidence base.

Mistakes/errors in the advice that are coming through are a symptom of the current working conditions with too much distraction and lack of prioritization, need to have some reallocation

of alternative tasks so people can focus on ICES work, even in remote contexts. It is important to dissect the errors to see the cause – copy/paste errors have been a major one.

The ACOM, SCICOM, DATA and Secretariat reports, as well as the recommendations of BCSGC19 have noted issues around the need for greater diversity, resources, and change. The ICES community is currently lacking focus, fatigued, and in some cases burnt-out, with difficulty finding leadership for expert groups and workshops. These issues have, and will continue to impact ICES. Consideration must be given to how to handle the required change in mindset and culture. Issues remain with diversity and gender, if these are not addressed this questions the sustainability of ICES outputs. New strategies are needed to leverage the popularity of the brand, while re-energizing the community.

Bureau initiative looking into BCSGC19 recommendations, associated investments, and implementation timeline, should also consider opportunity costs, as well as potential detrimental effects if the recommendations are not implemented.

**Action:**

Council commended the work of the Advisory Committee, noting the huge effort of the ICES community to ensuring the organization delivered on its commitments.

Council noted advice produced in 2020, further developments of advisory framework & of COVID-19 pandemic mitigation measures enacted in 2020.

Council noted findings of WKSHOES & agreed process for development of Stakeholder Engagement Strategy.

Council noted the importance of diversity, equity, and inclusion in the work of ACOM.

Council noted their critical ongoing role to ensure the importance of the Transparent Assessment Framework to be highlighted with experts & home institutes.

## 12 Strategic Issues

### UN Decade of Ocean Science for Sustainable Development, Arctic, and cooperation with PICES

Jörn Schmidt, SCICOM Chair provided an update on strategic engagement with the UN Ocean Decade, Arctic issues, and cooperation with PICES as outlined in **CM 2021 Del-Doc 15.1**.

ICES and PICES are collaborating on a UN Ocean Decade endorsed project called Sustainability of Marine Ecosystems through Global Knowledge Networks (SMARTNET). National UN Ocean Decade committees are not yet developed, and there is a potential opportunity for ICES to act as a hub for organizing activities in the Baltic and/or North Atlantic. SMARTNET is looking for opportunities to link to national or institute level Ocean Decade events.

This activity will support and leverage ICES and PICES member countries' activities related to the Ocean Decade and emphasizing areas of mutual research interest, especially:

- climate change
- fisheries and ecosystem-based management
- social, ecological and environmental dynamics of marine systems
- coastal communities and human dimensions
- communication and capacity development

The project incorporates strategies to facilitate Ocean Decade cross-cutting themes

- gender equality, diversity, equity and inclusion
- early career engagement
- involvement of indigenous communities and developing nations in the planning and implementation of joint activities

The ICES/PICES Ocean Decade Steering Committee (IPOD) is Chaired by Steven Bograd and Sanae Chiba (PICES) and Liisa Peramaki and Jörn Schmidt (ICES)

Arctic engagement continues to advance through institutional cooperation, making use of ICES Arctic Council observer status, as well as science cooperation, including the UN Ocean Decade Arctic Action plan, and new expert groups and events, such as the Joint ICES/PICES Working Group on Integrated Ecosystem Assessment of the Northern Bering Sea-Chukchi Sea (WGIEANS-CS), held in April 2021, and development of new products like the Central Arctic Ocean Ecosystem Overview.

PICES and ICES have been collaborating for over 20 years, the cooperation has taken place through joint workshops, expert groups, symposia and conferences, and makes use of the respective organizational structures and networks, and importantly, finding synergies between the complimentary expertise in the two scientific communities.

Related to the Arctic it was noted that further expanding the Ecosystem Overviews to include West Greenland/Davis Straight would be in line with the longer-term arctic engagement strategy, and would require cooperation with NAFO. The SCICOM Chair agreed to take this up.

Action: Council supported the UN Ocean Decade activities, noted progress on Arctic engagement, and appreciated the ongoing collaboration with PICES.

## Gender equality, diversity, equity, and inclusion

Ellen Johannesen, Coordinating Officer presented an update on work conducted towards gender equality, diversity, equity, and inclusion as outlined in **CM 2021 Del-Doc 15.2**. In cooperation with the World Maritime University, the ICES Secretariat has been engaged in a Department of Fisheries and Oceans Canada sponsored project called Empowering Women for the UN Decade of Ocean Science for Sustainable Development. During 2021, the focus has been on scoping, dialogue, and awareness raising within the ICES community. There has been strong support for further development of this work from across the ICES network, related to the importance of gender equality as a fundamental human right, as well as essential for the sustainable management of human activities in the ocean.

The following actions are planned or initiated and will form the basis of the proposed gender equality plan:

- Developing a Code of Ethics and Professional Conduct.
- A retrospective baseline analysis of gender representation in ICES activities.
- Training, first for ICES Secretariat staff, with a view to develop training for the ICES community.
- Review of ICES policies and procedures with emphasis on accountability, fostering diversity and inclusion, and reducing or eliminating bias.
- All of these actions will be integrated into a more specific Gender Equality Plan that will be developed in 2022.

During the discussion the following points were noted:

The gender equality plan is critical for the organisation to make progress, a draft plan will be put together for January 2022, based on actions initiated in 2021, and will outline a process for further and iterative development.

Secretariat resources are required to make progress and without the resources outlined in the BCSGC19 recommendation 4, progress will be limited. This should be considered in the Bureau discussion on resource availability and implementation of BCSGC19 recommendations.

This is an important priority for ICES as an organization and it is critical to make sure both human and financial resources are available to achieve the steps outlined in the report and encourage the change that is necessary. It is also important to reflect on steps we can take as individuals to support change.

The 1<sup>st</sup> Vice-President challenged each member country to think very carefully about whether nominations to Council can be more gender inclusive going forward.

An important synergy between the ongoing PhD research and gender equality plan will be to collect information about national level plans/policies in place in the network to start building a picture and lessons learned in the community. Some institutes are seeking accreditation on gender equality. The dialogue between ICES and member countries will be a two-way learning, with knowledge gained from the network, but the importance of gender equality for ICES also communicated to the institutes.

The ACOM Chair is requested to come up with a suggestion on how to include this situation specifically in regards to ACOM. Bureau will also be looking into this in connection with the COVID 19 follow up.

Action: Council supported the proposed development of a gender equality action plan, and noted the links to the recommendation of the Bureau Council Sub-group COVID-19, and critical

resource need to advance progress. A draft gender equality plan will be developed for review by Bureau, with further approval by Council at the 2022 meeting.

## Code of Ethics and Professional Conduct

Jörn Schmidt, SCICOM Chair presented the rationale, proposed contents, and proposed process for developing a Code of Ethics and Professional Conduct as presented in **CM 2021 Del-Doc 15.3**.

The proposed components include:

- ICES ethical principles as outlined by the Strategic Plan
- Who the code addresses
- Clear lines of reporting, accountability, and action
- Guidelines for Safeguarding Good Research Practice
- Guidelines for Conflict of Interest
- Environmental responsibilities (sustainability)

The document will be drafted following good practice by a group consisting of the President and First Vice-President, ACOM and SCICOM Chair, Line Managers, Coordinating Officer, Staff representatives, and Human Resource department in consultation with ACOM and SCICOM, Bureau and final approval by Council.

Council acknowledged the need for high-level guidelines and supported the development and proposed process.

Action: Council noted the importance of a further development of Code of Ethics and Professional Conduct and supported the proposed process, with the document to be submitted for final approval at the next Council meeting, October 2022.

## 13 Any Other Business

### 13.1 Reporting from member countries on national level ICES activities:

Activities at national level to promote the work of ICES are important tools to help communicate the important work of the organization, and can be a tool to engage a broader network. Member Countries noted the following activities:

Belgium: A session is proposed for the next ASC on the national networks (approval pending), this will be another opportunity for reporting of this kind.

France: A national level ICES day is in planning phase.

Canada: Hosted a national level online event with the Chair of SCICOM participating.

UK: During COVID-19, three webinars were jointly hosted for Cefas, Defra and University of East Anglia on 1) ICES and ACOM, 2) SCICOM and IJMS, and 3) Early career scientist experiences within ICES, all aimed at increasing participation.

Netherlands: Critical science issues include important topics: (1) ban on pulse fishing, (2) large scale wind energy at sea, with effects on ecosystem and fisheries

These are important initiatives, sharing this information is helpful, to not only see where it is resonating, but also if it can be aligned across countries.

### 13.2 Farewell to the President

Bill Karp, ICES First Vice-President thanked out-going President Fritz Köster for his leadership of ICES during times of change, his engagement has helped to ensure the stable economy of the organization, also allowing for investments needed at this time to ensure the organization can continue on a stable path and continue to develop in a positive manner. Council supported and acknowledged the important contributions of President Fritz Köster.

### 13.3 Next meeting

The next Council meeting will take place (in person if possible) 26–27 October 2022, at ICES HQ, Copenhagen, Denmark.



## Annex 1: List of Actions

Issue	Action/Outcome
Bureau Council Sub-group COVID-19	Council endorsed the report of the Bureau Council Sub-Group COVID-19, noting the summary, recommendations, and training needs. Council supported the recommendations (in principle) for implementation in the next three years, (with further consideration for timing and funding through equity). Council noted the specific resources needs for the recommendations will be discussed under agenda item 7.2.
ICES in a net-zero emission world	Council supported the continuing work on the net-zero initiative, with new groups members, Gerd Kraus (Chair) and Matt Gubbins, Geir Huse, and Ciaran Kelly given the mandate to revise the ToRs based on the Council discussion.
General Secretary Recruitment Process	Council approved the recruitment process as outlined in CM 2021 Del-Doc 4.2. The proposed recruitment panel composition was also approved, (specific membership to be communicated to Council once the appropriate gender, geographic, and knowledge of ICES have been identified), as was the vacancy announcement as drafted.
Secretariat report	The Council noted the information provided in the Secretariat and the important links to the recommendations for investment submitted by the BCSGC19. The Council further commended the work of the Secretariat, and staff during a difficult period. Also noting that many of the challenges are being addressed through on-going initiatives such as the workplace assessment.
Elections and appointments	William (Bill) Karp, US was elected ICES President Carl O'Brian, UK was elected ICES First Vice-President Piotr Margonski, PL was elected ICES Vice-President
Finance Committee Leadership and members	In the absence of a forthcoming Chair for Finance Committee, outgoing ICES President Fritz Köster accepted the suggestion that he take on the role. By e-voting procedure, Council approved a one-time exception to the Rules of Procedure, to allow Fritz Köster to serve as Finance Committee Chair (2022–2024), though he will not serve as Danish delegate in that period.
Finances	By e-voting procedure, with the required 2/3 majority (19 “yes” votes, 1 country having not registered their position) Council: <ul style="list-style-type: none"> <li>- Approved the 2020 Final Accounts including Audit book.</li> <li>- Approved the proposed budget for 2022, noting that the national contributions have already been agreed.</li> <li>- Agreed to conduct the voting on the level of national contributions for 2023 by separate e-voting procedure in December/January, with each member country providing an indication of current status and required documentation to vote on an increase as presented by Finance Committee.</li> <li>- Approved that Bureau may decide on the implementation of equity funds in surplus of 2.5 million DKK to implement investment recommendations that have been endorsed or recommended by the Council, and any other essential investments for the organization (Understanding that Council will be provided with regular updates on progress).</li> </ul>
Science Committee	Council noted the requests from SCICOM to: Council noted the requests from SCICOM to: <ul style="list-style-type: none"> <li>• Acknowledge the need for further support of the science network from the Secretariat, including strategic leadership on projects.</li> <li>• Continue and further extend the support of national experts as chairs and members of Expert, Operational and Steering Groups as well as Strategic Initiatives to strengthen the scientific network</li> </ul>

Issue	Action/Outcome
	<ul style="list-style-type: none"> <li>• Support national activities linked to ICES science priorities to increase the pool of experts for ICES activities</li> <li>• Support the Strategic Initiative on the Integration of Early Career Scientists</li> </ul>
Strategic Project Participation	Action: The Council supported the initiative to look into strategic project participation, according to the actions timeline presented in the document and reporting back to the Council meeting in October 2022.
Education Initiative	Council acknowledge the work of the Education Initiative conducted to date and supported the continuation of this work under new leadership.
Data and Information	Council commended the work of Data and Information and noted the important progress on data governance, the regional database and estimation system, infrastructure changes, projects, contracts, and sub-contracts of note. Council approved the Data policy and Data licencing package.
Advisory Committee	<p>Council commended the work of the Advisory Committee, noting the huge effort of the ICES community to ensuring the organization delivered on its commitments.</p> <p>Council noted advice produced in 2020, further developments of advisory framework &amp; of COVID-19 pandemic mitigation measures enacted in 2020.</p> <p>Council noted findings of WKSHOES &amp; agreed process for development of Stakeholder Engagement Strategy.</p> <p>Council noted the importance of diversity, equity, and inclusion in the work of ACOM.</p> <p>Council noted their critical ongoing role to ensure the importance of the Transparent Assessment Framework to be highlighted with experts &amp; home institutes.</p>
UN Decade of Ocean Science for Sustainable Development, Arctic, and cooperation with PICES	Action: Council supported the UN Ocean Decade activities, noted progress on Arctic engagement, and appreciated the ongoing collaboration with PICES.
Gender equality, diversity, equity, and inclusion	Council supported the proposed development of a gender equality action plan, and noted the links to the recommendation of the Bureau Council Sub-group COVID-19, and critical resource need to advance progress. A draft gender equality plan will be developed for review by Bureau, with further approval by Council at the 2022 meeting.
Code of Ethics and Professional Conduct	Council noted the importance of a further development of Code of Ethics and Professional Conduct and supported the proposed process, with the document to be submitted for final approval at the next Council meeting, October 2022.

## Annex 2: List of Participants

Member Name	Member Country/Role
Fritz W. Köster	ICES President
Hans Polet	Belgium
Serge Scory	Belgium
Alain Vezina	Canada
Liisa Peramaki	Canada (Observer)
Nis Christiansen	Denmark
Anna Rindorff	Denmark
Liv Louise Victoria Backhaus	Denmark (Observer)
Markus Vetemaa	Estonia
Katarina Viik	Estonia
Ari Leskelä	Finland
Paula Kankanpaa	Finland
Florence Cayocca	France
Pierre Petitgas	France
Christopher Zimmermann	Germany
Gerd Kraus	Germany
Gudmundur Thordarson	Iceland
Þorsteinn Sigurðsson	Iceland
Ciaran Kelly	Ireland
Paul Connolly	Ireland
Didzis Ustups	Latvia
Justas Poviliūnas	Lithuania
Joost Backx	Netherlands
Tammo Bult	Netherlands
Geir Huse	Norway
Piotr Margonski	Poland

Member Name	Member Country/Role
Manuela Azevedo	Portugal
Maria Ana Martins	Portugal
Carmen Fernandez Llana	Spain
Pablo Abaunza	Spain
Karin Victorin	Sweden
Carl O'Brien	United Kingdom
Matthew J. Gubbins	United Kingdom
Jonathan A. Hare	United States
William (Bill) Karp	United States
Mark Dickey-Collas	ACOM Chair
Jörn Schmidt	SCICOM Chair
Amjad Iqbal	ICES Secretariat
Asli Bankaci	ICES Secretariat
Anne Cooper	ICES Secretariat
Celine Byrne	ICES Secretariat
Ellen Johannesen	ICES Secretariat
Lotte Worsøe Clausen	ICES Secretariat
Neil Holdsworth	ICES Secretariat
Rachel West Knudsen	ICES Secretariat
Søren Toft	ICES Secretariat
Helle Falck	ICES Secretariat
Wojciech Wawrzynski	ICES Secretariat



**ICES**  
**CIEM**

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

Council meeting

October 2021

Del-Doc 1.1

Agenda

---

## ICES 109<sup>th</sup> Statutory Meeting

By online meeting

Chair: Fritz W. Köster, ICES President

26–27–28 October 2021

Day 1, 15:00-19:00 (CEST)

Day 2, 15:00- 19:00 (CEST)

Day 3, 15:00- 19:00 (CEST)

### Day 1 Tuesday 26 October 2020

---

- |  |                       |
|--|-----------------------|
| 1. <b>Opening and welcome</b>  | 15:00                 |
| 1.1. Introduction of agenda and timetable (Fritz Köster, ICES President)   |                       |
| 1.2. Introductions of meeting participants (tour de table)   |                       |
| 1.3. <a href="#">Follow-up</a> on actions and decisions taken at the 2020 Council meeting  |                       |
| 2. <a href="#">Bureau Council Subgroup COVID19</a>   | 15:45                 |
| (Paul Connolly, IE)  |                       |
| 3. <a href="#">ICES in a net-zero emission world</a>   | 16:30                 |
| (Bill Karp, ICES 1 <sup>st</sup> Vice-President/US)  |                       |
| Health Break   | 10 minutes            |
| 4. <b>The Secretariat</b>  | 17:00                 |
| 4.1 Resignment of the General Secretary and operation in her absence (Fritz Köster, ICES President, Bill Karp, ICES 1 <sup>st</sup> Vice-President/US) |                       |
| 4.2 <a href="#">Recruitment process of a General Secretary</a> (Bill Karp, ICES 1 <sup>st</sup> Vice-President/US)                                     |                       |
| 4.3 <a href="#">Secretariat report</a> (Ellen Johannesen, Coordinating Officer)  |                       |
| 5. <b>Review of elections and voting</b> to be completed (Fritz Köster/Ellen Johannesen)   | 18:00                 |
| <b>End of Day 1</b>  | <b>(latest) 19:00</b> |

## Day 2 Wednesday 27 October

---

- |  |                       |
|--|-----------------------|
| 6. <b>Outcome of elections and voting</b> (Fritz Köster, ICES President)                                   | 15:00                 |
| 7. <b>Finances</b>   | 15:15                 |
| 7.1. <a href="#">Report from Finance Committee</a> (Ari Leskelä, Chair of Finance Committee)               |                       |
| 7.2. Investment suggestions by Bureau/Council Subgroup COVID-19 (Søren Toft, Head of Finance)              |                       |
| 7.3. Appoint a new Finance Committee Chair and members of Finance Committee (Fritz Köster, ICES President) |                       |
| Health break   | (10 minutes)          |
| 8. <a href="#">Report from Science Committee</a> (Jörn Schmidt, Chair of SCICOM)                           | 16:10                 |
| 9. <a href="#">Strategic Project Participation</a> (Wojciech Wawrzynski, Head Science Support)             | 17:10                 |
| Health break   | (10 minutes)          |
| 10. <a href="#">Education Initiative</a> (Bill Karp, US)   | 17:50                 |
| 11. <b>Brief review of election process</b> (Fritz Köster/Ellen Johannesen)                                | 18:20                 |
| <b>End of Day 2</b>  | <b>(latest) 19:00</b> |

## Day 3 Thursday 28 October

---

- |  |              |
|--|--------------|
| 12. <b>Outcome of elections and voting</b> (Fritz Köster, ICES President)  | 15:00        |
| 13. <a href="#">Report from Data &amp; Information</a> (Neil Holdsworth, Head of Data & Information)   | 15:15        |
| 14. <a href="#">Report from the Advisory Committee</a> (Mark Dickey-Collas, Chair of ACOM)   | 16:00        |
| Health break   | (10 minutes) |
| 15. <b>Strategic Issues</b>  | 17:10        |
| 15.1. <a href="#">UN Decade of Ocean Science for Sustainable Development</a> as well as Arctic, and cooperation with PICES (Bill Karp, ICES 1 <sup>st</sup> Vice-President/US / Jörn Schmidt, Chair of SCICOM) |              |

15.2. [Diversity, Equity, and Inclusion](#) (Ellen Johannesen, Coordinating Officer)

15.3. [Code of Ethics and Professional Conduct](#) (Jörn Schmidt, Chair of SCICOM)

16. **Any other business** 18:10

11.1 Reporting from member countries on national level ICES activities

17. **Closing remarks** (Fritz Köster, ICES President)

**End of Day 3**

**(latest) 19:00**

## President's Review

*Council delegates will be invited to review and take note of the follow-up, in relation to actions decided at the 2020 Council meeting.*

### General comments

As was the case in 2020, 2021 has been an unusual year for ICES. We have been successful in meeting our obligations thanks to the dedication and flexibility of staff and the entire network. The ongoing pandemic has been especially challenging for reasons we all understand and which will be discussed later in the meeting. However, the successful completion of our first online Annual Science Conference is especially noteworthy.

In June, our General Secretary informed us that she planned to retire at the end of the year, much earlier than planned. Since then, she has been on sick leave. As a result, the secretariat and the entire organization has operated without a General Secretary and this, again, has increased stress and demands placed on staff and we wish to recognize their resilience. We will discuss the recruitment process for a new General Secretary during this meeting but we do not expect that the new General Secretary will take office before mid-2022. We will also bring you up-to-date on plans imposed on us by the Danish authorities to move the Secretariat to another building in Copenhagen. We expect this to occur later in 2022 or 2023.

Agenda item	Council Action	Follow-up
Council Strategic Initiative on Resources to support member countries contributions to ICES advice and science, as well as education and training	Action: Council supported and approved the ToRs for the Workshop on Graduate/Post Graduate Education Strategy to Meet future ICES Advisory needs (CM 2020 Del-Doc 2.1)	A successful workshop was conducted in December 2020, with a follow-up meeting in June 2021. Plans to further continue the initiative are in development. Further information will be provided under agenda item 10 of the 2021 Council agenda,
COVID-19 Pandemic response ICES	Council supported the establishment of a Bureau led Council sub-group to look into how changes caused by societal response to the COVID-19 pandemic will affect ICES work in the short and long-term. The sub-group will include representation from	The Bureau Council Sub-Group on COVID-19 worked throughout 2021 to develop recommendations and solicit feedback from the ICES community. The report has been submitted and Council will be invited to discuss the recommendations under



Agenda item	Council Action	Follow-up
	<p>ACOM/SCICOM/Data &amp; Information and Secretariat to elaborate a draft report with specific recommendations. Council members Matt Gubbins (UK), Paul Connolly (IE), Piotr Margonski (PL), Chris Zimmerman (DE), Florence Cayocca (FR) also volunteered to participate in the work of the subgroup.</p>	<p>agenda item 2 of the 2021 Council agenda and the suggestions for financial investment under agenda item 7.2</p>
<p>ICES in a net-zero CO<sub>2</sub> emission world</p>	<p>Council agreed to establish the Bureau working group on ICES in a net-zero emission world to address TORs 1-4. Membership in this group will be broad to engage expertise from within and outside ICES. The work will be informed by the sub-group set-up under 2.2 (Pandemic Lessons Learned).</p> <p>Council requests SCICOM to report back on TORs 5-7</p> <p>Council delegates are requested to provide updated information on relevant national policies and needs</p> <p>The work will also aim to engage with the community (e.g. plans for a webinar)</p> <p>Bureau will revise the draft policy statement based on the Council discussion. Bureau is mandated to approve and publish the statement.</p>	<p>It was agreed to sequence the work of the group, following the outcome of the Bureau Council sub-group COVID-19 and reported under agenda item 3</p> <p>SCICOM will report back on progress under Agenda item 8.</p> <p>The policy statement was revised, approved and included to the Strategic Plan.  <a href="http://community.ices.dk/Committees/CouncilForum/Lists/Posts/Post.aspx?ID=31">http://community.ices.dk/Committees/CouncilForum/Lists/Posts/Post.aspx?ID=31</a>          (Link only accessible to Council Delegates)</p>

Agenda item	Council Action	Follow-up
Report from Finance Committee	<p>Finance Committee is requested to look back at the financial development over the past five years, or a timescale that is found appropriate, also considering the project income.</p> <p>Council approved the final accounts for 2019, as well as the proposed 2021 budget.</p> <p>Council provided information via an online questionnaire on what further documentation would be needed to support an increase in national contributions for the forecast 2022 budget, as recommended by Bureau and Finance Committee.</p> <p>The Secretariat and Finance Committee will follow-up on the suggestions provided by Council members and an e-voting/approval process on the 2022 forecast budget will be planned for January 2021.</p>	<p>Finance Committee conducted a review on income and expenses in 2019 and 2020 (audited), 2021 (estimated), 2022 (prognosed budget) and 2023 (forecast budget) showing very similar project income in 2019-2021.</p> <p>The Finance dep. conducted an analysis of the economic perception 2016-2020 from forecast, prognosed to audited budget, which did not show a consistent trend as years were to a different degree characterized by unexpected intake (e.g. through new clients, special request), investment decided upon with relatively short notice (e.g. from equity) and expected expenses not realised (e.g. travel under COVID-19).</p> <p>Under agenda item 7.2 of the 2. day, Head of Finance will present an analysis of the financial development in 2021-2023 based on presently available information</p>
Strategic investments	<p>Council will be kept updated on the need for further investments in support of the move of ICES HQ, remote meeting facilities, as well as training. Coordination group will report back when more information is available.</p>	<p>An update of investment needs will be provided under agenda item 7.1 and 7.2</p>
Report from Advisory Committee	<p>Council commended the work of the ACOM Chair and Advisory Committee.</p> <p>At its next meeting Bureau should discuss how ICES can help find ways to resource benchmarks, reviewers, bycatch expertise, as well as assessing and providing</p>	<p>The issues of resources were discussed at the November and February Bureau meetings. This included:</p>

Agenda item	Council Action	Follow-up
	<p>advice for mixed fisheries/selectivity/fleet-based approaches; Ensuring the quality of fisheries management advice and expertise in management strategy evaluation; Assessing and managing the impact of fishing on the marine ecosystem.</p> <p>Bureau should review the development in funding options for strengthening integrated monitoring and the potential use of data collected by control agencies.</p>	<p>Review of the EU Multiannual Financial Framework 2021-2027. Overall, EMFAF resources are reduced and consequences for data collections, assessment and advisory efforts depend on national prioritisations.</p> <p>Review of Information on co-financing options of Horizon Europe (HE) with Interreg and HE Partnerships with EMFAF funding was reviewed, but was found largely unclear.</p> <p>It was noted that especially the HE Blue economy partnership research agenda is of relevance for ICES. Member states draft the workplan as part of an application to be submitted to the Commission in February. 2022. Delegates are encouraged to influence both content and process of setting up call texts at national level with responsible funding agencies or connected ministries. This approach was confirmed by a talk with the Director General of DGMARE in Sept. 2021.</p> <p>Bureau reviewed the US data-collection programme and its financing for inspiration for strengthening integrated monitoring programmes.</p>
Report from the Science Committee	<p>Council accepted the invitation of Ireland to host the Annual Science Conference 2022.</p> <p>Council acknowledged the development of proposals from the US (joint ICES–PICES conference</p>	<p>Planning for the joint ICES–PICES conference is underway. It is now possible to confirm that the event will take place in the US in 2023. The planning team is in</p>

Agenda item	Council Action	Follow-up
	<p>2023, pending funding and preparations in a joint ICES/PICES/US group); Spain (San Sebastian); and the UK (venue and date to be confirmed) and supported to convene a high-level working group to prepare the joint ICES/PICES conference, including the US ICES and PICES Delegates, the ICES General Secretary, the PICES Executive Secretary, the SCICOM Chair and Head of Science Support, and key individuals from NOAA and the Department of State.</p> <p>Council mandated the Secretariat to investigate the resource implications of a hybrid conference set-up, and based on this to report back to Bureau with suggestions for how to arrange the 2021 ASC (enhanced online participation or hybrid conference). These efforts and experiences can help to inform planning processes for future conferences.</p> <p>An update will be provided to Bureau at its next meeting 17 November, 2020.</p>	<p>advanced stages of venue selection.</p> <p>The 2021 Annual Science Conference took place entirely online, reflecting the continued COVID-19 pandemic travel restrictions. However, in the preparation phase the costs for alternative hybrid conference were estimated. Experiences are reported in the SCICOM report under agenda item 8.</p>
<p>Increasing opportunities to engage with ICES expert groups through online open sessions</p>	<p>In accordance with the Rules of Procedure and Resolution ICES CM 2008 Del-05, Council noted the suggested pilot process (three years) for a sub-set of ICES Expert Groups (not including ACOM EWGs) to:</p> <ul style="list-style-type: none"> <li>- allow expert groups to host open sessions during online meetings, where the focus is broader than their specific ToRs (i.e. the open session will be related to, but not specifically address the ToRs), and</li> <li>- where the sessions are defined as open because participation it is not limited to expert group members.</li> </ul>	<p>A report back on the pilot process will be provided as part of the SCICOM reporting under agenda item 8.</p>

Agenda item	Council Action	Follow-up
	Council supported this proposal and requested a progress report at the next Council meeting.	
Data and Information	Council commended the work of Data & Information services.	An update on Data & Information will be provided under agenda item 13
Projects and further information on the revised mandate	Council noted that the expanded mandate for ICES participation in projects provides flexibility in a changing funding landscape, and does not change the existing rules of engagement as defined in ICES project policy. Project reporting will continue to be an annual agenda item for discussion by Council delegates.	An update on projects will be provided under agenda item 9
UN Decade of Ocean Science for Sustainable Development as well as Arctic, and cooperation with PICES	<p>Council noted:</p> <ul style="list-style-type: none"> <li>- support for the work of the Joint ICES Council Strategic Initiative/PICES Study Group to plan participation in the UN Decade of Ocean Science (ICES–PICES Ocean Decade);</li> <li>- the upcoming Arctic regional workshop, under the UN Ocean Decade, taking place in virtual meetings, 23 October, 5 November and if needed 18 November;</li> <li>- the Arctic Science Ministerial (ASM3), taking place, 8–9 May 2021 in Tokyo, Japan, co-hosted by Iceland and Japan, and the need to investigate the possibility at national level to bring attention to ICES activities;</li> <li>- the on-going work under the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, and the need to investigate the possibility at national level to bring attention to ICES activities.</li> </ul>	The ICES–PICES Ocean Decade Steering Committee (IPOD-SC) has been operating throughout 2021. An update on Ocean Decade, Arctic, and other strategic issues will be provided under agenda item 15.

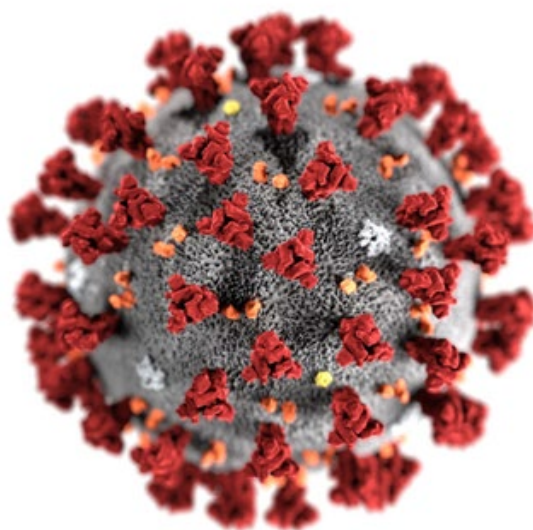
Agenda item	Council Action	Follow-up
Council Strategic Initiative on Maritime Transatlantic Cooperation	Activities with transatlantic relevance will continue to be tracked, and progress reports provided to the annual Council meeting.	Transatlantic cooperation continues to be of central importance to the organization with continued efforts evident in the work of expert groups, projects, and committees, with specific focus on the UN Decade of Ocean Science for Sustainable Development, the Arctic, and cooperation with PICES, but not least the education initiative, related to agenda items 15 and 8, respectively.
Secretariat Report	Council extended its appreciation to the Secretariat for the wide scope of working and continued dedication during the difficult year.	An update on the work of the Secretariat will be provided under agenda item 4.3.
General Secretary contract extension	Council supported the Bureau recommendation to extend the contract of Anne Christine Brusendorff as General Secretary until 31 January 2024, corresponding to the end date of a 2nd term of 6 years. This recommendation is based on the excellent work record of Anne Christine Brusendorff as General Secretary since filling of the position 1 February 2011 as well as a discussion with the Bureau on 20 October 2020. The discussion focused on challenges faced by the organisation, its business model, and the responsibilities of the General Secretary as well as the organisation of the ICES secretariat.	<p>The General Secretary has submitted her resignation effective 31 December. Council will be invited to discuss the recruitment process under agenda item 4.2</p> <p>As a consequence of the resignation of the General Secretary, three extraordinary bureau meetings were held to review 1) the structural set-up of the organisation after the reform in 2015, with professionalized ACOM and SCICOM leadership, while reducing resources in the respective Departments, 2) the role of a General Secretary in such organisation and more broadly in a post COVID-19 and Zero Carbon Emission World with an ICES Strategy</p>

Agenda item	Council Action	Follow-up
		having the aspiration to enhance the global profile and leadership of the organisation. The ICES HR Officers and the ICES Coordinating Officer supported these and several additional targeted meetings with varying involvement of ACOM and SCICOM chairs and Line managers under the lead of the 1. Vice- President.



# **Bureau Council Sub Group on COVID-19 - (BCSGC19)**

## **Final Report**



*(VERSION 9.1 @ 25/01/22)*



### COVER IMAGE

The iconic illustration of COVID-19 was created at the Centers for Disease Control and Prevention (CDC), USA. It reveals the ultrastructural morphology exhibited by coronaviruses.

*COVID19 will be remembered as the virus that stopped the world.*

*The World Health Organization (WHO) estimate that globally, there have been 238 million cases on COVID19, with 4.85 million deaths and 6,262 million vaccine doses administered.  
WHO – 13<sup>th</sup> October 2021.*

*“When patterns are broken,  
new worlds emerge.”*

*Tuli Kupferberg*

#### UPDATE NOTE

- (1) The 2021 meeting of the ICES Council endorsed the report of the Bureau Council Sub-Group on COVID-19 (BCSGC19), noting the summary, recommendations, and training needs. Council supported the recommendations (in principle) for implementation in the next three years, (with further consideration for timing and funding through equity).
- (2) Council also approved that Bureau may decide on the implementation of equity funds to implement investment recommendations that have been endorsed or recommended by the Council, and any other essential investments for the organization (Understanding that Council will be provided with regular updates on progress).
- (3) An Implementation Plan for the BCSGC19 recommendations will be developed by the ICES Coordination Group within the Secretariat, for consideration by the ICES Bureau in early 2022. This Implementation Plan will take note of the survey feedback from the ICES community on the recommendations of the BCSGC19.



# Contents

	Summary .....	1
1	Introduction and Background.....	20
2	Approach to Addressing our TOR's.....	35
3	Addressing TOR 1 – ICES and the Lessons Learned .....	37
4	Addressing TOR 2 – Snapshot of Member States Views .....	50
5	Addressing TOR 3 – Training and Wellbeing .....	77
6	Addressing TOR 4 – Recommendations .....	82
7	Soliciting feedback from the ICES community on the recommendations from BCSGC19 .....	106
8	Concluding Comments .....	132
	Appendix 1 – TOR's for BCSGC19 .....	135
	Appendix 2 – List of Participants .....	136
	Appendix 3 – BCSGC19 List of Meetings.....	137
	Appendix 4 – Draft TOR's of Zero C Initiative .....	138
	Appendix 5 – List of Actions from Turrell (2019).....	140
	Appendix 6 – A Checklist for a Responsible Organisation .....	141



## Summary

### 1. OBJECTIVE OF BCSGC19

The main objective of the Bureau Council Sub-Group on COVID19 (BCSGC19) was to provide ICES with clear recommendations on how to prepare for a post COVID19 era at ICES.

The TOR 4 outputs provide 7 recommendations for consideration by the ICES Bureau and Council as the organisation prepares for the post pandemic era. The owner, implementer/implementation, resource requirements, and estimated costs are given for each recommendation.

### 2. Addressing TOR 4 – RECOMMENDATIONS

Globally, the business landscape for most organisations, particularly international organisations will look a lot different after the COVID19 pandemic. It would be a mistake to look for a one-size-fits-all plan. Every industry, organisation and community (including marine science) will face unique challenges. Some will be permanently damaged by what they have gone through. Others will benefit from the changed conditions and attitudes. In any case, organisations that meet these challenges and embrace change with innovative thinking will have the best chance of prospering in the post COVID19 era.

The BCSGC19 linked package of recommendations represents an investment in “change at ICES” to ensure the organisation is fit for purpose in key areas that will enable it to remain relevant and to operate effectively and efficiently in a new post pandemic world. The BCSGC19 recognise the many demands on ICES finances over the coming years and that strategic prioritisation of investments will be critical to the future of the organisation.

#### **Recommendation 1 - On a new Paradigm for Expert Group Work**

- Operational Process Change - In order to reduce artificial logistical and time constraints imposed by packaging all information into a resolution, ICES should explore options for separating the resolution process and associated information management into modules along the following grouped elements: Terms of Reference; Approval of Chairs; Logistics of the work; Publicly communicate about the establishment of new groups and their outputs.
- This operational process change would primarily affect national delegates, expert group chairs, and the Secretariat and should be implemented over a 1-2-year timeframe, starting as soon as possible.

- Cultural Change - To refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work. Meetings will be a tool, not the sole element of an expert group. This reflects the organic change that is already happening across the network and will require adjustment of the procedures, reporting and overall management of expert groups.
- This cultural change would primarily affect expert group members and chairs, SCICOM and ACOM, with implications also for the Secretariat in supporting this. A cultural shift would take effect over a defined period, and likely linked to a cycle of the ICES Strategic plan (3 years).
- **OWNER** – ACOM; SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat
- **RESOURCE REQUIREMENTS** – 1.5 Positions over 3 years (2022 to 2024)
- **ESTIMATED COSTS** – 0.5 position focused on Change Management + 1 position focused on Implementation – Cost = 823,000 DKK per annum.  
Additional Consultant Fees may be required = 250,000 DKK.

### 3. **Recommendation 2 - On a Digital Collaboration Strategy (DCS)**

- ICES should develop a digital strategy for collaboration (DCS) that outlines the key areas that the organisation needs to offer IT solutions/services in, and what services it needs to offer within each area.
- The digital strategy should be relatively high level and focussed on managing informed technology choices for the organisation rather than specific technology/software offerings per se. It would build on existing agreements, principles, and policies.
- While it would be preferable to assign this task to an existing expert group or Committee, due to its cross-cutting nature, it would be appropriate to form a dedicated workshop to establish the strategy and also define the forward process for governance and review of the digital collaboration strategy.
- This should be started as soon as possible and an outline available for ICES Council in the Autumn of 2022.
- Note strong links to TOR 3 – Training and to Recommendation 4 (Develop GADEI Digital Support)
- **OWNER** - SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat; Start with a series of Workshops with stakeholders – Formation of Core ICES DCS Team – Training Needs.
- **RESOURCE REQUIREMENTS** – 0.5 Person for 3 Years (2022 to 2024).

- **ESTIMATED COSTS** – 0.5 Person to support Workshop, Core Team – and Training. Cost = 220,000 DKK per annum.

#### 4. **Recommendation 3 - On the Quality of the ICES Advice and TAF**

The COVID-19 pandemic has caused increase in work pressures at home laboratories and at the ICES Secretariat. This, along with other issues has impacted ICES workload.

- In response to the stalled uptake and application of the Transparent Assessment Framework (TAF) throughout the assessment process, and the results of the recent survey of TAF users; home institutes must make time available for TAF implementation and training, with key messaging that this is a priority for ICES as a quality assured advice provider. It is recognised that COVID19 has had a major impact on the TAF situation in that it has put severe pressure on the Secretariat and Member Countries.
- ACOM and WGTAFGOV will re-emphasise the role of TAF and prioritise guidance and online documentation and assistance/helpdesk which requires resourcing in the Secretariat).
- Secretariat to improve the functionality and technical set up (including to export directly into the Stock Assessment Graphs (SAG) database and implementation between years).
- **OWNER** - ACOM
- **IMPLEMENTER/IMPLEMENTATION** – ACOM; Secretariat; WGTAFGOV, Member Countries.
- **RESOURCE REQUIREMENTS** - 1 Person for 3 Years.
- **ESTIMATED COSTS** - 1 Person focused on training and implementation of TAF particularly within Member Countries. Cost = 435,000 DKK per annum

#### 5. **Recommendation 4 – On Gender Awareness, Diversity, Equity and Inclusion (GADEI)**

- Gender Mainstreaming - Embed gender awareness, diversity, equity, and inclusion in the values and culture of ICES. Develop a Code of Ethics and Professional Conduct, revising and harmonizing the Code of Conduct and Meeting etiquette documents to foster a working culture that is respectful, diverse, and inclusive. Future work planning should account for diverse needs, with special attention to women, people with caring responsibilities, and other underrepresented groups
- Data Collection - Systematically collect gender disaggregated data to aid monitoring, evaluation, and to identify areas where strategic actions are needed to support equity of access and opportunities in ICES work
- Training - Provide training on gender and diversity, equity, and inclusion to the ICES community to foster a safer working environment, increased well-being, and equal opportunities



- **OWNER** - Council
- **IMPLEMENTER/IMPLEMENTATION** – Bureau can address the gender awareness, Diversity, Equity and Inclusion policy issue and drive this in all ICES work through the establishment of a ICES Gender Awareness, Diversity, Equity and Inclusion initiative (GADEI)
- **RESOURCE REQUIREMENTS** – 1 Position for 3 years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Position focused on Gender Mainstreaming and Training and 0.5 position focused on business intelligence and data collection = 435,000 DKK per annum.

#### 6. Recommendation 5 – On the Future of the Annual Science Conference (ASC)

- ICES will reflect on the future format of the ASC following the cancellation of the 2020 ASC due to the COVID19 pandemic.
  - The existing SCICOM ASC subgroup will “think outside the box” to explore existing and new formats by actively collecting experiences to maintain the ASC as a key ICES “flagship event” and ensure that the key characteristics of the ASC (e.g. networking, partnerships, science exchange) are strengthened while at the same time increasing inclusiveness and reducing environmental impact.
  - The lessons learned from the new formats at the upcoming ASC’s in Copenhagen 2021, Dublin 2022, and from the joint ICES/PICES conference in the US in 2023 will critically inform the discussions on the future evolution of the ASC.
  - Provide resource means to effectively coordinate this process in the Secretariat.
- **OWNER** - SCICOM
  - **IMPLEMENTER/IMPLEMENTATION** – SCICOM; Secretariat; Member Countries.
  - **RESOURCE REQUIREMENTS** – 1 position for three years (2022 to 2024).
  - **ESTIMATED COSTS** – 0.5 Position focused on lessons and new ASC formats. 0.5 position focused to support implementation of new formats at ASC 2022 = 435,000 DKK.

#### 7. Recommendation 6 – The Secretariat Post COVID

- **Workload** - Given the increase in workload and new working norms resulting from the COVID-19 pandemic (i.e. increased use of virtual meetings and support), the Secretariat sees a need for additional human and technical resources both in terms of staff and equipment/tools. Secretariat resource gaps have been identified and additional investments will need to be approved by Council.
- **Meetings** - There is clear need to reconfigure office space, meeting rooms and working schedules to ensure that staff have the ability to

support the network meetings without disrupting their colleagues. The move to the new headquarters should facilitate this.

- Human contact – the remote work period has led to reduced networking opportunities, for the ICES community, especially for early career scientists and new participants. Future planning should include a “hybrid” approach where both virtual and physical meetings form part of ICES meeting procedures.
- Work-life balance – Work/life balance has been significantly impacted by increased workload as well as meetings taking place outside normal working hours. Future planning in the Secretariat must factor in work/life balance and staff wellbeing.
- The COVID19 pandemic and the looming post COVID era presents an opportunity for the Secretariat to review the match between its resources and its current work programmes.
- **OWNER** - Secretariat and Bureau
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat (with ACOM and SCICOM on how groups will operate).
- **RESOURCES** – Additional resources for the Secretariat, that address the COVID19 impacts outlined above, have been identified and costed in Recommendation 1, 2, and 3.
- **ESTIMATED COSTS** – No additional costs.

## 8. Recommendation 7 – On the Zero Carbon Initiative

- While not specifically in the BCSGC19 TOR's, an important element of its work was to link with the Zero Carbon Initiative (Council Group on ZERO C Initiative).
- BCSGC19 has addressed some elements of the Zero Carbon Initiative TOR 2 (Travel and Remote meetings) and future work should build on this. The 13 actions in the Bill Turrell paper (2019), can also provide a useful starting point (foundation) for the Zero C Initiative. BCSGC19 has considered actions 7, 8 (remote meetings) and 9 (Science Conferences).
- The Group noted that many of its recommendations will have a positive impact on Net Carbon emissions (e.g. reduced air travel as a result of greater use of remote meetings).
- **ICES as a Responsible/Sustainable Organisation** - In the current marine policy landscape, ICES has a “moral responsibility” to minimise its energy usage while conducting its core business in the secretariat/science/advice/data domains. ICES should strive to minimise its energy usage and CO<sub>2</sub> footprint and “lead by example”. This is a key component of being a “sustainable and a responsible organisation”. Other elements of a responsible/sustainable organisation need to consider business health, employees, customers and impacts on nature.
- **Highlighting ICES Advice and Science Outputs** – ICES should highlight the elements of its advice/science that will help reduce CO<sub>2</sub> emissions and energy usage in key marine sectors (e.g. via advice on MSP

- (Marine Spatial Planning); ORE (Offshore Renewable Energy) and Shipping).
- Establish a Bureau Council Working Group that will revise the TOR's of the Zero Carbon initiative. The Group should work throughout 2022 and present their Draft Report to Council in 2022. The TOR's should consider if ICES work processes and support progress towards the UN Sustainable Development Goals and ICES as a "Responsible Organisation".
  - It should be noted that flexible working practices, like working from home and remote meetings are also a way to reduce CO2 emissions generated from local communities.
  - **OWNER** - Council
  - **IMPLEMENTER/IMPLEMENTATION** – Bureau Council Working Group
  - **RESOURCES** – Working Group Members.
  - **ESTIMATED COSTS** – from current ICES budget.

## 9. TOTAL ESTIMATED COSTS FOR IMPLEMENTATION

The breakdown of the costs for each of the 7 recommendations are shown on the table below in DKK. (Conversion Rate; 1 DKK = € 0.134382).

ITEM	2022 DKK	2023 DKK	2024 DKK	TOTAL DKK
<b>Rec 1 *</b>	906,300	906,300	906,300	<b>2,718,900</b>
<b>Rec 2</b>	222,000	222,000	222,000	<b>666,000</b>
<b>Rec 3</b>	435,000	435,000	435,000	<b>1,305,000</b>
<b>Rec 4</b>	435,000	435,000	435,000	<b>1,305,000</b>
<b>Rec 5</b>	435,000	435,000	435,000	<b>1,305,000</b>
<b>Rec 6</b>	0	0	0	<b>0</b>
<b>Rec 7</b>	0	0	0	<b>0</b>
<b>TOTAL</b>	<b>2,433,300</b>	<b>2,432,300</b>	<b>2,432,300</b>	<b>7,299,900</b>

*\*Costs for Recommendation 1 include external consultancy of 250,000 DKK over three years. Included in Costs Table as 83,073 DKK per annum.*

The Total Estimates Costs for new staff and external consultancy for implementation of the 7 Recommendations is circa 7,299,900 DKK (circa. € 981,082 over 3 years – circa. €327,027 per annum – circa. €16,351 per ICES Member Country per annum).

## 10. INTRODUCTION AND BACKGROUND

The Introduction to this report looks at the global impact of COVID19 on society and on organisations. It addressed 15 linked topics (a - o) that include the origin of the virus, the global crisis, how society has adapted, remote working, fatigue, impact on science and conferences, global fisheries, new technology, airlines, people, wellbeing, climate and the future (i.e. the post pandemic era). The key points from each topic are highlighted in bold. The Introduction is not intended to be a comprehensive review of the subject, but more to collate a broad range of information and expert opinion that was intended to prime discussion and ensured the Group address its TOR's in a comprehensive and insightful way.

## 11. KEY GLOBAL COVID19 MESSAGES FROM THE INTRODUCTION

Some key global messages from the introduction topics that informed the Groups discussions included;

- *Organizations have had to adapt and pivot their operations swiftly in response to the changes imposed by the health risks of COVID19, as well as the economic impact of the ongoing restrictions.*
- *Quarantines, lockdowns, and self-imposed isolation have pushed tens of millions around the world to work from home, accelerating a workplace experiment that had struggled to gain traction before COVID19 hit.*
- *During the pandemic virtual meetings have increased in orders of magnitude, with hundreds of millions happening daily, as social distancing protocols have kept people apart physically. The term "Zoom Fatigue" has become a popular expression to describe tiredness, worry or burnout associated with the overuse of virtual platforms for communication, particularly videoconferencing.*
- *COVID19 has impacted science. In a 2020 survey, there were substantial differences between male and female respondents in how the pandemic had affected their work. Female scientists and scientists with young dependents reported that their ability to devote time to their research has been substantially affected, and these effects appear additive: the impact is most pronounced for female scientists with young dependents.*
- *The COVID19 pandemic leading to strictly enforced measures to stop the virus's spread, resulted in an unprecedented number of scientific conferences cancelled in 2020 and 2021.*
- *Online meetings impose significant challenges concerning sustainable fisheries management, such as limited discussions and negotiations on important issues. Thus, to continue their work effectively, these organizations need to develop new decision-making procedures that are more resilient.*
- *According to a new McKinsey Global Survey of executives, companies have accelerated the digitization of their customer and supply-chain interactions and of their internal operations by **three to***

**four years.** Additionally, the share of digital or digitally enabled products in their portfolios has **accelerated** by **seven years.**

- *Business travel will take longer to recover, and even then, it is estimated that it will only likely recover to around 80% of pre-pandemic levels by 2024. Remote work and other flexible working arrangements are likely to remain in some form post-pandemic, resulting in fewer corporate trips.*
- *COVID19 has brought about an enormous sense of uncertainty for most people. In the workplace, team members are looking up to leadership to make sense of what is happening and what it means for their job security, livelihoods and their families; forcing leaders to step up into being open and honest. In the immediate term employees will be looking for their leaders to be flexible, open to changes in work patterns, empathetic to personal situations, and to really listen.*
- *The COVID19 pandemic has made it painfully clear that the well-being of the workforce is in jeopardy. Coaching and formal learning opportunities improve the ability of staff to problem solve, present, communicate, resolve conflict, and lead at work. In the same way, wellbeing should be treated as a business-critical skill that can be improved through training and development programs.*
- *It can be reasonably expected that the COVID19 pandemic will abate. However, much work remains to be done in terms of public-health measures to help control the pandemic, monitoring, potential revaccination and dealing with potential new variants.*
- *Government policies during the COVID19 pandemic have drastically altered patterns of energy demand around the world. Many international borders were closed and populations were confined to their homes, which reduced transport and changed consumption patterns. Daily global CO2 emissions decreased by –17% (–11 to –25% for  $\pm 1\sigma$ ) by early April 2020 compared with the mean 2019 levels, just under half from changes in surface transport.*
- *The business landscape will likely look a lot different after COVID19. It would be a mistake to look for a one-size-fits-all plan. Every industry will face unique challenges. Some industries will be permanently damaged by what they have gone through. Other industries will benefit from changed conditions and attitudes. In any case, businesses that meet these changes with innovative thinking will have the best chance of prospering.*

## 12.ADDRESSING TOR 1 – LESSONS LEARNED

TOR 1 focused on the lessons learned by ICES during the pandemic. These are the key lessons learned from 2020 and 2021 when virtual meetings dominated the ICES landscape and had significant impacts on the ICES staff workload.

- Online meetings take longer to prepare and it is difficult to deal with complex, strategic, and contentious issues.
- Online meetings make it difficult to sense the mood of the network and lack the incentives of physical meetings.
- The shift to online meetings has allowed for more frequent meetings throughout the year, as opposed to concentrated work in short periods.
- Online meetings are shorter and more focussed and attract greater participation.
- The tendency to postpone decisions, or delay the closure of work/activities has become more common in all areas of ICES business, including advice production.
- ICES needs to maintain an initial list of meetings to be conducted physically, on-line and in physical/on-line format. Furthermore, ICES should develop guidance on how to identify the characteristics of meetings that are better online, physical or a combination of both (e.g. meetings that demand wide participation and are focused on one-way communication – like WGCHAIRS – are well suited to be facilitated completely online in future (with opportunistic physical meetings at the ASC). Meetings on sensitive or contentious issues may need physical meetings.
- Understanding and agreeing on the Secretariat support given to the different types of meetings, and the resource demands this creates, in the light of a potential increase of meetings is a critical consideration for the future (Secretariat resource needs).
- Potential future physical/online meetings need to ensure equal opportunity for remote participants to contribute and interact as those present in the room.
- Understanding the training needs for the different meeting formats, considering specific issues, and setting priorities - the audience for the training and the timing of that training should be decided based on challenges of specific meeting formats. ICES is moving its IT to the Cloud, the COVID19 pandemic has accelerated this move, which also implies more acute and variable demands on the IT/ICES budget, and on human resources to implement and adapt processes to the changes.

### **13. ADDRESSING TOR 2 – THE VIEWS OF DELEGATES**

The outputs from TOR 2 have provided information on the views of the Delegates from 9 ICES Member Countries in relation to COVID19. The following Member Countries provided feedback to the BCSGC19 – UK, Poland, Germany, Spain, Norway, Iceland, US, France and Ireland. This represents the Delegates views of 45% of the ICES Member States. A consolidated summary of this feedback is presented below.

## VIEWS ON THE IMPACTS

- (1) There is a recognition that the pandemic will change the work practices of home institutes and their working processes with ICES.
- (2) In many ICES Member Countries (MC's) fieldwork (sampling and surveys) were severely disrupted or postponed. Laboratory work was less severely impacted. The impact of disrupted sampling on fisheries data will become apparent as ICES delivers advice for 2022 and 2023.
- (3) Fishery-dependent data collection activities were impacted differently at a regional level. There were also delays in responding to data calls in some MC's.
- (4) Some MC's increased their socio-economic data collection activity.
- (5) The pros and cons of virtual meetings were highlighted by all MC's. Virtual meetings are not effective in dealing with sensitive issues and participants from different time zones cause logistical problems. ICES scientists adapted quickly to the rapid move from physical to remote meetings. Staff fatigue (i.e. Teams and Zoom Fatigue) was a feature of some MC's responses.
- (6) Other areas negatively impacted in MC's were grant proposals, conferences (hosting and attendance - ASC) networking, teaching, mentoring, research (e.g. PhD's) and "in person meetings".
- (7) The negative impact of COVID-19 on career progression was also highlighted in some MC's responses.
- (8) The negative and positive impacts on working from home (remote working) featured in most Delegates responses. Issues related to home internet access and bandwidth were also highlighted.
- (9) The decline in mental health and wellbeing of staff was also highlighted.
- (10) The negative impacts of the COVID-19 response were most evident for women in full-time employment, and in scientists with disabilities.

## VIEWS ON THE FUTURE

- (1) All MC have recognised the need for new work practices and clear guidelines for staff that embrace new workings norms around flexible working, mentoring, training, mental health, and wellbeing as we all enter an increasingly virtual workplace.
- (2) There is a need to find new ways of informal networking within the marine science and broader science communities
- (3) Ensure access to online conferences, seminars, meetings and continuous learning activities.
- (4) Ensure the impacts of COVID-19 do not negatively impact on career progression and recruitment.
- (5) Travel (both domestic and international) will be restricted having positive benefits in home laboratories travel budgets and general CO2 emissions.
- (6) The need for face to face meetings is necessary for key discussions.
- (7) IT will have a major role to support technology choices by Member Countries in the new virtual ICES workspace.

- (8) ICES meetings and intercessional work need to be “redesigned” (separate out intercessional work; discussion; sensitive decisions; incorporation of webinars; new IT tools to facilitate new ways of working).
- (9) Address some of the TOR’s of ICES Expert Groups through webinars.

#### **14. ADDRESSING TOR 3 - TRAINING REQUIRED TO SUPPORT RECOMMENDATIONS**

**Supporting BCSGC19 Recommendation 1** - The suggested change of how a multi-year ICES Expert Groups will work in future, as well as the need to accommodate more online meetings, effectively balance meetings that will be a mix of physical and remote attendees, and the increasing use of different workflows and processes, requires specific tools, skills, and competences to ensure equitable participation, good cooperation, community building and efficiently working together while being considerate of human well-being. The remote nature of meetings and workflows might also exacerbate intercultural differences in working and communication style.

**Supporting BCSGC19 Recommendation 2:** General challenges are related to running meetings (online and mixed physical/online), organizing the work and workflows, and more broadly on onboarding new people, building community, driving innovation and making decisions. These challenges can be partly addressed by using tools and partly only through strengthening skills in how to lead a change in work culture, and organise dispersed groups and workflows. Training on intercultural competences will help to facilitate working in an international setting.

**Supporting BCSGC19 Recommendation 3:** The introduction of TAF was meant to support the work of Assessment groups and to open up resources for more science within the groups. To achieve this, the implementation needs to be supported by active training of stock assessors and stock coordinators.

**Supporting BCSGC19 Recommendation 4:** Gender mainstreaming, the active consideration of diversity, equity and inclusion and ensuring a respectful and open work culture requires awareness training for the community as well as special training for secretariat staff and community leaders to be able to handle cases of misbehaviour and harassment competently and confidently.

**Supporting BCSGC19 Recommendation 5:** Depending on the future formats of the ASC, training needs to be provided to session conveners to enable them to effectively run sessions in virtual settings, both in terms of technical skills for the use of tools as well as moderation skills and to secretariat staff to develop and implement new formats effectively.



## Wellbeing

- Wellbeing aspects of work life need to be considered at all levels of the ICES community, fostering an equitable and inclusive working environment, that allows contributions regardless of different individual realities.
- Develop training material, in the form of in-person short courses and recorded materials to address key aspects ICES community wellbeing. Including effective leading of meetings, organization of workflows, as well as training on skills ensuring social interaction and community building.
- As with the recommendations on gender awareness, diversity, equity, and inclusion; wellbeing should be embedded in the values and culture of ICES.
- **OWNER TRAINING** – Bureau SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – SCICOM
- **RESOURCES** – Existing Training Budget and Additional Training Resources included in Recommendations 1 to 7.
- **ESTIMATED COSTS** – Existing Budget and New Resources.

## 15. SURVEY OF THE ICES COMMUNITY

In order to get feedback and support from the ICES community on the BCSGC19 recommendations and draft report, a survey was circulated to the ICES staff and community. **The survey had 113 responses and indicated strong support (Strongly Agree / Agree) with the 7 recommendations of the BCSGC19.** It also produced a rich set of 232 comments on the recommendations (all of which were incorporated into the full report) of which 81 are included in the summary. The concerns and comments raised by the ICES Community will be discussed during the implementation phase of the recommendations, should Council approve the report and recommendations at their meeting at the end of October 2021. A summary of some key comments on the recommendations are presented below.

### Summary of Some Key Comments from the ICES Community

(The full list of Comments are presented in Pages 112 to 128 of the BCSGC19 Report)

### Recommendation 1 – A New Paradigm

- A more project-based approach makes eminent sense, but will require supporting digital tools to help chairs manage a much more diverse workflow and task distribution. Conflict resolution may also need to be strengthened as remote collaboration does not offer quite the same opportunities to discuss and disperse conflicts.

- Agree that a single annual meeting shouldn't be the only focus of work but should be cautious about implications of 'project approach' on existing workload of WG members and ensure distribution and recognition of work is fair across participants.
- Although I strongly agree with this recommendation, I must stress that certain meetings must still happen in person in order to achieve the desired goals of a meeting/workshop.
- As a WG chair I can that this will simplify WG operation.
- Cultural change timeframe is ambitious but I agree with the sentiment here.
- I agree with spreading the workload over a broader time via remote meetings, but I strongly encourage annual in-person meetings.
- I don't see the value in separating the resolution process into modules. It is not clear to me as described in the document how this would work in practise. I would think that collating this information in modules will become a bigger administrative burden for the Secretariat and at the same time potentially confusing for the EG Chairs. Fine to change the culture towards a more project-based approach, but we need a simple and easy-to-manage system!
- I like the idea of a project approach for EG. The only thing that worries me is that it will probably lead to increase workload for experts. It is important to ensure resources so that enough people is involved and people have affordable workloads
- Nothing is wrong that needs to be fixed in the current system. There are much more important issues to be solved. Unclear whether the 4-module system will be operational and what it actually needs.
- Project based is likely to be better. I've sat in meetings in year 3 of ToR where people are still trying to work out what we're doing!
- The recommendation is good, and it creates potentially more progress and it is flexible, which makes it easier to deliver the best work, but ensure that WG/EG do not work continuously all year, then the focus will drop, and delays from some persons/groups affect other in a worst way then when all are working concentrated for e.g. 10 days.

## **Recommendation 2 – Digital Collaboration**

- Agree the DCS must be very high level - it must recognize that different national institutes will be providing most IT services, and there will be various restrictions among ICES meeting participants in terms of allowed technology.
- As the world and collaborations become more digital, the tools and training are needed. This will be an important part of the future of ICES
- Digital Collaboration is essential and should be assisted by well-trained people. So I agree with Recommendation.
- Of course the recommendation is good, but remember there are other ongoing critical IT developments, which should not be overlooked, because of COVID-19 initiatives.
- The funding proposed for this is entirely inadequate if this is anything other than a review. Very important that the community feel engaged in this,

- and it draws on personal and national experience, some individuals are now moving much faster than organisations.
- There is a strong foundation in Sharepoint. But look to new technologies such as discord that allow communities to host text and voice/video channels on the fly within a shared workspace (that now also integrated with Sharepoint). Giving groups some freedoms to structure a collaborative environment at their level is important.
  - This is a critical function. Without digital collaboration, we cannot function in the "new normal".
  - We still have a long way to go with Covid. Most people are vaccinated now (at least in my country), yet hospital rates are still very high. The constant panic in the media doesn't help. At my organisation we have at least half of staff unwilling to come to the office, let alone travel to an international meeting. I suspect we're a long way off physical meetings, even once they are allowed. I personally have realised the benefits of not constantly travelling in terms of my work/life balance. Online meetings have made it much easier for colleagues who don't have large budgets to attend meetings. A "digital by default" approach is needed and would help with climate change.

### **Recommendation 3 – Advice and TAF**

- An opportunity to consolidate issue-centered expert groups for ad-hoc ICES advice.
- Assisting experts in person at meetings is the easiest way to increase uptake of TAF
- Fully agreed, TAF is ICES flagship initiative and world leading.
- Home institutes will need resources to follow this recommendations. Also I think it is important that the forthcoming RDBES system coordinates with other Data Calls (i.e. FDI) to ensure consistency and to not overload national institutes with different data calls that could be solved with a single one.
- I really like the idea behind the TAF and I think is the way forward. What is the actual status? I think it would be helpful to have more examples accessible to the whole ICES community, and more guidance in the initial steps.
- Without any doubt, absolutely critical issue. Relates to credibility and transparency of advice.
- Yes, to accomplish this, experts need one-on-one training, however, uptake needs to go beyond this. This isn't a "one (training) and done" kind of problem. ICES needs to go beyond the training needs to see what is impeding TAF uptake by trained experts. The incoming ACOM VC should be able to shed some light on this.

### **Recommendation 4 – Gender Awareness**

- A lot of important issues thrown in one basket.
- Agreed, but more to diversity than just gender issues and we need to make sure all types of people can engage with ICES, noting online working and working in person in very constrained ways can pose challenges for many scientists.

- Although all points made in this recommendation are very important, one should carefully guard so that people are involved for their talents, capacities and knowledge rather than to reach certain statistics. "Gender inclusion" is necessary, but can be a difficult concept to balance. Knowledge, talent, capacity, transparency, integrity should be main drivers strongly supported by gender awareness.
- As a woman, I appreciate the focus on gender and applaud ICES intent in this recommendation. The focus on gender comes across as prioritized over other forms of diversity in these bullets though. Considerations that are part of the last sentence of bullet #1 (people with caring responsibilities, other underrepresented groups) gets lost when the data collection focus in bullet #2 shifts back to gender. I think it is important to think about diversity, equity, and inclusion from a broad perspective and to ensure multiple forms of diversity are thoroughly represented and tracked through the process.
- Have always lived by this, so am 100% supporter.
- I am in full support that ICES is in grave need of DEI uptake, however, I find it off-putting that it gets wrapped up in a post COVID "new" way of working document. This issue should stand alone. Covid highlights additional DEI issues for the ICES community that need to be addressed, it is not the source of our problems. By placing it here, ICES appears tone deaf. I am also uncomfortable with the solution--hire someone. Rather than kitting out a menagerie, let's take actions at multiple levels across the organization to create true change.
- I do not see any gender problems within ICES
- I do not think there is an issue within ICES with gender awareness, diversity, equity and inclusion. ICES is an open, liberal and professional organization in my view. There is an issue with gender equality at different levels but that is due to the make up within institutes.
- ICES is still very middle age or old white male dominate network and this has to change.
- In the 25 years I am working in MCWG, I never had any reason to doubt gender equality, diversity, equity and inclusion whatsoever, and I see no reason to stress this as it might only work counterproductive. We had 4 female chairs, that were high-level, had recognised black and Jewish participants that were amongst the most respected, and had several disabled people attending. There has never been any issue whatsoever, we behave exemplary in this respect, and there is no need in any training or other lengthy talking session. We will do everything required to keep it that way, of course.
- Really pleased to see this. I feel it could be more ambitious with recommendations to achieve targets of gender (and other characteristics) on WGs etc. to reflect proportions of wider population or scientific community. You can get started and be proactive without waiting for a time-series of gender disaggregated data.
- This seems like low-hanging fruit where success can be easily and quickly achieved.
- This is independent of Covid. This should be a long-term goal of ICES with implementation starting now.
- Yes important but do not alienate more mature scientists, male members, diversity and inclusion should not leave anyone behind. We have already had

some feedback from senior researchers who feel left behind in the new initiatives. Perhaps more focus on mentoring?

### **Recommendation 5 – ASC**

- A combination of online presentations with digital breakout rooms has worked really well at conferences I've attended this year. Probably better than physical events.
- A suggestion from this year's ASC participant: alternate between physical and online conferences. But if hybrid is the way, please keep in mind that hybrid means double the workload.
- Agree that there should be efforts made for more remote participation in ASC, but we should not lose the immense benefits of in-person meetings in the trade-off. Other options to consider would be alternating in-person and fully remote meetings in alternate years, where the structure of the in-person meetings remains relatively the same.
- Evaluating the ASC and the next 2 upcoming conferences is an excellent idea. I hope we will all have an opportunity to weigh in again after results from all 3 conferences are in.
- Exploring new options would be good, but I hope we retain a physical conference.
- Hybrid seems the way of the future. The nominal fee for remote attendance would make sense, as most current hybrid conferences/symposia are charging the same amount for in-person and remote attendance. I believe the ASC should be in-person.
- If we can shift considerable parts of the other work of ICES to remote participation and significantly lower the travelling activity associated with these, then retaining and strengthening the ASC as the key networking and social event (e.g. combine WGCHAIRS with ASC, committees meet physically once a year at ASC, Room/capacity for WG's to have rooms for meeting a half or a whole day during ASC) is very important for ICES to retain cohesiveness of it's community.
- It is important to tackle the zero-carbon initiative, but it is equally important to network and socialize. Physical gatherings as the ASC is extremely important to exchange ideas and network, particularly since it has a less formal pressure when it is in-person in comparison to being online.
- I've been in this year ASC and I really acknowledge the effort ICES has made to make it work, but I think that virtual big conferences like this do not have much future... maybe physical every two years and something light virtual in the middle
- The ASC is a place for networking and for strengthening the feeling of the participants of being part of "The ICES Community". Please do not underestimate the value of coffee break discussions, introductions etc. as well as the personal relationships that germinates in the afternoons and evenings over a beer...
- The recommendation is good, because it opens up for partly or remote participation for people, who cannot participate physically, but the ASC is about meeting scientists and discussing new initiatives and knowledge and that is by far better in physical meetings.

**Recommendation 6 – Secretariat**

- I agree that the ICES Secretariat needs to expand given the added work needed for virtual meetings. They have been awesome this last year.
- ICES secretariat support has been outstanding in the last year, and I recognise how much work that has required from individuals. I would hope for similar support in the future, this may require additional staff.
- If you have said yes/good to the recommendation above you need to say this recommendation is good and needed. But bear in mind that COVID-19 should not clear the table, if you want progress on existing projects you need to keep resources on them until they are fully implemented.
- In regards to configuring office spaces and meeting rooms, the move to new headquarters will be an opportunity to make improvements--however, please note the Secretariat's "moving" budget is already quite tight in terms of purchasing furniture/equipment which is optimized for a hybrid working environment. It may be that additional costs are necessary in order to achieve all of our goals.
- Issues have been identified well, but how they will be resolved by solely using the resources suggested for points 1, 2 and 3 is unclear.
- Many of the staff have substantially reduced work life balance given the requirements for frequent evening meetings, and their workload has increased immensely since the start of Covid. This is unacceptable to continue in the long run. Resolve either by returning primarily to in person meetings or move to a model with remote work with staff living in other time zones to accommodate a variety of international working hours of the network.
- The level of support from the Secretariat has been exemplary over the past year+. I don't work there so I don't have a strong opinion on changes.
- The move to the new building must be thoroughly planned with the new working conditions in mind and the staff need to be consulted on major changes. As identified during the APV, there are large problems around the workload in the secretariat and these have increased with the working hours being all day long. It is impossible to support meetings all times of the day and claim to have work-life balance. And this is not a problem that can be solved by hiring more people as we still will need to participate in these afternoon/evening meetings to do our work and use our expertise.
- The Secretariat is located in Copenhagen, Denmark, thus, most work hours should be taking place in normal Copenhagen work hours - we should not have accommodate North American time zones as much as we have this past year, as this severely interferes with work-life balance.
- Work life balance and virtual meeting fatigue are key issues that need to be considered at every turn as we go forward. In addition to virtual meeting fatigue, consider that participation is often less focused for virtual meetings - meaning less can be accomplished, and while there is additional participation in terms of numbers, very few are actively participating in virtual meetings.

### **Recommendation 7 – Zero Carbon Initiative**

- Agree in principal, but the devil is in the details, while lowering carbon footprint, do not impact the important work that ICES and the Expert WG does. There must be a balanced approach.
- Although a reduction in travel may reduce a carbon footprint, the usage of technology may negate the reduction in carbon emission by lessening travel. Every Google search costs large amounts of energy, not to speak of hours upon hours of online calls that have carbon emissions. This is a under researched, but should be included in a future strategy towards reduced carbon/GHG emissions. Technology is a solution, but not always as the best or even better solution.
- Appreciate strong commitment and intent to lead by example expressed in this recommendation.
- For as far as this is about ICES as an organisation, this looks fine, when it comes to the work and travel of all EGs, it looks unachievable and out of the hands of ICES to regulate that. It is also not desirable ICES would try to do so.
- I strongly support the zero-carbon initiative but I doubt it will be cost neutral for ICES.
- ICES should establish a policy recommending purchase of carbon offsets as part of any travel claim, for ICES meetings, and more generally, so that it can be implemented by national institutes outside ICES meetings as well.
- Important to take balanced approach and moving with member countries and national policies (for secretariat). Agree much more scope for ICES science community to look at energy use, emissions in general, we made progress with offshore wind for example but the sector is really moving faster than the science
- Since ICES has no way (at the moment anyway) to offset carbon it can never become zero carbon so long as it need facilities, electricity and equipment. Even if all meetings were virtual it will not result in zero carbon use. However, ICES can seek ways to decrease its carbon footprint in all of its operations not only in meetings
- There is no such thing as zero carbon (i.e. the absence of CO<sub>2</sub> production) – this term being a misnomer for offsetting CO<sub>2</sub> production with some form of CO<sub>2</sub> consumption. Maximising the offset of production with consumption, preferably with more consumption than production.
- This is a good initiative but some of the practical solutions discussed here in order to reach the ideals behind it are a priori in disagreement with the core of ICES: the network cannot be maintained and broadened through more online/hybrid work. Additionally, the secretariat is suffering from fatigue and impossible working hours trying to accommodate and support meetings in different time zones. What is in the core of ICES and how to maintain this in this transitional phase? We need to do our part in halting the climate crisis but minimizing our CO<sub>2</sub> footprint can only be miniscule due to the aforementioned reasons. Surely, we will have much more impact by focusing on more climate related work and climate-aware advice, that would be leading the way, no?

- While zero carbon is admirable, I would not let it override the need for some physical meetings.
- Zero Carbon ambition is infeasible. For the sake of science and sustainability, some emissions are justified.

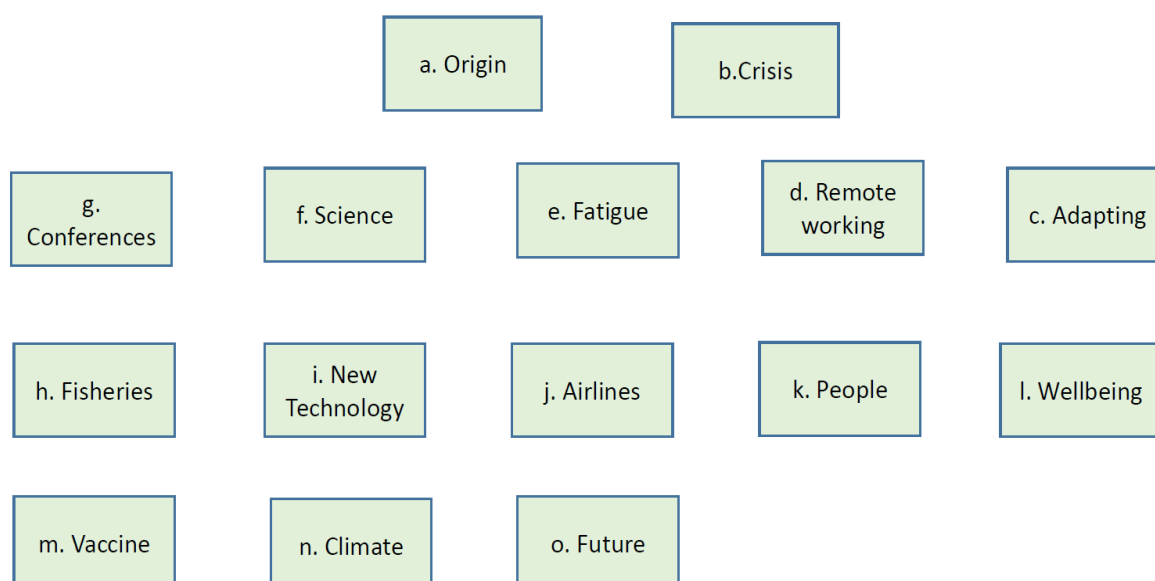


# 1 Introduction and Background

At the ICES Council meeting in October 2020, a Bureau led Council Sub Group on COVID19 (BCSGC19) was established to examine **how changes caused by the societal responses to the COVID19 pandemic will affect ICES work in the short and longer term and to provide recommendations (including new training needs) on how ICES should respond to new working norm that will emerge**. Council felt that ICES needs to prepare for a new working norm and consider a post COVID19 situation in which many scientists from Member Countries may have a very different work pattern (e.g. working from home; remote meetings). This will raise a series of issues for the current ICES “way of doing business” and may impact ICES work particularly in relation to science and advice.

The COVID19 pandemic has profoundly impacted society, organisations and individuals in many different ways. This introduction addresses a broad range of key topics that have been an integral part of the pandemic experience for all of us. Given the dynamic and evolving COVID19 landscape, the introduction draws on “recent” (2020 and 2021) published papers and consultant reports (see reference list at the end of this section). It is not intended to be a comprehensive review of the subject but more to collate a broad range of information and expert opinion that will prime discussion and ensure the Group address its TOR’s in a comprehensive and insightful way.

The 15 topics addressed (identified as “a to o”) are presented in the schematic below and include the origin of the virus, the global crisis, how society has adapted, remote working, fatigue, impact on science, conferences, global fisheries, new technology, airlines, people, wellbeing, climate and the future (the post pandemic era). Some key points from each topic are highlighted in bold and presented in the Summary (Page 1).



### a. ORIGIN

In late 2019, a novel coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was identified as the cause of an outbreak of an acute respiratory illness in Wuhan, China. In February 2020, the World Health Organisation (WHO) designated the disease as COVID-19, which stands for coronavirus disease 2019 which is the disease caused by the virus SARS-CoV-2. Since the first reports of COVID-19, the infection has spread worldwide, prompting the **WHO to declare a public health emergency of international concern in late January 2020 and characterize it as a pandemic in March 2020** (<https://www.who.int/>).

The current COVID-19 pandemic has had a pervasive effect on society, including an unprecedented toll on health, the economy, science, research and education worldwide. **On 13<sup>th</sup> October 2021, The World Health Organisation (WHO) estimate there have been 238 million cases on COVID19 globally, with 4.85 million deaths and 6.26 billion vaccines administered** (<https://www.who.int/>).

### b. CRISIS

**The COVID-19 pandemic is arguably one of the most defining crises society has experienced in the past 50 years.** Its implications are far-reaching, with no society, organisation or individual unaffected. The pandemic has had massive implications for the nature of work and the role technology plays in the workplace

**In particular, COVID-19 had an unprecedented impact on work and organisational practices. Millions of people worldwide have had to alter work patterns within organisations. Organisations have had to adopt new information technology (IT) systems during the pandemic.** Many have been forced into rapid 'big bang' introduction of technology and 'tech-driven' practices in an unprecedented and time pressured manner. In many cases there has been little training or reflection on how the practices and associated technology should be introduced and integrated or adapted to suit the new workplace context.

Many organisations have had to completely rethink their business model, moving to online services and products and engaging in new business channels to those eroded or removed by the pandemic. At the very least many are required to implement alternative workspaces in order to comply with social distancing requirements.

COVID-19 represents one of the greatest ever shocks to our economies and, in consequence, to the business models of organisations and the way they do business. While many changes to business processes and operations were already taking place prior to the pandemic, COVID19 has given many added impetus and urgency. **Decision-makers must choose between adapting a wait-and-see approach or implementing more proactive strategies to safeguard and, if possible, grow their businesses.**

### c. ADAPTING

National response measures to the COVID19 pandemic include mass gathering cancellations (for specific events or a ban on gatherings of a particular size); closure of public spaces (including restaurants, entertainment venues, non-essential shops, partial or full closure of public transport etc.); closure of educational institutions (including day care or nursery, primary schools, and secondary schools and higher education); 'stay-at-home' recommendations for risk groups or vulnerable populations (such as the elderly, people with underlying health conditions, physically disabled people etc.); 'stay-at-home' recommendations for the general population (which are voluntary or not enforced); and 'stay-at-home' orders for the general population (these are enforced and also referred to as 'lock-down'), use of protective masks in public spaces/on public transport (mutually exclusive voluntary recommendations and mandatory obligations shown separately) and also teleworking recommendations/closure of workplaces. There has been a substantial heterogeneity in these national policies and their implementation.

**Organizations have had to adapt and pivot their operations swiftly in response to the changes imposed by the health risks of COVID19, as well as the economic impact of the ongoing restrictions.** As we enter what we hope will be the start of an era of recovery, leaders may find themselves asking how they should reimagine their organizations to become stronger and more resilient in the future. Human-resources executives are playing a central role in finding more agile solutions for their employees, transforming their organizations amid the COVID19 crisis, and leading many innovative efforts to speed up a return to work through a human-centric approach

### d. REMOTE WORKING

**For many workers,** COVID-19's impact has depended greatly on one question: Can I work from home or am I tethered to my workplace? **Quarantines, lock-downs, and self-imposed isolation have pushed tens of millions around the world to work from home, accelerating a workplace experiment that had struggled to gain traction before COVID19 hit.**

Now, well into the pandemic, the limitations and the benefits of remote work are clearer. Although many people are returning to the workplace as economies reopen—the majority could not work remotely at all—executives have indicated in surveys that hybrid models of remote work for some employees are here to stay. **The virus has broken through cultural and technological barriers that prevented remote work in the past, setting in motion a structural shift in where work takes place, at least for some people.**

Now that vaccines have been approved and are being administered, the question looms: To what extent will remote work persist? **A McKinsey analysis found that the potential for remote work is highly concentrated among highly skilled, highly educated workers in a handful of industries, occupations, and geographies.** More than 20 percent of the workforce could work remotely three to five days a week as effectively as they could if working from an office. If remote work took hold at that level, that would mean three to four times as many people working from home than before the pandemic and would have a profound

impact on urban economies, transportation, and consumer spending, among other things.

More than half the workforce, however, has little or no opportunity for remote work. Some of their jobs require collaborating with others or using specialized machinery, work in a laboratory; other jobs, such as conducting CT scans, must be done on location; and some, such as making deliveries, are performed while out and about. Many of such jobs are low wage and more at risk from broad trends such as automation and digitization. Remote work thus risks accentuating inequalities at a social level.

Remote work raises a vast array of issues and challenges for employees and employers. Companies are pondering how best to deliver coaching remotely and how to configure workspaces to enhance employee safety, among a host of other thorny questions raised by COVID-19. For their part, employees are struggling to find the best home-work balance and equip themselves for working and collaborating remotely.

#### **e. FATIGUE**

**Pandemic fatigue is plaguing organizations and employees. In 2020, people endured a global pandemic, a massive economic crisis, and widespread social unrest. Layer on top of that forces that are fundamentally reshaping societies — technological innovation, business-model disruption, societal inequality, and workforce automation—and it's clear that an epidemic of stress has been building, with the COVID19 crisis as the tipping point.** In the US, 75% of employees and close to 33% in the Asia-Pacific region report symptoms of burnout. European nations are reporting increasing levels of pandemic fatigue in their populations. The number of those who rate their mental health as “very poor” is more than three times higher than before the crisis, and mental-health issues are still likely to rise. Organizations have an opportunity to do more than just “get through it,” restoring the performance and work life enjoyed before the crisis. Many employees already have a sense that we aren't likely to simply “bounce back” to how things were before the COVID-19 crisis.

**During the pandemic virtual meetings have skyrocketed, with hundreds of millions happening daily, as social distancing protocols have kept people apart physically. The, the term “Zoom Fatigue” has become a popular expression to describe tiredness, worry or burnout associated with the over-use of virtual platforms of communication, particularly videoconferencing. This fatigue arises because of 1) Excessive amounts of close-up eye contact is highly intense. 2) Seeing yourself during video chats constantly in real-time is fatiguing. 3) Video chats dramatically reduce our usual mobility. The cognitive load is much higher in video chats.**

#### **f. SCIENCE**

**The COVID19 pandemic has undoubtedly disrupted the scientific enterprise.** Policymakers and institutional leaders have already begun to respond to mitigate the impacts of the pandemic on researchers. For instance, many universities are making accommodations for their researchers, and the US government

has allowed temporary flexibility in grant conditions. However, we lack evidence on the nature and magnitude of the disruptions scientists are experiencing.

**The pandemic appears to have affected scientists working in different disciplines unevenly.** Scientists working in fields that tend to rely on physical laboratories and time-sensitive experiments—bench sciences such as biochemistry, biological sciences, chemistry and chemical engineering—reported the largest declines in research time, in the range of 30–40% below pre-pandemic levels. Conversely, fields that are less equipment-intensive—such as mathematics, statistics, computer science and economics—reported the lowest declines in research time. The difference between fields can be as large as fourfold.

In a recent survey conducted by Myers et al. (2020), **there were substantial differences between male and female respondents in how the pandemic had affected their work. Female scientists and scientists with young dependents reported that their ability to devote time to their research has been substantially affected, and these effects appear additive: the impact is most pronounced for female scientists with young dependents.**

The findings regarding the impact of childcare reveal a specific way in which the pandemic is impacting members of the scientific community differently. Indeed, ‘shelter at home’ is not the same as ‘work from home’ when dependents are also at home and need care. Because childcare is often difficult to observe and rarely considered in institutional research policies (aside from parental leave related to birth or adoption), addressing this issue may be an uncharted—but important—new territory for institutional leaders.

Female respondents reported larger declines in the time they could devote to research than their male colleagues. Scientists with young children appear to have been particularly hard-hit, especially women, who remain primarily responsible for childcare. It is therefore important that institutions and funding bodies take into consideration the consequences of policies adopted to respond to the pandemic, as they may disproportionately disadvantage specific groups of scientists and worsen existing disparities.

#### **g. CONFERENCES**

**As the coronavirus pandemic marches around the world, leading to strictly enforced measures to stop the virus’s spread, the number of scientific conferences cancelled in 2020 and 2021 was unprecedented.** Researchers were scrambling to find alternative ways to share their work and interact with collaborators. Some of these discussions are even pushing researchers to rethink the concept of conferences entirely. Many organizers and participants have turned to online platforms as a way to share work, creating virtual conferences that mimic at least some parts of a physical meeting. **Conversations about the point of a conference are happening in the science community. Although cultural changes happen slowly in the scientific world, change is in the air. The conference shift could help to address long-standing calls to make meetings more accessible to a wider set of researchers, for instance those from resource-poor universities and those with disabilities.** Furthermore, many researchers already complain about the relentless expectation of travel and worry about the carbon footprints they create by taking international flights. The

new conference norm could improve accessibility, cut down on researchers' carbon footprints and reach a wider audience than a conventional meeting could. Participants will watch recorded talks ahead of time and then join in online conversations on the day of the conference.

#### **h. FISHERIES**

Many fisheries and marine science organizations are working to determine how to meet their missions in the midst of the COVID19 outbreak. It is prudent to exchange ideas, share knowledge, and initiate a discussion around how to operate during the pandemic. The scientific leadership team for NOAA Fisheries, have offered some perspectives and explored the potential challenges posed by COVID-19 and to purposefully ascertain whether there are strategic opportunities for improving how we conduct our operations. This has allowed NOAA to find ways to mitigate the effects of COVID19 on their mission and also to glean information from their responses. The recommendations will not solve every problem, but the dialogue allowed teams and organisations to learn from each other and engage in dialogue to advance much-needed changes (Link et al 2020).

The COVID19 situation is unprecedented, at least in the context of the past 100 years of fisheries science and management. Certainly, there have also been temporary shocks to fisheries systems due to acute pulse events such as hurricanes, oil spills, etc. (McLaughlin 2008). But mostly those have been short-term and highly regional in nature, not impacting the entire national fisheries science and management system. The closest lessons one can learn would likely be from the influenza pandemic from circa 1918 (Reid et al. 2001; Niall et al. 2002; deValpine 2015), but the machinery to manage fisheries was not nearly as established then as it is today. Lessons one can learn from the 1918 situation, acute events, and the current COVID-19 situation include the need to uphold all the human health and epidemiological guidelines while (often creatively) maintaining our ability to monitor, measure, and manage fishes to provide seafood for the nation. **The salient point from our current and historical situation is that although what follows focuses on our mission, the health and safety of the many fisheries professionals working at NOAA Fisheries, of our partners, of our stakeholders, and of the communities in which we work remains a priority (Link et al, 2020).**

**The global COVID19 pandemic is impacting on the fisheries sector and posing significant challenges for the management of transboundary fisheries.** Due to travel bans and border closures, regional organizations are not able to hold face-to-face meetings. This commentary provides a summary of the meeting procedures of Regional Fisheries Management Organizations and Regional Organizations during the global pandemic. Most organizations have transitioned to online platforms and are holding virtual meetings. **These online meetings impose significant challenges concerning sustainable fisheries management, such as limited discussions and negotiations on important issues. Thus, to continue their work effectively, these organizations need to develop new decision-making procedures that are more resilient in the upcoming future.**

The COVID19 pandemic has significantly disrupted the management of global fisheries. **An analysis conducted by the Food and Agriculture Organization (FAO) revealed that 44% of Regional Fisheries Management Organisations**

**(RFMOs) believe that the pandemic will negatively impact the sustainable management of fish stocks** [1]. Reasons included, inter alia, the lack of physical meetings and the decline of inspections and observer coverage [1]. It is highly likely that travel bans and border closures will continue throughout 2021, further impacting on the ability of RFMOs to implement their conservation and management responsibilities. For example, the Australian government's budget forecast assumes that international travel will not resume until the end of 2021 [2]. This poses significant challenges to effective management, particularly in transboundary fisheries that require complex and regular negotiations to adopt, implement, and monitor conservation and management measures. This commentary summarizes the different responses of RFMOs and Regional Organizations towards the global COVID19 pandemic.

#### **i. NEW TECHNOLOGY**

There is no question that the way we work has fundamentally changed due to the COVID19 pandemic. Organizations have had to find ways to quickly implement digital solutions to allow for productive and efficient remote working conditions. **According to a new McKinsey Global Survey of executives, companies have accelerated the digitization of their customer and supply-chain interactions and of their internal operations by three to four years. Additionally, the share of digital or digitally enabled products in their portfolios has accelerated by seven years.** COVID19 is taking place throughout the end-to-end supply chain, with faster and broader adoption of data and predictive analytics, cognitive automation and AI, application and infrastructure platforms, digital reality, digital supply networks, smart factories, and e-commerce. Providing at least a temporary infrastructure for connected digital technologies, has allowed for scientists to make revolutionary breakthroughs, and businesses to work more efficiently than ever during the COVID19 pandemic.

**While the pandemic has caused an acute disruption in the world of digital transformation, the pay offs have proved to be a worthwhile investment and have therefore, accelerated many businesses' long-term digital strategies.** The focus on creating a digitally connected laboratory environment to automate and accelerate science, remains a focus in the pharmaceutical industry. As we have learned, digital enablers such as AI, machine and deep learning, blockchain, digital analytics and delivery, and process automation are central to creating more agile research and development processes. These technologies all accelerate a specific component of the R&D process, but the real efficiency gains come from these technologies being connected.

#### **j. AIRLINES**

McKinsey report that it is difficult to overstate just how much the COVID-19 pandemic has devastated airlines. In 2020, industry revenues totalled \$328 billion, around 40 percent of the previous year's. In nominal terms, that's the same as in 2000. The sector is expected to be smaller for years to come; we project traffic won't return to 2019 levels before 2024. Financial woes aside, the pandemic's longer-term effects on aviation are emerging. Some of these are obvious: hygiene and safety standards will be more stringent, and digitalization will continue to transform the travel experience. Mobile apps will be used to store travellers' vaccine certificates and COVID19 test results.

Other effects, though, are more profound. Unlike the 2008 global financial crisis, which was purely economic and weakened spending power, COVID19 has changed consumer behaviour — and the airline sector — irrevocably.

**Business travel will take longer to recover, and even then, we estimate it will only likely recover to around 80 percent of pre-pandemic levels by 2024. Remote work and other flexible working arrangements are likely to remain in some form post-pandemic and people will take fewer corporate trips.**

When demand for air travel returns, it will likely outpace supply initially. There will be

a glut of latent demand of people eager to travel. It will take time for airlines to restore capacity, and bottlenecks such as delays in bringing aircraft back to service and crew retraining could lead to a supply–demand gap, resulting in higher short-term prices.

The impact of the COVID19 pandemic is far from over. There is some relief to be found in various parts of the world now that vaccinations have begun, but the road to recovery for air traffic will take several years. The shape of the post COVID19 airline sector is becoming clearer and holds lessons for airlines today. Multiple longer-running trends have been accelerated, such as digitization and the phasing out of less efficient aircraft. Burdened by debt, many carriers have depleted their cash reserves. But the forecast is not without bright spots. **Travel will become greener and more efficient, and people are itching to travel again for holidays. Taking steps now will help airlines thrive in this transformed sector (Refs. Xxx).**

#### **k. PEOPLE**

**COVID19 has brought about an enormous sense of uncertainty for most people. In the workplace, team members are looking up to leadership to make sense of what is happening and what it means for their job security, livelihoods and their families; forcing leaders to step up into being open and honest. In the immediate term employees will be looking for their leaders to be flexible, open to changes in work patterns, empathetic to personal situations and to really listen.** However, leaders who want to be effective and respected in the long run need to respond to the emerging movement of **employees who are looking for more meaning, happiness, and connectedness at work.** As a leader, sharing your values with your team in times of uncertainty can provide the team with a sense of security because they know what is important to you. Open and honest communication – even around difficult topics – during these times is crucial. Following up words with actions that are aligned will build trust, not only in the immediate term but also for the future. Coming out of this crisis our workforce will be looking for employers who have their backs, whom they can trust to lead them through difficult times authentically as and when they arise again; and who will be providing a sense of purpose throughout and after. **This could be the greatest chance yet to attract and retain the best talent by creating a sense of belonging and loyalty, even amongst our restless workforce.**



Emerging evidence on the impact of COVID19 suggests that women's economic and productive lives will be affected disproportionately and differently from men. COVID19 is not only a challenge for global health systems, but also a test of our human spirit. Recovery must lead to a more equal world that is more resilient to future crises. Fiscal stimulus packages and emergency measures to address public health gaps have been put in place in many countries to mitigate the impacts of COVID-19.<sup>1</sup> It is crucial that all national responses place women and girls - their inclusion, representation, rights, social and economic outcomes, equality and protection - at their centre if they are to have the necessary impacts. This is not just about rectifying long-standing inequalities but also about building a more just and resilient world. It is in the interests of not only women and girls but also boys and men. Women will be the hardest hit by this pandemic but they will also be the backbone of recovery in communities. Every policy response that recognizes this will be the more impactful for it (UN Report, 2020).

## I. WELLBEING

**The COVID-19 pandemic has made it painfully clear that the wellbeing of the workforce is in jeopardy.** At a time when more than half of Americans say the pandemic has negatively affected their mental health, employees are needing and increasingly demanding additional support from their employers. A 2020 McKinsey report showed that 62 percent of employees globally consider mental-health issues to be a top challenge during the COVID-19 crisis, with higher reporting among diverse groups. The same report paints a picture of employers that are scrambling to meet the moment: 96 percent of companies globally provided additional mental-health resources to employees, but only one in six employees reported feeling supported.

**Coaching and formal learning opportunities improve the ability of staff to problem solve, present, communicate, resolve conflict, and lead at work. In the same way, wellbeing should be treated as a business-critical skill that can be improved through training and development programs.** It is crucial that leaders value their colleagues 'and peers' wellbeing just as much as their technical skills, and it is their responsibility to model positive behaviour and prioritize supporting their colleagues' own efforts. It could be as simple as building in wellbeing check-ins as part of team meetings and ensuring that key resources in an open way and backing it with significant action, leaders can eliminate a work culture that implies work should come before personal needs—and empower employees to invest in themselves so that they can be at their best for others.

## m. VACCINE

**The speed of COVID-19 vaccine development has been an unqualified success.** The approvals for vaccines made by Pfizer and BioNTech, Moderna, Oxford and AstraZeneca, Sinopharm, Serum Institute, Bharat Biotech, Gamaleya, and others within a year of viral sequencing smashed all records for development timelines. However, rollout is off to a slow start in many countries. While countries such as Israel have shown what is possible, many countries have fallen behind their targets due to vaccine supply difficulties and public concerns about side effects.

Mckinsey report that the transition toward normalcy will occur when COVID-19 mortality falls and the disease is de-exceptionalized in society. COVID-19 will not disappear during this transition, but will become a more normal part of the baseline disease burden in society (like flu, for example), rather than a special threat requiring exceptional societal response. During this transition, controlling the spread of SARS-CoV-2 will still require public-health measures (such as continued COVID19 testing and mask use in many settings), but mortality will fall significantly, allowing greater normalization of business and social activities. This will be driven by a combination of early vaccine rollout (which, being directed first at those at greatest risk, should reduce deaths faster than cases), seasonality, increasing natural immunity, and stronger public-health response.

It can be reasonably expected that the COVID19 pandemic will abate. However, much work remains to be done. In the short term, public-health measures can help control the pandemic, but even when herd immunity is achieved, managing the risk of COVID-19 will require monitoring, potential revaccination, and treatment of isolated cases and new variants. Every country has its own COVID-19 story, but those stories will eventually reach some kind of ending.

#### n. CLIMATE

Nature report that **Government policies during the COVID19 pandemic have drastically altered patterns of energy demand around the world**. Many international borders were closed and populations were confined to their homes, which reduced transport and changed consumption patterns. **Daily global CO2 emissions decreased by -17% (-11 to -25% for  $\pm 1\sigma$ ) by early April 2020 compared with the mean 2019 levels, just under half from changes in surface transport**. At their peak, emissions in individual countries decreased by -26% on average. The impact on 2020 annual emissions depends on the duration of the confinement, with a low estimate of -4% (-2 to -7%) if some restrictions remain worldwide until the end of 2020. Government actions and economic incentives post crisis will likely influence the global CO2 emissions path for decades.

Five years after the adoption of the Paris Climate Agreement, growth in global CO<sub>2</sub> emissions has begun to falter. The pervasive disruptions from the COVID19 pandemic have radically altered the trajectory of global CO<sub>2</sub> emissions. Contradictory effects of the post-COVID19 investments in fossil fuel-based infrastructure and the recent strengthening of climate targets must be addressed with new policy choices to sustain a decline in global emissions in the post-COVID19 era.

Nature report that **the growing commitments by countries to reduce their emissions to net zero within decades provides a substantial strengthening of climate ambition**. This is now backed by the three biggest emitters: China (by 2060 but with few details on scope), the United States (by 2050 as detailed in President Joe Biden's electoral climate plan)<sup>20</sup> and the European Commission (by 2050 with strengthened ambition of at least 55% reduction by 2030). **The effective implementation of these ambitions, both within and beyond COVID19 recovery plans, will be essential to change global emissions trajectory. Most current COVID19 recovery plans are in direct contradiction with countries' climate commitments.**

### o. The FUTURE

The business landscape will likely look a lot different after COVID19. It would be a mistake to look for a one-size-fits-all plan. Every industry will face unique challenges. Some industries will be permanently damaged by what they have gone through. Other industries will benefit from changed conditions and attitudes. In any case, businesses that meet these changes with innovative thinking will have the best chance of prospering. Artificial intelligence (AI) will get embedded everywhere. I think manufacturing is at the cusp of that transformation. The biggest thing in manufacturing post-COVID-19 is how the Internet of Things and AI can make manufacturing more efficient, effective, and automated. Primary and secondary education, having tried fully online and mixed models, will have experience in what does and doesn't work. For parents, there will still be a need for the in-person function of schools. Post-secondary education will change more radically post-COVID19.

Forbes report that colleges have been selling "the college experience" for years, and it has become so expensive that many students will be attracted to online learning, especially if offered by established universities. And by transitioning to more online courses, colleges can move from classes taught by teaching assistants to allow more students to learn from professors. Health care is perhaps the field most directly impacted by COVID19. Telemedicine will be a boon not only for patients in remote areas but for everyone. Health care is perhaps the field most directly impacted by COVID19. Telemedicine will be a boon not only for patients in remote areas but for everyone.

The lesson of COVID19 is that disruptions to your business will come, and you will not be able to predict the timing or form. There will no doubt be another pandemic. And we won't know until we're in it. But companies that build this scenario into their planning will come out ahead. More employees working off-site will not just mean an investment in new technology for remote work; the relationship between management and employees will change. Nobody really knows yet how that will unfold. But the strategy for riding out all of these disruptions is the same: Prioritize innovation. That is the key to surviving in the post-Covid-19 world.

**COVID19 will be remembered as the virus that stopped the world. We are all living through a period that can only be described as the greatest act of solidarity in history, as people give up civic freedoms to save lives. While we all agree that managing the health crisis is the overwhelming priority, the social and economic consequences are, and will be, dramatic in an already troubled world.** Above all, technology now allows the demands of work to permeate our lives 24 hours a day, seven days a week. There is a clear case for businesses to build their employees' skills for wellbeing. The actions businesses take through this current global crisis will make us stronger in the future. As we navigate the challenges of today, our capacity to foster wellbeing in the face of uncertainty will determine the strength of our leadership tomorrow.

## Key References that Guided the Crafting of the Introduction.

*(There are also additional useful National References on the ICES BCSGC19 Sharepoint Site)*

1. Coll, M. (2020). Environmental effects of the COVID-19 pandemic from a (marine) ecological perspective. *ETHICS IN SCIENCE AND ENVIRONMENTAL POLITICS* Vol. 20: 41–55, 2020 <https://doi.org/10.3354/esep00192>
2. Brendan Kennelly , Mike O’Callaghan , Diarmuid Coughlan , John Cullinan , Edel Doherty , Liam Glynn, Eoin Moloney , Michelle Queally (2020). The COVID-19 pandemic in Ireland: An overview of the health service and economic policy response. *Health Policy and Technology*. Volume 9, Issue 4, December 2020, Pages 419-429 <https://www.sciencedirect.com/science/article/pii/S2211883720300952?via%3Dihub>
3. Ernest and Young (2020). Beyond Covid 19; what will define the new normal. Ernest and Young Global Think Tank. <https://www.sciencedirect.com/science/article/pii/S2211883720300952?via%3Dihub>.
4. McKinsey (2021). The New Normal, Reimagining Operational resilience – Building Future Proof Strategies. McKinsey Global Publications. PP.197.
5. EU Directorate-General for Research and Innovation (2020). Improving pandemic preparedness and management; Lessons learned and ways forward. Group of Chief Scientific Advisors, European Group on Ethics in Science and New Technologies Special advisor to President Ursula von der Leyen on the response to the coronavirus and COVID-19 Joint Opinion Brussels, 11 November 2020. PP. 96. [https://europa.eu/european-union/contact\\_en](https://europa.eu/european-union/contact_en)
6. Doyle, J. and Walsh, K. (2020). Recovering from COVID-19 through a Green Lens. Oireachtas Library & Research Service (2020). L&RS Spotlight: N0.4, 2020. PP.23.
7. OECD. “Making the Green Recovery Work for Jobs, Income and Growth.” Accessed September 24, 2020. <https://www.oecd.org/coronavirus/policy-responses/making-the-green-recovery-work-for-jobs-income-andgrowth-a505f3e7/>.
8. IMF Fiscal Affairs (2020). Greening the Recovery. <https://www.imf.org/~media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19-greening-the-recovery.ashx?la=en>
9. Jeffrey Cimmino, Rebecca Katz, Matthew Kroenig, Josh Lipsky, and Barry Pave (2020). A Global Strategy for Shaping the Post-COVID-19 World. Scocroft Center for Strategy and Security. Atlantic Strategy Council papers. PP.54
10. Deloitte (2020). COVID-19 Aviation’s recovery flight plan Stronger ecosystem collaboration needed. Preparing for the New Norma. Deloitte International Group. PP.10.
11. Anon (2020). Wellness in the workplace – Unlocking Future Performance. CBRE. PP. 27.
12. Anon (2020). Post-COVID recovery plan for a stronger digital Europe. Digital Europe. PP.8. <https://www.digitaleurope.org/resources/how-to-relaunch-manufacturing-in-a-post-covid-19-world>.
13. Eurofound (2020). Living, working and COVID-19. COVID-19 series, European Foundation for the Improvement of Living and Working Conditions, 2020. PP. 66. Publications Office of the European Union, Luxembourg. <http://eurofound.link/ef20059>.
14. McKinsey (2020). The future of work in Europe. Automation, workforce transitions, and the shifting geography of employment. McKinsey Global Institute. Discussion Paper. June 2020. PP.46. <https://www.mckinsey.com/mgi/overview>.

15. OECD (2020). Building Back Better: A Sustainable, Resilient Recovery after COVID-19. PP. 16. OECD - <https://www.oecd.org/coronavirus/en/>.
16. McKinsey (2021). The postpandemic economy. The future of work after COVID-19. McKinsey Global Institute. PP.140.
17. Noel Carroll\*, Kieran Conboy (2020). Normalising the “new normal”: Changing tech-driven work practices under pandemic time pressure. International Journal of Information Management. 55. 2020. Opinion Paper. <https://doi.org/10.1016/j.ijinfomgt.2020.102186>.
18. Anon. (2021) Making Remote Work. National Remote Work Strategy. Government of Ireland. PP. 30.
19. McKinsey (2020). Climate Change. McKinsey and Company. September 2020. PP 213. <https://www.mckinsey.com>
20. Anon (2021). National Strategy for the COVID-19 Response and Pandemic Preparedness. The US White House. January 2021.
21. KPMG (2020) The importance of Workforce Transformation in a COVID-19 world. KPMG Viewpoint. April 2020. PP.4.
22. McKinsey (2020). The Next Normal – The Recovery will be Digital - Digitizing at speed and scale. McKinsey and Company. August 2020. PP. 158. <https://www.mckinsey.com>
23. UN (2020). Research Roadmap for the COVID-19 Recovery. Leveraging the Power of Science for a More Equitable, Resilient and Sustainable Future. UN. November 2020. PP.126. <https://www.un.org/coronavirus>.
24. UN (2020). COVID-19 and the Need for Action on Mental Health. UN Policy Brief. 13<sup>th</sup> May 2020. PP. 17. <https://www.un.org/coronavirus>.
25. UN (2020). The World of Work and COVID-19. UN Policy Brief. June 2020. 17. PP.27 <https://www.un.org/coronavirus>.
26. McKinsey (2021). When will the Global Pandemic End. An Update. McKinsey Group. January 2021. PP.8. <https://www.mckinsey.com>
27. PWC (2019). Workforce of the future: The competing forces shaping 2030. PWV 2019. PP. 41. <https://www.pwc.com/people>.
28. Levine, R., Rathmell, W.K. (2020). COVID-19 impact on early career investigators: a call for action. Nature Reviews. CANCER. Vol. 20. July 2020. <https://nature.com>.
29. Viglione, G. (2020). A year without conferences? How the coronavirus pandemic could change research. Nature. 597. March 2020. <https://nature.com>.
30. IMF (2020). A Crisis Like No Other, An Uncertain Recovery. IMF. June 2020. PP.20. <https://www.imf.org/en>
31. WEF (2020). Challenges and Opportunities in the Post-COVID-19 World. World Economic Forum, Insight Report. June 2020. PP. 63. <https://www.weforum.org>.
32. Kyle R. Myers, Wei Yang Tham, Yian Yin, Nina Cohodes, Jerry G. Thursby, Marie C. Thursby, Peter Schifer, Joseph T. Walsh, Karim R. Lakhani and Dashun Wang (2020). Unequal effects of the COVID-19 pandemic on scientists Nature Human Behaviour. July 2020. Comment. <https://doi.org/10.1038/s41562-020-0921>.

33. Le Quere, C. et al. (2020). Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement. *Nature Climate Change* | VOL 10 | July 2020 | 647–653 | [www.nature.com/nature/climatechange](https://www.nature.com/nature/climatechange).
34. Link, J et al. (2021). A NOAA Fisheries science perspective on the conditions during and after COVID-19: challenges, observations, and some possible solutions, or why the future is upon us. *Can. J. Fish. Aquat. Sci.* 78: 1–12 (2021) [dx.doi.org/10.1139/cjfas-2020-0346](https://doi.org/10.1139/cjfas-2020-0346)
35. Rust, M. (2020). A good enough, crowd-sourced guide to planning and running virtual meetings. Unpublished Guidance Document. Version 1.
36. Ahearne, A. Hynes, S. (2021). Challenges and Opportunities for Ireland's Major Ocean Economy Industries. SEMRU, Whitaker Institute, NUI Galway 29 June, 2020. PP19.
37. Connolly, P and Kelly, C. (2020). Lessons Learned in Working through the 2020 COVID-19 pandemic. Some thoughts and recommendations from Ireland. Discussion Document to ICES Council 2020. Del. Doc. 2.2.1. PP. 12
38. Robinson, B. (2021). The future of work: what the post pandemic workplace holds for remote workers. *Forbes Views*. PP6. <https://www.forbes.com/sites/bryanrobinson/2021/05/02/future-of-work-what-the-post-pandemic-workplace-holds-for-remote-workers-careers/?sh=7110b9f77f5b>.
39. McKinsey (2021). Back to the future: Airline Industry poised for change post COVID19. McKinsey viewpoint. PP. 6 <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/back-to-the-future-airline-sector-poised-for-change-post-covid-19>

**FOOD FOR THOUGHT – POST COVID19 RECOVERY**

There is growing hope that we will begin to see a recovery in both public health and the economy this year. What do you think the return to work is going to look like?

Leena Nair: I must say that we all must be hugely optimistic but have a sense of gritty optimism, which means it will be longer than we think it's going to be. Everything we're thinking about—return to office, return to travel, return to some semblance of normalcy—is going to take a little longer than we think when we look at some of the vaccine-efficacy rates, at the vaccine-deployment successes, at the challenges across the world to make all of this happen. So stay optimistic. But stay optimistic with a good dose of realism.

How are we thinking about this at Unilever? The office is important, but you don't need to be in the office five days a week. We've shown that. We think across the world, and it really depends on local context. People will come back to the office, whether it's two days, three days, four days. It's what we're calling a hybrid work arrangement, with a physical workspace and a digital workspace.

We're rethinking our physical workspace entirely to create more connections, more collaboration. We are also thinking about the digital workspace and how we can make that experience better—where we continue to work digitally but build in some of the social-capital rituals as well.

I know that we need flexibility based on the roles our people play, on the countries they come from, and on their own personal lifestyle and needs. I do think leaders have seen that a new way of work is possible. This moment has helped change the mindset of leaders, including our own, to believe that this is possible. We can reinvent work—or at least we can try. People have tasted something new, so they may be more keen to try and make new ways of working work.

McKinesy Interview with Leena Nair,  
Chief Human Resources Officer, Unilever  
March 2021

## 2 Approach to Addressing our TOR's

The four TOR's for BCSGC19 are given in Appendix 1. The list of Participants is given in Appendix 2. It was critical to the work of BCSGC19 to have the leaders of ACOM, SCICOM, Data/Information and the Secretariat participating in the Group. The list of BCSGC19 meetings is given in Appendix 3

TOR1 focused on ICES and the impacts and lessons learned from the pandemic on work processes and outputs, including measures put in place to mitigate these impacts and the impact on staff. The approach taken by the BCSGC19 draws on the material in two lessons learned document presented to Council in October 2020. The Group also used feedback from a survey of the ICES staff in March 2021. The ICES experiences of 2021, published papers, reports and discussion by the Group. The outputs reflect on the new norms that may emerge in the post pandemic era, against a background of great uncertainty.

TOR 2 dealt with the impact of the COVID19 pandemic on the ICES Member Countries and the future impacts on their marine science community. The Group felt that it would "not" be useful to conduct a survey of "all" ICES Member Countries given the dynamic and variable situation in each country and the uncertainties around the future direction of the pandemic and post COVID recovery. Furthermore, "survey fatigue" could also lead to a poor response rate from Member Countries and would also eat into the limited working time of the Group. The Group made use of existing survey information collected by other organisations (e.g. Two European Marine Board Surveys).

TOR 2 of BCSGC19 sought a "snapshot" and used the views of ICES delegates from a selection of Member Countries. 10 Member states were approached to give their Delegates views on how COVID had impacted their marine science community and on future prospects and issues in a post COVID era.

The TOR 3 focused on the new training needs that will emerge in the post COVID era, particularly in relation to remote working methods and approaches that address the nature and objectives of the different types of ICES meetings. It also focused on new training requirements for the implementation of the recommendations that emerged from the work of BCSCC19 (Training is a key enabler).

The TOR 4 provides a linked package of 7 recommendations on how ICES might prepare for and adapt to new ways of working that will emerge in a post COVID19 landscape. These recommendations also give the owner; implementer / implementation, additional resources required and the estimated costs.

An important element of the work of BCSGC19 was to link with the work of the BCGC19 to the Zero Carbon Initiative. The approach was to examine the TOR of the Zero Carbon Group and identify common areas. TOR 2 of the Zero Carbon Group (Appendix 4) established the linkage with the work of BCSGC19. Furthermore, the Turrell (2019) paper, which was used to develop the thinking in the Zero C Group developed a series of 13 Actions (Appendix 5) three of which were



addressed in the work of the BCSCC19. Recommendation 7 offers some views on how the Zero Carbon initiative might progress and a checklist for a sustainable and responsible organisation is provided in Appendix 6.

A key approach by BCSGC19 was to use existing material (e.g. reports, published papers, surveys, data and information) in order to avoid duplication of effort with other initiatives and avoid the gathering of new information that will require a lot of additional work. BCSGC19 was sensitive to “survey response fatigue” and avoided unnecessary new surveys of the ICES community and its stakeholders. Furthermore, given the fast evolving and dynamic nature of the pandemic, survey information becomes outdated very quickly. Where specific key gap areas were identified, could be delivered with the resources available to the Group and within its work timeframe.

BCSGC19 operated in a flexible/agile manner as the COVID19 pandemic continued to evolve during 2021. The Group operated at a strategic level and provide recommendations that aim to guide and enhance the ICES organisation in a post pandemic era.

BCSGC19 worked throughout 2021 via 8 online Team meetings. Intercessional work (homework) and regular updates to the ICES Bureau on progress were key elements of the work programme. The draft BCSGC19 report was presented for and approved by the Bureau meeting at the end of August. The list of BCSGC19 meetings and updates to Bureau are given in Appendix 3.

In the spirit of openness and transparency, in September 2021, the draft report was circulated to the ICES community for comment and feedback. The comments were incorporated into the BCSGC19 Report and will be addressed during the implementation phase of the recommendations (subject to Council approval).

The Final Draft Report of BCSGC19 will be considered by the ICES Council at their meeting in October 2021.

### 3 Addressing TOR 1 – ICES and the Lessons Learned

ICES COVID19 Response – Longer-term considerations – based on experience from on-line work. This document outlines the experience gained by ACOM, SCICOM and the Secretariat during the COVID-19 pandemic, and suggests ways to address these issues (DEL-DOC-22 ICES Council 2020)

#### 3.1 Experience with Increased Levels of Online Work

##### Challenges

###### **On-line meetings take longer time to prepare**

The majority of the guidelines/processes have been developed for physical meetings. It thus takes time to make this into on-line practises. Shorter and more frequent meetings are time-consuming to prepare, especially for the chairs and the Secretariat. E.g. advance consideration and preparation of tools to gauge consensus/decisions; increase in the data-entry tasks required for registering additional meetings and participants in the Resource Coordination Tool and other administrative systems.

###### **On-line meetings have difficulties to deal with strategic issues and complicated or contentious issues**

Due to the limited personal interaction, and the difficulties in these circumstances to have in-depth discussion around more complicated issues, there has been a deferral of strategic and contentious issues.

###### **On-line meetings have seen a tendency to centralize decision-making in a smaller pool of individuals**

Due to the limited personal interaction there has been less activity on the fora, and less engagement by the members. This has resulted in an increased influence by centralised members (for example, ACOM leadership). Shorter meetings with increased participation may constrain potential for all perspectives to be heard.

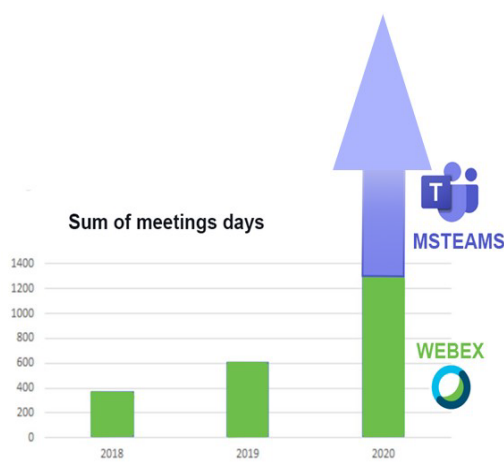
While English is the working language of ICES, remote meetings can be more challenging for non-native English speakers, who may be less likely to speak in an online meeting; we have seen increased interaction/intervention through online messaging and this may favour, or be favourable to less confident speakers.

###### **On-line meetings make it difficult to sense the mood of the network**

The inability to informally chat, has resulted in an inability to read the mood of the network and science community; both for ICES meetings and for meetings outside the network. This has large implications in terms of inter-organisational relationships, preparing for ICES meetings and decisions, listening to feedback from stakeholders and requesters of advice, hearing of innovations and developments relevant to ICES advice.

## Online meetings lack some of the incentives of physical meetings

It has been specifically difficult to attract benchmark reviewers.



### The Growth in Virtual Meetings (WEBEX and Teams) at ICES (2018 to 2020)

In 2018 – ICES was already using Virtual Meetings (WEBEX) @ about 400 Days in 2018 – 8 Days per week. NO TEAMS

In 2019 – WEBEX Virtual Meetings increased to about 600 Days in 2019. – 12 Days per week. NO TEAMS.

In 2020 (First COVID Year) WEBEX Virtual Meetings at ICES reached about 1,300 Days – 25 Days per week just in WEBEX. TEAMS was Introduced and Virtual meetings Days went “through the roof” putting major pressure on the System (particularly on the Secretariat).

*These WEBEX meetings figures are “relative” and are to illustrate the large increase in ICES Virtual Meetings between 2018 and 2020. There are no reliable TEAMS usage statistics for 2020 – but we know the number is much more than WEBEX.*

**Figure 3.1 - The growth in the number of ICES WEBEX Meetings Days during 2018 to 2020 (Note ICES did not use Teams in 2018 and 2019).**

In 2018, ICES was using remote meetings, via WEBEX, to facilitate participation at physical meetings (about 8 WEBEX Meetings Days per week). In 2019 the number of WEBEX meetings increased to about 12 Meeting Days per week. The COVID19 pandemic in 2020 resulted in a further increase to circa. 25 WEBEX Meetings Days per week. In 2020, TEAMS was introduced and the number of virtual meetings “went through the roof” putting major pressure on the system. Supporting these large number of on-line meetings put a considerable strain on the ICES Secretariat in 2020 (and in 2021).

## Online meetings and the shift to remote work require a consideration of trade-offs in efficiencies.

The shift to online meetings has allowed for more frequent meetings throughout the year, as opposed to concentrated work in short periods. There has been an increase in remote meetings overall and expectation that people should be available, constant multi-tasking may not be an efficient/sustainable working strategy. Travelling to a meeting often means people are dedicated to a task/ICES work and are able to work in the margins of the meetings without home responsibilities. On the other hand, we also heard people appreciating more meetings as giving more continuation throughout the year. And being able to focus on one task per meeting being efficient.

**Online meetings have led to a tendency to postpone decisions, or delay the closure of work/activities in advice production, leading to spread out consultations and delayed final approval of advice.**

There is an increasing trend to use the opportunities to meet again at short notice, to delay final decisions, or suggest more consultations. This spreads out the production of advice, and requires more investment in expert, ACOM and secretariat time and effort. This also threatens the independence of the advice, as only the most tenacious engage with the longer process, leading to potential bias, and also challenges the quality assurance of advice, if last minute data/knowledge are brought into the process at the last minute.

## **Opportunities**

### **Online meetings are shorter and more focussed**

Due to different time zones, and the need to keep the focus and concentration of the participants, online meetings are shorter and focus on a limited number of ToRs that are achievable. There is therefore a need to balance expectations of what can be achieved during the meeting. Some groups have seen a greater uptake of 3<sup>rd</sup> party online tools to aid the work in the meeting i.e. online polls, mind-mapping which have been immediately available and useable in the EG outputs, as opposed to 'paper formats' which have not readily been translated into EG report contributions.

### **Online meetings attract greater participation**

Compared to 2019 (2400) we have seen an increase in the number of participants (2900), which is reflecting similar increases from earlier years. Based on available data, it seems to be the existing network of experts participating in more meetings. However, we do not have an overview of how inclusive our meetings are, in terms of diversity, Early Career Professionals, and gender equality. (see Myers et al., 2020 - Unequal effects of the COVID-19 pandemic on scientists).

## **Potential Solutions and Way Forward**

### **Differentiating between meetings needing physical, on-line only and Physical/online format**

Based on issues discussed (e.g., updates/technical/formalities/strategic/contentious issues) there's a need to make an initial list of meetings to be conducted physically, on-line and in physical/on-line format.

### **Understanding and agreeing on the support given to the different types of meetings, and the resource demands this creates, in the light of a potential increase of meetings – resource needs**

The amount of administrative and technical, as well as other support needed for the different kinds of meetings will be paramount in deciding on the needed resources, in both the Secretariat and the Member Countries. It will also be important to decide which tools are to be supported by the Secretariat. Figures will be compiled on number of meetings conducted during the COVID-19 restrictions, as compared to pre-COVID periods.

**Potential future physical/online meetings need to ensure same ability for remote participants to contribute and interact as those present in the room**

For the physical/online meetings (some participants online, some participants attending physically) there are special challenges, and it is very important to ensure equal opportunities to interact and participate for all participants.

**Understanding the training needs for the different meeting formats, considering specific issues, and setting priorities**

The audience for the training and the timing of that training should be decided based on challenges of specific meeting formats (especially physical/online meetings), and the specific needs for ICES meeting and group types. Some of the specific needs include: ADG's (building consistency and formulating narrative; monitoring who is in, and who is active in the conversation, Benchmarks (innovation and consensus), EG's using breakout groups, Symposia (unstructured interaction and social aspects), Training groups (for combinations of above issues), Secretariat.

A consultant should be engaged in developing training webinars.

*IT infrastructure -resource and finance needs*

ICES is moving its IT to the Cloud (to have less dependency on in-house hardware, more resilience to software upgrades, seamless changes to infrastructure, 24/7 availability of services and better integration within and between federated organisations). The COVID-19 pandemic has accelerated this move, which also implies more acute and variable demands on the IT/ICES budget, and on human resources to implement and adapt processes to the changes.

**SWOT Analysis – ICES shift to remote meetings**

Strengths	Weakness
<ul style="list-style-type: none"> <li>- Improved access to ICES meetings potentially improving representation on some aspects of diversity</li> <li>- Meeting attendance is not constrained by travel time and costs</li> <li>- Reductions in CO<sub>2</sub> footprint of ICES Activities</li> <li>- Allows for more frequent meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Remote meetings may also restrict access for some (certain groups/ challenges)</li> <li>- Requires additional preparation time</li> <li>- Difficult to make progress on difficult/strategic/contentious issues</li> <li>- Requires new kinds of support from the Secretariat</li> <li>- Meeting across time-zones</li> <li>- Trade-off between in-person concentrated meetings in short periods and more frequent meetings over longer periods</li> <li>- Remote meeting fatigue</li> <li>- Differences among institutes about which platforms are allowed</li> </ul>

Opportunities	Threats
<ul style="list-style-type: none"> <li>- Broader participation in ICES meetings               <ul style="list-style-type: none"> <li>- Training</li> </ul> </li> <li>- Consider new more inclusive strategies for decision-making</li> <li>- New capacities and skill development working in remote environments/meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of incentive to Chair/lead initiatives/meetings – especially e.g. Benchmarks</li> <li>- Remote meeting fatigue – experts unwilling to participate in remote meetings</li> <li>- Reliance on internet connectivity</li> <li>- Privacy issues/unauthorized recordings of meetings</li> </ul>

The Council document presented above was further updated by ICES following the additional experience gained by ACOM, SCICOM and the Secretariat as the pandemic continued throughout late 2020 and into 2021.

The document lists the needs identified if remote meetings are to continue up to 31 January 2021, and even beyond, including IT equipment, training, and additional human resources. It is important to state that issues such as language, gender, and culture are among factors influencing the effectiveness of remote meetings, and which are difficult to measure. These factors are important to consider in international science cooperation, and to explore tools available to help improve communication.

Based on the experience gained the following documents are in development:

Guidance for chairs of expert groups transitioning to online meetings during the COVID-19 pandemic (in preparation)

- an outline document on hybrid meetings (a mixture of online and in-room attendees), currently being commented on by SCICOM. Once finalized the document will serve as the basis for defining needs (IT, online resources and training), for which the 2019 Council meeting put aside a limited amount of equity funding. However, it is clear that a longer-term investment would be required to implement, sustain, and to ensure training and tools are accessible to the entire community.

Short-term considerations - On 9 August 2020 the President, First-Vice President, ACOM and SCICOM chairs, as well as the General Secretary communicated the following: groups will continue to operate through online meetings up to 31 January 2021. this decision will be evaluated in November, and only be adjusted if the situation of the pandemic, quarantine rules, and travel restrictions have changed substantially. this will impact WGCHAIRS and a shortened online meeting(s) will occur in January, with a physical meeting of WGCHAIRS being held later in 2021 when appropriate.

Longer-term considerations - Experience from meetings Focusing on operational delivery and not strategic issues. While ACOM has still fully engaged in the delivery of advice, there has been an increasing silence on the forum for strategic development and tactical decision-making. Likewise, it has been difficult within SCICOM to have longer, in-depth discussions and foster innovation. And in some

cases, this has been amplified with curtails on especially fieldwork and to some extent laboratory work. This makes the delivery of the science and advisory plans more challenging. Decision-making is being enacted by a smaller pool of individuals.

ACOM has been less active on the forum, resulting in the centralised members of ACOM (i.e. ACOM leadership) having an increased influence on the direction, and a corresponding reduction in influence of ACOM members (i.e. the network and member countries). There has been a similar reduction of activity on the SCICOM Forum, with less engagement from SCICOM members. Sensing the mood of the network. The inability to informally chat, has resulted in an inability to read the mood of the network and science community. This is true for both ICES meetings and those outside the network, such as Advisory Councils and Regional Fisheries Management Organizations meetings. This has large implications in terms of inter-organisational relationships, preparing for ICES meetings and decisions, listening to feedback from stakeholders and requesters of advice, hearing of innovations and developments relevant to ICES advice. Invitations to external experts. It is becoming difficult to attract experts to act as reviewers, especially for benchmarks. We must recognise that participation is not totally driven through altruism.

The added enticement of a trip to Copenhagen to engage with ICES is a strong motivation for those outside the ICES community. For many the prospect of multi-day remote meetings is not as positive as face-to-face meetings in Copenhagen. Diversity and nurturing talent, including supporting Early Career Scientists.

The ACOM leadership and the ICES secretariat is reverting to “the regulars” when reaching out for experts and potential Chairs of new expert groups. The lack of face-to-face contact thus reduces the diversity of the expert pool, tends to favour male experts and reduces the opportunity for new experts to take leadership roles in ICES.

There is a reduced equity of access to ICES organisational structures. There is a huge difference in the confidence required from an early career expert to have a brief coffee chat, compared to picking up the phone to cold call ACOM leadership. The current situation is particularly stressful for young families and Early Career scientists.

In addition to the challenges related with balancing personal life and work, also the lack of opportunities to present work at conferences and to grow personal networks is challenging.

Discrimination caused by operating across time zones. To some extent there has been an expectation that individuals are available beyond the standard work hours, their working week will be longer. This was accepted at the beginning of October 2020 the disruption, but is beginning to create problems as it becomes a modus operandi. This particularly discriminates against carers and people with disabilities. There is a growing evidence base being documented online to support this observation. Individuals are reporting that they have been expected to be available during their normal work hours for their normal work, and then working additional hours at antisocial times for ICES. ACOM will discuss the provision and format of advice during their September meeting.

The challenges caused by the pandemic has provided both opportunities for improvement and reductions in quality of the advice. These issues will be considered and the decision made before the end of 2020.

#### Guidance for on-line meetings

The document in preparation by the ICES Coordination Group will provide simple and clear guidance for how to best prepare and conduct on-line meetings. The guidance is based on cumulative experience from on-line meetings, as well as known best practices identified by the ICES Community and Secretariat. Resources:

#### Training and Capacity Building

On a general note, the rapid uptake of online tools coupled with the increasing updates/changes to these tools, has created pressure on the Secretariat and Community to follow the development. The rate of change will not slow significantly, and therefore the style and frequency of training to support the user base will need to be considered. A sub-group of the coordination group met in August to discuss the specific challenges on running/participating in hybrid meetings (some participants online, some participants sitting together in person). The tenet agreed by the group is: "Remote participants should have the same ability to contribute/interact as those present in the room" In brief, the group discussed the challenges of hybrid meetings, the specific needs for ICES meeting/group types, the audience for the training and the timing of that training. The group identified that a number of meeting types would need enhanced attention/training: - ADG's (building consistency and formulating narrative; monitoring who is in, and who is active in the conversation - Benchmarks (innovation and consensus) - EG's using breakout groups - Symposia (unstructured interaction and social aspects) - Training groups (for combinations of above issues) Expert Group chairs were deemed to be the first priority for training, as well as symposia chairs and training course convenors. A 2nd priority would be Committee and SG chairs,

ACOM/SCICOM leadership and the Secretariat.

It was clear that this training needs to be available all the time (when needed), and reusable. The aim is to use this information as a briefing to then contact external companies/consultants to deliver online training webinar(s) for ICES. There is a small budget that was allotted under the 2019 strategic investment by Council that can support this, however it is clear a longer-term investment would be required 4 | October 2020 to both sustain this, and to ensure training and tools are accessible to the entire community. SCICOM is currently commenting on the document on hybrid meetings. ACOM cannot form a consensus on hybrid meetings at the moment, as many divergent views have been stated. ACOM will return to the issue in December or January.

#### Resources:

##### Human, financial and infrastructure

Given the need to run meetings across time zones, there could be an additional burden on all parts of the community, but especially those with caring responsibilities (often women). This could require additional resources for carrying out the same work remotely. The shift to entirely online processes and administration



has also put additional pressure on Secretariat staff. Additional meetings, meetings across time zones, and facilitating and administrating all ICES work entirely online requires additional time and resources.

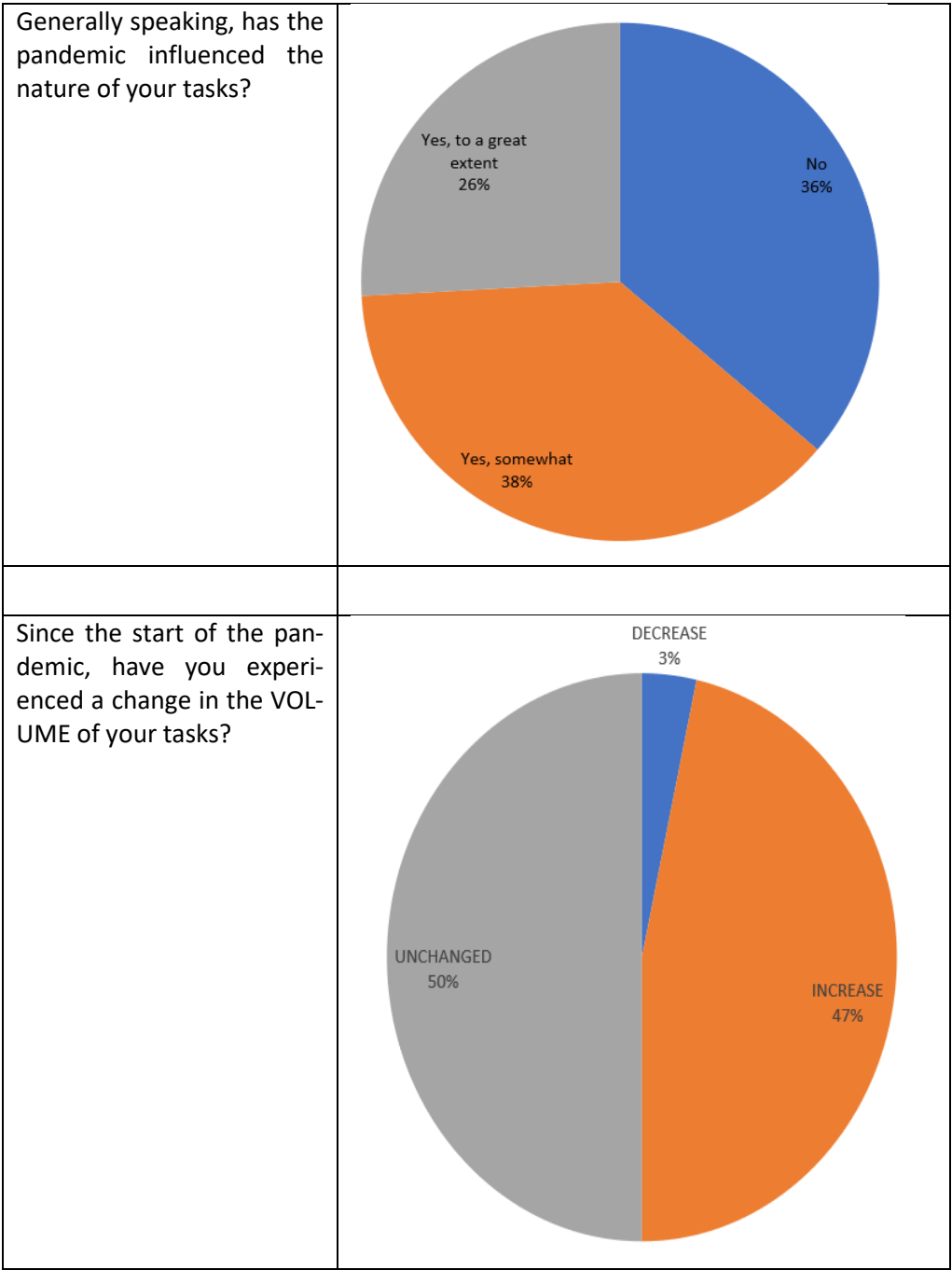
Overtime compensation will be required for supporting staff working outside core working hours if meetings across time zones continues in the long-term. For IT, we have been working towards a 4–5 year plan to move more services and infrastructure into the Cloud. There are clear benefits to working through the Cloud – less dependency on in-house hardware, more resilience to software upgrades, seamless changes to infrastructure, 24/7 availability of services and better integration within and between federated organisations. The timeline has been quite conservative for two reasons; the move of some services i.e. SharePoint are in themselves a grand challenge as they are so embedded in the way we work and need revising for full Cloud integration. Secondly, the cost of moving to the Cloud is still uncertain/variable in regards to our storage and user licence needs – which is at odds with the way that we plan budgets over a 2-3-year timeframe in ICES. These considerations have been in focus in COVID-19, and we are now seeing an accelerated move to the Cloud environment, which also implies more acute and variable demands on the IT/ICES budget, and on human resources to implement these changes.

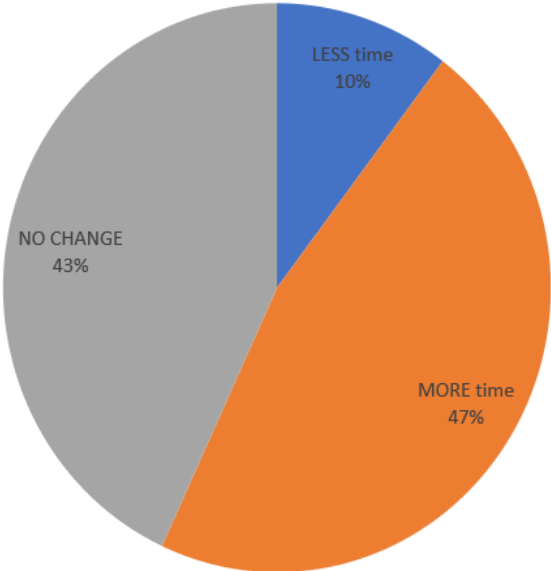
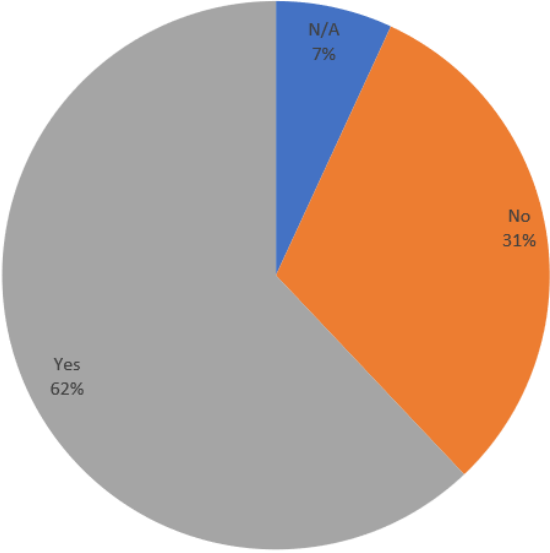
### **3.2 Survey of the Staff of the ICES Secretariat**

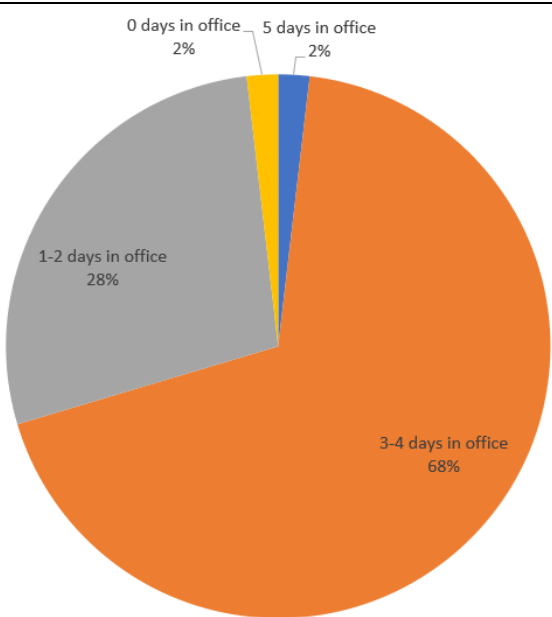
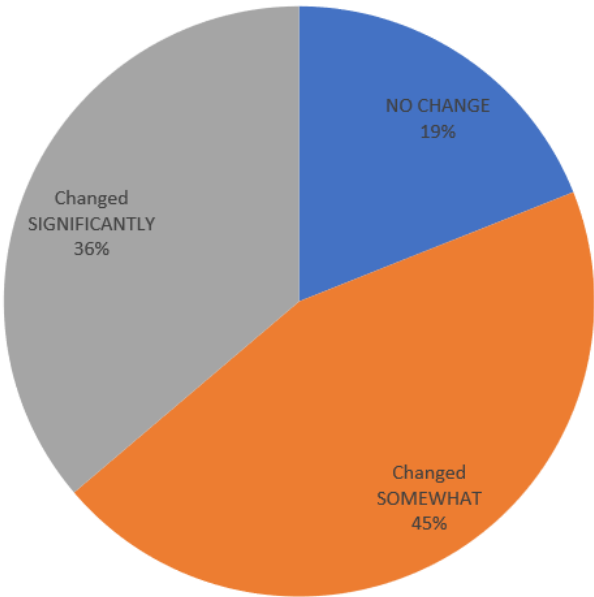
In order to gauge the COVID-19 experiences of the ICES Secretariat, a short survey was circulated to staff who have joined after March 2020. 58 responses were received. The figures below present the main findings on COVID-19 related issues and provides some evidence for the need for additional resources for the Secretariat.

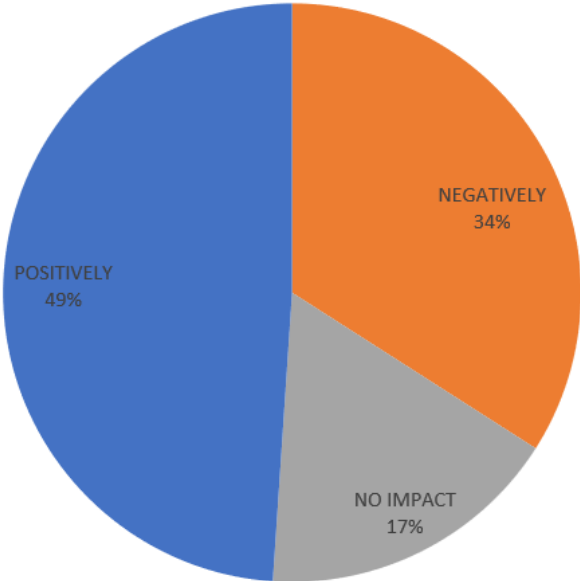
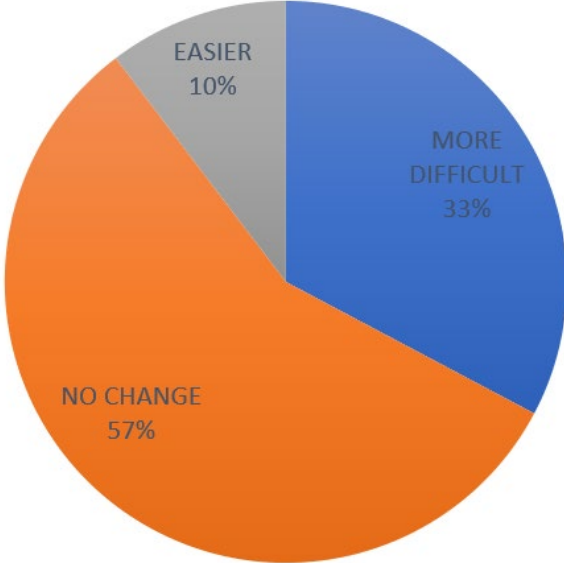
- Overall, more than 70% of Secretariat staff experienced changes in the nature of their tasks, 47% reporting an increase in volume of tasks.
- 47% reporting an increase in time needed to complete tasks.
- Questions around remote work echo the findings of the literature review and consultant reports, with more than 60% of staff wishing to continue to be able to work from home on a regular basis, with a majority of staff preferring 3-4 days of physical presence in the office.
- Questions related to work–life balance reveal major changes in working schedules, and 34% of staff reporting negative impacts from these changes.
- Critically, connection to the ICES network has also degraded with 33% of staff respondents noting this important connection has been made more difficult.

**Figure 3.2.1** Secretariat staff responses to a survey on the experiences of working through the COVID-19 pandemic.



<p>Since the start of the pandemic, have you experienced a change in the TIME it takes you to complete tasks?</p>	 <table><thead><tr><th>Response</th><th>Percentage</th></tr></thead><tbody><tr><td>LESS time</td><td>10%</td></tr><tr><td>NO CHANGE</td><td>43%</td></tr><tr><td>MORE time</td><td>47%</td></tr></tbody></table>	Response	Percentage	LESS time	10%	NO CHANGE	43%	MORE time	47%
Response	Percentage								
LESS time	10%								
NO CHANGE	43%								
MORE time	47%								
<p>Even after the recommendation to work from home has ended, would you like the option to work from home on a regular basis?</p>	 <table><thead><tr><th>Response</th><th>Percentage</th></tr></thead><tbody><tr><td>Yes</td><td>62%</td></tr><tr><td>No</td><td>31%</td></tr><tr><td>N/A</td><td>7%</td></tr></tbody></table>	Response	Percentage	Yes	62%	No	31%	N/A	7%
Response	Percentage								
Yes	62%								
No	31%								
N/A	7%								

<p>What is the preferred balance of home working to office working, in the course of a working week?</p>	 <table><thead><tr><th>Days in office</th><th>Percentage</th></tr></thead><tbody><tr><td>0 days in office</td><td>2%</td></tr><tr><td>1-2 days in office</td><td>28%</td></tr><tr><td>3-4 days in office</td><td>68%</td></tr><tr><td>5 days in office</td><td>2%</td></tr></tbody></table>	Days in office	Percentage	0 days in office	2%	1-2 days in office	28%	3-4 days in office	68%	5 days in office	2%
Days in office	Percentage										
0 days in office	2%										
1-2 days in office	28%										
3-4 days in office	68%										
5 days in office	2%										
<p>Has your average daily work schedule changed (i.e. start/end at different times) since the start of the pandemic?</p>	 <table><thead><tr><th>Change</th><th>Percentage</th></tr></thead><tbody><tr><td>NO CHANGE</td><td>19%</td></tr><tr><td>Changed SOMEWHAT</td><td>45%</td></tr><tr><td>Changed SIGNIFICANTLY</td><td>36%</td></tr></tbody></table>	Change	Percentage	NO CHANGE	19%	Changed SOMEWHAT	45%	Changed SIGNIFICANTLY	36%		
Change	Percentage										
NO CHANGE	19%										
Changed SOMEWHAT	45%										
Changed SIGNIFICANTLY	36%										

<p>If your working schedule has changed, how has this affected your work/life balance? Select the answer which most often applies.</p>	 <table><thead><tr><th>Impact</th><th>Percentage</th></tr></thead><tbody><tr><td>POSITIVELY</td><td>49%</td></tr><tr><td>NEGATIVELY</td><td>34%</td></tr><tr><td>NO IMPACT</td><td>17%</td></tr></tbody></table>	Impact	Percentage	POSITIVELY	49%	NEGATIVELY	34%	NO IMPACT	17%
Impact	Percentage								
POSITIVELY	49%								
NEGATIVELY	34%								
NO IMPACT	17%								
<p>Since the start of the pandemic, has your contact with the ICES network changed?</p>	 <table><thead><tr><th>Change</th><th>Percentage</th></tr></thead><tbody><tr><td>NO CHANGE</td><td>57%</td></tr><tr><td>MORE DIFFICULT</td><td>33%</td></tr><tr><td>EASIER</td><td>10%</td></tr></tbody></table>	Change	Percentage	NO CHANGE	57%	MORE DIFFICULT	33%	EASIER	10%
Change	Percentage								
NO CHANGE	57%								
MORE DIFFICULT	33%								
EASIER	10%								

### FOOD FOR THOUGHT – COVID19 LESSONS LEARNED

What are some lessons you've learned or reinforced over the last year since the pandemic began?

Leena Nair: It's been a difficult year. This is my life's work, being with people. It's been personally very difficult to be alone in a room, day after day, look at a screen, and not have a chance to meet other human beings. Let me reflect on some of the lessons.

My first lesson is when you look after your people, they will look after the business. When you care for your people—put their health, safety, and well-being at the center of everything you do—you will watch them make the business a far better business.

My second lesson is the huge importance of mental well-being. Thinking of all employees and having something that responded to their concerns and needs was very important for me. Be responsive, understand the needs, and create programs that truly support people.

My third lesson is double down on purpose because it's very different when people realize, "Oh my God, I'm going to the factory because the world truly needs soap and sanitizers now" or "I'm going to the factory because everyone is struggling to make sure food is available everywhere." That gives a different meaning to your actions.

My fourth lesson is this is a moment of reinvention. Let's not waste it. Every leader—whether they're leading businesses, institutions, people, NGOs,<sup>3</sup> governments—needs to be bold and to reimagine how things are done. So many of our assumptions about how things should be done and can be done have gotten challenged in the last few years. This is the time to advocate reinvention, reimagination, and rethinking work, workplace, workforce, where to work, and how to work.

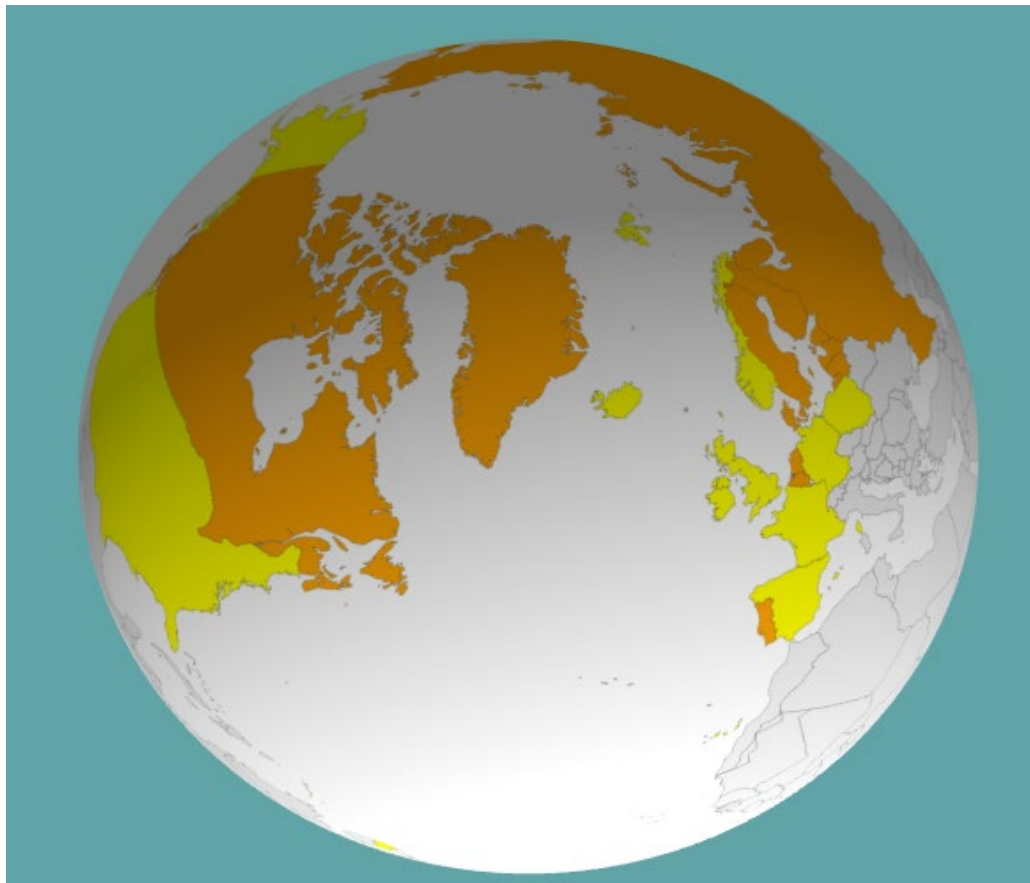
And my last lesson is resilience, resilience, resilience. It is exhausting. It is relentless. Leaders tend to overestimate what people can do and can't: "of course everything is possible, and I have infinite capacity." You underestimate how hard or difficult it might be.

McKinsey Interview with Leena Nair,  
Chief Human Resources Officer, Unilever  
March 2021

## 4 Addressing TOR 2 – Snapshot of Member States Views

1. **The views of ICES Member Countries** – The outputs from TOR 2 have provided information on the views of the Delegates of 9 ICES Member Countries in relation to COVID19. The following Member Countries provided feedback to the BCSGC19 – UK, Poland, Germany, Spain, Norway, Iceland, US, France and Ireland. This represents the Delegates views of 45% of the ICES Member States. The feedback received is given for each Member Country together with a consolidated summary of the key points that emerged.

**FIGURE 4.1** The schematic below shows the ICES Member Countries around the north Atlantic and adjacent seas in orange and yellow. Those Member Countries in yellow (UK, Ireland, France, Spain, Norway, Germany, Poland, Iceland and the US) represent those that provided their ICES Delegates views on the impact on COVID-19 on their marine science communities (including fisheries) and their thoughts on the future of marine science in a post COVID-19 pandemic.



## 4.1 VIEWS OF THE DELEGATES FROM THE UK

The 2020/21 COVID-19 pandemic has had a significant impact on the delivery of marine science, ways of working and wellbeing of marine scientists in the UK. Here we summarise the nature of the impacts, residual issues and future look as it relates to delivery of products to ICES and representation at ICES meetings.

### Surveys at sea

Relatively early on in the crisis, activity on research vessels ceased while there was a review of safe working practices, a full review of all risk assessments to account for COVID-safe practices followed by a careful and measured reactivation with extensive staff consultation. This meant that a small number of surveys undertaking important data collection required to respond to ICES data calls in 2021 were cancelled – these specifics of these have been detailed elsewhere and reported to DGMARE and ACOM (notably SIAMISS, scallops).

The nature of the modified working procedures implemented mean that there are some residual issues also impacting on 2021 surveys at sea. Vessel crew and scientists must maintain social distancing whilst on board, wear face coverings, occupy shared spaces sparingly. This means that some deck operations are not possible, on some vessels where there is reliance on shared cabins and showers, reduced crewing is in effect, visitors are not allowed, half landings cancelled and, on some vessels, internal spaces are simply not sufficient to allow overnight operations meaning reduced range of operations and reliance on shore-based accommodation for some staff.

Commercial COVID-19 testing for crew and scientists is available in some UK administrations but not others, and some administrations are pursuing the possibility of prioritised vaccination of seagoing staff as an additional layer of protection rather than replacement of other COVID-19 safe practice.

Currently the upshot of these residual issues means that surveys planned for small inshore vessels are still difficult/impossible (scallops / Nephrops) and charters are only possible on large pelagic vessels. The use of industry personnel on chartered vessels has also been explored but raises liability concerns.

The overall impact has been and will continue to be small due to effective adaptation (eg switching work planned on inshore vessels to larger vessels; switching to largely shore based /day trip operations). The effect on delivery for fisheries data collection has been well documented and communicated, but the impact on other areas of ICES business is less well examined such as environmental surveys, effects on time series for OSPAR assessments of datasets hosted by ICES DOME and may warrant further investigation.

### Catch Sampling

There have been significant impacts on both observing for unwanted catch and market sampling of landed catch. Both data collection activities were temporarily suspended shortly after the crisis emerged in the UK to protect staff. Market sampling was reactivated after the loss of Quarter 2 data collection with heavily modified working practices, but minimal impact on data quality from 2020 Quarter 3. There remain some issues around access to some 3<sup>rd</sup> party sites (auction mar-



kets and processors in particular) with some processors still not accepting external visitors (cold working environments with large quantities of biological material are considered high risk and several processors in the north of the UK have been subject to significant outbreaks). This has necessitated a change to receiving samples at laboratory facilities and on house processing with some increased resource costs. All shore-based fieldwork is now carried out by staff travelling individually in vehicles again with resource considerations.

Observing of unwanted catch on board commercial vessels has largely ceased now for 12 months. Some observed trips have been possible between lockdowns (autumn 2020) where undertaken by industry scientists able to access commercial testing and forming “bubbles” with skippers and crew. There has since been a move to more “industry co-sampling” with vessels providing samples of unwanted catch for quayside (or return to laboratory) sampling and processing by observers. These schemes are at different stages of development across the UK administrations and present a number of issues that have needed working through (legal & quality).

### **Reduction in travel and attendance of remote meetings**

The change in working arrangements for representation at ICES meetings has generally been well received and brings a number of recognised benefits as well as disadvantages. Notably, meetings are seen as more time efficient, inclusive, better participated and often with more structured intersessional working. Within institutes a number of EG members have expressed views that they would prefer continued remote meetings, whilst others miss the physical meeting format and opportunities for networking and innovative collaboration that a shared physical space provide. The cost savings to institutes associated with reduced travel and subsistence costs has also been significant and welcome.

Looking forward there is a need to ensure technology works for mixed model meetings where the majority of participants are remote, while some share the same physical space. There is a need for long forward planning of eg travel budgets in institutes and participant expectations. There is therefore a continued leadership role for ICES in communicating well in advance remote meeting policy as well as implementation of technology and training.

### **Occupation of buildings / home working**

Most government buildings were vacated as a precautionary measure at the start of the crisis. There has been some limited reoccupation for reactivation of marine science where this has been in accordance with well-defined business continuity plans and compatible with constantly evolving government guidelines (different across the UK administrations) on safe working practice. Currently, essential laboratory work has been reactivated and building re-occupancy of office spaces for essential staff engaged in lab and field work preparation (single occupancy only) is at about 15-20%. We do not expect a substantial increase on this for most of 2021. Achieving this level of reoccupation took a very significant effort in reviewing hundreds of risk assessments and ensuring consistency of approach with other parts of government. Most other government buildings with open plan office spaces remain unoccupied with home working the norm.

All desk-based work continues to be undertaken from the home and in some instances analytical work has been risk assessed to be safe to conduct in the home environment (eg microscopy of otoliths) to avoid unnecessary reoccupation of shared spaces.

Many of our scientists and support staff are relishing home working without the need for commuting and do not want to see a return to the office environment, some feel a need to return as soon as possible and others hope to see a more flexible model in the future (which seems likely).

### **Wellbeing**

The wellbeing of scientists engaged in ICES work has been demonstrably affected during the course of this crisis. In Marine Scotland a recent survey found that 57% of respondents in Science said COVID-19 had fairly or significantly negative impact on caring responsibilities, 55% fairly or significantly negative impact on work and 39% fairly or significantly negative impact on productivity.

Anecdotally, members of our UK ICES science community who live alone, have caring responsibilities, separated from loved ones by geography or restrictions or who normally rely on public spaces and events for their social interaction have been disproportionately negatively affected. Organisations/institutes have responded with for example an acceptance of reduced productivity by individuals, increased non-work related remote social interactions and bolstering of mental health first aid provision.

### **Diversity issues**

A number of diversity issues for the UK ICES community have emerged as a result of the COVID crisis. These include early career scientists being disadvantaged from career networking potential as a result of remote meetings. Female scientists have seen a disproportionate reduction in publication outputs (presumably related to reduced capacity and increased caring responsibilities). Many categories of ICES contributing scientists have also experienced a reduction in productivity compared to their peers, including parents, carers, partners of “key workers” etc.

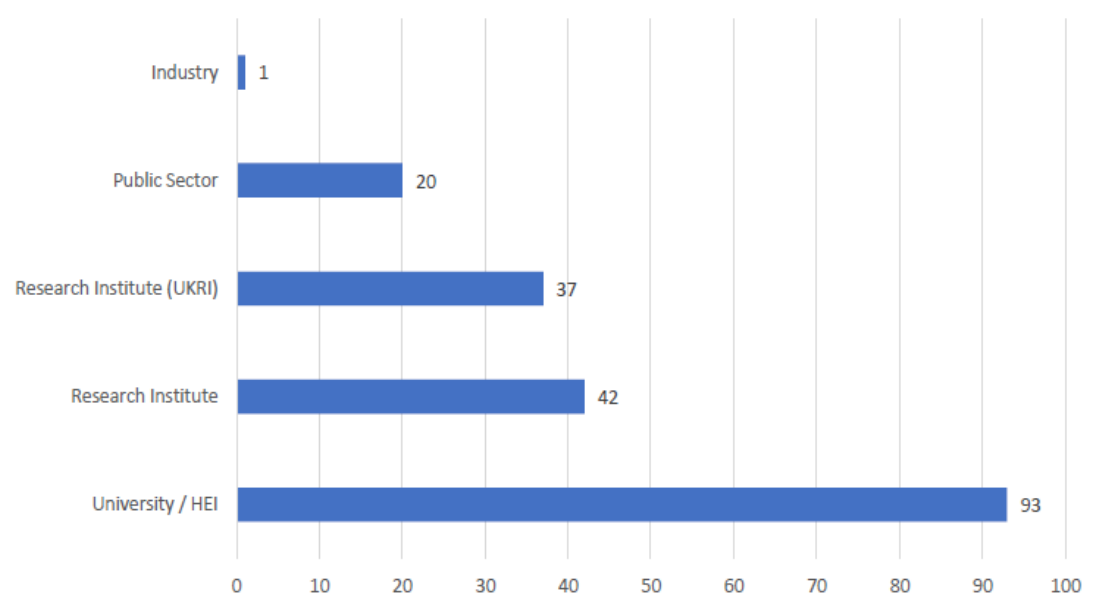
Some positive aspects have also emerged such as broader inclusivity in ICES remote meetings.

In addition, the wider UK Marine Science community conducted an impact survey. The summary findings are presented below.

UK Marine Science  
COVID-19 WORKING GROUP IMPACT SURVEY

In October 2020 representatives of the UK marine science community conducted a survey to assess the impact of COVID-19. The results from 193 responses are summarised below and include recommendations for science leaders, particularly with respect to Early Career Researchers (ECRs) and staff on fixed term appointments (FTAs), that may help to enhance the working environment for scientists in a post-pandemic world.

SURVEY RESPONDANTS BY SECTOR



SURVEY INSIGHTS

FIELDWORK

84%

of planned marine fieldwork in UK cancelled or postponed.

LABWORK

> 90%

of marine science labwork impacted either moderately or severely.

Most strongly impacted

- ECRs & FTAs and their supervisors
- University sector
- Researchers with caring duties
- Researchers with a disability

**GRANTS****> 50%**

of those planning on writing a grant proposal were negatively impacted.

**Most strongly impacted**

Mid-career

University sector

Researchers with caring duties, and/or pastoral care duties for Postgraduate students.

**NATIONAL CAPABILITY (NC)****~ 33%**

of end-users found access negatively impacted.

**CONFERENCES AND NETWORKING****> 50%**

of respondents attended fewer conferences

**TEACHING AND EDUCATION****> 35%**

of those concerned about education reported cancelled/postponed field teaching

**> 50%**

reported that face-to-face teaching was cancelled/postponed

**MENTORING****~ 50%**

of ECRs reported a drop in mentoring and supervision

**17%**

ECRs don't feel they have a mentoring and supervising programme

**CAREER PROGRESSION****> 33%**

feel their career progression will be negatively impacted

**~ 33%**

don't know if career progression and promotion has been cancelled or postponed

**OTHER****> 50%**

find it hard to work from home

**> 50%**

feel more isolated

**25%**

have declined in mental health

**40%**

have increase in administrative workload

### Negative impacts felt most strongly by

ECRs and FTAs

Scientists with disabilities

Women

Scientists in full-time employment

## SURVEY RECOMMENDATIONS

### RECOMMENDATIONS – FOCUS ON ECRs AND UNDER-REPRESENTED GROUPS

- The recommendations are focused on supporting marine scientists to transition to new ways of working post-COVID-19, and reassure them that the impacts of COVID-19 will be considered and addressed as part of standard recruitment, career planning and promotion(s).

### RECOMMENDATIONS FOR HEIs AND INSTITUTES INVOLVED IN OCEAN SCIENCE\*

- Provide mentoring schemes & mentoring training.
- Raise awareness of mental health issues and contact details for key support groups.
- Raise awareness of career progression mechanisms and ensure the long term impact of COVID-19 are addressed as standard within recruitment, career progression and promotion processes.
- Plan for changes in post-COVID-19 working practice including transition period, flexible working rules and implications for ECRs & FTAs in an increasingly virtual meeting space.
- Facilitate access to field samples, data, labwork for ECRs and FTAs who have been impacted by COVID-19, and support completion of key activities that have impacted science delivery and career progression, where possible.
- Work with NERC to enhance opportunities for informal networking to allow ECRs and FTAs to build partnerships and engage in sea-going activities.
- Maintain the ability to access online conferences, seminars, meetings and learning.
- Re-institute or replace internal small institutional funding opportunities/allocations.

### RECOMMENDATION FOR THE CHALLENGER SOCIETY

- Set up a working group of ECRs and FTAs to generate ideas for networking in the future where there may be a reduction in face-to-face events or large meetings.
- Generate a best practice guide for flexible working or working from home.

### RECOMMENDATION FOR NERC FACILITIES

- Raise awareness of NERC facilities including booking procedures.

---

Respondents were based at marine research institutes from across the UK. The COVID-19 Working Group was led by Dr Kate Hendry of the University of Bristol and supported by Jackie Pearson of the NOC Association of Marine Science National Capability Beneficiaries (NOCA).

\*Many organisations may be implementing similar recommendations and best practice already, but sharing understanding and examples of best practice will benefit staff and students in terms of consistency, equality and equity. We believe all recommendations benefit staff, students and employers.

## 4.2 VIEWS OF DELEGATES FROM UNITED STATES

For a more complete discussion, see: *Link et al. 2021 A NOAA Fisheries science perspective on the conditions during and after COVID-19: challenges, observations, and some possible solutions, or why the future is upon us. Canadian Journal of Fisheries and Aquatic Sciences* <https://doi.org/10.1139/cjfas-2020-0346>

Data collection was severely limited in 2020 extending partially into 2021.

- Most fishery-independent, oceanographic, and ecosystem data collection activities were cancelled from late-March – November 2020. Activities started to resume in Fall 2020 and most activities are operating in 2021. The cost and logistics of operations, however, are substantially greater.
- Fishery-dependent data collection activities were impacted regionally. Catch reporting continued through the pandemic. Some regions of the country maintained fishery-dependent observer and biological sample data collection activities, while others suspended fishery-dependent data collection from late-March through mid-August. The cost and logistics of operations, however, are substantially greater.
- Recreational fishery data collection was also impacted regionally. The collection of effort data continued but the collection of catch data was interrupted and varied between States.
- Protected species data collection was cancelled from late-March – August 2020. Flight operations began in August and vessel operations began in early 2021. The cost and logistics of operations, however, are substantially greater.
- Socio-economic data collected increased as NOAA measured the impact of the COVID pandemic on the seafood sector ([link here](#)). The response activities and ongoing activities are continuing.

NOAA Fisheries assessment of a wide range of fisheries stocks, protected resources, habitats, and ecosystems are impacted by the decrease in data collection.

- An important standard in U.S. marine management legislation is “best scientific information available”. The missing data from 2020 will increase uncertainty in assessment products, but most products and processes are designed to be robust to some missing data.
- Another important standard in U.S. marine management is the “precautionary principle”, thus in general the increased uncertainty resulting from missing data in 2020 will be expressed as more protective management measures in 2021 and for a few years into the future.
- The collection of data in 2021 is critical to begin to reduce the uncertainty from the missing 2020 data

The situation in 2020 largely resulted in highly constrained travel and no in-person meetings

Within the U.S. federal government, travel was greatly restricted. This impacted data collection (above), management processes, and scientific exchange.

- Data collection related travel began late in 2020. Travel related to management and scientific meetings remains restricted (as of this writing, May 2021).
- Besides federal rules, different states, academic institutions, companies, and NGOs all have separate rules for travel that affect the ability to hold management and scientific meetings. The diversity of such travel rules makes holding meetings a challenge.
- For management processes, the use of online-meetings has been used with varying effect. While the inability to continue interactions outside of the official meeting venue can be a hindrance, the increase in the public's participation and the "leveling-of-the-playing-field" is a benefit of video-meetings. Access to online-meetings is a challenge for some participants related to internet access and bandwidth.
- For scientific meetings, the use of online-meetings has also had varying effects: more inclusive yet less interactive. The development of 100% remote scientific meeting and hybrid meetings will likely be a lasting legacy of the pandemic.

Most of the U.S. Federal Government has been operating in a mandatory or maximum telework status since April 2020

- Similar to online-meetings, conducting online-work has benefits and challenges.
- The primary challenge is the lack of unstructured and in-person interactions with co-workers and colleagues. There is also well documented online-interaction fatigue and a greater blurring of work and personal life.
- The primary benefit is reduced commuting time and more flexibility in work location and work times.
- In the future, it is likely that telework, and potentially remote work, will become more common. Planning around the specific needs for onsite-work is ongoing including the need for work-related, in-person interactions.

NOAA Fisheries distributed aid to fishing communities through the state with funds from COVID relief legislation.

- Relief was authorized by the U.S. Congress
- Each state developed a process for qualifying and applying for relief

#### Clarion Calls - Lessons Learned

- The pandemic was eye-opening and revealed strengths and weaknesses of the U.S marine science and management enterprise
- We can be effective using on-line tools, but need to develop tools, approaches, and guideline to improve effectiveness

- Increase use of cooperative research with industry, academic and research partners
- Increase use of unscrewed technologies such as active acoustics ([link](#)) and passive acoustics ([link](#))
- Increase use of management strategy evaluations, vulnerability assessments, scenario planning, and state of the ecosystem reports to evaluate and provide context for management decisions under increased uncertainty

Development and improvement of stock assessments including model-based and indicator-based assessments that are robust to data gaps and uncertainty.

#### 4.3 VIEWS OF DELEGATES FROM SPAIN

The COVID19 pandemic affected Spain intensely during 2020. All human activities, including marine research, were affected. In relation to fishing activity and marine research, the situation in 2020 was as follows:

- The Spanish Government considered fishing an essential activity. Except for the first months of spring, fishing activity took place with relative normality in EU waters.
- Sampling of the fishing activity at fishing ports and by observers on board suffered important restrictions, but this was not so much because of the pandemic but because of the coincidence in time with an administrative problem of the companies that carry out the sampling.
- The response to data calls was fairly normal, except for those calls launched in the first months of the year (for example for WGDEEP and WGBIE), where there were significant delays in the provision of data.
- Regarding the oceanographic and fishing research surveys in the ICES area, there were serious difficulties during the spring and early summer months and several of them had to be suspended. However, those planned for the second half of the year were carried out, although the application of strong security measures to avoid pandemic problems meant that the number of participants was limited and this affected the number of tasks that could be carried out.
- All international and internal coordination meetings in relation to marine research were held by telematic means.
- The work in the science labs during the spring (the hardest time of the pandemic) was carried out by teleworking (or had to be postponed). Afterwards, teleworking was combined with physical presence in the labs.

Looking to the future, the experience of the pandemic has left us with some aspects that we consider very important:

- Teleworking, especially in its mixed format (i.e. combined with part-time presence in the science labs), has proven its worth and effectiveness in



- achieving the objectives set out in marine research. Its extensive application to all personnel belonging to institutes and organizations dedicated to marine research corroborates the validity of the method.
- Holding meetings by telematic means has worked reasonably well, including meetings with broad participation such as congresses and general committees. This suggests that in the future this will be an important method, avoiding unnecessary costs and CO2 emissions. This said, there were also challenges involved in these processes, for example in international meetings with participants in a wide range of time zones (which can make it very difficult to find sufficient meeting time in plenary sessions). In addition, the lack of informal and more relaxed discussion time, as often occurs e.g. during coffee breaks, was also strongly missed in the meetings by correspondence. All in all, the need for face-to-face meetings in key or special situations, or with some periodicity, is also recognized as important. Also the ease of connecting people through communication platforms on the Internet has produced a tendency to overload work time with some unnecessary telematic meetings.

#### 4.4 VIEWS OF THE DELEGATES FROM GERMANY

The Covid-19 pandemic and measures to prevent a spreading of the disease had effects on multiple layers of the work related to ICES.

Most prominent was the **impact on regular data collection and delivery**, as the ability of ICES to deliver its annual advice largely depends on access to the national data. During the first year of the pandemic, Germany could fulfil almost all of its obligations to data delivery. It is not clear yet whether this will remain the same for the 2021 data collection, but until the end of the 1<sup>st</sup> quarter, there have been no major dropouts.

**Survey** data was impacted, but not a single survey delivering high-priority assessment data had to be cancelled. For some surveys, the number of stations or sampling intensity (e.g. number of fish analysed) had to be reduced, because the scientific crew had to be minimised to ensure sufficient distance onboard to comply with Covid-19 rules. In some cases, like the Baltic Sea cod larvae survey in May 2020, Germany was even able to cover parts of another international survey which had to be cancelled. However, there were significant drop-outs for cruises not delivering assessment data. Prominent examples are the biennial eel survey in the Sargasso Sea, planned for March and April 2020 (which had to be cancelled because scientists were not allowed immigration into the Bermudas, the vessel was already there ready to start the cruise after embarkation of the crew), and a cruise for testing selective gear in the Baltic Sea cod fishery. These cancellations do have longer-term effects on the availability of data to ICES EGs and policy development. Also, while so far

(March 2021) not a single Covid-19 case has been detected on the German research vessels, the situation might drastically change if it comes to an outbreak during one of the next infection waves.

**Commercial fishery sampling** has been largely conducted as planned prior to the pandemic. Harbour samples were reduced because of the reduced activity of the fishery during various lockdowns, access of observers to the vessels was more difficult, especially for the larger vessels, and some planned observer trips had to be cancelled to protect the scientific observers. Whether this will have a significant impact on the data collection and assessment is yet to be seen, it depends on the ability of other contributing nations to conduct their observer programs. It can be expected that for some métiers where only few nations fish (like Greenland Halibut in 14.b quarter 1) there will be insufficient data from commercial sampling.

**Recreational fishery sampling** was conducted as planned, however due to access restrictions for anglers during lockdowns angling effort was significantly reduced. The sampling schemes have been adapted to the new situation but data quality might have suffered.

**Workup of samples** in the laboratories needed more time because of access restrictions to the labs. The institutes rearranged working procedures to make sure that data was available in time for the assessment working groups. Slight delays have been noted when turnaround time was short, such as between the Baltic Sea International Trawl Survey 1<sup>st</sup> Quarter and the receiving ICES EGs.

**Data evaluation and delivery** was largely not impacted by the pandemic: The infrastructure proved to be sufficient to allow for validation and raising of the data from home office, using remote access to central servers. To our knowledge, there might have been slight delays in meeting data call's deadlines, but all data was finally delivered.

The second layer is related to **participation in ICES Expert Groups** (EGs). As for all other member states, the measures have made physical meetings impossible until today. EG members adapted quickly to the new situation, and most of the work could be conducted sufficiently during remote meetings. The virtual format allowed to include a wider group of staff to participate, also for only a fraction of the meeting, without generating much travel cost. This also helped introducing new member of staff to ICES work, which is a clear benefit of the remote format. However, attendees of virtual EGs mentioned that agreeing on outcomes is much more difficult in a remote format, sometimes even impossible. IT looks like side conversations at coffee breaks are necessary to progress with controversial issues. In many cases, controversial issues had to be postponed to a future physical meeting, which might be possible for a year or so, but not for much longer. Also, virtual meeting seem to favour experienced, long-term participants with a good standing and not afraid of contributing, which limits the contributions in EGs to a much smaller group. That bal-

ances the benefit of participation of newcomers. Finally, the important element of social interaction during physical meetings is missing in a purely virtual meeting setting, which makes building up personal relations and trust impossible and thus participation in virtual EG meetings less attractive in the longer term.

The third layer **regards staffing and soft skills**. This issue is only indirectly connected to ICES work, but it does have impact. Acquiring new staff or replacements for departing employees proved to be more difficult under the rules of the pandemic. Also their introduction to standing working habits in the institutes or in ICES EGs is more demanding, and there are examples where this went wrong. The number of new staff which has left us within the first year has increased. Now, at the end of the first year of the pandemic, there are signs of exhaustion and fatigue in many of the highly productive members of staff. Part of the reason is that the new working conditions require much longer and much more frequent virtual meetings, often many during the day. This makes it more difficult to focus on one specific topic at a time. Finally, we observe that the generation of new ideas and the production of project proposals suffers from the present working conditions. This includes the acquisition of new partners to proposals. It seems we're working in "freezing mode", which again might be a good strategy for a restricted period of time, but can't be continued without significant decline in productivity for many years.

It seems clear that the pandemic will change the work of national institutes and the cooperation with ICES also in the future, but at present it is almost impossible how this will happen, beyond the obvious "more virtual meetings".

#### 4.5 VIEWS OF THE DELEGATES FROM POLAND

- Big effort was allocated to secure data collection and provision to ICES according to the COVID restrictions – analyses on logistics and safety rules for the Institute staff including our vessel cruises as well as sampling on the fishing boats and at the harbours e.g. isolation of those planning to join the cruises and separation of teams collecting data and carrying out analyses in labs.
- Organising the job at the institute that allows remote work for significant part of the staff. Most of the lab analyses were not possible remotely.
- Switching to the remote expert groups meetings at ICES:
- Saving time and budget for travelling (a clear advantage for some of the staff).
- Sometimes those remote meetings are very "silent" (low personal engagement of numerous participants).
- Meetings over various time-zones.
- Distraction is easier and more common during long-lasting remote meetings.
- Lack of free discussions during coffee breaks or evening dinners.

#### The Future

- In majority of cases, data collection and provision is possible but more effort is needed.
- Lab analyses are possible only at the Institute facilities or some of them at the harbours.
- Remote meetings are possible but creative thinking is necessary i.e. short plenary sessions, breaks for homework, working in subgroups etc.
- Many including myself are suffering from the lack of personal contacts.

#### **4.6 VIEWS OF THE DELEGATES OF ICELAND**

- In general, the effects of COVID on marine science in Iceland have at least in the short term been relatively minor.
- All cruises have to date been conducted according to plan and work at the institute has not suffered significantly. However, if the current situation continues some cracks might start to appear.
- We have had problems obtaining samples from commercial catches and international cooperation has suffered in some ways due to lack of physical meetings.
- As in most countries, workers have increasingly worked at home which some find positive and others not so. The challenge has mostly been the lack of overview and greatly reduced interactions in teams, though technology such as Teams has helped.
- There is increased interest in homeworking and the trend will most likely continue post COVID-19. The challenge is mostly to find balance between this new working culture and the need for personal interaction which is one of the fundamental things when it comes to collaboration between people.
- It has become increasingly difficult to access fish markets and processing plants because of hard measures to reduce the risk of infection. Many entities are reluctant to allow access again, even after official measures have been revoked.
- When it comes to Iceland's involvement in ICES, the pandemic has had negative and positive impacts. People are generally not as keen to attend virtual meetings as physical meetings and the quality of the discussion/debate inside the working groups has suffered.
- The importance of meeting in person can't be dismissed and in the long run the effectiveness of the ICES procedure will suffer if meetings continue to be virtual.
- The positive thing is that more people can now attend meetings as travel cost is not an issue. Over the year and half the virtual meetings have become more focused and efficient, specially the ADGs, but at the same time less time is spent on scrutinizing text which is not always a bad thing.
- Having virtual meetings over weekends should not happen and in many cases, it might be helpful to have shorter sessions each day but go on for more days. When physical meetings resume in some form or another it might be worth looking into the possibility that the first part be virtual and then the physical meeting would maybe last

2-3 days rather than the 5-7 days in the past. Furthermore, it might be possible to run some annual EG-meetings virtually every second year or so. This would reduce travelling cost but still maintain the personal connections needed.

- The same applies to conferences as to meetings. Even more so people want to go to them in person for the same reasons, meet other scientists and discuss their work.
- Running the ASC virtual would eventually kill it we fear. One obvious challenge with attending a virtual conference is that it is much more difficult to set a side time to watch talks even though they are pre-recorded.

#### **4.7 VIEWS of the DELEGATES OF NORWAY**

- DoF collect and synthesize aggregate catch statistics for all Norwegian fisheries, we monitor our fisheries by VMS and Electronic logbooks and we control landings, and on a risk-based level inspect and control landings. We also cooperate with the Norwegian Coast Guard. Finally we participate as members of Norwegian delegations in fisheries negotiations.
- Covid-19 has not interfered with the production of aggregate catch statistics, as these go electronically from the buyers of fish via our sales organisation into the DoF. Neither has there been any disruption in terms of VMS signals from the vessels or deliverance of electronic logbooks.
- At the outset of the pandemic (spring 2020) we cancelled all our control and inspection activities for some weeks until we procedures for our control personnel to carry out their work with acceptable (low) risk of either receiving or passing on the virus.
- Anecdotal evidence (stories in the newspapers) signaled that this lack of control increased the amount of unreported landings in the cod fishery, but the magnitude of this is unknown. To my knowledge the Norwegian Coast Guard did not reduce their inspection activity due to Covid-19.
- We have cancelled a joint research cruise with Russia both in 2020 and 2021 where the aim was measuring conversion factors for shrimp (frozen weight relative to live weight etc).
- All fisheries negotiations have been conducted as videoconferences.
- The Institute of Marine Research has an extensive annual data and samples collection in support of various advisory processes in ICES. Covid-19 has led to many changes in how we work and most importantly the majority of our staff has been working from home and a high number of meetings taking place online.
- However, we have been able to run our survey programme and lab work pretty much as normal. This has been possible due to the measures that has been put in force with home quarantines prior to surveys and spacing out in labs to mention two important measures.

- The only monitoring survey we cancelled due to the pandemic was the blue whiting survey. Most of the other participating countries also cancelled and the survey was consequently not carried out.
- We also had restricted catch sampling of ground fish during March and April of 2020. But this was not considered critical to the stock assessment and the programme has been running as normal since then.

#### **4.8 VIEWS OF THE DELEGATES OF FRANCE**

- Work has never stopped. Rules have been set, which have evolved depending on the pandemic situation. The management has dedicated much time to organize regular online interactions with the team leaders and ensure they kept interactions alive within the teams.
- During the 1st containment, work was from home for all except for those on duty because of equipment, experiments or (reduced) coastal monitoring. Then procedures evolved. Presence gauges and behavioural rules were established for working in the office. Currently, the personnel works from home for certain days and in the institute for others. There are exceptions for duty work in laboratories and for personnel who cannot work from home.
- Travelling is allowed when the working conditions are at least as secure as in the institute.
- Psychological follow-up and training have been proposed to the personnel to help adapt to working remotely. Overall, fatigue certainly has accumulated about the situation. Yet, there is no sign of disruption in the work or of less science production in terms of papers or deliverables, and new projects have been submitted.

#### **Students**

- Students live away from their families often and alone in small apartments. They are more prone than others to suffer from isolation during containments. They have been allowed to work remotely 100% from their family homes or work in the office 100% depending on situations and their wishes. Many doctoral thesis works have been delayed and extensions permitted or subjects modified, depending on situations. Scientists mastering students (including interns) come in the office to meet them at least one day per week.

#### **Work at sea**

- In 2020 one survey only was cancelled during the 1st containment, the other surveys could be shifted in time and took place with secured health protocols. The 2021 surveys have not been affected so far. Health conditions have been defined for embarking on research vessels and protocols set for living and working on board.

- Working on fishing vessels is restricted depending on the protocols applying onboard. Conditions must be at least as secure as that on research vessels. A certain number of operations have been cancelled or delayed when working on fishing vessels.

### **COVID-19-related projects**

- The impacts of covid-19 on fishing activity, sales and markets could be monitored (with several weeks delay only), thanks to automated operational systems. This was possible for boats that are located with VMS. The small-scale fisheries were difficult to monitor during the 1st containment. Special protocols were designed by phone but some data is expected to be missing for 2020 (but production was low anyhow).
- The data required for justifying access to UK waters since Brexit have similarities because they are about the activity of vessels. VMS for small scale fisheries is becoming an issue because this would secure objectivity, quality and precision.
- Research projects have been started in marine socio-economics and epidemiology. Disruption in value-chains and changes in consumers' behaviours during the different containments are being analyzed. A monitoring has been started to assess covid-19 virus levels in waste waters, coastal waters and molluscs.

### **Working changes expected to last**

- The good aspects of remote meetings are beneficial. An open electronic agenda coupled with a visio platform allows to set meetings easily and discuss subjects with all concerned and not just those present at the coffee break. Some meetings are now hybrid because of the presence gauge in the office. We have more and shorter online meetings for managing, informing and reporting. There are more working interactions yet less human interactions.
- Working Interactions between colleagues make use of online tools such as chats and pads and shared documents on clouds. This makes the management less vertical and more horizontal.
- The different dimensionalities in a meeting can be segregated: presenting, discussing, producing joint documents, brainstorming, interacting socially, etc. Time and tools for each can be organized in differed mode. Meetings can thus be re-designed as well as inter-sessionnal work. Linking meetings with webinars allows to open the meetings and increase opportunities with new colleagues.
- Another aspect that will stay is teleworking. Probably 2 days per week. This will impact the teams, increase the need for online interaction tools, webinars and shared documents.

### **ICES work**

- Working groups. Work of working groups has been carried out remotely with no sign of disruption. Yet, the simple switch from physical to online

meetings cannot be continued in the long run. It is paramount to rethink how to organize meetings and work before, after and during meetings. Tight deadlines are more difficult to comply with when working remotely. Online meetings have important limitations. In particular, when consensus is difficult to reach within a group. Also, it is less easy for incomers to a working group to integrate its community as human interactions are difficult online when scientists don't know each other well before hand. Tools for informal and ludic interactions would be helpful. Thus, hybrid meetings where part of the participants meet physically while others are online it's not thought to be a good setup because of asymmetry between participants.

- ASC and webinars. A benefit of online meetings is the opportunity to open working groups worldwide and undertake some of their ToRs as webinars. Online conferences lack obviously the ability to meet new colleagues and exchange informally. SCICOM has discussed repeatedly the interest of an online tool during the ASC allowing conference participants to get in touch with each other, a sort of social media platform but based on competence and professional interests. It is perhaps timely for ICES to invest in online interaction tools (+ staff?), beyond the simple switch from physical to online meetings.

## **4.9 VIEWS OF THE DELEGATES FROM IRELAND**

### **CURRENT COVID ISSUES**

#### **SOCIETY**

1. In Ireland, as in most other countries, the COVID-19 crisis catapulted hundreds of thousands of employees and their employers into a work pattern and routine vastly different to their normal daily work experience. This radical change happened suddenly and for the vast majority the change effectively occurred overnight
2. A survey of Irish employees working remotely during 2020 indicated that the top three challenges of working remotely at present are: 1. not being able to switch off from work 2. collaboration and communication with colleagues and co-workers is harder 3. poor physical workspace.
3. The top three advantages of working remotely were 1. no traffic and no commute 2. reduced costs of going to work and commuting 3. greater flexibility as to how to manage the working day.
4. The experience with remote meetings is very mixed. A lot depends on what the meeting is trying to achieve. Meetings with task-oriented ToR's, and a small workload were more efficient, because they reflect the reduced attention span with virtual meetings. So reducing the ToR's at meetings as a blunt approach helps.
5. A general observation is that it is much more difficult for a new participant to get engaged with remote meetings because relationship building is much more difficult. Traditionally much of the discussions happen over coffee, on the roof terrace, and out to dinner.



6. Another general observation is that because meetings are “easier” to arrange, the number of meetings has proliferated to the degree that many are suffering from “meeting burnout”. This is exacerbated by many meetings being poorly disciplined, such that there is an exhaustive amount of discussion and inefficient decision making.

## **MARINE SCIENCE**

7. The suspension of the at sea observer programme was mitigated in part by instigating a vessel self-sampling scheme. Although the self-sampling programme had to be funded, the cost of this was only 6% of the total cost of sending commercial samplers or the FATS (Fisheries Assessment Technicians) to sea on commercial fishing vessels. Results from the data are showing that whilst this is a very useful supplement to observer coverage its not a replacement. The workload is shifted to the shore where samples must be processed sometimes leading to bottlenecks in resources.
8. The commercial observer’s costs decreased by 87% and the suspension of MI staff on commercial vessels caused a 100% decrease in the FATS at sea allowance costs. There was a 47% decrease in T&S (Travel and Subsistence) associated with sampling, but the cost of fish purchases for sampling increased by 21%.
9. Research vessel survey programme continued despite new COVID restrictions on the vessel work activities and processes.
10. In sharp contrast to the impact of Covid-19 on the sampling and survey programme, the outputs from the assessment and advice programme were less impacted. After lockdown in March 2020, all ICES meetings for assessments and advice generation were conducted remotely. This had a significant impact on the Marine Institute travel costs and carbon footprint associated with assessment & advice work which was reduced by 99% and 100% respectively.
11. In Ireland, travel restrictions were introduced in February 2020. In March 2020 the Marine Institute introduced a complete ban on international travel for business meetings. As participation in international meetings is feasible through remote means, International work travel is still prohibited at the Marine Institute and this may remain the case for the remainder of 2021 unless government guidelines change.
12. There was a reduction in Ireland’s carbon footprint in relation to the ICES advisory/science participation.
13. The reduced networking activity within ICES also reduced “sensing the mood” of the ICES community, scientists, managers, policy makers and partner organisations
14. There has been limited impact on marine research funding.

## THE FUTURE FOR ICES

15. While a global pandemic has been a looming risk for decades, COVID-19 has come as a shock to society, health systems, economies, governments, leaders and decision makers worldwide. In the midst of extraordinary challenges and uncertainty, and countless personal tragedies, leaders are under pressure to make decisions on managing the immediate impact of the pandemic and its future consequences. These decisions will shape the state of the world and the format of work many years to come.
16. COVID-19 has catalysed a deep discussion in society on the future of work and has focused attention on the quality of life, wellbeing, working from home, the benefits of remote meetings, reducing travel, reducing climate impacts of travel, and the enormous savings that have been made in travel budgets. COVID-19 is a unique phenomenon in that it has impacted all of the ICES community across the globe, albeit to different levels of severity. The post COVID-19 landscape will change the way most organisations accomplish their goals and will certainly introduce new perspectives to ICES on the way its community of scientists will need to work and interact.
17. COVID-19 presents ICES with some strategic opportunities. There is a need to explore new ways of working for the ICES network that are aligned with a new way of thinking about work in society, particularly in relation to reduced appetite for travel, increased demand to address human wellbeing and the benefits of remote working.
18. A change agenda to reflect the broader changes in society and the new needs of old and new clients is a great opportunity for ICES.
19. One of the greatest threats to ICES is to adopt the mindset of a return to business as usual. ICES needs to plan for the change that is coming.
20. There is likely to be an economic downturn over the next 3 years and there is great uncertainty on what the post COVID-19 era will look like for the international scientific community.

## THE FUTURE AND THE MARINE INSTITUTE

21. Subject to public health guidelines, the Marine Institute expects a phased return to on site working from 1 September 2021 onwards. The pattern of work will be led by business requirements and a process will shortly start with teams to identify the demands for space, resources, IT support, laboratories, training etc.
22. A 2021 Q1 Survey of Marine Institute Staff returned a strong response with 90% (of 206 people) seeking a blend of remote and onsite working post pandemic (7% wish to continue fully remotely and 3% exclusively onsite). The wishes of individuals will need to be balanced with the business needs of teams, and it appears that whilst it was relatively “easy” to get the workforce out of the office under the emergency, returning to the desired “hybrid” model will be considerably less straightforward. This is

- because at an individual level the specific arrangement of hybrid working is very heterogeneous.
23. Our corporate services and IT teams in particular are participating in various training and networking initiatives to seek to learn best practice and apply it in the Marine Institute. Any return on site is in the planning stage for most employers and public health guidance and State employer guidance is awaited
  24. Depending on plans in each area and for each individual and on public health guidance, we are likely to have facility changes – change in office sharing, hot-desking and other arrangements. Depending on the public health guidance in place and our own risk assessments, these may have an impact on plans for each team.
  25. In July 2020, the European Council, made up of the Heads of State and Government of each EU Member State, adopted a historic €750 billion recovery package for Europe. This package, Next generation EU, is Europe's shared response to the severe health and economic crisis caused by COVID-19. Next Generation EU is an ambitious and common recovery package which will complement and support each country's own national response to the crisis.
  26. Ireland has developed a National Recovery and Resilience Plan to contribute to a sustainable, equitable, green and digital recovery effort, in a manner that complements and supports the Government's broader recovery efforts.
  27. While there are strong grounds for optimism regarding our recovery prospects, the scale of disruption as a result of the pandemic across our economy and society has been considerable and asymmetric.
  28. Key priority policy issues for Ireland include Climate Change, BREXIT, Biodiversity, and Post COVID recovery. The scale and nature of the challenge to meet Ireland's ambitious greenhouse gas emissions targets and lay the foundations for achieving carbon neutral economy by 2050 is profound. However, the Government's climate policy approach and a more digital future also presents significant opportunities for sectors, jobs and local communities. Marine science and collaborations with the ICES community will have a key role to play in these policy areas.
  29. The Irish Government have stated that supportive policies can ensure a just transition across the regions of Ireland as we reshape how we live and work, and balance economic growth with environmental sustainability. Innovation, research, and education and skills will be crucial in positioning Ireland in an increasing competitive global landscape through a time of significant change. This will be reflected in the Marine Institutes future modus operandi.

## **SUMMARY OF THE VIEWS OF SOME ICES MEMBER STATES DELEGATES ON THE IMPACTS OF COVID -19**

### **VIEWS ON THE IMPACTS**

- (1) There is a recognition that the pandemic will change the work practices of home institutes and their working processes with ICES.
- (2) In many ICES Member Countries (MC's) fieldwork (sampling and surveys) were severely disrupted or postponed. Laboratory work was less severely impacted. The impact of disrupted sampling on fisheries data will become apparent as ICES delivers advice for 2022 and 2023.
- (3) Fishery-dependent data collection activities were impacted differently at a regional level. There were also delays in responding to data calls in some MC's.
- (4) Some MC's increased their socio-economic data collection activity.
- (5) The pro's and con's of virtual meetings were highlighted by all MC's. Virtual meetings are not effective in dealing with sensitive issues and participants from different time zones cause logistical problems. ICES scientists adapted quickly to the rapid move from physical to remote meetings. Staff fatigue (i.e. Teams and Zoom Fatigue) was a feature of some MC's responses.
- (6) Other areas negatively impacted in MC's were grant proposals, conferences (hosting and attendance - ASC) networking, teaching, mentoring, research (e.g. PhD's) and "in person meetings".
- (7) The negative impact of COVID-19 on career progression was also highlighted in some MC's.
- (8) The negative and positive impacts on working from home (remote working) featured in most Delegates responses. Issues related to home internet access and bandwidth were also highlighted.
- (9) The decline in mental health and wellbeing of staff was also highlighted.
- (10) The negative impacts of COVID-19 were most evident in scientists with disabilities and in women in full time employment.

### **VIEWS ON THE FUTURE**

- (1) All MC have recognised the need for new work practices and clear guidelines for staff that embrace new working norms around flexible working, mentoring, training, mental health, and wellbeing as we all enter an increasingly virtual workplace.
- (2) There is a need to find new ways of informal networking within the marine science and broader science communities.
- (3) Ensure access to online conferences, seminars, meetings and continuous learning activities.
- (4) Ensure the impacts of COVID-19 do not negatively impact on career progression and recruitment.
- (5) Travel (both domestic and international) will be restricted having positive benefits in home laboratories travel budgets and general CO2 emissions.
- (6) The need for face to face meetings is necessary for key discussions.
- (7) IT will have a major role to support technology choices by Member Countries in the new virtual ICES workspace.
- (8) ICES meetings and intercessional work need to be "redesigned" (separate out intercessional work; discussion; sensitive decisions; incorporation of webinars; new IT tools to facilitate new ways of working).
- (9) Address some of the TOR's of ICES Expert Groups through webinars.
- (10) The ASC is a flagship for ICES and the future format needs to be reviewed.

#### 4.11 European Marine Board (EMB) Survey of the Marine Science Community

One of the key principles of the BCSGC19 was to use existing published reports on the impact of COVID19 on the marine science community. A useful survey published by the European Marine Board in 2021 examined the impacts on the European science community. The results presented below are of relevance to the outputs of the BCSGC19.

With the global COVID-19 pandemic driving large-scale lockdowns in Europe in 2020, the EMB Secretariat was keen to understand the impacts these had on EMB member organizations, and their research and teaching activities. With lockdown conditions continuing across most of Europe, in early 2021 the EMB Secretariat re-launched the 2020 survey to gain more insight into the impacts of COVID-19 on EMB member organization and their research and teaching activities 6 months on.

An updated survey was conducted in February 2021. The survey repeated the questions in the original survey from summer 2020 which asked about both the negative and positive impacts that EMB member organizations had experienced, as well as the implications they foresaw for their future activities. It also asked members about inequalities in the impacts experienced by different groups of staff in their organizations. The updated survey also asked some additional questions about how the situation in February 2021 compared to that in summer 2020, about their expectations for the future and about whether longer-term measures had already been taken within institutes.

Further details can be found on <https://www.marineboard.eu/publications/covid-and-marine-science-update>.

10 key points from the EMB survey are listed below. The points in bold are very much in line with the outputs from the survey of the views of some ICES Delegates.

##### Some Key Findings from the EMB Survey

- (1) **70% of respondents have had to cancel or postpone research cruises, field work, laboratory work, conferences and workshops.**
- (2) **50% have experienced impacts on data availability,**
- (3) 89% have had increased ability to attend events online and 50% noted increased audiences from this move.
- (4) 50% said they had been motivated to try new virtual initiatives.
- (5) **44% were not aware of disparity in the impacts of COVID-19 based on gender, race or age. 50% were aware and 6% didn't know.**
- (6) 33% of respondents noted that their institutes had already established additional procedures or resources to tackle inequality in impact from COVID-19.
- (7) **61% expect further reductions in travel funding and 33% have already experienced examples of this.**

- (8) 83% expect there to be less international travel for meetings in the future and 39% expect there to be less travel for field work.
- (9) 56% expect to see movement of some teaching and training to online.
- (10) 22% expect there to be reductions in funding in marine science.



## COVID AND MARINE SCIENCE - UPDATE

*In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.*

### IMPACT INEQUALITY

#### INEQUALITY AWARENESS

**44%** were **NOT** aware of disparity in impact of COVID-19 based on gender, race or age, 50% was aware and 6% didn't know

The impact on different people depends on their situations and this is hard to generalize.

#### MONITORING INEQUALITY

**33%** of respondents noted that their institute is **NOT** testing / monitoring for impact disparity among their staff, 22% are and 45% didn't know

#### ADDRESSING INEQUALITY

**33%** of respondents noted that their institute has already established additional procedures or resources to tackle inequality in impact from COVID-19

### EXPECTED IMPACTS

#### STAFFING

**28%** expect future reductions in ability to employ new staff and around 20% said they or their colleagues had already experienced this

#### TRAVEL

**61%** expect future reductions in travel funding and 33% had already experienced examples of this

#### RESEARCH FUNDING

**72%** have experienced impacts on funded projects, including receiving no-cost extensions

**50%** expect future reductions in or redirection of research funding, and 17% said they or their colleagues had already experienced this

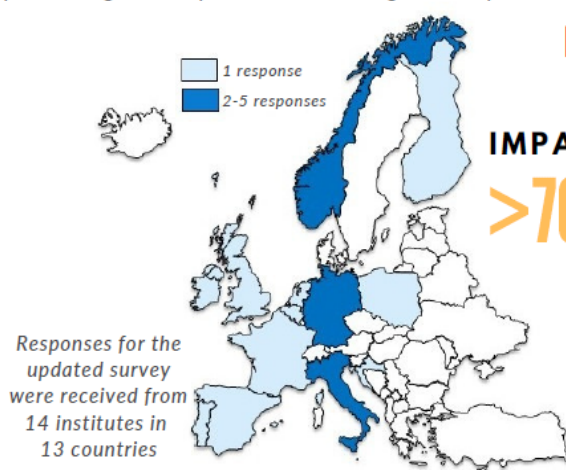
#### POSITIVE OUTCOMES

**50%** foresee increased support and resources for online interaction, and around 45% said they or their colleagues had already experienced this

**23%** said that their institute had been able to, or had plans to undertake COVID-19 specific marine research

## COVID AND MARINE SCIENCE - FEBRUARY 2021 UPDATE

In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.



### NEGATIVE IMPACTS

#### IMPACTS ON RESEARCH

**>70%** have had to cancel or postpone:

- Research cruises
- Field work
- Laboratory work
- Conferences
- Workshops or interviews

#### TEACHING & INTERNS

**~ 60%** felt there has been a negative impact on teaching and on ability to take on interns or students

#### IMPACTS ON DATA

**~ 50%** have experienced impacts on data availability, including from long-term monitoring

### POSITIVE IMPACTS

#### SUPPORTING THE COVID-19 RESPONSE EFFORT

**56%** of institutes donated protective equipment to front line workers and care givers

**17%** of institutes assisted with laboratory work, research work, and/or by providing homeschooling materials

#### MOVING ONLINE

**89%** agreed that they have had an increased ability to attend events now that they were online, and 50% noted increased audiences from this move

**50%** said they have been motivated to try new virtual initiatives such as webinars or podcasts, and 44% said they had already launched their webinar or podcast



## COVID AND MARINE SCIENCE - UPDATE

*In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.*

### IMPACT INEQUALITY

#### INEQUALITY AWARENESS

**44%** were **NOT** aware of disparity in impact of COVID-19 based on gender, race or age, 50% was aware and 6% didn't know

The impact on different people depends on their situations and this is hard to generalize.

#### MONITORING INEQUALITY

**33%** of respondents noted that their institute is **NOT** testing / monitoring for impact disparity among their staff, 22% are and 45% didn't know

#### ADDRESSING INEQUALITY

**33%** of respondents noted that their institute has already established additional procedures or resources to tackle inequality in impact from COVID-19

### EXPECTED IMPACTS

#### STAFFING

**28%** expect future reductions in ability to employ new staff and around 20% said they or their colleagues had already experienced this

#### TRAVEL

**61%** expect future reductions in travel funding and 33% had already experienced examples of this

#### RESEARCH FUNDING

**72%** have experienced impacts on funded projects, including receiving no-cost extensions

**50%** expect future reductions in or redirection of research funding, and 17% said they or their colleagues had already experienced this

#### POSITIVE OUTCOMES

**50%** foresee increased support and resources for online interaction, and around 45% said they or their colleagues had already experienced this

**23%** said that their institute had been able to, or had plans to undertake COVID-19 specific marine research





## COVID AND MARINE SCIENCE - UPDATE

*In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.*

### LOOKING TO THE FUTURE

#### TRAVEL

**83%** expect there to be less international travel for meetings in the future, and 39% expect there to be less travel for field work

#### PLANNING

**>30%** said that their institute has already released a policy for future events, or has engaged in discussions with staff regarding future operations

#### TEACHING

**56%** expect to see movement of some teaching and/or training online in the future

#### RESEARCH FUNDING

**22%** expect there to be re-direction of funding away from marine science in future

### COMPARING THE SITUATION IN AUGUST 2020 TO FEBRUARY 2021

6% of respondents said that research activities had returned fully to pre-COVID levels

44% said that some research activities had resumed but the situation was not yet at pre-COVID levels

17% said that only a few research activities had been able to resume

11% said that the research activity situation was still the same as in August 2020

Nine respondents/institutes completed both surveys. Overall, the responses to the questions were consistent between the two surveys, with only minor changes in the outcomes, except for a notable increase in awareness of impact inequality from 22% in 2020 to 44% in 2021.

## 5 Addressing TOR 3 – Training and Wellbeing

### 5.1 Supporting the Implementation of the BCSGC19 Recommendations

BCSGC19 - TOR 3 - To make recommendations on training for participants (particularly the chairs) in remote working methods and approaches that address the nature and objectives of the different types of ICES meetings.

Recommendations under ToR 4 highlight specific training needs for secretariat staff and ICES community. Training needs to be provided for EG chairs, Committee chairs, SG chairs, Secretariat, Symposia chairs, ICES training course convenors.

All training should be developed in a sustainable way that allows it to be available and accessible to the above target audiences, who operate across time-zones and on different terms of service with a high-rotation in these roles.

The format of the training can include:

- Text-based documents, in fact-sheet format with infographics
- Online (interactive) training sessions performed by an external expert
- Recorded webinars (non-interactive)
- Smaller online/in-house workshop/webinars aimed at a subset of ICES community

**Supporting BCSGC19 Recommendation 1** - The suggested change of how a multi-year ICES Expert Groups will work in future, as well as the need to accommodate more online meetings, effectively balance meetings that will be a mix of physical and remote attendees, and the increasing use of different workflows and processes, requires specific tools, skills, and competences to ensure equitable participation, good cooperation, community building and efficiently working together while being considerate of human well-being. The remote nature of meetings and workflows might also exacerbate intercultural differences in working and communication style.

The work in ICES is organized through specialised groups and processes, which have specific needs:

- ADG's: building consistency and formulating narrative; monitoring who is in, and who is active in the conversation, this requires sensitive moderation that is mindful of inclusion;
- Benchmark groups: innovation and agreeing applied methods;
- Stock Assessment Groups: use of the Transparent Assessment Framework, timely delivery;
- Expert groups: science synthesis and innovation, uptake of emerging science areas;
- Symposia: exchange of science and networking, identification of emerging science areas;
- Training Groups: organising remote learning;

- Committees: Collaboration on strategic priorities, identification of emerging science areas.

**Supporting BCSGC19 Recommendation 2:** General challenges are related to running meetings (online and mixed physical/online), organizing the work and workflows, and more broadly on onboarding new people, building community, driving innovation and making decisions. These challenges can be partly addressed by using tools and partly only through strengthening skills in how to lead a change in work culture, and organise dispersed groups and workflows. Training on intercultural competences will help to facilitate working in an international setting.

**Supporting BCSGC19 Recommendation 3:** The introduction of TAF was meant to support the work of Assessment groups and to open up resources for more science within the groups. To achieve this, the implementation needs to be supported by active training of stock assessors and stock coordinators.

**Supporting BCSGC19 Recommendation 4:** Gender mainstreaming, the active consideration of diversity, equity and inclusion and ensuring a respectful and open work culture requires awareness training for the community as well as special training for secretariat staff and community leaders to be able to handle cases of misbehaviour and harassment in competently and confidently.

**Supporting BCSGC19 Recommendation 5:** Depending on the future formats of the ASC, training need to be provided to session conveners to enable them to effectively run sessions in virtual settings, both in terms of technical skills for the use of tools as well as moderation skills and to secretariat staff to develop and implement new formats effectively.

## 5.2 Wellbeing

One aspect that has not been explicitly in focus in ICES work in the past, but becomes increasingly important and increasingly difficult due to the remote work environment, is the aspect of human wellbeing.

As the population fully vaccinated against COVID-19 grows, more employers are asking employees to come back into the office. With a workforce already suffering from a notable rise in mental distress from the pandemic a real risk exists that millions of people will encounter yet another wave of stress and anxiety as they return to the workplace. Issues that may emerge include;

- Recognising how different employees anticipate and experience on-site work differently
- Communicating how positive and negative mental health impacts are valid
- Caring for the health and safety of employees and their families through specific COVID-19 practices (for example, certain spaces closed to help with social distancing, easy access to COVID-19 testing)
- Supporting flexible and hybrid/remote work options and allowing employees to adjust their schedules and hybrid/remote arrangements after trial periods

- Addressing stigma head on by replacing negative attitudes and discriminatory policies with healthier attitudes

How can we change working culture to ensure that returning to physical meetings and continued remote work is balanced? The challenge within a network organisation like ICES is that in the work settings, people often only have informal leadership roles and the work and home-life realities of the participants in groups is wide ranging. Thus, the expectations on how much consideration an EG chair can give to individuals in a group and how much leverage the chair has in supporting group members needs to be realistic.

Active awareness of different situations and the flexibility to react to different ways individuals can contribute to a given work flow and group, needs to be communicated, and leadership (SCICOM and ACOM Chairs, SG chairs, ACOM Vice Chairs) needs to keep an open dialogue to provide support when needed. The needs of the ICES community and the support to be provided by secretariat also need to reflect the current capacity of the secretariat.

As with the recommendations on gender awareness, diversity, equity, and inclusion; wellbeing should be embedded in the values and culture of ICES.

## TRAINING REQUIRED TO SUPPORT BCSCC19 RECOMMENDATIONS

**Supporting BCSGC19 Recommendation 1** - The suggested change of how a multi-year ICES Expert Groups will work in future, as well as the need to accommodate more online meetings, effectively balance meetings that will be a mix of physical and remote attendees, and the increasing use of different workflows and processes, requires specific tools, skills, and competences to ensure equitable participation, good cooperation, community building and efficiently working together while being considerate of human well-being. The remote nature of meetings and workflows might also exacerbate intercultural differences in working and communication style.

**Supporting BCSGC19 Recommendation 2:** General challenges are related to running meetings (online and mixed physical/online), organizing the work and workflows, and more broadly on onboarding new people, building community, driving innovation and making decisions. These challenges can be partly addressed by using tools and partly only through strengthening skills in how to lead a change in work culture, and organise dispersed groups and workflows. Training on intercultural competences will help to facilitate working in an international setting.

**Supporting BCSGC19 Recommendation 3:** The introduction of TAF was meant to support the work of Assessment groups and to open up resources for more science within the groups. To achieve this, the implementation needs to be supported by active training of stock assessors and stock coordinators.

**Supporting BCSGC19 Recommendation 4:** Gender mainstreaming, the active consideration of diversity, equity and inclusion and ensuring a respectful and open work culture requires awareness training for the community as well as special training for secretariat staff and community leaders to be able to handle cases of misbehaviour and harassment in competently and confidently.

**Supporting BCSGC19 Recommendation 5:** Depending on the future formats of the ASC, training need to be provided to session conveners to enable them to effectively run sessions in virtual settings, both in terms of technical skills for the use of tools as well as moderation skills and to secretariat staff to develop and implement new formats effectively.

### Wellbeing

Wellbeing aspects of work life need to be considered at all levels of the ICES community, fostering an equitable and inclusive working environment, that allows contributions regardless of different individual realities.

Develop training material, in the form of in-person short courses and recorded materials to address key aspects ICES community wellbeing. Including effective leading of meetings, organization of workflows, as well as training on skills ensuring social interaction and community building. As with the recommendations on gender awareness, diversity, equity, and inclusion; wellbeing should be embedded in the values and culture of ICES.

- **OWNER TRAINING** – Bureau SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – SCICOM
- **RESOURCES** – Existing Training Budget and Additional Training Resources included in Recommendations 1 to 7.
- **ESTIMATED COSTS** – Existing Budget and New Resources

**FOOD FOR THOUGHT – A HEALTHY WORKFORCE**

How can you sustain the speed of change brought about by the pandemic and still retain a healthy workforce?

Without a doubt, I don't think that this speed is sustainable. It's one thing to work during a crisis, when everyone's on board and kind of on adrenaline—working long hours, week after week. But over the long term, it's not a sustainable way to work. As many of us have tried to home school young children, look after vulnerable people in our families, and have endless meetings, even after dinner, I think every single one of us has spent at least some time asking, "Do we have to keep working the way we were before? Do we need to keep traveling the way we were previously? Do we need to really go back to what we thought was normal?"

McKinsey Interview with Leena Nair,  
Chief Human Resources Officer, Unilever  
March 2021

## 6 Addressing TOR 4 – Recommendations

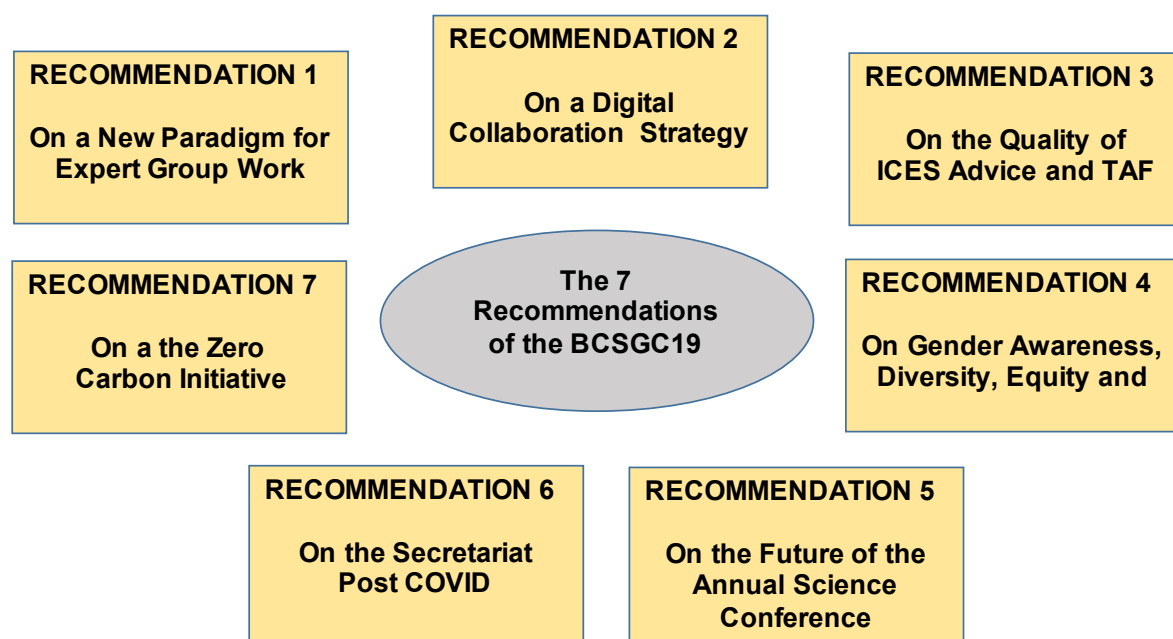
The package of seven linked recommendations from the BCSGC19 are shown in the schematic below. These recommendations focus on a 7 broad but inter-linked areas. They address a the need for ICES to focus on;

- (1) A new paradigm for expert group work;
- (2) A digital collaboration strategy;
- (3) The quality of ICES advice and TAF
- (4) Gender awareness, Diversity, Equity and Inclusion;
- (5) The Future of the ASC;
- (6) The Secretariat Post COVID;
- (7) The Zero Carbon Initiative.

They all represent key areas that ICES should focus on as the ICES community begins to operates in the new post COVID era.

**Figure 6.1**

Schematic summarising the 7 Recommendations of BCSGC19.



## Recommendation 1 – New Paradigm for Expert Group Work

Even before the pandemic, ICES expert groups were moving towards remote meetings, occurring a few times throughout the year and focusing on deliverables. The move to 100% remote meetings has provided opportunities and challenges, and has led to a number of “ICES norms” to be waived.

The shift to 3-year resolutions for science oriented expert groups (working groups) was introduced around 2011, and less formalised annual cycles were already occurring prior to March 2020.

Resolutions of Council, and the devolved resolutions of the Committees, are the basic governance mechanism of ICES, as mentioned in the [Rules of Procedure](#). They set objectives and direction for all groups in ICES. The Expert Group resolutions contain the objectives for the group, the terms of reference (work tasks and deliverables) and scientific justification for the work of the group. They also list the name of Chairs, the dates and location of the meeting. The current system describes Expert Groups as mainly focused around the concept of one annual meeting in a fixed location leading to a final report at the end of the 3-year term (Box 1, taken from [Guidelines for ICES Groups](#)).

### EXPERT GROUPS

Expert groups 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 Committee and/ or Advisory Committee. Expert groups publish their work in the series “ICES Scientific Reports”

Currently the expert groups perform a number of roles from developing science and innovation, providing and synthesising evidence for advice, offering a safe space for scientific debate and collaboration, quality assurance and data management, and governance of network processes.

The idea that this is done through an annual meeting is anachronistic and does not reflect current working practices.

Various objectives and requirements are delivered by the current resolution system *[decision and data management processes shown in brackets]*:

1. Approval of the group’s resolution, including the work plan, the chairs and the proposed meetings. *[Approval through resolution forum or formal meetings, and the information managed through the Resource Coordination Tool (RCT)]*
2. The resolution itself provides *[Information to be managed through resolution database]*
  - a. background information, including dates, times and locations of meetings, and describes needs for logistical support usually by



the secretariat, and sometimes by host institutes. *[Information managed through RCT and logistical support information is not being included in the new database approach]*

- b. a listing of the expected work plan of the groups as terms of reference, which also provides a mechanism to collate metrics on outputs, and evaluate and review the groups' performance.  
*[Information to be managed through resolution database and fulfilment through e-evaluation and final report]*
- c. a reporting route and mechanism for the groups, with expected dates, leading to public output/profiling of the expert groups.  
*[Information to be managed through resolution database]*

3. Offering the opportunity to publicise the group prior to the group meeting.

*[Actions through correspondence within the secretariat, and no information management system at present]*

4. Nomination of experts to the group, either through the Council delegates or through invitations of the chair(s).

*[Nomination through email to [nominations@ices.dk](mailto:nominations@ices.dk), viewed on delegates dashboard, or email from expert group Chair, and information managed through RCT]*

While subtle nuances exist between the different expert groups (e.g. science development, synthesise into advice, governance groups), all are initiated using this resolution format. The current form steers groups to try setting up their work around one physical meeting per year.

The consequences of the move away from 100% physical meetings are described elsewhere in this report. ICES procedures have generally withstood the challenges of a system under stress from the pandemic disruption. However, many weaknesses have been identified, and now may well be an opportune time to adapt the system after this stress test.

In particular, the system has been challenged by the:

- evolution to other various forms of group working (e.g. to a series of online meetings in preparation for a larger synthesis session)
- invitation to a wider online community to “join in” i.e. the traditional budget/travel restrictions no longer being a determining factor in participation, as discussed at Council 2020
- requests to expert groups to present their work remotely in wider external fora
- redefining of a participant, and the monitoring of observers
- redefining of engagement of a participant

- challenge to the secretariat to support and manage the expert groups, maintaining good governance, metrics and transparency of operations
- challenge to develop a single information system to efficiently manage, and quality assure the data flows.
- change in focus from a synthesis report (what we did and how) delivered on a timetable related to one physical meeting per year, to a focus on specific outputs related to different ToR delivered over a period of time
- use of meeting, reporting and collaboration tools that are not currently 'recognised' in the ICES portfolio

There are examples of process-based approaches, rather than meeting based approaches in operation. A number of groups already adopted workflows that include a series of shorter meetings, focussed on single ToR and continue work over the SharePoint side (e.g. WGBESEO) or have adopted new tools like GitHub and work task based continuously on this platform, supported by shorter remote meetings and if needed a longer physical or remote meeting (e.g. WGS-FDGOV).

Another example is the ICES [advice processes](#), e.g for bycatch advice, although the steps are still linked to events, rather than deliverables or approval points.

#icesrct\_requesttopic :  
2021 Advice on bycatch

2021 Advice on bycatch	***	AdviceBYC 2021	AR	Release of bycatch advice	02-12-2021 04:00	02-12-2021 04:00	313470007	Advice release	
2021 Advice on bycatch	***	WCBYC 2021	ACOM	ACOM web conference to finalize advice on bycatch	22-11-2021 06:00	22-11-2021 08:00	313470003	Web conference	Henn Ojaveer
2021 Advice on bycatch	***	ADGBYC 2021	ADGBYC	Bycatch Advice Drafting Group	08-11-2021 01:00	10-11-2021 10:00	313470002	By correspondence / WebEx	Henn Ojaveer -
2021 Advice on bycatch	***	WGBYC 2021	WGBYC	Working Group on Bycatch of Protected Species	28-09-2021 02:00	01-10-2021 10:00	313470000	La Rochelle, France	Gudjon Sigurdsson - Allen Kingston -

Any adapted process must ensure coherent documentation in the relevant information management systems to ensure good governance of the expert groups and enable tracking the implementation of Strategic, Science and Advice plans. It must show decision flow for approvals and be transparent on dashboards. The system must be efficient, with only single entry of information an element and a clear primacy in veracity of data storage. Consideration of the utility of remote working should be included. The RCT and incoming Resolution Database can be used to this end, if developed in a modular manner. A decision is required swiftly, as the resolution database is in its final beta testing stage. There is also currently an ongoing review of the nominations system, this will link to the RCT. There is no plan currently on information management of the publicity for expert groups around advertising existing/new groups and disseminating the outputs of Groups (e.g. advertising their scientific reports).

## **Recommendations to SCICOM, ACOM and facilitating/supporting role of the secretariat**

### **1. Operational process change**

In order to reduce artificial logistical and time constraints imposed by packaging all information into a resolution, explore options for separating the resolution process and associated information management into modules along the following grouped elements:

- a) The terms of reference (the overall direction, tasks and deliverables, monitoring and evaluations)
- b) The approval of Chairs and, if necessary, reviewers (such as for benchmarks)
- c) The logistics of the work (working and reporting procedures, if necessary the meetings dates, the utility of remote working, frequency and location, nominations to expert groups)
- d) Publicity pre and post expert group

This would primarily affect national delegates, expert group chairs and the Secretariat and be implemented over a 1–2 year timeframe starting as soon as possible.

### **2. Cultural change**

To refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work. Meetings will be a tool, not the sole element of an expert group. This reflects the organic change that is already happening across the network and will require adjustment of the procedures, reporting and overall management of expert groups.

The notion that an expert group is synonymous with a meeting should be removed from guidance documents and reporting. Expert groups would be linked to start and end dates, and deliverables. The potential for remote working should be considered. The operational changes listed above will help this refocus and maintain information flow and management.

This would primarily affect expert group members and chairs, SCICOM and ACOM, with implications also for the Secretariat in supporting this. A cultural shift would take effect over a defined period, and likely linked to a cycle of the ICES Strategic plan.

SCICOM, ACOM and the supporting departments of the secretariat should swiftly report on potential opportunities and challenges of the refocus in approach. This should be before the end of 2021.

**Recommendation 1 - On a new Paradigm for Expert Group Work**

- **Operational Process Change** - In order to reduce artificial logistical and time constraints imposed by packaging all information into a resolution, ICES should explore options for separating the resolution process and associated information management into modules along the following grouped elements: Terms of Reference; Approval of Chairs; Logistics of the work; Publicly communicate about the establishment of new groups and their outputs.
- This operational process change would primarily affect national delegates, expert group chairs, and the Secretariat and should be implemented over a 1–2 year timeframe, starting as soon as possible.
- **Cultural Change** - To refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work. Meetings will be a tool, not the sole element of an expert group. This reflects the organic change that is already happening across the network and will require adjustment of the procedures, reporting and overall management of expert groups.
- This cultural change would primarily affect expert group members and chairs, SCICOM and ACOM, with implications also for the Secretariat in supporting this. A cultural shift would take effect over a defined period, and likely linked to a cycle of the ICES Strategic plan (3 years).
- **OWNER** – ACOM; SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat
- **RESOURCE REQUIREMENTS** – 1.5 Positions over 3 years (2022 to 2024)
- **ESTIMATED COSTS** – 0.5 position focused on Change Management + 1 position focused on Implementation – Cost = 823,000 DKK per annum. Additional Consultant Fees may be required = 250,000 DKK.

## Recommendation 2 - Digital Collaboration Strategy

The change in working habits and meeting formats precipitated by COVID-19 has greatly affected the information technology landscape that supports the way in which the ICES community collaborates. We are exposed to a greater number of software tools in our daily work, and a greater choice of software (and hardware) solutions to any given task that we need to perform.

The ICES community, and the ICES Secretariat, is challenged in both adopting and learning these new tools, as well as ensuring adequate training and support for their use. There is a risk that without a clear strategy, different tools may be used in parallel, which may result in outputs that are not compatible; and tools adopted into the core business areas where not all participants have equal and fair access and training to the resource.

For the ICES community to work effectively and in harmony in a distributed network of people in time and space, ICES should develop a digital strategy for collaboration that outlines the key **areas** that the organisation needs to offer **IT solutions/services** in, and what services it needs to offer within each area.

Furthermore, ICES needs to define the core supported services from the ICES Secretariat, and to also outline additional services from the ICES Community that could be used in place, or in addition to the core services – and under what criteria. Finally, ICES need to outline any security and retention policies in these areas.

The digital strategy should be relatively high level and focussed on managing informed technology choices for the organisation rather than specific technology/software offerings per se. It would build on existing agreements, principles and policies.

*A key area would be **Online meetings**, the services within this area might include web conferencing, online polling, online whiteboards etc. Within this, an accepted criteria could be that all online conferencing platforms allow up to 250 regular attendees, and all attendants can speak, raise hand, message and phone dial in.*

The digital strategy would need substantial input from the practitioners that are using these tools on a daily basis. Chairs of expert groups (via WGCHAIRS) would need to be core to this, as well as members of the ICES Secretariat that are tasked with administering or supporting these tools.

This should be started as soon as possible and an outline available for ICES Council in the Autumn of 2022.

**Recommendation 2 - On a Digital Collaboration Strategy (DCS)**

- ICES should develop a digital strategy for collaboration (DCS) that outlines the key areas that the organisation needs to offer IT solutions/services in, and what services it needs to offer within each area.
- The digital strategy should be relatively high level and focussed on managing informed technology choices for the organisation rather than specific technology/software offerings per se. It would build on existing agreements, principles, and policies.
- While it would be preferable to assign this task to an existing expert group or Committee, due to its cross-cutting nature, it would be appropriate to form a dedicated workshop to establish the strategy and also define the forward process for governance and review of the digital collaboration strategy.
- This should be started as soon as possible and an outline available for ICES Council in the Autumn of 2022.
- Note strong links to TOR 3 – Training and to Recommendation 4 (Develop GADEI Digital Support)
- **OWNER** - SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat; Start with a series of Workshops with stakeholders – Formation of Core ICES DCS Team – Training Needs.
- **RESOURCE REQUIREMENTS** – 0.5 Person for 3 Years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Person to support Workshop, Core Team – and Training. Cost = 220,000 DKK per annum.

### Recommendation 3 – On Quality of the ICES Advice and TAF

#### Deterioration in TAF adoption coincides with pandemic, impacting schedule for quality assurance of stock assessments.

The pandemic and change in working practices has coincided with a reduction in the use of the Transparent Assessment Framework ([TAF](#), Figure 1). This was unforeseen, especially as take up was good in 2019, and it was hoped that momentum would continue. A big driver in 2019 were the localised training courses in TAF. These did not continue in 2020. The importance of skill development, training, and capacity building are important for quality of the advice and for the expertise in the institutes. It is expected that with increased use, TAF will improve the effectiveness and efficiency of the advice.

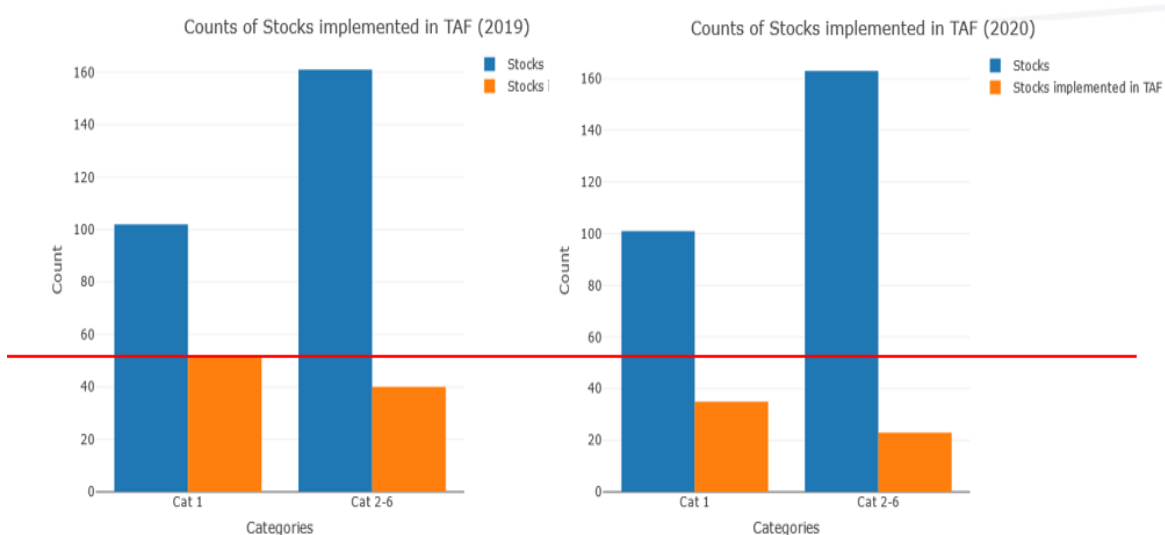


Figure 6.2 Number of stocks implemented in TAF in 2019 and 2020.

A survey of TAF users and potential users (n= 42) was conducted in June-July 2021 to understand in more detail the perceived barriers to its use, the benefits of its adoption from the user perspective and the potential improvements that would lead to increased use. Over 60% of respondents were stock assessors or stock coordinators running assessments that lead to ICES advice. A large proportion saw many benefits in using TAF (Figure 2). These included clear documentation of code and data, robust scripting, version control and automation. The issues of sharing of workload was not so highly rated, potentially suggesting that as yet, TAF is not seen as a routine tool for assessment and forecast.

#### 4. What are the main advantages for you in using TAF in its current form?

[More Details](#)

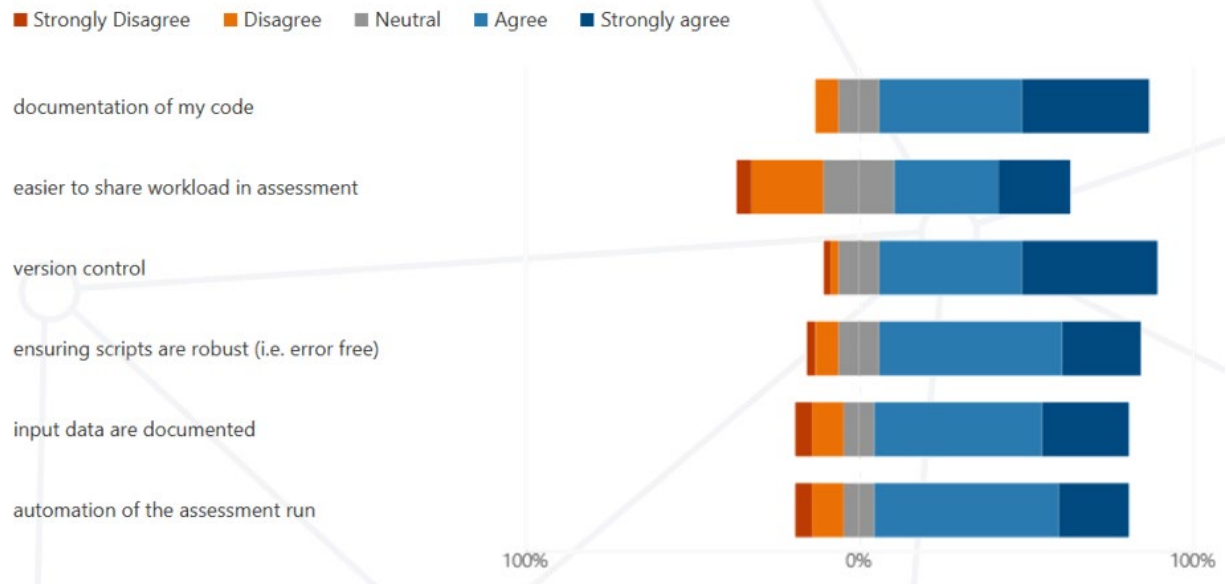


Figure 6.3. Survey responses on the potential benefits of TAF.

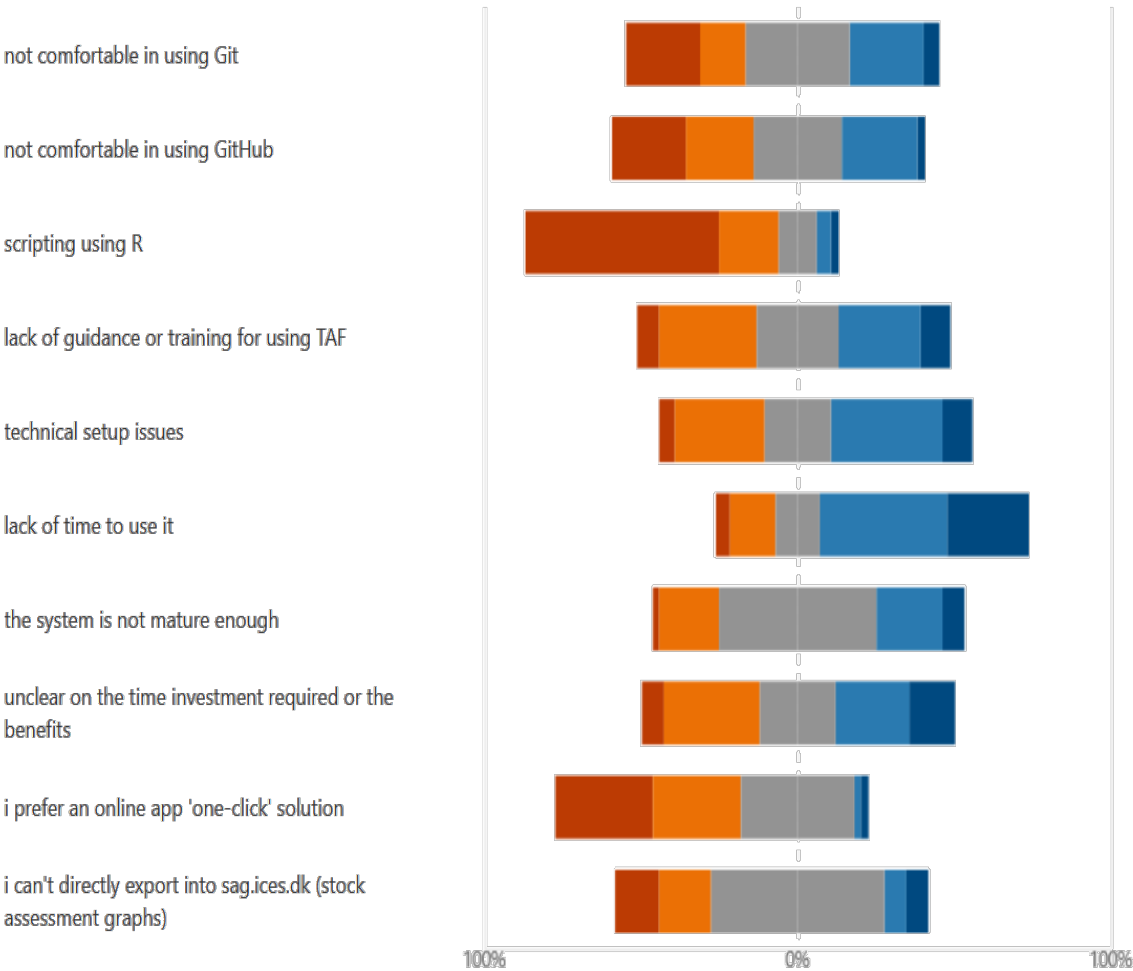
The respondents were quite clear about the potential barriers to implementation (Figure 3). Time investment is required but not being made available. This enables dedicated time to learn/use TAF in regular assessment cycle. There are still some technical issues, such as users experiencing challenging setup issues in configuring their software environment to use the scripts/repositories. More guidance and training is needed with supporting online documentation. Competence in R scripting or GIT was not seen as a barrier to use of TAF.



3. What are the main barriers for you in using TAF?

[More Details](#)

Strongly Disagree Disagree Neutral Agree Strongly agree



Figures 6.4. Barriers to using TAF.

### Recommendation 3 - On the Quality of the ICES Advice and TAF

The COVID-19 pandemic has caused increase in work pressures at home laboratories and at the ICES Secretariat. This, along with other issues has impacted ICES workload.

- In response to the stalled uptake and application of the Transparent Assessment Framework (TAF) throughout the assessment process, and the results of the recent survey of TAF users; home institutes must make time available for TAF implementation and training, with key messaging that this is a priority for ICES as a quality assured advice provider. It is recognised that COVID19 has had a major impact on the TAF situation in that it has put severe pressure on the Secretariat and Member Countries.
- ACOM and WGTAFGOV will re-emphasise the role of TAF and prioritise guidance and online documentation and assistance/helpdesk which requires resourcing in the Secretariat).
- Secretariat to improve the functionality and technical set up (including to export directly into the Stock Assessment Graphs (SAG) database and implementation between years).
- **OWNER** - ACOM
- **IMPLEMENTER/IMPLEMENTATION** – ACOM; Secretariat; WGTAFGOV, Member Countries.
- **RESOURCE REQUIREMENTS** - 1 Person for 3 Years.
- **ESTIMATED COSTS** - 1 Person focused on training and implementation of TAF particularly within Member Countries. Cost = 435,000 DKK per annum

## Recommendation 4 - Gender Awareness, Diversity, Equity and Inclusion

With evidence mounting of differential gendered impacts from restrictions and responses related to the COVID-19 pandemic, the ICES community must ensure that the gender perspective is considered as we transition to new ways of working.

Given the persistent gender bias in marine science (Giakoumi et al., 2021), and the under-representation of women in the decision-making levels of ICES, critical gender awareness is needed at individual, community, and institutional levels to ensure that new ways of working have specifically considered how to foster diversity, equity, and inclusion (DEI) in ICES work and meetings.

### Evidence/indicators of gendered impacts

As early as April 2020, the evidence of the differential gendered impacts from the response to COVID-19 pandemic started to emerge with evidence of fewer women submitting papers to peer-reviewed publications, while male contributions increased<sup>12</sup>.

Recent gains towards gender equality in workplaces are threatened by the impacts of COVID-19. McKinsey reports that for the first time, there are indications of higher proportions of women than men considering leaving the workforce, and that women have been feeling more pressure at work<sup>3</sup>.

While lockdowns ease, children return to school, and freedoms return, in academia, there are calls for specific actions to prevent further inequities that will the under-representation of women without specific actions to correct for periods where researchers were unable to publish or start on research, caused by additional home and caring responsibilities<sup>4 5</sup>.

In a survey<sup>6</sup> of institutions conducted by the European Marine Board, they report that 57% of respondents "...were not aware of disparity in impact of COVID-19 based on gender, race or age." Highlighting the importance of raising the profile of these issues within ICES, as well as at the institute level.

Myers et al. (2020) surveyed 4 535 faculty or principal investigators in the USA and Europe, primarily. All else being equal, female scientists reported a 5% larger decline in research time than their male peers during the Covid-19 pandemic. For scientists with at least one child five years old

---

<sup>1</sup> <https://www.thelily.com/women-academics-seem-to-be-submitting-fewer-papers-during-coronavirus-never-seen-anything-like-it-says-one-editor/>

<sup>2</sup> <https://voxeu.org/article/who-doing-new-research-time-covid-19-not-female-economists>

<sup>3</sup> <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/seven-charts-that-show-covid-19s-impact-on-womens-employment>

<sup>4</sup> <https://www.pnas.org/content/117/27/15378>

<sup>5</sup> <https://www.labmanager.com/news/covid-19-shines-spotlight-on-gender-inequity-in-academia-23216>

<sup>6</sup> [https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB%20Members%2C%20Marine%20Research%20and%20COVID\\_Final\\_1.pdf](https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB%20Members%2C%20Marine%20Research%20and%20COVID_Final_1.pdf)

or younger, the decline in research time was even 17%. The authors recalled that women tended to be the primary care-givers of young children.

Initial analyses also suggest that women's publishing rate has fallen relative to men's amid the pandemic and that women are posting fewer pre-prints and starting fewer research projects than their male peers (Viglione, 2020).<sup>7</sup>

### Online meetings

The increased accessibility to ICES meetings during the remote work period via online meetings has increased the diversity of participants, and has been a benefit to the organization, with greater numbers of experts willing and able to contribute. Remote participation has also provided more convenient access to meeting participants with caring responsibilities, some who may not otherwise be able to participate when international travel is required. Remote participation options should continue to be part of ICES meetings even as physical options become possible again.

While the shift to online meetings may provide greater access, that may not directly translate into more inclusive working practices. Remote meetings may continue to widen the gap and create deeper divides between genders. While remote meetings have improved access and may be preferential for some with caring responsibilities, given the avoidance of travel and being away from home. The format of remote meetings may in fact make it worse for women to be heard in meetings<sup>8</sup>. Specific training is needed to ensure remote participation in meetings is handled in an inclusive manner.

Flexible working arrangements are important to Millennials and women<sup>9</sup>, and will be part of the "new normal". However, policies need to be implemented mindfully to prevent unintended consequences for women's careers<sup>10</sup>.

If female professionals become scarcer at the office, more women will feel as though they don't belong and opt to work remotely. So women will be even scarcer. This is a potentially dangerous cycle that threatens the strides in gender equity at the office that have been made in the past several decades. Women will miss out on the connections, networking and mentorship that lead to advancement. Meanwhile, they will experience increased loneliness and the stress that comes from feeling that the division between their work and their home life has eroded.<sup>11</sup>

Employees who are less often in the office may suffer negative impacts to their careers, employers should focus on avoiding creating two-tiers of employees,

---

<sup>7</sup> <https://en.unesco.org/news/covid-19-pandemic-disproportionately-affecting-women-science-and-engineering>

<sup>8</sup> <https://www.nytimes.com/2020/04/14/us/zoom-meetings-gender.html>

<sup>9</sup> <https://www.forbes.com/sites/joyburnford/2019/05/28/flexible-working-the-way-of-the-future/?sh=3a874e4b4874>

<sup>10</sup> [https://www.thelily.com/parents-want-to-work-from-home-for-good-for-moms-the-effects-could-be-dire/?tid=recommended\\_by\\_lily](https://www.thelily.com/parents-want-to-work-from-home-for-good-for-moms-the-effects-could-be-dire/?tid=recommended_by_lily)

<sup>11</sup> <https://www.washingtonpost.com/opinions/2021/03/03/remote-work-women-office-equity/>

and ensure evaluation and opportunities are based on output<sup>12</sup>. Output should be measured in a way that is proportional to hours worked, recognizing that women, and/or those with caring responsibilities may work part-time and should not be expected to produce at the same level as those who work full-time.

### References

Giakoumi, S., Pita, C., Coll, M., Frascchetti, S., Gissi, E., Katara, I., Lloret-Lloret, E., Rossi, F., Portman, M., Stelzenmüller, V., Micheli, F. 2021. Persistent gender bias in marine science and conservation calls for action to achieve equity, *Biological Conservation*, Volume 257, 109134 <https://doi.org/10.1016/j.biocon.2021.109134>.

### Recommendation 4 – On Gender Awareness, Diversity, Equity and Inclusion (GADEI)

- Gender Mainstreaming - Embed gender awareness, diversity, equity, and inclusion in the values and culture of ICES. Develop a Code of Ethics and Professional Conduct, revising and harmonizing the Code of Conduct and Meeting etiquette documents to foster a working culture that is respectful, diverse, and inclusive. Future work planning should account for diverse needs, with special attention to women, people with caring responsibilities, and other underrepresented groups
- Data Collection - Systematically collect gender disaggregated data to aid monitoring, evaluation, and to identify areas where strategic actions are needed to support equity of access and opportunities in ICES work
- Training - Provide training on gender and diversity, equity, and inclusion to the ICES community to foster a safer working environment, increased well-being, and equal opportunities
- **OWNER** - Council
- **IMPLEMENTER/IMPLEMENTATION** – Bureau can address the gender awareness, Diversity, Equity and Inclusion policy issue and drive this in all ICES work through the establishment of a ICES Gender Awareness, Diversity, Equity and Inclusion initiative (GADEI)
- **RESOURCE REQUIREMENTS** – 1 Position for 3 years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Position focused on Gender Mainstreaming and Training and 0.5 position focused on business intelligence and data collection = 435,000 DKK per annum.

<sup>12</sup> <https://hbr.org/2020/07/why-wfh-isnt-necessarily-good-for-women>

## **Recommendation 5 – Future of ASC**

### **The Future of the ICES Annual Science Conference (ICES ASC)**

A SCICOM subgroup on the ASC is in place to consider the implications and discuss changes to the ASC format, ensuring the key characteristics, networking, science exchange and the ASC as the ICES community event are strengthened and at the same time increasing inclusiveness and reducing environmental impact.

The ASC is the flagship event of ICES. It provides opportunities for marine scientists to present and discuss the latest marine science, develop new ideas, and establish partnerships. The ASC provides opportunities to develop networks of collaborators, to get feedback on research and to learn about new tools and techniques. While focused on the ICES community, the ASC facilitates interaction between ICES and the marine science community at large by providing a welcoming, resourceful, diverse, inclusive, and gender balanced, as well as a respectful working environment. Attending the ASC allows exchange within each respective field as well as linking to other fields, creating an innovative and creative atmosphere.

Due to the COVID-19 pandemic measures, the ASC 2020 was postponed to 2021 and will run in 2021 as a fully virtual event. This presents challenges in providing the same atmosphere and opportunities as a fully physical conference, but also provides opportunities to think beyond the physical conference and allowing for an even wider participation and inclusivity. However, this also affects the way we will run future Annual Science Conferences.

Although the baseline might still be the physical conference, ways to ensure remote participation as well as adding online only components to help increasing the reach of the conference and support networking, science presentations and other core aspects of the ASC need to be explored. This can include thinking about different formats and possibly shifting to alternating physical and online events. The online components also need to stand out from other online formats to be attractive and add value for the participants.

Will the ASC stay as one single annual event or do the online opportunities open up ways to allow a more continued exchange on science that is adding to the work of expert groups and opening up to the larger marine science community?

Networking, especially bringing in new people, is assumed to be more difficult or even impossible in a fully virtual setting. However, there are differences across generations and other communities, like online gamers, are successfully connecting through virtual means only and can serve as role models. Thus, including Early Career Scientists into the discussion is important.

We are operating in unknown territory, thus learning from experience and observing conferences which will take place in the next months, including the first online ASC in September, will be as crucial as testing different formats of online components at physical conferences, especially at the ASC 2022 in Dublin and the joint ICES/PICES conference in 2023.

Formats like debates on controversial topics between 2-4 panelists and active engagement of both physically and remote attending participants, can move the scientific discourse forward, if done well.

The expansion of the format requires more resources, especially within the secretariat to coordinate and organise as well as potentially for the host country to ensure technological capabilities are available.

Registration fees need to be set for attendance of the physical part of the conference and the remote participation to ensure fair distribution of costs but give enough incentive to engage. A low remote participation fee has been seen as a benefit for attendance of students and Early Career Scientists especially from low-income countries.

#### **Recommendation 5 – On the Future of the Annual Science Conference (ASC)**

- ICES will reflect on the future format of the ASC following the cancellation of the 2020 ASC due to the COVID19 pandemic.
- The existing SCICOM ASC subgroup will “think outside the box” to explore existing and new formats by actively collecting experiences from ASCs, other conferences, and other communities. The goal will be to maintain the ASC as a key ICES “flagship event” and ensure that the key characteristics of the ASC (e.g. networking, partnerships, science exchange) are strengthened while at the same time increasing inclusiveness and reducing environmental impact.
- The lessons learned from the new formats at the upcoming ASC’s in Copenhagen 2021, Dublin 2022, and from the joint ICES/PICES conference in the US in 2023 will critically inform the discussions on the future evolution of the ASC.
- Provide resource means to effectively coordinate this process in the Secretariat.
- **OWNER** - SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – SCICOM; Secretariat; Member Countries.
- **RESOURCE REQUIREMENTS** – 1 position for two years (2022 to 2023).  
**ESTIMATED COSTS** – 0.5 Position focused on lessons and new ASC formats. 0.5 position focused to support implementation of new formats at ASC 2022 = 435,000 DKK.

## Recommendation 6 – The Secretariat Post COVID

### Secretariat Observations for Post-COVID Operations

#### Based on results of Secretariat staff survey from April 2021

Drawing on the evidence of a recent survey of Secretariat staff on the impacts of COVID, it was found that experiences over the last year have varied considerably based on one's working areas as well as personal needs.

Given that the COVID-19 situation remains uncertain and dynamic, and the ICES Secretariat is in a major period of transition, (e.g. new Secretary General and move to new headquarters) these are preliminary observations with some initial ideas about recommendations or how they should be developed.

The survey highlighted the following issue areas.

Issue Area	Mitigation actions	Specific Recommendation
<b>ON WORKLOAD</b> How to handle the increase in workload resulting from new patterns of virtual meeting and support	The Secretariat sees a need for additional human and technical resources: both in terms of staff and equipment/tools. More work requires more help.  Furthermore, new ways of working require enhanced training in both software tools and techniques, as well as up-to-date IT tools for increased efficiency.	To be further developed based on assessment of available and needed Secretariat resources. If resource gaps are identified, additional investments will need to be approved by Council. (Audience: Council)
<b>ON MEETINGS</b> How to deal with increased volume of meetings as well as time zone challenges?	Increased need to plan ahead so that individuals not overly burdened with back-to-back meetings or meetings outside normal working hours (08:00-18:00).	Should identify how work, office space, and meeting planning could be improved to meet the challenges of an increase in meetings, as well sharing the burden of meetings across time zones.



	A clear need to reconfigure office space, meeting rooms and working schedules to ensure that staff have the ability to support the network meetings without disrupting their colleagues	(Audience: Secretariat/ACOM/SCICOM/WGChairs/Council)
<b>ON HUMAN CONTACT</b> Missing “human factor” and informal relationships with colleagues/network; virtual meetings tend to be purely transactional in nature	Observed that advance virtual preparation for remote meetings increased efficiency and overall participation, but decreased networking opportunities, especially for new participants. Planning should include hybrid approach where both virtual and physical meetings included in work.	A hybrid approach where both virtual and physical meetings are part of work planning should be pursued. The approach should retain the good practice from the remote work period of advance preparation to make best use of physical meeting time. While physical meetings are recognised as important for collaborative work, networking, especially for early career professionals/scientists.  (Audience: Secretariat/ACOM/SCICOM/WGChairs/Council/SI-IECS)

In addition to the above, it has been observed that the working situation over the past year has created both opportunities and challenges with regards to an inclusive workspace.

Easier accessibility to virtual meetings opens more opportunities for participation in various work areas.

Likewise, flexible schedules accommodate work/life balance and accommodates different working styles and preferences.

However, Likewise, flexible schedules accommodate work/life balance and accommodates different working styles and preferences. However, work/life balance is been significantly impacted by increased workload as well as meetings taking place outside normal working hours.

### Recommendation 6 – The Secretariat Post COVID

- **Workload** - Given the increase in workload and new working norms resulting from the COVID-19 pandemic (i.e. increased use of virtual meetings and support), the Secretariat sees a need for additional human and technical resources both in terms of staff and equipment/tools. Secretariat resource gaps have been identified and additional investments will need to be approved by Council.
- **Meetings** - There is clear need to reconfigure office space, meeting rooms and working schedules to ensure that staff have the ability to support the network meetings without disrupting their colleagues. The move to the new headquarters should facilitate this.
- **Human contact** – the remote work period has led to reduced networking opportunities, for the ICES community, especially for early career scientists and new participants. Future planning should include a “hybrid” approach where both virtual and physical meetings form part of ICES meeting procedures.
- **Work-life balance** – Work/life balance has been significantly impacted by increased workload as well as meetings taking place outside normal working hours. Future planning in the Secretariat must factor in work/life balance and staff wellbeing.
- The COVID19 pandemic and the looming post COVID era presents an opportunity for the Secretariat to review the match between its resources and its current work programmes.
- **OWNER** - Secretariat and Bureau
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat (with ACOM and SCICOM on how groups will operate).
- **RESOURCES** – Additional resources for the Secretariat, that address the COVID19 impacts outlined above, have been identified and costed in Recommendation 1, 2, and 3.
- **ESTIMATED COSTS** – No additional costs.

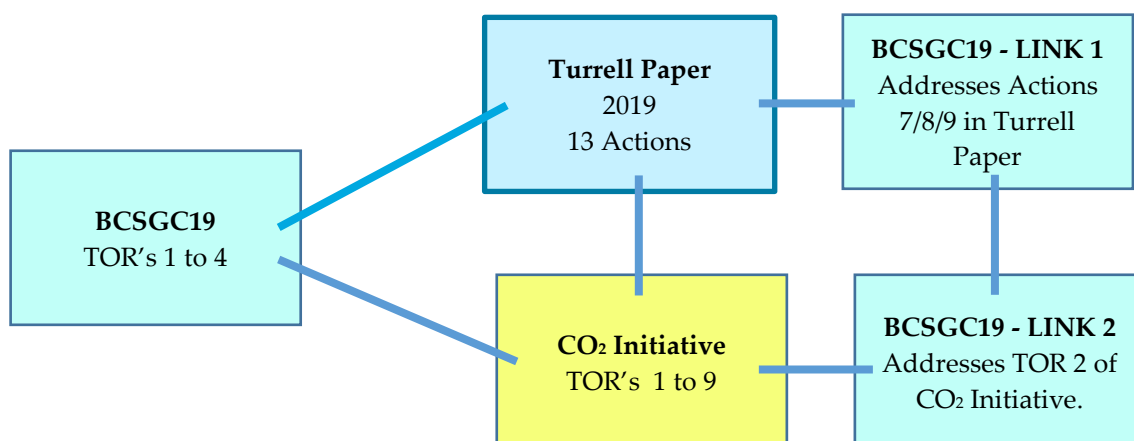
## Recommendation 7 – The Zero Carbon Initiative

### Linking BCSGC19 to the ICES Zero C Initiative

1. The link between the work of BCSGC19 and the zero C Initiative is not explicit in the BCSGC19 TOR 1 to 4. However, it is specifically mentioned in the preamble to the TOR and ICES Council were very clear that they wanted a strong link established between the work of the BCSGC19 and the zero C initiative.
2. There are two approaches to establishing a strong link – the Bill Turrell paper (2019) and TOR 2 of the C initiative (Figure 6.5).
3. Firstly, we will use the Bill Turrell paper (2019) as a starting point (foundation) for the linkage process. The Turrell paper has 13 Actions which are outlined in the attached schematic (Appendix 5). These actions will form the basis of the linkage. Note the paper is pre COVID19 pandemic but still highly relevant.
4. The work of the BCSGC19 addresses Actions 7, 8 and 9 of Turrell paper.
5. Secondly, the Zero C initiative has their own TOR. These are attached as Appendix 2. Note there is strong reference to the Turrell paper.
6. BCSGC19 work already addresses many elements of TOR 2 of the Zero C Initiative.
7. The Turrell paper can also form the basis of a BCSGC19 recommendation. The paper states that ICES has a low CO<sub>2</sub> footprint in relation to ICES meetings. (0.002 M tonnes of CO<sub>2</sub>) but “that does not give us an excuse to do nothing”.
8. The annual ICES CO<sub>2</sub> emission total could be offset at an annual cost of € 56,000 (Turrell 2019).
9. In the current marine policy landscape, ICES has a “moral responsibility” to minimise its energy usage while conducting its core business in the secretariat/science/advice/data domains. ICES should strive to minimise its energy usage and CO<sub>2</sub> footprint and “lead by example”. This is a key component of being a “sustainable organisation”. Into the future, the energy usage statistics and CO<sub>2</sub> footprint of ICES become an integral part of the ICES annual report.
10. The move to the new ICES HQ building is an opportunity to action this energy reduction policy.

11. ICES should highlight the elements of its advice/science that will help reduce CO<sub>2</sub> and energy reductions in key marine sectors (e.g. MSP and ORE).
12. ICES science should look a new and innovative ways to reduce CO<sub>2</sub>, particularly in relation to new science outputs and initiatives (e.g. science of CO<sub>2</sub> sequestration).
13. ICES should strive to ensure MS data collection programmes (ICES raw material for advice) are as CO<sub>2</sub> efficient as possible. (e.g. Research Vessel Data).
14. The post Covid19 landscape will require organisations to examine their modus operandi, including remote working and remote meetings. This provides ICES with an opportunity to action a minimum energy usage policy.
15. Establish a Bureau Council Working Group and Chair that will work on the TOR's of the Zero C initiative and present their recommendations to Council in 2022. This should consider if ICES is a sustainable organisation.
16. The current Zero C Initiative TOR's should be reviewed in the light of the recommendations of BCSGC19.

**Figure 6.5 - Establishing strong link between the work of BCSGC19 and the C02 Initiative**



## FOOF FOR THOUGHT – THE SUSTAINABLE ORGANISATION

**Sustainability** is the issue of our times and reflects collective, long term, damaging behaviour that needs our immediate attention. Society needs to generate positive economic results, while solving the problems of polluted oceans, inequality, mass migrations, unsustainable consumption, polluted water, unsafe working conditions and climate change. We need to come up with new ideas scale solutions, and develop the talent to operate sustainable organisations. We need to help everyone in our organisations to develop a heightened degree of awareness about the problems and the challenges. Our problems lie in the way we have been trained to behave, the incentives that encourage similar behaviour and the business practices that keep us going down the same path.

*BOOK - Sustainability is the New Advantage*  
*Peter McAteer (2019)*  
*Anthem Press*

Sustainability is viewed as the “intersection” of three areas; (1) society; (2) the economy; (3) the environment, or simply put, people, planet and profit. For an organisation to be sustainable, its goal should be to act in ways that have a net positive effect on (1) shareholders; (2) employees and the communities in which they work (3) the environment. The UN Sustainable Development Goals (SDG's) can provide leaders with a baseline from which to build a sustainable organisation. The sheer number of SDG's and measures can be seem as overwhelming, while different SDG's may appear to be in conflict with cultural dimensions leading to different interpretations. However, working within the UN SDG's framework is a good starting point for discussions on how an organisation can incorporate sustainability into its vision, values and daily operations.

An initial starting point for an organisation on the road to sustainability, is to start with being a “**responsible organisation**”. There are five elements to address on the road to being a responsible organisation (1) Responsibility to the health of the business; an organisation cannot honour its social and environmental responsibilities unless it meets its first responsibility – to stay financially healthy. (2) Responsibility to Employees. An organisation should do what it can to reward the people who make its products and provide its services; (3) Responsibility to customers; offer a service that can be used; (4) Responsibility to Nature; (including energy reduction) the economy depends on nature and organisations will destroy the economy if they destroy nature.

On the road to a **responsible and ultimately a sustainable organisation** - “*Checking off the easy stuff gives us experience and builds confidence. Tackling the big stuff, and surviving setbacks and failures makes us smarter, stronger and more useful to others. Doing both can lead to environmental and societal gains of the sort we need: some widely imaginative, some quietly effective, some both*”

*BOOK - The Responsible Company*  
*What we have learned from Patagonia's first 40 years.*  
*Yvon Chouinard and Vincent Stanley (2016),*  
*Patagonia Publishers*

**See Annex 6 For a Checklist of Issues that the Responsible Organisation should address on the road to becoming a sustainable organisation.**

### Recommendation 7 – On the Zero Carbon Initiative

- While not specifically in the BCSGC19 TOR's, an important element of it's work was to link with the Zero Carbon Initiative (Council Group on ZERO C Initiative).
- BCSGC19 has addressed some elements of the Zero Carbon Initiative TOR 2 (Travel and Remote meetings) and future work should build on this. The 13 actions in the Bill Turrell paper (2019), can also provide a useful starting point (foundation) for the Zero C Initiative. BCSGC19 has considered actions 7, 8 (remote meetings) and 9 (Science Conferences).
- The Group noted that many of its recommendations will have a positive impact on Net Carbon emissions (e.g. reduced air travel as a result of greater use of remote meetings).
- **ICES as a Responsible/Sustainable Organisation** - In the current marine policy landscape, ICES has a "moral responsibility" to minimise its energy usage while conducting its core business in the secretariat/science/advice/data domains. ICES should strive to minimise its energy usage and CO<sub>2</sub> footprint and "lead by example". This is a key component of being a "sustainable and a responsible organisation". Other elements of a responsible/sustainable organisation should consider business health, employees, customers and impacts on nature.
- **Highlighting ICES Advice and Science Outputs** – ICES should highlight the elements of its advice/science that will help reduce CO<sub>2</sub> emissions and energy usage in key marine sectors (e.g. via advice on MSP (Marine Spatial Planning); ORE (Offshore Renewable Energy) and Shipping).
- Establish a Bureau Council Working Group that will revise the TOR's of the Zero Carbon initiative. The Group should work throughout 2022 and present their Draft Report to Council in 2022. The TOR's should consider if ICES work processes and support progress towards the UN Sustainable Development Goals and ICES as a "Responsible Organisation".
- It should be noted that flexible working practices, like working from home and remote meetings are also a way to reduce CO<sub>2</sub> emissions generated from local communities.
- **OWNER** - Council
- **IMPLEMENTER/IMPLEMENTATION** – Bureau Council Working Group
- **RESOURCES** – Working Group Members.
- **ESTIMATED COSTS** – from current ICES budget.

## 7 Soliciting feedback from the ICES community on the recommendations from BCSGC19

### Effective community engagement

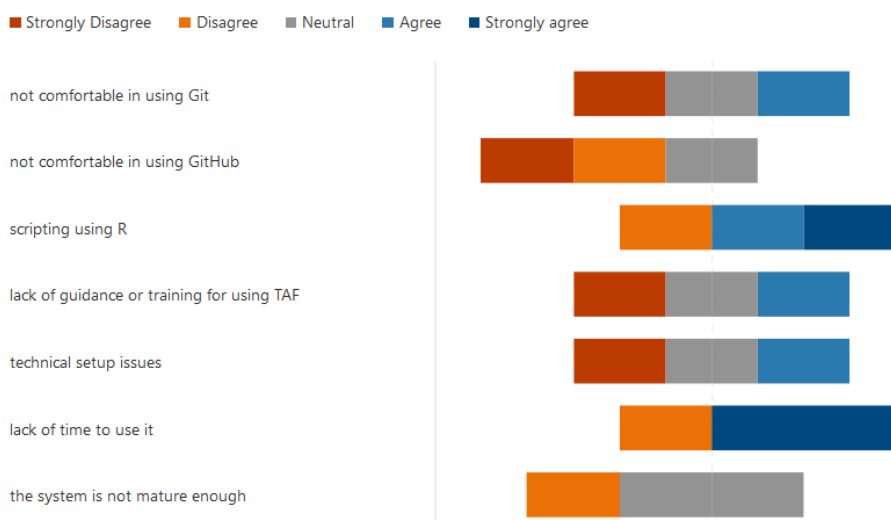
In order to effectively engage with the ICES community, the conversation should be started early as the timeline for feedback is very pressed, potentially before the recommendations are endorsed by Bureau. Use “teasers” in appropriate communication channels for the specific audience to highlight that feedback is needed from the community about the direction of travel. Encourage the audience to “have their say” by providing feedback.

For each recommendation, define what kind of feedback is needed:

- Specific feedback (i.e. narrative comments)
- Indication that they agree with the recommendations broadly (voting options)
- Potentially a very short feedback form
  - Narrative or Likert scale – one question survey
  - Make it comparable among audiences.

#### 3. What are the main barriers for you in using TAF?

[More Details](#)



### Targeting feedback

A well-defined target audience is needed for each specific recommendation, recognizing that people only want to give feedback where they see their stake/how they are affected.

There is also a secondary audience, we want stakeholders to be informed about the developments and to communicate that ICES is responsive and adaptive to change as needed. Direct communication to stakeholders about the approved recommendations at the end of the process will also be required.

A townhall/webinar is not the right format for soliciting feedback, given so many different audiences for these recommendations.

### Potential Audiences

ACOM/SCICOM/Council/WGCHAIRS/Members of working group/Workshop participants/Advice recipients/observers/Cooperation partners/National institutes/ Others?

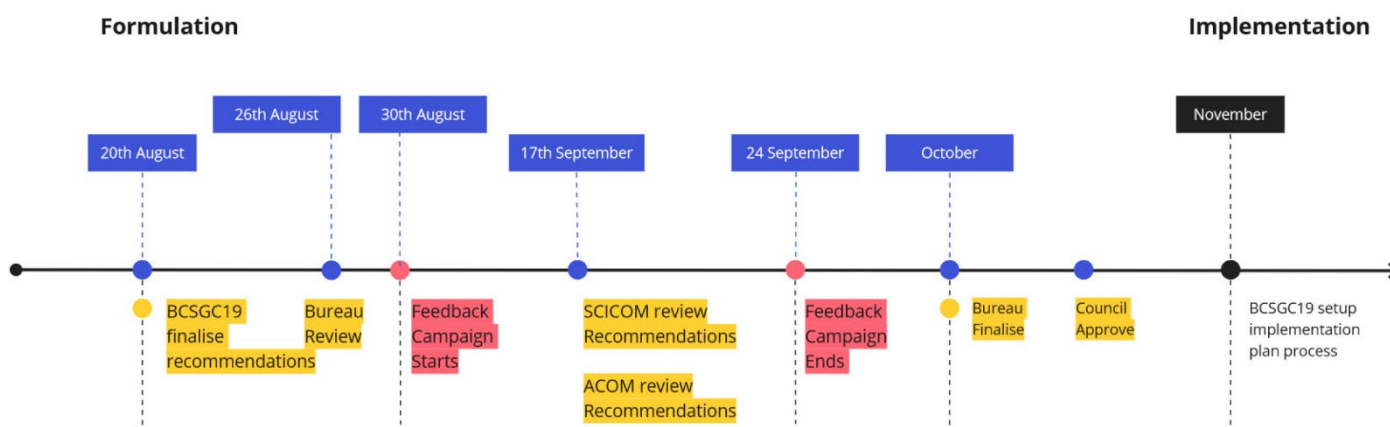
### Format of Recommendations

Broadly cover a What, Why, Who and When approach ('How' would be for the implementation plan and not necessary to include at this stage); this is to allow each recommendation to be as self-describing as possible, which in turn makes it easier to communicate and elicit feedback

- What: describe the issue
- Why: define the problem
- When: Would need to have a time horizon for adoption defined
- Who: Define who this will affect
- Should be presented for feedback in the most appropriate way for that audience.

### The Way forward

Decouple the timeline for feedback from the ASC





### Overview of potential recommendations audiences/ communication channel

Recommendation	Description	Audience	Communication channel
1. Operational process change	To explore options for separating the resolution process and associated information management into elements or modules	Internal Primary: ACOM/SCICOM/Council/Secretariat	ACOM/SCICOM Forum SCICOM September meeting
2. Cultural change	Refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work	Primary: WGCHAIRS/ members of working groups	WGCHAIRS forum/Twitter (?)
3. Secretariat survey	Requirements for ICES HQ	Primary: Council/Secretariat/National institutes	
4. Critical Gender awareness	Critical gender awareness needs to be mainstreamed in ICES planning.	Primary: Council Training group/WGCHAIRS	WGCHAIRS/email to training group/Council forum
5. CO <sub>2</sub>	Raising awareness about how the work of ICES is contributing to lower CO <sub>2</sub> emissions.	External Primary: Cooperation partners/stakeholders	ACOM/SCICOM/Council forum/Twitter(?)

### Key Considerations on Soliciting Feedback

- Effective community engagement means defining specific audiences, feedback needed (qualitative and quantitative), and communication channels for each recommendation
- Take a targeted digital approach to seeking feedback on specific recommendations
- Decouple the timeline for getting feedback from the ASC

## **Survey of the ICES Community**

In order to get feedback and support from the ICES community on the BCSGC19 recommendations and report, a survey was circulated to the ICES staff and community.

The recommendations summary document, full report, and link to the survey was publicly posted with a news item on the ICES website. Targeted messages encouraging responses were sent to staff, the Advisory Committee, Science Committee, Council, Annual Science Conference participants, and the Strategic Initiative on Early Career Scientists, as well as broadly communicated via social media. Responses were collected from 6 September until 1 October, in total 116 responses were received.

The anonymous survey collected demographic information related to respondent's role in ICES (expert groups member; Expert Group chair; Secretariat staff; Early Career Scientist; ACOM; SCICOM) and gender. The survey asked respondents to rate each of the recommendations on a five-point scale from Strongly agree to no opinion. Respondents also had the opportunity to provide specific comments on the recommendations, or identify any gaps.

The survey responses have helped to inform the final version of the report.

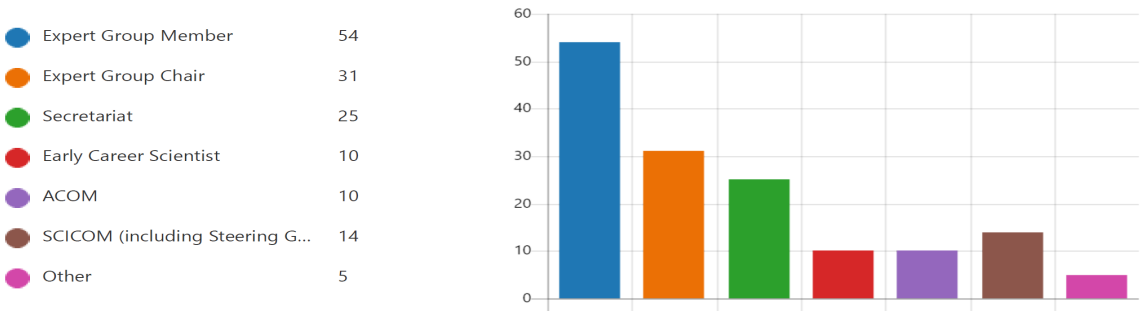
Community Feedback to post COVID-19 recommendations (5 minute survey)

113  
Responses

99:07  
Average time to complete

Active  
Status

1. In which capacity are you answering this survey (multiple choices possible)

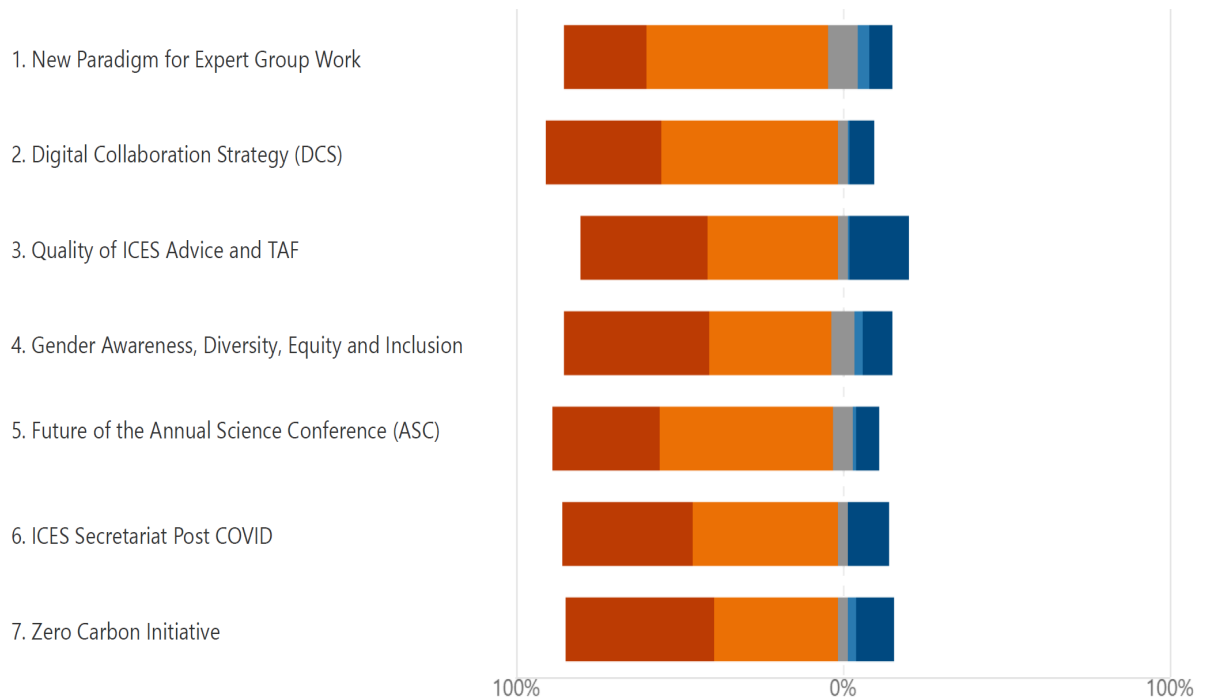


2. How would you describe your gender?



### 3. Please give your opinion on whether you agree with the recommendations from the report

Strongly Agree Agree Disagree Strongly disagree No opinion



### 4. new Paradigm for Expert Group Work

45 <sup>Insights</sup>  
Responses

Latest Responses

"I don't see the value in separating the resolution process into modules..."

"Physical (in-person) meetings are the most effective means for establi..."

22 respondents (51%) answered **work** for this question.

meetings as the tool  
project approach  
meeting is a very important  
project work  
work time  
physical meetings  
year  
work  
meetings  
WG members  
EG work  
Virtual meeting  
expert groups  
annual meeting  
need  
group meetings  
groups often work  
meetings are essential  
person meetings  
focus of work

5. Digital Collaboration Strategy (DCS)

💡 Insights

32

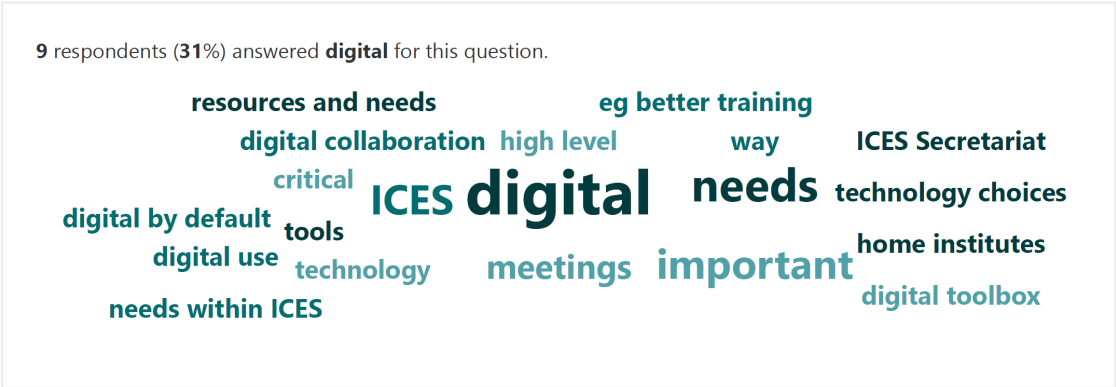
Responses

Latest Responses

"N/A"

"In-person meetings reserved for high-level issues. Focus on maintaini..."

"I am not in a position to comment on this in detail, but it seems a goo..."



6. Quality of ICES Advice and TAF

💡 Insights

36

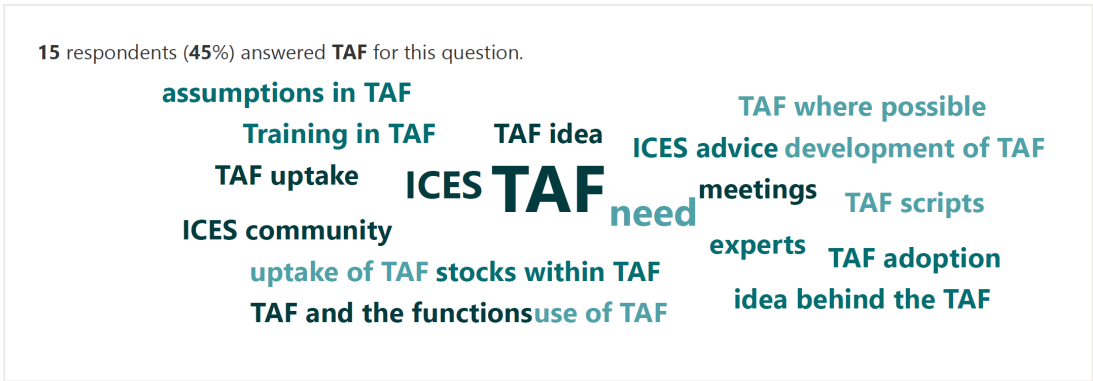
Responses

Latest Responses

"N/A"

"An opportunity to consolidate issue-centered expert groups for ad-ho..."

"Looks like a good idea, though I am unlikely to make use of this/these..."



## 7. Gender Awareness, Diversity, Equity and Inclusion

 Insights

39

## Responses

### Latest Responses

"N/A"

*"emphasis on inclusion of young scientists "*

*"Have always lived by this, so am 100% supporter."*

**13** respondents (**36%**) answered **gender** for this question.



## 8. Future of the Annual Science Conference (ASC)

 Insights

32

## Responses

## Latest Responses

"N/A"

"on-line"

*"Hybrid seems the way of the future. The nominal fee for remote atten...*

**15** respondents (**52%**) answered **ASC** for this question.



9. ICES Secretariat Post COVID

 Insights  
**34**  
Responses

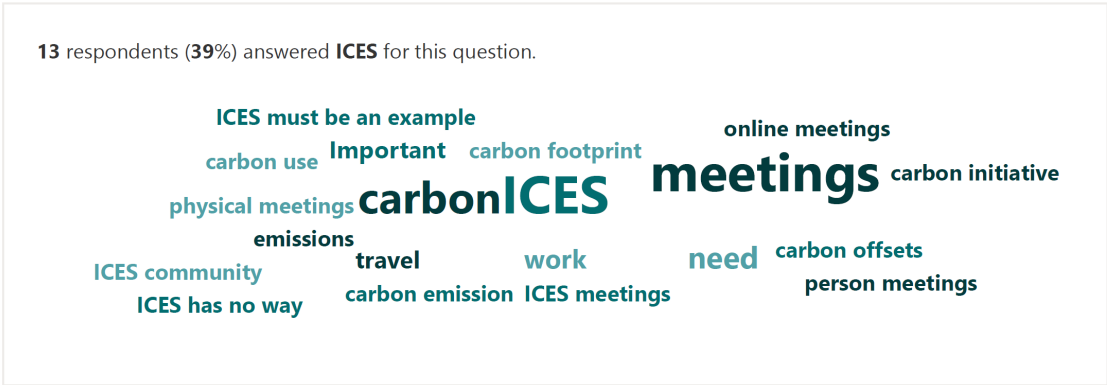
Latest Responses  
"N/A"  
"Seems sensible."



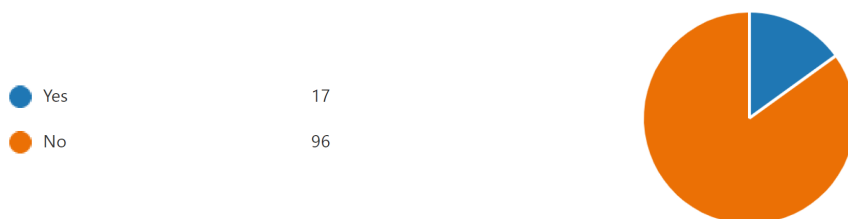
10. Zero Carbon Initiative

 Insights  
**36**  
Responses

Latest Responses  
"N/A"  
"curtailing in-person meetings (expert groups, ASC) would contibute to..."  
"There is no such thing as zero carbon (i.e. the absence of CO2 product..."



11. Are there any issues missing from the recommendations?



12. If yes, please describe the gaps

17 Insights  
Responses

Latest Responses

7 respondents (41%) answered **meetings** for this question.

community and staff recommendations ASC Expert Groups  
 unscheduled meetings change work **meetings** ICES new face meeting  
 WebEx meetings Secretariat need good ICES Secretariat  
 future meetings hybrid meetings ICES role person meetings

## ICES Community Comments Received on BCSGC19 Recommendations

(Comments in bold are included in Summary)

### Recommendation 1 – A New Paradigm

- A more project-based approach makes eminent sense, but will require supporting digital tools to help chairs manage a much more diverse workflow and task distribution. **Conflict resolution may also need to be strengthened as remote collaboration does not offer quite the same opportunities to discuss and disperse conflicts.**
- A shift from an annual meeting setup towards a more 'project-like' approach for working groups may lead to more work load -and so, a bigger demand on personnel (and finances) at the institutes. It is important to notice that the move towards a different approach should in principle not lead to exclusion of members who are not able to contribute more than they can do in the current situation.
- Agree in general, however it is important to remember that annual reports of ICES country activities lead are important ToR and lead to more project related ToR. Annual reports are an important part of many ICES WG.
- Agree some streamlining of operations is needed, but already see the meetings as the tool to generate the outcomes (reports, basis of advice).



- The benefits of a modular approach would be achieved simply by digitising the resolutions process, and then terms of reference, chair approval etc could just be handled with the relevant data streams.
- Agree strongly that work related to the analyses related to the expert group need to be conducted throughout the year. Other initiative under this recommendation need to be clarified.
  - **Agree that a single annual meeting shouldn't be the only focus of work but should be cautious about implications of 'project approach' on existing workload of WG members and ensure distribution and recognition of work is fair across participants.**
  - Although I agree with this new paradigm, it is important to consider that this approach might bring a substantial amount of work to individual scientists that are part of a substantial number of working groups if meetings and tasks are too spread over the year. My experience during the COVID-19 period is that the same WG has demanded more time and work than before.
  - **Although I strongly agree with this recommendation, I must stress that certain meetings must still happen in person in order to achieve the desired goals of a meeting/workshop.**
  - As a Chair I cannot wait for the return of physical meetings. While we achieved all our aims, it was incredibly difficult at times. In particular, once the scheduled date of the meeting passed, very few people continued to work on the report, advice etc. This was frequently because of other meetings scheduled afterwards, that would not have been normally physically attended, but could be remotely. There can be too many online meetings.
  - **As a WG chair I can that this will simplify WG operation.**
  - Concentrated work time is advantageous, spreading out the work across the year when people are continually spread thin and multitasking during their WG meetings is inefficient and does not build a community feeling.
  - Could be more specific.
  - **Cultural change timeframe is ambitious but I agree with the sentiment here**
  - Expert Groups organize themselves in a way they find useful, and I don't see the need for any specific action from ICES to steer this.
  - Experts work group being organized more as project work is already taking place (e.g. Ecosystem related advice processes for special requests). This is definitely a model producing better results for advice though the Secretariat manpower needed to support this efficiently is largely underestimated here. From experience, even with the most dedicated of chairs, you will need much more secretariat support.
  - Fully agree with a project based approach to EG work in the future.
  - Good idea. My concern is how to do it without affecting other duties along the year.
  - I agree
  - **I agree with spreading the workload over a broader time via remote meetings, but I strongly encourage annual in-person meetings.**
  - I agree with the new paradigm defined in the recommendations.
  - **I don't see the value in separating the resolution process into modules. It is not clear to me as described in the document how this**

**would work in practise. I would think that collating this information in modules will become a bigger administrative burden for the Secretariat and at the same time potentially confusing for the EG Chairs. Fine to change the culture towards a more project-based approach, but we need a simple and easy-to-manage system!**

- I have concerns that splitting up the process will quadruple the number of actions needing review and approval, and be confusing to EG Chairs to implement
- **I like the idea of a project approach for EG. The only thing that worries me is that it will probably lead to increase workload for experts. It is important to ensure resources so that enough people is involved and people have affordable workloads**
- It should be kept in mind not to spread the assessment working group work throughout the year. One benefit of the concentrated meetings is that it reduces disruptions in science work in other parts of the year. Also, an important part of a good workflow within the groups is based on many years of personal communication in face to face meetings. And lastly, the long-living assessment expert groups do not fit well into a project-based focus.
- Many groups are a brand, a forum for collaboration, not a project. They are run with 3-y objectives and can be free to organize themselves.
- Meetings are tools but physical meetings are essential for some WG needs to be balanced approach so there is not fatigue from both types
- New ways of doing EG work should be explored. But virtual meetings should not replace in person meetings. Some virtual to help prepare and facilitate work would be useful but to really have in depth conversations you need in person interactions. If ICES could finally move more to multi year assessments this would allow a model of interim year virtual and assessment year in person
- **Nothing is wrong that needs to be fixed in the current system. There are much more important issues to be solved. Unclear whether the 4-module system will be operational and what it actually needs.**
- On Resource Requirements the best would be 2 positions for 3 years as the amount of work will be considerable
- Physical (in-person) meetings are the most effective means for establishing the inter-personal links that drive forward delivery on ToRs and enhance the benefits to early-career scientists. As such, a hybrid approach is the minimum, and an annual meeting (where circumstances permit) should be maintained using the hybrid format.
- Physical meetings are still important, project approach would probably mean improvement, but may need more financing then present approach
- Project approach to WG work with short focused meetings through out the year is already being used in some of the working groups that I participate in. It is a much better method to get some science done. Virtual meeting can be very productive but it is important for member to get an opportunity to physically meet but does not have to be every year. Meeting every second year might be enough to keep the human connection.
- **Project based is likely to be better. I've sat in meetings in year 3 of ToR where people are still trying to work out what we're doing!**

- Re: moving to project approach. ACOM groups often work on very specific time lines where the annual meeting is a very important focus. Merging the benchmark requirements into the remaining time as part of a project approach for the WGs could allow more considered thought to model development and save some extra admin on benchmarking.
- Separating the resolution process and associated information management into modules will create extra work as they will not be finalized in one go and the different modules will have to be checked individually. Moving away from annual meetings also adds to the workload of both experts and Secretariat.
- Space should be provided for groups to continue in a way that works for them - I don't think they should be forced into a new paradigm if the old one worked for them (annual meetings approach) - in some cases this may be the most appropriate. However, I highly support providing space for more options and thinking outside of the box, but would be wary of the 'project' terminology given the distinct lack of funding for the majority of groups. Consideration should also be given to the specific challenges met by groups that are 'science' groups but tasked with advice deliverables - e.g. IEA groups, with no resources. This greatly affects their working practices.
- Suggested changes seem like unnecessary micro-management.
- The annual meeting is not the central focus of the work but a key element (side discussion, better networking, easier to integrate new members etc)
- **The recom. is good, and it create potentially more progress and it is flexible, which makes it easier to deliver the best work, but ensure that WG/EG do not work continuously all year, then the focus will drop, and delays from some persons/groups affect other in a worst way then when all are working concentrated for e.g. 10 days.**
- The recommended "project approach" may not work ideally for all working groups. It is very well suited for workshops, maybe less so for other WG. It might be more suitable to offer a portfolio of approaches rather than the single "project" one.
- The workload of ices expert groups along the year is already quite high. I'm afraid this new paradigm could imply even more work
- Time commitments by WG members are limited. Having one annual meeting allows for workplaning. I see no real benefit in this proposal.
- We already do a lot of work intersessionally, so it is not a real shift and it is not really ICES steering the work of a SCICOM EG, that is mainly done by the members themselves, so better that ICES does not impose extra burden on the members and chairs. Next to network a lot of us have become friends as well, and the regular physical meeting is essential to welcome new members, have intense discussions but mainly the essential work through coffee breaks and joint dinners, where lots of disputes are handled in a non-formal atmosphere.
- Work on reducing the duration of some expert group meetings (eg. 2 weeks duration is too long, especially if attending more than one of those per year)

- Yes, some change is needed, but throwing the baby out with the bath-water in the name of a new normal is short-sighted and harmful to the important

## Recommendation 2 – Digital Collaboration

- **Agree the DCS must be very high level - it must recognize that different national institutes will be providing most IT services, and there will be various restrictions among ICES meeting participants in terms of allowed technology.**
- All in favour of this.
- Although I agree on the need for high level management of informed technology choices for the organization rather. There is also a need for upgrading technology/software and having more digital tools/convenience/resources in house.
- **As the world and collaborations become more digital, the tools and training are needed. This will be an important part of the future of ICES**
- Could be more specific
- **Digital Collaboration is essential and should be assisted by well-trained people. So I agree with Recommendation.**
- Flexibility wrt online, in-person, hybrid meetings at all levels in critical.
- I am not in a position to comment on this in detail, but it seems a good idea.
- I tend to agree but not fully clear about which are the key areas you meant.
- In-person meetings reserved for high-level issues. Focus on maintaining durable digital contacts within expert group members. Replace annual meetings with issue-centered digital meetings.
- link to TAF will aid this
- **Of course the recom. is good, but remember there are other ongoing critical IT developments, which should not be overlooked, because of COVID-19 initiatives.**
- Ok. A training in DCS is needed to adapt our way of working.
- Take in consideration all time zones when scheduling meetings.
- **The funding proposed for this is entirely inadequate if this is anything other than a review. Very important that the community feel engaged in this, and it draws on personal and national experience, some individuals are now moving much faster than organisations.**
- the organisation needs to provide better ways for groups to communicate other than email.
- The proposal is too vague for me to have an opinion. But again, groups make use of digital collaboration tools that are useful for them. Having technology choices made by fiat from above is rarely successful.
- **There is a strong foundation in Sharepoint. But look to new technologies such as discord that allow communities to host text and voice/video channels on the fly within a shared workspace (that now also integrated with sharepoint). Giving groups some freedoms to structure a collaborative environment at their level is important.**

- **This is a critical function. Without digital collaboration, we can not function in the "new normal".**
- This is extremely important and it's implementation will allow for other processes to flow more smoothly, saving time and harmonising procedures.
- This is too high-level for me, I do not have a clue what is meant here.
- **This point seems to be outward-facing, but an evaluation of the digital use, resources and needs within ICES could also be pertinent and link well to point 9 (ICES Secretariat post Covid). Could we implement new IT resources or optimize use of our current ones (e.g. better training) to make our processes more efficient?**
- This would benefit from being accompanied by an increase in the digital toolbox provided by the ICES-secretariat + a short introduction/training in using those tools for the EG chairs. Whiteboards, live surveys and more elaborate digital meeting setups (e.g. gathertown) are examples of tools.
- To the extend possible, harmonize with home institutes.
- Very important, as is critical for ensuring the long-term sustainability of the system.
- **We still have a long way to go with Covid. Most people are vaccinated now (at least in my country), yet hospital rates are still very high. The constant panic in the media doesn't help. At my organisation we have at least half of staff unwilling to come to the office, let alone travel to an international meeting. I suspect we're a long way off physical meetings, even once they are allowed. I personally have realised the benefits of not constantly travelling in terms of my work/life balance. Online meetings have made it much easier for colleagues who don't have large budgets to attend meetings. A "digital by default" approach is needed and would help with climate change.**
- With increased reliance on remote meetings and increased data submission to ICES database this is very important as home institutes do not provide this service.
- **Yes, yes, yes ICES needs to develop their digital strategy.**

### **Recommendation 3 – ADVICE and TAF**

- **An opportunity to consolidate issue-centered expert groups for ad-hoc ICES advice.**
- **Assisting experts in person at meetings is the easiest way to increase uptake of TAF.**
- Could be more specific
- Different capabilities to learn and adapt the work to TAF must be considered.
- Equity for stocks reviewed in ADGs. Better communication between ADGs and stock coordinators if changes are made to the advice during ADGs.
- **Fully agreed, TAF is ICES flagship initiative and world leading.**

- Good, just make sure that TAF does not hinder exploration of other approaches that recommended by ICES at a given time.
- **Home institutes will need resources to follow this recommendations. Also I think it is important that the forthcoming RDBES system coordinates with other Data Calls (ie FDI) to ensure consistency and to not overload national institutes with different data calls that could be solved with a single one.**
- Home institutions must take digital collaboration into account for expert group members and allow members to expand their roles.
- I am seldom involved in advice work, so no opinion and also unclear what is meant.
- I don't know what this is.
- **I really like the idea behind the TAF and I think is the way forward. What is the actual status? I think it would be helpful to have more examples accessible to the whole ICEScommunity, and more guidance in the initial steps.**
- I think the quality of advice will suffer if no in person WG meetings are held. I agree that many decisions have been delayed during virtual meetings and we found lack of engagement during the meeting an issue. Numbers were up but participation was down. If you want to move the WG and ICES community a continuous focus is needed, so this recom. is good.
- Improving TAF and the functions including producing SAGs is a good idea, maybe a similar procedure could be started among the survey groups, whereby a SAG type system for surveys is initiated. Would make for better cross comparison between surveys and years.
- **In addition to the inclusion of stocks within TAF, there needs to be effort in ensuring that the code/assumptions in TAF is correct. A number of errors where ICES had to re-issue advice were for stocks already included in TAF. TAF needs to be more than a documentation repository.**
- Increase use of TAF where possible will aid workloads once initial training/exposure time which can vary a lot has been allowed.
- Is the system too complex too difficult to maintain? How much efforts should be really given to assessments when other major issues are more demanding?
- It is a great idea. In the beginning it is one more task being added to an large load of tasks at the assessment meetings.
- It is unfortunate that TAF adoption wasn't a little more advanced prior to covid, but we are where we are. Education, support and guidance are absolute key - as well as demonstrable benefits (e.g. automatic linkage to SAG, report section generation and similar).
- Looks like a good idea, though I am unlikely to make use of this/these tool(s) in the near future.
- More support is vital
- No concerns.
- Reduced uptake of ICES is not the fault of ICES but due to a lack of effort of some scientists. TAC is great!

- Streamlining the advice process and storing all data at ICES date bases in important development of the quality of the ICES advice.
- **TAF has to be the back bone of ICES advice in the future. At the moment it remains in a development stage and need to become operational. More resources are need to do this.**
- TAF is designed to put too much ad-hoc coding into the hands of applied scientists, who are not excerpts in coding, this will lead to coping of TAF scripts and errors occurring from that. Pushing TAF at this stage will lead to more not fewer mistakes. The design should put the responsibility for setting up all the coded scripts on the model developers.
- **The TAF idea is a very good one. There is a need to explore the reasons for lack of uptake and to promote uptake.**
- Training in TAF would be useful. A development of TAF "in practice" for IEAs would also be desirable.
- training needed, training provided has been interrupted
- Want to emphasise my EGs have clearly run into the limitation of online meetings. I don't claim to have answers for this but our current workload is almost impossible to manage doing 4 hr daily online meetings for 12-14 days. By the end the experts are drained and exhausted. This worries me greatly. For next year we are thinking about breaking our ToRs in sections to be addressed at different meetings but the scope for this is limited. The bulk of the ToRs needs to be addressed in a single meeting. We'll have to see what the future brings but if feel we need some kind of face-to-face meeting format. If we continue with the WG as it stands. I am in discussion with the Secretariat about this and i really appreciate that.
- We need more people in the assessment working groups, the workload of data preparation, assessment is very big, so the time available for the audit of other stocks and TAF is very limited. The audit process as it is now is not working.
- **Without any doubt, absolutely critical issue. Relates to credibility and transparency of advice.**
- **Yes, to accomplish this, experts need one-on-one training, however, uptake needs to go beyond this. This isn't a "one (training) and done" kind of problem. ICES needs to go beyond the training needs to see what is impeding TAF uptake by trained experts. The incoming ACOM VC should be able to shed some light on this.**

#### Recommendation 4 – Gender Awareness

- **A lot of important issues thrown in one basket.**
- **Agreed, but more to diversity than just gender issues and we need to make sure all types of people can engage with ICES, noting online working and working in person in very constrained ways can pose challenges for many scientists**
- Agreed.
- **Although all points made in this recommendation are very important, one should carefully guard so that people are involved for their talents, capacities and knowledge rather than to reach certain statistics. "Gender inclusion" is necessary, but can be a difficult conept to balance.**

**Knowledge, talent, capacity, transparency, integrity should be main drivers strongly supported by gender awareness.**

- **As a woman, I appreciate the focus on gender and applaud ICES intent in this recommendation. The focus on gender comes across as prioritized over other forms of diversity in these bullets though. Considerations that are part of the last sentence of bullet #1 (people with caring responsibilities, other underrepresented groups) gets lost when the data collection focus in bullet #2 shifts back to gender. I think it is important to think about diversity, equity, and inclusion from a broad perspective and to ensure multiple forms of diversity are thoroughly represented and tracked through the process.**
- **By increasing remote collaboration, there is an element of increased inclusion, lowering the bar for participation (e.g. people with caring needs no longer need to be away on travels for several days) Gender representation should hopefully also balance better.**
- **Could be more specific**
- **Data collection and training are critical, but the coordinating position needs to be permanent and labeled as not just for gender but more broadly for diversity and inclusion.**
- **Don't feel there is any awareness in what concerns gender. We shouldn't distinguish genders because of equality.**
- **Emphasis on inclusion of young scientists.**
- **Gender balance is lacking on ACOM especially, both the committee and the vice chairs**
- **Have always lived by this, so am 100% supporter.**
- **I am in full support that ICES is in grave need of DEI uptake, however, I find it off-putting that it gets wrapped up in a post COVID "new" way of working document. This issue should stand alone. Covid highlights additional DEI issues for the ICES community, that need to be addressed, it is not the source of our problems. By placing it here, ICES appears tone deaf. I am also uncomfortable with the solution--hire someone. Rather than kitting out a menagerie, let's take actions at multiple levels across the organization to create true change. I do not see any gender problems within ICES**
- **I do not think there is an issue within ICES with gender awareness, diversity, equity and inclusion. ICES is an open, liberal and professional organization in my view. There is an issue with gender equality at different levels but that is due to the make up within institutes.**
- **ICES is still very middle age or old white male dominate network and this has to change.**
- **Important, but perhaps not the absolute key for functioning of the organisation. However, important principles and ICES should definitely follow.**
- **Important, no doubt**
- **In the 25 years I am working in MCWG, I never had any reason to doubt gender equality, diversity, equity and inclusion whatsoever, and I see no reason to stress this as it might only work contraproductive. We had 4 female chairs, that were high-level, had recognised black and jewish participants that were amongst the most respected, and had several disabled people attending. There has never been any issue whatsoever,**



**we behave exemplary in this respect, and there is no need in any training or other lengthy talking session. We will do everything required to keep it that way, of course.**

- No comment except that ICES can not be more diverse than its member countries
- No concerns.
- **Really pleased to see this. I feel it could be more ambitious with recommendations to achieve targets of gender (and other characteristics) on WGs etc to reflect proportions of wider population or scientific community. You can get started and be proactive without waiting for a time-series of gender disaggregated data.**
- Remember that the focus is not JUST on gender.....
- Strongly agree.
- The discussion on gender equality in higher positions is missing. At the moment we are just about having balance in the ACOM leaderships (good job to the ACOM chair there) but this is not the case for SCICOM and definitely not for bureau. This is where the change is needed and leadership needs to take the responsibility and address this and not airbrush over this issue with nicely worded paragraphs.
- The ICES community is already very inclusive. Mandatory procedures would only slow down science progress.
- There is something in this sentence that doesn't sound right, but I cannot say specifically what it is: "...with special attention to women, people with caring responsibilities, and other underrepresented groups"...is the "woman" part that to me sounds a bit weird (and I'm a woman). Worth giving an extra look at it.
- **This is independent of covid. This should be a long-term goal of ICES with implementation starting now.**
- This is long overdue within the ICES framework. For a large international network like ICES it is strange how limited action has been on this front. There are no guidelines within the ICES framework of how to facilitate diversity, equity and inclusion in working groups or other work. There are no guidelines of how ICES will deal with harassment, bullying or inappropriate behavior. Most importantly, ICES does not have any guidelines for victims of harassment, inappropriate behavior, bullying or worse. Does ICES have any internal protocols of how to deal with such incidents both towards the perpetrator and the victim? Is there any official way to file a complaint about being treated poorly, bullied or harassed within the ICES framework?,
- This recom. is good, a better balance is needed.
- **This seems like low-hanging fruit where success can be easily and quickly achieved.**
- This is an important point. we need to be careful with meetings taking place outside normal working hours
- Training will be crucial for this - also, bullying should not be tolerated, and it would be very important to ADDRESS the bullying behaviour of some powerful individuals within the organization.
- Very supportive of this.
- While many/most people seem to be up to date with modern standards I am still taken aback by comments from some people on what they evidently think

is acceptable. There is still a lot to be done here, so everything ICES can do to help, the better.

- **Yes important but do not alienate more mature scientists, male members, diversity and inclusion should not leave anyone behind. We have already had some feedback from senior researchers who feel left behind in the new initiatives. Perhaps more focus on mentoring?**

### Recommendation 5 – ASC

- **A combination of online presentations with digital breakout rooms has worked really well at conferences I've attended this year. Probably better than physical events.**
- **A suggestion from this year's ASC participant: alternate between physical and online conferences. But if hybrid is the way, please keep in mind that hybrid means double the workload.**
- **Agree that there should be efforts made for more remote participation in ASC, but we should not lose the immense benefits of in-person meetings in the trade-off. Other options to consider would be alternating in-person and fully remote meetings in alternate years, where the structure of the in-person meetings remains relatively the same.**
- Agree with Recommendation
- Agreed.
- As important as TAF for the advisory function. Directly relates to fulfilling ICES Science Plan.
- ASC is an important event for ICES and the scientists in its community. Having a virtual option is good but will not replace in person. Has it perhaps gotten too large?
- Consider special fees as a benefit for active expert group members.
- **Evaluating the ASC and the next 2 upcoming conferences is an excellent idea. I hope we will all have an opportunity to weigh in again after results from all 3 conferences are in.**
- Even more important as a networking event in the coming years
- **Exploring new options would be good, but I hope we retain a physical conference.**
- Good to explore new options.
- **Hybrid seems the way of the future. The nominal fee for remote attendance would make sense, as most current hybrid conferences/symposia are charging the same amount for in-person and remote attendance.**
- **I believe the ASC should be in-person.**
- I expect a hybrid version will be the way of the future. However, given the nature of in person meetings and discussions, output will be uneven with in person response decisions taking precedent.
- **I found this years ASC disappointing and to be honest not worth the time investment. Which is not to discredit the clearly intensive efforts of the secretariat and all those involved, Whova was all singing**

and dancing but for myself and all the colleagues I spoke to none of us really engaged with it. I can see that its useful to think outside the box regarding future formats but I think its really difficult thing to do successfully.

- I rarely attend ASC as the timing is difficult to me, and the focus on fisheries is too high, but generally looks fine.
- I think the possibility of having access to the recorded talks during one month with a reduced inscription to the ASC is interesting for science dissemination.
- **If we can shift considerable parts of the other work of ICES to remote participation and significantly lower the travelling activity associated with these, then retaining and strengthening the ASC as the key networking and social event (e.g. combine WGCHAIRS with ASC, committees meet physically once a year at ASC, Room/capacity for WG's to have rooms for meeting a half or a whole day during ASC) is very important for ICES to retain cohesiveness of it's community.**
- It is important to tackle the zero-carbon initiative, but it is equally important to network and socialize. Physical gatherings as the ASC is extremely important to exchange ideas and network, particularly since it has a less formal pressure when it is in-person in comparison to being online.
- I've been in this year ASC and I really acknowledge the effort ICES has made to make it work, but I think that virtual big conferences like this do not have much future... maybe physical every two years and something light virtual in the middle
- Keep as flagship event and explore developing some parts of it to increase gender awareness, diversity, equity and inclusion.
- Messaging important here. Evolve based on successes, outside the box makes me a bit nervous for ICES
- **Online networking leaves a lot to be desired. As a network, ICES should push to have this flagship event as much in person as possible.**
- people are tired of online meetings, while an online component does allow for broader participating, maintaining a network of volunteers requires something like an annual meeting to encourage participation and a community feeling
- **The ASC is a place for networking and for strengthening the feeling of the participants of being part of "The ICES Community". Please do not underestimate the value of coffee break discussions, introductions etc. as well as the personal relationships that germinates in the afternoons and evenings over a beer...**
- The possibility of a hybrid ASC would be fine.
- **The recom is good, because it opens up for partly or remote participation for people, who cannot participate physically, but the ASC is about meeting scientists and discussing new initiatives and knowledge and that is by far better in physical meetings.**
- We could try a "hybrid" meeting in the next WGCHAIRS?

- Whilst agreeing with the objective to reduce environmental impact from the ASC and noting the links with the Zero Carbon Resolution, I think options for in-person meetings should still be given consideration as it is a vital part of human communication, sharing of ideas, and inclusivity. Perhaps satellite meetings that can hook into the main conference would be one way of achieving this, so people could travel shorter distances in carbon neutral ways, and get the benefit of attendance in-person.

## Recommendation 6 – Secretariat

- A major issue for workload has been meeting run on. This has made it difficult for everyone, including the secretariat. In face to face meetings the work is done in the prescribed timeframe. Under COVID some chairs seem to think that multiple meetings can be scheduled running past the original time slots making participants unable to engage. This puts more work on the professional staff as well.
- Although digital meetings can be a good substitute, especially for the workings of a group throughout the year, nothing goes above a live meeting to make important decisions, finalise recommendations or to network.
- ASC21 had many good elements, but a bit confusing experience sometimes. Some kind of a hybrid is the way forward as I think.
- Could be more specific
- Heart for functioning of the organisation.
- Hybrid working has been excellent for allowing early career scientists to experience career development by attending WGs virtually when they wouldn't otherwise have been allowed to attend due to costs so maintaining some form of hybrid working will be a real asset for contingency planning and more active engagement in WGs.
- **I agree that the ICES Secretariat needs to expand given the added work needed for virtual meetings. They have been awesome this last year.**
- I think some of the comments are applicable to the whole ICES community, not only the secretariat. Is ICES planning to do something about it? Regarding the meetings, I think the "hybrid" meetings where half of the people is online and the other half is meeting physically are the most difficult to handle with. I wouldn't encourage them, unless people connected are expected to have a small role.
- **ICES secretariat support has been outstanding in the last year, and I recognise how much work that has required from individuals. I would hope for similar support in the future, this may require additional staff.**
- **If you have said yes/good to the recom. above you need to say this recom. is good and needed. But bear in mind that COVID-19 should not clear the table, if you want progress on existing projects you need to keep resources on them until they are fully implemented.**
- **In regards to configuring office spaces and meeting rooms, the move to new headquarters will be an opportunity to make improvements--however, please note the Secretariat's "moving" budget is already quite tight in terms of purchasing furniture/equipment which**

- is optimized for a hybrid working environment. It may be that additional costs are necessary in order to achieve all of our goals.
- **Issues have been identified well, but how they will be resolved by solely using the resources suggested for points 1, 2 and 3 is unclear.**
  - It is clear that the secretariat is very busy, and must be properly resourced to maintain and improve the end product and support expert groups.
  - Looks fine, but I am not qualified to judge that.
  - **Many of the staff have substantially reduced work life balance given the requirements for frequent evening meetings, and their workload has increased immensely since the start of covid. this is unacceptable to continue in the long run. resolve either by returning primarily to in person meetings or move to a model with remote work with staff living in other time zones to accommodate a variety of international working hours of the network**
  - No opinion, except noting that paradoxically, increased digitalization leads to increased need for personnel.
  - Resources should be allocated to achieve this recommendation successfully
  - Seems sensible.
  - **Supportive, have to recognise the significant pressures that result from contributing to an organisation seeing fundamental shift in 'business' model**
  - **The challenges faced by staff are substantial. I don't see that this document draws a clear or coherent map between the challenges for staff, the changes you want to implement (e.g. rec1), and a happier more satisfied staff. It appears that we'll simply have additional staff members with many more meetings to attend.**
  - **The level of support from the Secretariat has been exemplary over the past year+. I don't work there so I don't have a strong opinion on changes.**
  - The move to online has severely impacted on experts motivations to participate in ICES activities and also the collaborative spirit within the network. This has resulted in more organizing of meetings and chasing by ICES sec. The business model of ICES in relation to requested advice should be extended to ensure proper resourcing rather than relying on good will of institutes\experts. The secretariat resources are already over stretched and should be increased.
  - **The move to the new building must be thoroughly planned with the new working conditions in mind and the staff need to be consulted on major changes. As identified during the APV, there are large problems around the workload in the secretariat and these have increased with the working hours being all day long. It is impossible to support meetings all times of the day and claim to have work-life balance. And this is not a problem that can be solved by hiring more people as we still will need to participate in these afternoon/evening meetings to do our work and use our expertise.**
  - **The Secretariat is located in Copenhagen, Denmark, thus, most work hours should be taking place in normal Copenhagen work hours - we should not have accommodate North American time zones as**

**much as we have this past year, as this severely interferes with work-life balance.**

- There will be some significant challenges for secretariat in terms of the familiarity with and support for digital collaboration tools and a new paradigm for groups working. It is more likely that groups meet outside regular timezones of the secretariat working hours. It is therefore important to have recognition of the level of support that can/should be provided.
- Totally agree
- Very important to develop the hybrid meeting model as much as possible.
- Virtual meetings should be strongly considered for several reasons, e.g., economic and environmental
- We need the possibility for physical meetings again. Hybrid might work for some but for the working groups to do science we need to physically meet. Maybe it is enough to meet every second year. During covid the first annual digital meeting was manageable but now the in the second year of digital meetings it is exponentially harder to stay motivated and focused on the task at hand. Maybe physical meetings every second year should be considered.
- **Work life balance and virtual meeting fatigue are key issues that need to be considered at every turn as we go forward. In addition to virtual meeting fatigue, consider that participation is often less focused for virtual meetings - meaning less can be accomplished, and while there is additional participation in terms of numbers, very few are actively participating in virtual meetings.**

### **Recommendation 7 – Zero Carbon**

- **Agree in principal, but the devil is in the details, while lowering carbon footprint, do not impact the important work that ICES and the Expert WG does. There must be a balanced approach.**
- **Although a reduction in travel may reduce a carbon footprint, the usage of technology may negate the reduction in carbon emission by lessening travel. Every Google search costs large amounts of energy, not to speak of hours upon hours of online calls, that have carbon emissions. This is a under researched, but should be included in a fuure strategy towards reduced carbon/GHG emissions. Technology is a solution, but not alwyas the best or even better solution.**
- **Appreciate strong commitment and intent to lead by example expressed in this recommendation.**
- **curtailing in-person meetings (expert groups, ASC) would contibute to ZCI**
- **For as far as this is about ICES as an organisation, this looks fine, when it comes to the work and travel of all EGs, it looks unachievable and out of the hands of ICES to regulate that. It is also not desirable ICES would try to. do so.**
- **I strongly support the zero-carbon initiative but I doubt it will be cost neutral for ICES.**
- **I think this definitely needs to play into decisions on conference formats.**

- ICES should be helping to lead the work on climate change. I dread to think what our collective carbon footprint is with all the flights and travelling.
- **ICES should establish a policy recommending purchase of carbon offsets as part of any travel claim, for ICES meetings, and more generally, so that it can be implemented by national institutes outside ICES meetings as well.**
- If we, as the ICES community, cannot commit to eliminating or offsetting our emissions, then it will ring pretty hollow as we increasingly examine the effects of increased emissions and potentially produce advice on how users and actors in the marine space should alter their behaviour.
- If zero-carbon equates to eliminating in-person meetings, then I am against it. We must be able to accommodate in-person meetings.
- Important going forward
- **Important to take balanced approach and moving with member countries and national policies (for secretariat). Agree much more scope for ICES science community to look at energy use, emissions in general, we made progress with offshore wind for example but the sector is really moving faster than the science**
- Important, but perhaps not the absolute key for functioning of the organisation.
- In my opinion, online meetings allow a very satisfactory development of the work, while reducing costs, facilitating a normal family and personal life (not travelling every second week), and probably the most important benefit, reducing pollution. We should never lose the whole perspective, we work for a better management of marine resources, which is part of a broader goal of managing sustainably our planet, and this involves reducing the amount of travels. Hopefully our behaviour will be an example for other companies not related to environmental work.
- Need to ensure carbon zero while ensuring that products are of good quality
- No doubt, ICES must be an example to reduce the anthropogenic impact and contribute to mitigate the climate change.
- Obviously a good intention. Still need some face to face meetings.
- One option to reduce the number of trips can be to have consecutive pre-sential and online meetings for EG (ie. for an EG, you meet in person one year, and online the following year). this way you reduce the impact of traveling (in the environment and in the work-life balance) and can benefit of the advantages of both types of meetings.
- Physical meetings, travel should be monitored - this is a big topic and as a scientific community we need to action this as a priority
- Preference for online ADGs and other meetings that do not require personal interaction
- reducing in person meetings around the world reduces our retention of existing participants and attractiveness to bring in new ICES people, consider other options like offering opt in carbon offsets
- Reducing the number of physical meetings is essential, but meeting people personally facilitates working virtually enormously.

- **Since ICES has no way (at the moment anyway) to offset carbon it can never become zero carbon so long as it need facilities, electricity and equipment. Even if all meetings were virtual it will not result in zero carbon use. However, ICES can seek ways to decrease its carbon footprint in all of its operations not only in meetings**
- Strongly agree ICES should lead by example
- The a “hybrid” approach mentioned in recommendation 6 is important here. It should be considered which meetings requires to be held in presence and which one can be as efficient (or more efficient) remotely
- **There is no such thing as zero carbon (i.e. the absence of CO2 production) – this term being a misnomer for offsetting CO2 production with some form of CO2 consumption. Maximising the offset of production with consumption, preferably with more consumption than production.**
- **This is a good initiative but some of the practical solutions discussed here in order to reach the ideals behind it are a priori in disagreement with the core of ICES: the network can not be maintained and broadened through more online/hybrid work. Additionally, the secretariat is suffering from fatigue and impossible working hours trying to accommodate and support meetings in different time zones. What is in the core of ICES and how to maintain this in this transitional phase? We need to do our part in halting the climate crisis but minimizing our CO2 footprint can only be miniscule due to the aforementioned reasons. Surely, we will have much more impact by focusing on more climate related work and climate-aware advice, that would be leading the way, no?**
- This is so obvious that ICES as written need to be a “Responsible Organization” and “lead by example”.
- We have not choice on this. Time to act and no more blah, blah, blah.
- We'll be reducing CO2 associated to transportation, but I guess there is also some CO2 associated to use of communication systems? e.g. Zoom, Teams... (I don't know about this so I cannot suggest anything, but worth looking into the issue)
- **While zero carbon is admirable, I would not let it override the need for some physical meetings.**
- **Zero Carbon ambition is infeasible. For the sake of science and sustainability, some emissions are justified.**



## 8 Concluding Comments

1. COVID19 will be remembered as the virus that stopped the world. We are all living through a period that can only be described as the greatest act of solidarity in history, as people give up civic freedoms to save lives. While we all agree that managing the health crisis is the overwhelming priority, the social and economic consequences are, and will be, dramatic in an already troubled world.
2. The 2020 ICES Council supported the establishment of a Bureau led Council Sub-Group (BCSGC19) to look into how changes caused by the societal response to the COVID19 pandemic which will impact the future work of ICES in the short and long-term.
3. The BCSGC19 worked throughout 2021 and has addressed its four Terms of Reference and provided 7 recommendations that will help ICES meet the key challenges posed in a post COVID era. Against a background of new conditions and attitudes, our recommendations embrace a change agenda for ICES, with innovative thinking and strategic thinking.
4. The owner, implementer / implementation mechanism, resource needs and estimated costs for each recommendation have been provided to facilitate discussions on the funding of change at ICES into the future
5. The outputs from the BCSCC19 have been kept at a high level and are of considerable strategic importance for the future of ICES. They will help ICES prepare for new working norms and consider a post COVID19 situation in which many scientists from its Member Countries will have very different work pattern (e.g. working from home; remote meetings).
6. BCSGC19 has also provided a suite of Training to enable the implementation of the 7 recommendations. Preparing for new working norms will include a strong focus on training (particularly the chairs) in “remote working methods and approaches” that address the nature and objectives of the different types of ICES meetings.
7. In the post COVID era, there will be a greater emphasis at ICES to embed gender awareness, diversity, equity, inclusion and wellbeing into the values and culture of ICES.
8. BCSGC19 also provided a recommendation on how the Zero Carbon Initiative might progress in the light of the outputs of the BCSGC19.
9. Transparency and feedback were important elements of BCSGC19. Delegates feed into the process through their views on the impact of Covid19,

on their marine science community, Bureau was regularly updated on progress and the ICES community were surveyed on the 7 recommendations (Summary and Draft Report made available). The survey of the ICES community had 113 responses and indicated strong support (Strongly Agree / Agree) with the 7 recommendations of the BCSGC19. It also produced a rich set of comments on the recommendations which will be addressed during implementation.

10. The estimated costs (conservative) of the implementation of our recommendations over a three-year time frame is estimated at 7,299,900 DKK (€ 981,082). This linked package of recommendations represents an investment in “change at ICES” to ensure the organisation remains relevant and is fit for purpose in key areas that will enable it to operate effectively and efficiently in a new post-pandemic world. The BCSGC19 recognise the many demands on ICES finances over the coming years and that strategic prioritisation of investments will be critical to the future of the organisation.

11. Globally, the business landscape for most organisations, particularly international organisations will look a lot different after the COVID19 pandemic. It would be a mistake to look for a one-size-fits-all plan. Every industry, organisation and community (including marine science) will face unique challenges. Some will be permanently damaged by what they have gone through. Others will benefit from the changed conditions and attitudes. In any case, organisations that meet these challenges and embrace change with innovative thinking will have the best chance of prospering in the post COVID era.

## **Appendices**

**Appendix 1 - TOR of BCSGC19**

**Appendix 2 - List of BCSGC19 Participants**

**Appendix 3 - List of BCSGC19 Meetings**

**Appendix 4 - Draft TOR of Zero C Initiative**

**Appendix 5 - List of Actions from Turrell (2019) Paper**

**Appendix 6 – Checklist for a Responsible Organisation**

## **Appendix 1 – TOR's for BCSGC19**

### **Bureau Led Council Sub Group on COVID-19 (BCSGC19)**

#### **Terms of Reference**

*(Version 3 @ 7<sup>th</sup> Dec 2020)*

The 2020 ICES Council supported the establishment of a Bureau led Council sub-group to look into how changes caused by the societal response to the COVID19 pandemic will affect ICES work in the short and long-term.

ICES needs to prepare for a new working norm and consider a post COVID19 situation in which many scientists from Member Countries may have a very different work pattern (e.g. working from home; remote meetings). This will raise a series of issues for the current way of doing business and may impact the current science and advisory process. Preparing for the new working norm should include a focus on training for participants (particularly the chairs) in “remote working methods and approaches” that address the nature and objectives of the different types of ICES meetings. BCSGC19 will also link with the Council Group on the Zero Carbon initiative.

#### **BCSGC19 Participants**

Paul Connolly (IE Chair)

Matt Gubbins (UK)

Piotr Margonski (PL)

Chris Zimmerman (DE)

Florence Cayocca (FR)

Mark Dickey-Collas (ACOM Chair)

Jörn Schmidt (SCICOM Chair)

Neil Holdsworth (DATA)

Input from ICES Secretariat

Anne Christine Brusendorff (General Secretary)

Ellen Johannesen (Coordinating Officer)

TOR1- To report on the impacts and lessons learned from the COVID-19 pandemic on ICES work processes and outputs during 2020, including the measures put in place to mitigate these impacts.

TOR 2 - To provide a snapshot on the impacts of COVID-19 pandemic on ICES Member Countries, their societal thinking and the future impacts on their marine science community.

TOR 3 - To make recommendations on training for participants (particularly the chairs) in remote working methods and approaches that address the nature and objectives of the different types of ICES meetings.

TOR 4 - To make recommendations on how ICES might prepare for and adapt to the new ways of working that may/will emerge in a post COVID-19 landscape.

## **Appendix 2 – List of Participants**

1. Paul Connolly (IE Delegate - Chair)
2. Matt Gubbins (UK Delegate)
3. Piotr Margonski (PL Delegate)
4. Chris Zimmerman (DE Delegate)
5. Florence Cayocca (FR Delegate)
6. Mark Dickey-Collas (ACOM Chair)
7. Jörn Schmidt (SCICOM Chair)
8. Neil Holdsworth (DATA)
9. Anne Christine Brusendorff (Sec Gen)
10. Ellen Johannesen (Secretariat)

### Appendix 3 – BCSGC19 List of Meetings

*Due to the various forms of national restrictions in place as a result of the COVID19 pandemic, some members of our Group were working from home with child home schooling, child minding and other commitments. BCSGC19 was flexible with the sequencing of the meetings agenda as some people were not be able to participate for the full duration of our meeting. Furthermore, due to work commitments and summer holidays there was reduced participation at some meetings. Intercessional work between meetings was a critical component of the modus operandi of BCSGC19. Regular updates were given to the ICES Bureau.*

#### Meetings

- Dec 2020 - Informal 1 to 1 meetings between Chair and Participants on TOR's and approach to addressing the TOR's.
- BCSGC19 Meeting 1 (2 Hours)  
18<sup>th</sup> January 2021
- **Bureau Updated on Progress  
4<sup>th</sup> February 2021**
- BCSGC19 Meeting 2 (2 Hours)  
22<sup>nd</sup> March 2021
- **Bureau Updated on Progress  
12<sup>th</sup> April 2021**
- BCSGC19 Meeting 3 (2 Hours)  
17<sup>th</sup> May 2021
- BCSGC19 Meeting 4 (1 hour)  
7<sup>th</sup> June 2021
- **Bureau Updated on Progress  
8<sup>th</sup> June 2021**
- BCSGC19 Meeting 5 (1 Hour)  
28<sup>th</sup> June 2021
- BCSGC19 Meeting 6 (2 Hours)  
19<sup>th</sup> July 2021
- BCSGC19 meeting 7 (2 Hours)  
9<sup>th</sup> August 2021
- **Bureau Update on Draft Report and Recommendations  
26<sup>th</sup> August 2021**
- BCSGC19 Meeting 8 (1.5 Hours)  
12<sup>th</sup> October 2021

BCSGC19 Draft Report was Discussed and Endorsed by Bureau at their meeting on Aug. 2021

Survey of the ICES Community on 7 linked package of Recommendations – Sept. 2021

Council to Consider Report, Recommendations and Costs of Implementation – Oct. 2021

## Appendix 4 – Draft TOR’s of Zero C Initiative

### Draft Terms of Reference for Bureau Working Group

*(From Council meeting October 2020 = Del-Doc 2.3)*

TOR 1. Develop a strategy for estimating and publishing the ICES community baseline at an appropriate level of resolution

- a) Begin with a working definition of the “ICES Community” as “activities that are organized directly by ICES operations and activities managed directly by the Secretariat and carried out during meetings of ICES Expert Groups” and refine this as appropriate
- b) Consider alternative approaches for defining baseline (e.g. inventory of historic meetings and participation, more comprehensive approaches to quantify CO2 footprint, etc.)
- c) Investigate the possibility of using an existing guide/framework such as the one available from the Carbon Trust (depending on outcome of b, above) – (may not be necessary)

TOR 2. Inventory, document and evaluate steps already taken to justify travel, facilitate remote meetings, etc. in recent years and, in particular, during the Covid-19 pandemic with careful examination of benefits (such as broader participation) and costs (such reduced social and informal interaction). Make the greatest possible use of lessons learned in developing this strategy (develop best practice guides; collaborate with other organizations, etc.)

TOR 3. Survey member countries and other organizations to determine if they have:

- a) Developed targets and strategies for short- and long-term reduction of their CO2 footprints or otherwise restricted travel and/or other sources of emissions
- b) Conducted CO2 footprint audits or established baselines in other ways
- c) Inventory details related to a and b above and update regularly

TOR 4. Draft a CO2 footprint reduction strategy for ICES which achieves net-zero status as soon as possible and:

- a) Sets short-and long-term targets
- b) Establishes overall CO2 budget reduction trajectories for different parts of the organization
- c) Seeks input from throughout the organization (top-down and bottomup) and is responsive to relevant activities in Member Countries

d) Encourages and resources innovations that reduce ICES related travel, improve remote meeting capabilities, develop and advance remote networking, etc.

### **Terms of Reference for Forwarded to SCICOM by Bureau (June 2020)**

TOR 5. Together with other relevant organizations, consider approaches for auditing and reducing emissions associated with:

- a) research and monitoring, including use of research vessels and alternative platforms
- b) fishing, aquaculture and fish processing operations
- c) CO<sub>2</sub> offsets (e.g. mitigation, offshore energy, biomass /biofuel production)
- d) additional science focus areas?

TOR 6. Emphasize net-zero thinking in everything we do and miss no opportunity to advance on this goal (e.g. upcoming relocation of Secretariat, planning for future ASCs) (Standard TORs for EGs?)

TOR 7. Work with partner organizations such as PICES and OSPAR, to develop joint policies and procedures and take a leadership role in CO<sub>2</sub> reduction strategy development and implementation.

### **Process**

This strategy will be developed through a Bureau Initiative/Bureau Working Group. A small internal working group will be established to develop an implementation plan and schedule and to guide the process. This will consist of two individuals from each of Bureau, Secretariat, SCICOM and ACOM and will include staff support from the Secretariat. The process will be designed to encourage and endorse bottom-up participation.



Appendix 5 – List of Actions from Turrell (2019).

Green ticks indicate areas addressed by BCSGC19

13 Actions from Turrell (2019) Paper

1. Science for CCS Monitoring Strategies Future EIA	2. Understanding of Blue Carbon Sequestration	3. Predict threats to Blue Carbon Sequestration Rates and Stores	4. Support Offshore Renewable Energy Through MSP, EIA, Monitoring.
5. Science for C Emission Management in the Fishing Industry	6. C Reducing Survey Technology (AV's)	7. Insist on Remote Access to as many Meetings as Possible	8. Further develop Remote Ways of Professional Contacts
9. Investigate Multi Venue Science Conferences	10. Estimate, Record and Publish Institute Emission Statistics including RV's	11. Set Targets for Reductions in Emissions Including RV's	12. Share Emission Saving Techniques - Measures Between Institutes
13. Consider Vegetarian Catering And Local Produce	A. ICES – Total Emissions on Travel 0.002 M Tonnes CO2	B. Offset Emissions € 56,000 / Year	

## Appendix 6 – A Checklist for a Responsible Organisation

### The Responsible Company - A Checklist to Start the Thinking around Business Health; Workers; Customers and Nature.

(From - The Responsible Company - Yvonne Chouinard and Vincent Stanley, Patagonia Press, 2012) *\*\*\* Checklist Items in Red are for consideration in a Zero CO2 Initiative*

#### CHECKLIST 1 BUSINESS HEALTH

- Board of Directors that meet regularly
- Share Financial Information with employees
- Financial Controls
- Financial Reports
- Financial Reports reviewed by Board
- Audited by Independent Accounting firm
- Incorporate into the Mission Statement a commitment to reduce environmental harm
- **Provide employee training to reduce social and environmental harm**
- **Share information with stakeholders on reducing social and environmental harm**
- **Dedicate , even if part time, staff to monitor the company's social and environmental performance**

#### \*\*\* NOTE \*\*\*

**NO COMPANY ON EARTH CAN CHECK OFF EVERY ITEM ON THIS LIST. IT MIGHT BE USEFUL TO CHECK WHAT YOUR ORGANISATION DOES DO NOW. YOU WILL THEN BE AWARE OF WHAT NEEDS TO BE DONE, PLAN YOUR PROGRESS AND TRACK IT.**

#### CHECKLIST 2 WORKERS

- Pay a living wage - If you can't figure out when you can.
- Determine whether your company pays above market, or below market rates.
- Paying below market rates means competitors will attract better talent including your own
- Calculate the multiple by which your highest paid employees compares to the lowest paid employee. Narrow the gap.
- Calculate annual attrition rate. If number is high figure out why.
- set a benchmark for improvement.
- Calculate an internal hire rate for open positions. Are you training properly or allowing people grow in their jobs.
- Company Bonus Plan
- Health Insurance for Staff
- Retirement Plans for Staff
- **Diversity and Gender balance**
- Stock Options
- Vacation Pay
- Maternity and Paternity Pay
- Allow part time and **Flexitime and Remote Working as appropriate**
- Showers Changing Room so employees can exercise at lunchtime
- Establish relationship with childcare centre close to work
- Ensure facilities meet health and safety standards
- Ensure facilities meet disabilities standards.
- Provide company canteen.
- Maintain Board of Directors with outside members
- Subsidies Employee travel to work via public transport, walking , biking.
- Sabbatical Leave
- Employee Handbook
- **Code of ethics**
- **Job Satisfaction Survey**
- Annual Performance Management and Appraisal for Staff
- Determine training needs of Staff.

#### CHECKLIST 3 CUSTOMERS

- Bank locally - where you know them and they know you.
- Make opportunities for low income people and those with physical or learning disabilities
- Community Service Policy
- staff Group Volunteering Activity
- Create partnerships with local organisations that benefit the environment and the commons
- Make your facilities available for local organisations outside working hours
- identify 80% of suppliers. Meet with them annually.
- **Ethics policy for transacting with suppliers**
- **Our Code of conduct understood by suppliers**
- Set continuous improvement goals for your major suppliers in terms of social, environmental and quality standards
- Share above with other organisations
- **Encourage major suppliers to use renewable energy**
- **Encourage major suppliers to reduce and monitor Greenhouse Gas Emissions, waste and divert it from landfill**
- **Benchmark and reduce water**
- **Encourage Wastewater Recovery Systems**
- **Help set standards with suppliers that reduce social, and environmental harm and educate consumers on the impacts of the products they buy.**

#### CHECKLIST 4 NATURE (A)

- **Conduct independent audits of energy and water use and waste generation. Target reductions**
- **Share both targets and results with directors, employees and other businesses engaged in related activities, staff meetings, newsletters, web, and new staff orientations**
- **Do not create an environmental bureaucracy - do not make it a public relations or marketing arm .**
- **Incorporate environmental goals into job descriptions and performance appraisals**
- **Perform a life cycle assessment of the products that produce 80% of your business**
- **Conduct an independent review of the toxicity of major materials used in products and processes.**
- **Benchmark and target increases in the use of biodegradable material and measure performance**
- **Conduct an independent review of transportation for all inbound freight. - use less air and truck shipping - more rail And ocean freight, increase efficiency reduce energy and pollution**
- **Establish tools that can be integrated into IT software to measure environmental impacts and help improve performance**
- **Take back worn out products for recycling or repurposing or work with partners to do so**
- **Use products to include as much recycled material as possible**
- **Monitor energy bills for spikes in use that may indicate the need for maintenance**
- **Buy renewable energy credits to offset greenhouse gas emissions from company travel and energy use**
- **Purchase renewable energy from your utility company**

#### CHECKLIST 4 NATURE (B)

- **Set standards for corporate travel. Define priorities for types of business travel. Reduce corporate travel.**
- **Establish video conferencing facilities, ensure they work and that employees are trained**
- **Encourage employees to take the bus, train, carpool or bicycle to work.**
- **Offer electric vehicle ports for visitors and staff.**
- **Tune up energy efficiency in relation to heating and air conditioning.**
- **Use ceiling fans they use 98% less energy than Air Conditioning.**
- **Install renewable energy sources (wind; solar).**
- **Use a 365 thermostat to control heating and air conditioning**
- **Insulate and investigate heat pump technology.**
- **Annual Maintenance of heat-energy systems.**
- **Use solar water heaters**
- **Lighting - install automatic sleep modes, timers and LED bulbs and fixtures.**
- **Increase lighting efficiency by installing optical reflectors or diffusers.**
- **Develop a site specific water budget.**
- **Install low flow toilets.**
- **Check and repair water leaks.**
- **Change window cleaning from periodic to as required.**
- **Harvest rainwater**
- **Use grey water.**
- **Install water flow meters**
- **Pest control - use less toxic pesticides - explore alternative methods**
- **Use recycled oil for equipment**
- **Specify recycled office materials**
- **Discourage printing of e mails and go paperless for meetings**
- **Eliminate non recyclable packaging in the lunchroom.**
- **Compost kitchen waste.**
- **Eliminate single use plastic bottles**





**ICES**  
**CIEM**

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

Council meeting

October 2021

Del Doc 3.0

Agenda item 3

---

## ICES Net Zero CO<sub>2</sub> Initiative

Council is invited to:

- 1) Review actions related to the Net Zero CO<sub>2</sub> emissions initiative taken during 2020 Council Meeting and related follow up
- 2) Recognize and comment on plans for 2022 and beyond

At their 2020 meeting, Council agreed on a policy statement regarding reduction of emissions. Council requested Bureau to make some minor edits to proposed text and then to publish the statement. Bureau approved the additional edits and the following statement has now been published:

ICES acknowledges and supports actions taken by member countries to substantively reduce emissions and will take actions necessary to move towards net-zero status for operations and activities managed directly by the Secretariat and carried out during meetings of ICES Expert Groups as soon as possible. These actions will be taken in full consultation with member countries and in recognition of their specific positions. ICES will also encourage and support activities within our network which develop and integrate the science necessary to provide advice on reducing emissions associated with fishing and fish processing operations, aquaculture, research, monitoring, and ecosystem-based fisheries management, and integration of mitigation technologies, such as marine renewables, with other uses of marine space and resources. ICES considers this initiative to be of the highest priority and will make every effort to meet this goal, and engage the community in identifying, developing, and implementing the changes required. This Policy will be reviewed regularly.

Council also agreed to establish a Working Group on ICES in a NET Zero World. While initially defined as a Bureau Working Group, this will be established as a Bureau Council Working Group (WGINZW). The WG was asked to address the following TORs:

1. Develop a strategy for estimating and publishing the ICES community baseline at an appropriate level of resolution
  - a) Begin with a working definition of the “ICES Community” as “activities that are organized directly by ICES operations and activities managed directly by the Secretariat and carried out during meetings of ICES Expert Groups” and refine this as appropriate
  - b) Consider alternative approaches for defining baseline (e.g. inventory of historic meetings and participation, more comprehensive approaches to quantify CO<sub>2</sub> footprint, etc.)

- c) Investigate the possibility of using an existing guide/framework such as the one available from the Carbon Trust (depending on outcome of b, above) – (may not be necessary)
- 2. Inventory, document and evaluate steps already taken to justify travel, facilitate remote meetings, etc. in recent years and, in particular, during the COVID-19 pandemic with careful examination of benefits (such as broader participation) and costs (such as reduced social and informal interaction). Make the greatest possible use of lessons learned in developing this strategy (develop best practice guides; collaborate with other organizations, etc.)
- 3. Survey member countries and other organizations to determine if they have:
  - a) Developed targets and strategies for short- and long-term reduction of their CO<sub>2</sub> footprints or otherwise restricted travel and/or other sources of emissions
  - b) Conducted CO<sub>2</sub> footprint audits or established baselines in other ways
  - c) Inventory details related to a and b above and update regularly
- 4. Draft a CO<sub>2</sub> footprint reduction strategy for ICES which achieves net-zero status as soon as possible and:
  - a) Sets short-and long-term targets
  - b) Establishes overall CO<sub>2</sub> budget reduction trajectories for different parts of the organization
  - c) Seeks input from throughout the organization (top-down and bottom-up) and is responsive to relevant activities in Member Countries
  - d) Encourages and resources innovations that reduce ICES related travel, improve remote meeting capabilities, develop, and advance remote networking, etc.

Council requested that SCICOM address the following additional TORs:

- 5. Together with other relevant organizations, consider approaches for auditing and reducing emissions associated with:
  - a) research and monitoring, including use of research vessels and alternative platforms
  - b) fishing, aquaculture, and fish processing operations
  - c) CO<sub>2</sub> offsets (e.g. mitigation, offshore energy, biomass /biofuel production)
  - d) additional science focus areas?
- 6. Emphasize net-zero thinking in everything we do and miss no opportunity to advance on this goal (e.g. upcoming relocation of Secretariat, planning for future ASCs) (Standard TORs for EGs?)
- 7. Work with partner organizations such as PICES and OSPAR, to develop joint policies and procedures and take a leadership role in CO<sub>2</sub> reduction strategy development and implementation

As the work of Bureau Council Subgroup on COVID19 (BCSGC19) began, it quickly became apparent that much of the work of this subgroup was relevant to the goals of the Net Zero Initiative and Bureau agreed that it would be best to complete the work of the BCSGC19 before starting work on the Net Zero Initiative.

So this work will begin in early 2022. Gerd Kraus (Germany) has kindly agreed to co-chair the initiative and we are now seeking a co-chair from Bureau and additional members, hopefully some from BCSGC19.

SCICOM discussed how the TORs which have been passed to them, can be best handled. SCICOM will establish a subgroup on this, but have already identified initial science needs in relation to TOR 5. These include carbon storage and carbon sinks, linked to the work of WGONCE (Working Group on Ocean Negative Carbon Emissions), and research vessel design. The latter was seen as an opportunity to link national activities as many countries plan new research vessels and need to consider emission reduction measures. TORs 6 and 7 partly extend beyond the remit of SCICOM and thus only the aspects which can be covered by SCICOM will be worked on. In particular, the future format of the ASC is already being discussed in a SCICOM subgroup. The subgroup is working with the hosts of the 2022 ASC to explore opportunities and evaluates conferences held in fully virtual and hybrid format (e.g. the ASC 2021, the World Fisheries Congress, etc.)



**ICES**  
**CIEM**

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

Council meeting

October 2021

Del-Doc 4.2

Agenda item 4.1 And 4.2

---

## ICES General Secretary Recruitment

Council is invited to:

- 1) Recall Article 13 of the ICES Convention:  
*The Council shall appoint a General Secretary on such terms and to perform such duties as it may determine.*
- 2) Review steps already taken to prepare for recruitment
- 3) Review and endorse vacancy announcement and recruitment brief
- 4) Review and support proposed recruitment process

As reported earlier, Anne Christine Brusendorff, the ICES General Secretary, informed us in June that she was planning to resign her position effective December 31st, 2021. This was not expected since we had recently extended her contract until 2024. The General Secretary has been on sick leave since informing us of her resignation. We do not expect that she will return to work before her departure.

During her 10 years as General Secretary, Anne Christine Brusendorff's contributions to the Secretariat and the entire organization have been immense. She has brought inspired leadership during a time of change. Her influence on the Secretariat, the entire network, and our strategic engagement has been profound and greatly appreciated.

We are now faced with the unexpected challenge of recruiting for a new General Secretary. This is especially difficult because we have been unable to consult with the outgoing General Secretary and draw on her experience. In the past, we have had an orderly transition as one General Secretary departs and another takes office. But in this instance, we are challenged to minimize the time before a new General Secretary joins us in Copenhagen.

Bureau has worked with Secretariat staff and managers, and the committee chairs, during the past few months to develop a profile for a new General Secretary and define the necessary qualities and experience. We have been working with an executive search company with relevant experience to help draft a vacancy announcement and recruitment brief, and we will continue to work with this company throughout the recruitment process.

It's essential that Council be fully informed and supportive of the recruitment process. At this Council meeting, you will have an opportunity to review the draft vacancy announcement and recruitment brief. We will also outline the recruitment process for your approval. An essential aspect of the process will be establishment of a selection panel. We propose that this consist of:

- Two Bureau Members
- Two non-Bureau Council Members

- One Line Manager
- One Staff Representative
- President or First Vice President

The proposed Recruitment Process is:

- Council reviews announcement and agrees to support process (at the October 2021 meeting)
- Panel members appointed (at the October 2021 meeting or soon thereafter: Panel will be updated on progress as process evolves, major work of panel begins when shortlist is available)
- Consultancy finalizes announcement and begins formal search (November- early December)
- Candidate Assessments (December – early January)
- First round of interviews (mid-late January)
- Second round of interviews (if necessary: early February)
- Recommendation to Council (February 2022: online extraordinary meeting)
- Council requested to approve that the agreed process has been followed, and endorses the selection
- If Council is unable to approve the process and selection, the panel will, if possible, bring forward an alternative candidate
- Negotiation and agreement with selected candidate
- New General Secretary takes office (May 2022 or later)

Note that these timelines are optimistic, unforeseen delays may alter or delay the draft timeline.

The draft vacancy announcement and recruitment brief are provided in the following pages. These documents will be presented during the Council Meeting.





## Appointment details

**Company:** International Council for the Exploration of the Seas (ICES)

**Job title:** General Secretary

**Location:** Copenhagen

**Job reference:** QASAIA

**Closing date:** TBC

## Advert text

The International Council for the Exploration of the Seas (ICES) is the world's oldest intergovernmental scientific organization. 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 is a global leader in marine science and is comprised of a network of nearly 6000 scientists from over 700 marine institutes in 20 member countries.

ICES is now looking for a new General Secretary (GS) to lead the organisation through a period of strategic change. The GS is the Council's Chief Executive Officer. The GS is responsible for implementing the ICES Strategic Plan through direction of the Secretariat and high-level engagement within and beyond the community of Member Countries. The GS reports to the Bureau (Executive Council) and collaborates directly with the Science and Advisory Committee Chairs to support implementation of the Science and Advisory Plans.

ICES is seeking a visionary leader who can represent the organisation within and beyond its community of member countries. The successful candidate will have demonstrable managerial experience, possess outstanding executive and leadership skills and will bring experience of motivating, supporting and developing a workforce. They will also be an adept strategist, have a track record of engagement at a high-level with organisational leadership and be a resilient, communicative and committed individual. The successful candidate should have an understanding of provision of impartial evidence to support policymaking and implementation. Formal scientific education may not be essential but will be a consideration in the selection process.

Panorama are acting as employment agency advisors to ICES on this appointment. For further information about the role, including details about how to apply, please visit [www.saxbam.com/appointments](http://www.saxbam.com/appointments) using reference **QASAIA**. Alternatively telephone +44 (0)20 7227 0880 (during office hours). Applications should be received by noon on TBC.



ICES  
CIEM

# Appointment Brief

## Appointment of General Secretary

November 2021

Reference: QASAIA

# An introduction

ICES is the world's longest-standing intergovernmental marine science organisation. Its 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 is a global leader in marine science and is comprised of a network of approximately 6000 scientists from over 700 marine institutes in 20-member countries.

ICES is committed to better understanding marine ecosystems and securing sustainable benefits for society. The [ICES Strategic Plan](#) defines its direction and priorities relating to science, data, and advice. To fulfil the plan, it works collaboratively, using its broad international network to generate and share the data, knowledge, and advice needed to meet current and emerging conservation, management, and sustainability goals. A Secretariat of approximately 70 staff, based in Copenhagen, plays an active role in advancing ICES mission and supporting the network.

While the history of ICES is one of excellence in marine science and provision of advice, the organisation is continuously changing to keep pace with modern needs. This involves broadening participation in ICES activities, developing new scientific programs, tailoring scientific advice to meet changing user needs, and modernizing infrastructure that supports the scientific community. ICES is looking for a General Secretary (GS) to lead it through a period of significant strategic opportunity and change.









# The role

ICES is a global leader in marine science and the provision of scientific advice to decision makers. In recruiting for a GS, it is seeking a visionary leader who can represent it within and beyond its community of Member Countries. The ICES Strategic Plan is overarching and establishes the context within which its Science and Advisory Plans exist. The GS will be responsible for implementing the Strategic Plan with guidance from the President (on behalf of Bureau and Council) and, in association with the Science and Advisory Committee Chairs, enabling implementation of the Science and Advisory Plans. ICES' new GS will have outstanding executive and leadership skills and will bring experience to motivating, supporting and developing a workforce of approximately 70 individuals.

The GS will recognize the essential importance of the network in implementing the Strategic Plan and take steps to nurture and develop this network to meet changing and expanding needs. The GS will possess overall responsibility for workforce performance. The GS will guide and encourage strategic change that is necessary as the workforce adapts to changing demands in a post COVID world. In association with the Head of Finance and the Chair of the ICES Finance Committee, the GS ensures financial accountability and that the President, Bureau and Council are informed on the financial status of ICES regularly and alerted promptly when issues of concern arise. The new GS will also bring outstanding communications skills and the ability to work in a collaborative manner at all levels.

The GS is the Council's Chief Executive Officer. The GS is responsible for implementing the ICES Strategic Plan through direction of the Secretariat and high-level engagement within and beyond the community of Member Countries. The GS reports to the Bureau (Executive Council) and collaborates directly with the Science and Advisory Committee Chairs to support implementation of the Science and Advisory Plans.

The work of the GS will include the following areas:

- Leading Change – engendering the organisational change necessary to implement the strategic plan
- Leading People – leading and supporting staff and ensuring the workplace facilitates inclusion, teamwork and cooperation
- Accountability - Meeting goals and expectations set by the Bureau and translating these into actionable objectives and outcomes
- Operational activities – managing human, financial and information resources strategically, responsively and cost-effectively
- Building coalitions – developing and maintaining relationships within and beyond the community of member countries and partner organisations







# Person specification

To be considered for this appointment, it is expected that you possess the following:

## Knowledge and experience:

- Demonstrated leadership ability as a forward-looking strategic thinker and leader of change
  - Successful administrative/managerial experience, preferably with a scientific organisation, with a focus on marine science
  - Track record of solid people management skills, particularly the ability to lead and motivate
  - Demonstrated experience in financial management, includes developing budgets and monitoring expenditure for a diverse range of projects
  - Engagement at a high level with organisational leadership (e.g. at board level) to promote good coordination and information across the organisation, responding rapidly and effectively to feedback/requests from both within and outside the organisation
  - Broad understanding of digital working and communication
- Formal scientific education may not be essential but will be a consideration in the selection process

## Skills and attributes:

- Outstanding interpersonal skills – you treat others with sensitivity and dignity and tailor your behaviour to the audience
- Strong communicator – your spoken and written English are excellent and you can deliver clear and convincing presentations. You are also an effective listener
- High Integrity – you model a high standard of ethics and fairness, showing consistency between your words and actions
- Resilient – you remain flexible in the face of unexpected obstacles and handle pressure effectively and optimistically
- Committed to public service – you are motivated to achieve the mission and objectives of ICES and are empathetic to the public interests of our member states





# Terms of appointment

The appointment will be for a period of six years but is subject to further extension with the approval of the Council.

The post is based at the Council's headquarters in Copenhagen, Denmark.

The salary is based on, but not identical with, grade D2-1 of the UN Staff scale, adjusted for different working conditions. Other benefits similar to those paid by UN organisations are also available for qualified staff members (e.g. allowances related to installation, dependents, education, home leave, and repatriation). A pension scheme is available to which both the incumbent and the Council contribute.

Members of the Secretariat enjoy the privileges and immunities in line with ICES status as an international organisation and pursuant to the Host Agreement between the government of Denmark and ICES. The [ICES Staff Rules](#) set out the conditions and principles of employment and the responsibilities of the staff of the ICES Secretariat.

## How to apply

Panorama are acting as employment agency advisors to ICES on this appointment.

Candidates should apply for this role through our website at [www.saxbam.com/appointments](http://www.saxbam.com/appointments) using code **QASAIA**.

Click on the 'apply' button and follow the instructions to upload a CV and cover letter.

The closing date for applications is noon on **TBC**.



Partners in **Panorama** - Search around the world  
[panoramasearch.com](https://panoramasearch.com)

**Represented by:**

**MANGAARD & PARTNERS**

**Copenhagen**

Hammerensgade 1, 2. sal, 1267 Copenhagen K,  
Denmark

[mangaardpartners.com](https://mangaardpartners.com)

**SAXTON BAMPFYLDE**

**London**

9 Savoy Street  
London WC2E 7EG

**Edinburgh**

46 Melville Street  
Edinburgh EH3 7HF

[saxbam.com](https://saxbam.com)



## Secretariat Report

*Council is invited to take note of the information provided in this report from Administration and the important links to the recommendations for investment submitted by the Bureau–Council subgroup on COVID-19.*

### 1 Secretariat staff well-being and remote work

---

The ICES community continues to grow, with an increase in expert groups, workshops, and unique participants, all being supported by the Secretariat. During 2020 and 2021, there was also an increase in remote meetings requiring participation and support from the Secretariat.

The Secretariat staff members worked remotely, from March 2020 and until August 2021, following the recommendations of the Danish Health Authorities. Staff are now back in the office, with flexibility for working from home maintained, (depending on roles) acknowledging staff preferences, and accommodating the continued support for the ICES community across time-zones.

The remote work period, and the subsequent return to work has coincided with high-levels of stress in the Secretariat and required extra attention to staff well-being, from the management team and HR officers. In particular the high demands for support for the continued online work in the expert community has resulted in high stress-levels and consequently extended sick-leaves among multiple staff members.

### 2 Work place assessment

---

In order to get a structured feedback on all aspects of the working environment, a formal assessment, including feedback from staff via a survey was carried out with the support of a company specializing in this field. At the end of 2020 a work place assessment (APV) survey was conducted through Health Group, a local company that specialises in this process. This anonymous survey is a mandatory process for all regular workplaces in Denmark, where the physical and mental working environment is assessed every 2-3 years. This has been the first APV survey for ICES.

There was high participation from all departments, 85% of all staff completed the survey. Following the results, we have identified focus areas for both the psychological and the physical work environment. Required changes on the physical working environment will be rectified to the extent possible in the current HQ, and considered to the widest possible extent in the new HQ.

As advised from Health Group, we have been working with an external impartial consultant. Currently we are about to finalize the department workshops. For the most efficient outcome, this process had to take place in person which is why it has

taken longer than initially planned. This Autumn we will step into the final phase of workshops: creating a forward-looking action plan.

### **3 Cooperation in Secretariat and with ACOM and SCICOM Chairs**

---

In the absence of the General Secretary, the Secretariat Line Managers, (Head of Finance, Head of Advisory Support, Head of Science Support, as well as Head of Data and Information), have maintained regular meetings with the Coordinating Officer, and the ACOM and SCICOM Chairs in Coordination Group meetings to ensure best use of resources, involvement and agreement in establishing priorities, and communication on these issues. The President and 1<sup>st</sup> Vice-President are also in close communication with Coordination group and providing valuable support.

### **4 Move of ICES HQ**

---

In 2018, the Danish government announced plans to move ICES HQ to a new location in Copenhagen. Over the past two years, a great administrative effort has gone into compiling our facility needs, identifying a suitable relocation site, contacting suppliers and cooperating with Danish authorities. Due to coordination issues between the various Danish authorities involved in the relocation project, we still await a final answer on the project financing status and, thus, timeline of this move.

The Danish government is still committed to relocating ICES HQ to 13 Rigersgade, 1316 Copenhagen K. The new location will provide additional space, compared to the current location, and is conveniently located in the centre of Copenhagen with good access to public transportation, as well as hotels.

Negotiations continue on the renovations required, as well as the specific timeline, with a revised expectation on the moving date to be informed to ICES early November 2021, with the move unlikely before late 2022 or 2023. Additional resource needs are expected.

### **5 Finances**

---

During the first quarter of 2021, there were a number of major changes in the financial landscape, especially on the advisory side. Consequently, a larger amount of time has been dedicated to this in order to both ensure an equitable and transparent system for costing the advice, that also provides the required documentation, and is possible to administrate efficiently.

### **6 ICES Affiliates**

---

ICES science extends beyond the North Atlantic region through cooperation with national institutes in non-member countries as [affiliates](#). The rights and obligations of Affiliates are outlined in [ICES Affiliates policy](#).

During 2020/2021 Affiliate agreements have been renewed with CSIRO, Australia; Ministry of Primary Industries, New Zealand; IFOP, Chile, IMARPE, Peru.

A renewal of the agreement with DEFF, South Africa is still in progress.

## 7 Administrative systems

---

### 7.1 Resolutions database

Over the past few years, the ICES community, including SCICOM, ACOM, and Expert Group members, have requested a more comprehensive overview of resolutions that is fully searchable and able to support broader reporting. As such, the Secretariat has been working closely with ACOM and SCICOM to develop a streamlined process for submission and tracking of resolutions.

During 2020 and 2021, the team has been working to upgrade Microsoft Dynamics, the software that will support the resolutions database, so it can be integrated with our existing expert group meetings database (the Resource Coordination Tool – RCT). A major effort has also been dedicated to cleaning existing databases to allow for adequate reporting, and training staff on data entry protocols.

A new [ICES Activities dashboard](#) has been developed in beta-version to help member countries get an overview of their active nominations in current year.

The pandemic response, and resulting major shift in the structure of ICES work planning has resulted in a pause in development, recognizing that the planned resolutions database format will also require adaptations, and wider scope. This includes an upgrade and streamline of the nominations process, to allow for the collection of additional demographic information, to respond to reporting needs, and following the EU General Data Protection Regulation.

Additional technical (and dedicated) data competences are required, and are included in the recommendations of the Bureau Council Sub-group COVID-19.

### 7.2 New Intranet

We have initiated a migration of our intranet, the internal Secretariat SharePoint, to a new SharePoint site in order to consolidate databases, save on resources, and enable the latest Microsoft tools. The process is taking place throughout the 2<sup>nd</sup> half of 2021, with an aim to complete the full migration by year end. The migration is a pre-cursor to a future migration of our external community sites ([community.ices.dk](http://community.ices.dk)) which will be a much larger challenge. We will use the lessons learned from the internal process to execute as smooth a process for the community as possible.

### 7.3 Delegates Dashboard

The Delegate Dashboard is a customized view within the Resource Coordination Tool (RCT)—the database for storing information about all participants in ICES work and meeting activities. The Delegate Dashboard is designed especially for use by Council delegates to find an overview of all active nominations from their country. All delegates can access the Delegates Dashboard to view their active nominations and institutes. A specific national login and password has been provided to all Council delegates. Please contact the Secretariat ([nominations@ices.dk](mailto:nominations@ices.dk)) if you require a reminder of your national login/password.

## 8 General Data Protection Regulation

---

Following an internal review of the handling of personal data in the Secretariat and engagement with an external consultant, a Secretariat wide team is working to implement actions to improve protection of data subject privacy, and compliance with GDPR.

## 9 Focus on the empowerment of women – cooperation with the World Maritime University

---

Following on from the commitment made in the 2019 strategic plan on gender equality, diversity, equity, and inclusion there has been work ongoing to scope the current status and to ensure organizational practice supports a diverse and inclusive working environment.

The Secretariat Administration is continuing to work with the Global Ocean Institute at the World Maritime University on the project “[Empowering women for the United Nations Decade of Ocean Science for Sustainable Development](#)”. A WMU team, including ICES Coordinating Officer, Ellen Johannesen is conducting research with a focus on gender equality and the empowerment of women in the conduct and delivery of ocean scientific research, with specific focus on intergovernmental ocean science and governance organizations.

This work forms a foundation for further developing a gender equality plan for ICES and has contributed to the recommendations of the Bureau Council Sub-Group COVID-19.

## 10 Human resources

---

### 10.1 Arrangement of work – responsibilities, titles, and grades

The management team has made an overall examination of competencies and responsibilities within the Secretariat (tasks, people management, strategic, project & process, budget, experience/education), gradings and titles, and made appropriate re-gradings.

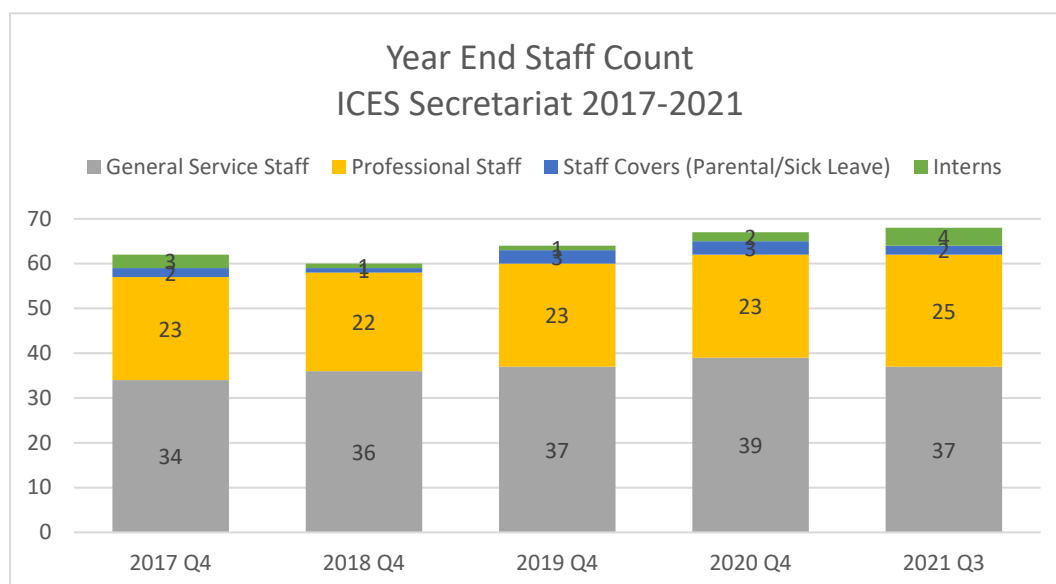
This examination has taken as its starting point the decisions by Council in 2014/2015, and the establishment of 100% Chair positions, and the positions as Head of Science Support, and Head of Advisory Support.

There are still discussions with the staff representatives and the staff association regarding the outcome of specific aspects of the overall examination.

It has also been agreed to rename the Advisory Support and Science Support departments to Advisory and Science Department, effective 1 November 2021.

### 10.2 Staffing trends and Changes 2021

Over the past 5 years, the Secretariat staff count has remained relatively stable, with an average of approximately 60 regular staff members.



In the third quarter of 2021, there were a total of 68 staff members employed (incl. 2 maternity covers and 4 interns) of which were 39 women and 31 men. Approximately one quarter of the Professional staff roles, and three quarters of the General Service staff roles are held by women.

#### 10.2.1 New Staff 2021

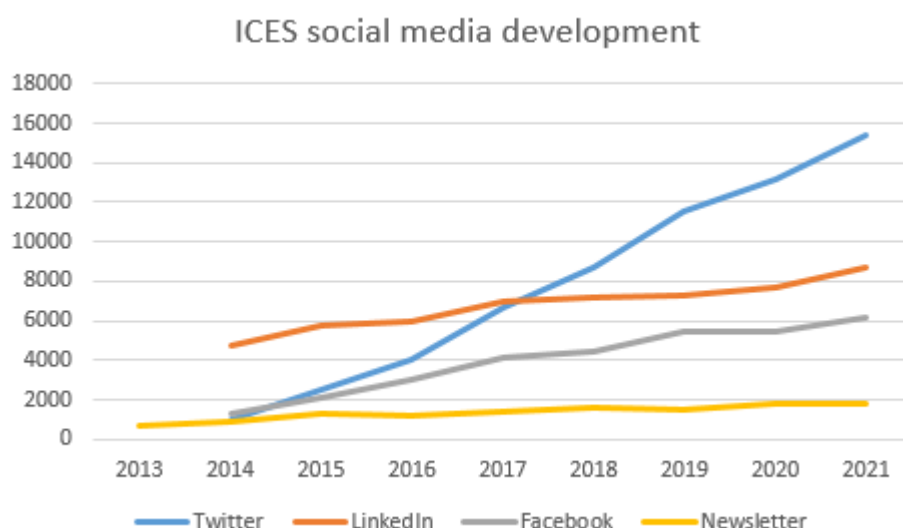
Start Date	Name	Note
16 Nov 2020	Data Officer (maternity cover)	11-month contract
16 Nov 2020	Copy Editor	4-year contract
1 Jan 2021	Science Outreach Officer	4-year contract
1 Mar 2021	Advisory Programme Supporting Officer	4-year contract
8 Feb 2021	Advice & Data Analyst	3-year contract
1 Sep 2021	Advisory Programme Supporting Officer	4-year contract

#### 10.2.2 Contracts Ending in 2021

End Date	Name, Title	Note
31 Dec 2021	Technical Editor	Retired
31 Dec 2021	General Secretary	Resigned
31 Dec 2021	Data Officer (maternity cover)	Contract closure
30 Nov 2021	Conference & Training Coordinator (maternity cover)	Contract closure
15 Sept 2021	Advisory Programme Supporting Officer	Retired
26 Sept 2021	Science Programme Supporting Officer	Resigned
28 Feb 2021	Data Manager	Contract terminated

## 11 Communications

The Secretariat Communications department has been actively supporting the dissemination of information on ICES activities. Digital communications remain the focus for ICES communications activities: all news articles, event announcements, training courses, etc., are published on [ICES website](#) and shared in social media. ICES is currently active on four social media platforms: [Twitter](#) (15376 followers), [LinkedIn](#) (8665 members), [Facebook](#) (6119 followers), and YouTube (331 subscribers) – numbers as of 28 September 2021). Of these platforms, we have the fastest growing audience on Twitter, which is proven to be the most effective platform for sharing ICES information to a varied audience.



**Figure 1: The number of ICES social media channel and newsletter followers (September 2021).**

### ICES news

The news page on ICES website highlights various work of the organization. The Communications department receives science highlights from our expert groups that are published as news articles or social media posts. The communications team also work with ICES Journal of Marine Science to promote themed issues and articles of interest.

[The newsletter](#) also includes in-depth feature articles written by scientists in our network, and currently has 1748 subscribers.

During the pandemic, the news has also included [information about the COVID-19 pandemic effects on ICES work](#). This news piece is frequently updated, as the situation changes in Denmark and throughout the world.

### Website

The restructured website has been well received and most associated problems (dead links) have now been addressed.



## Library

ICES is in the process of migrating the library of reports and documents to a commercial repository host. The Science Impact and Publication Group (SIPG) approved the choice of Figshare as most adequately addressing ICES needs. Since January 2021, SIPG and the Secretariat Editorial Office have been working closely with Figshare to develop the new ICES library platform, establish the hierarchy and organizational structure for our publications in the new library, and preparing the existing library for migration. Figshare has so far proven to be a very competent, responsive, and reliable partner. The soft-launch of the new ICES library is currently anticipated for October 2021, with the full release occurring shortly after. A full presentation of the new library, including all new and improved features, will be carried out after the launch.

## Outreach products and events

The communications department produces fact sheets on strategically important topics, which currently cover ICES work in general, and specifically ecosystem-based management, areas beyond national jurisdiction (ABNJ), and jointly with PICES a more detailed description on our joint work in the Arctic. Fact sheets in the making cover ICES/PICES cooperation on climate change as well as in the Arctic, together with other organizations, and the impacts of fishing.

ICES communications is also responsible for creating infographics and outreach products, such as [the Annual Report](#).

A lot of effort is put into promoting ICES events: [the first ever virtual Annual Science Conference](#), including an [ASC early career scientist day](#), and various [symposia, as well as online events such as Virtual Early Career Ocean Professional Day \(an Ocean Decade event\)](#).

## Videos

This year, the communications department has worked on a video series: [Eye on the Experts](#) introduces an Early Career Scientist based in each of ICES member countries and highlights the work they carry out in their respective expert groups. The videos are created together with the Science Outreach Officer.

Video were also created for [the Arctic Council Observer Statement](#), the World Fisheries Congress, the [ASC Opening Ceremony](#) and [ICES Outstanding Achievement Award](#). Further video projects are planned for the future.



**ICES**  
**CIEM**

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

Council meeting

October 2021

Del-Doc 5.0

Agenda item 5

---

## ICES Elections 2021

In October 2021, it will be time to elect a new President, 1<sup>st</sup> Vice-President, and Bureau member (Fritz Köster, Bill Karp, and Gerd Kraus are all concluding their terms). Given that the 2021 Council meeting will also be conducted online, the elections will also be conducted online, with nominations for President and 1<sup>st</sup> Vice-President in advance, and voting taking place in during the course of the meeting via e-voting procedure.

Given that there are three different positions to be filled, three separate processes will be run: For President, 1<sup>st</sup> Vice-President, and Vice-President, (potentially an additional Vice-President position, should a current Bureau member be elected to another role) these processes will be run sequentially. Nominations for President and 1<sup>st</sup> Vice-President will be solicited in advance. Nominations for Vice-President(s) will be solicited on the second day of the Council meeting.

According to the [Rules of Procedure](#):

### **Rule 8**

*The President shall be elected for a term of three years and shall not be eligible for reelection for the immediately succeeding term.*

### **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 (6)**

*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, DK (term concluding 2021), First Vice President Bill Karp, US (term concluding 2021), Vice Presidents Gerd Kraus, DE (term concluding 2021), Pierre Petitgas (FR), Karin Victorin, (SE), Pablo Abaunza, (ES), Paul Connolly, (IE)

Nominations for ICES President and ICES 1<sup>st</sup> Vice-President were solicited in advance of the meeting. Nominees willing to stand for election have provided [declarations of interest](#).

Nominations for remaining Bureau post(s) will be solicited during the Council meeting following the election of the President and Vice-President. Please see an overview of the 2021 election process in the table below.

Step in process	Additional information	Deadlines
Call for nominations	Call communicated by Council forum 5 October (e-voting tool link for nominations will be used) All Council delegates may submit nominations via the e-form (confidential and anonymous).	Deadline for submission of nominations 11 October.
Confirmation with nominees	Nominees will be asked to confirm their willingness to stand for election by email from the President. Nominees shall submit a short-written statement (less than 300 words) declaring their interest	Deadline for confirmation/submission of declaration of interest latest 15 October.
Call for confirmation of voting privileges	Member countries are only allowed one vote per country. Council delegates will be requested to confirm which delegate will be granted voting privileges during the Council meeting	Deadline for confirmation of voting privileges 22 October.
Election open	Declaration of interests will be posted on SharePoint. The e-voting tool will be shared with Council members at the end of the first day of the meeting 26 October.	Deadline for vote submission 27 October 13:00 (CET).
New ICES President and 1 <sup>st</sup> Vice-President announced	The outcome of the vote is announced at the beginning of the 2 <sup>nd</sup> day of the Council meeting.	
Additional nominations for Vice-President	During the course of the 2 <sup>nd</sup> day of the Council meeting, nominations will be solicited for remaining Bureau post(s).	Deadline for additional nominations 27 October (specific time to be confirmed at the meeting)
Confirmation with nominee	Nominees will be asked to confirm their willingness to stand by ICES	

	President. Additional nominees will be invited to give a short verbal intervention on their interest.	
Election of Vice President(s)	The e-voting tool will be shared with Council voters at the end of the second day of the meeting 27 October.	
New Vice-President(s) announced	The outcome of the vote is announced at the beginning of the 3 <sup>rd</sup> day of the Council meeting	

## Finance Report

This document presents the outcome of the Finance Committee, has been elaborated together with the Chair of the Finance Committee, and updated based on information as of August 2021 and projecting costs for the remaining part of the year, taking into account the financial implications of the ICES response to the COVID-19 pandemic. The document has been considered by Bureau, at its meetings in June and October.

The report summarises the main trends and uncertainties for revenues and expenditures. 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 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 2020, including Audit Book, noting that the Final Accounts for 2019 did not give rise to any qualifications or emphasis on any specific matters, cf. Attachment 3;
- approve the proposed budget for 2022, noting that the national contributions have already been decided, and a 1.7% inflation regulation agreed, cf. Attachment 1;
- approve the 2023 forecast budget, with a 1.7% inflation regulation of the national contributions, noting that the implications on the budget without an inflation regulation of the national contributions will increase the deficit by DKK 409,000;
- note the trends in revenue and expenditure, presented in graphs over a 5-year period from Audited 2019 to Forecast 2023 figures;
- note the positive development in the trend towards 100% cost recovery of recurrent advisory requests.

*Given the 2021 Council meeting will take place remotely, the approvals will be conducted by e-voting procedure. Council Delegates will be provided with a link, to submit their approval during the course of the meeting.*

## Finance Report – 5-year overview and trends

### Bureau statement on the economy of the organisation

Based on the Financial Overview Report for 2019-2023, and taking into account the 2020 audited accounts, Bureau finds that: Overall, the organization is demonstrating healthy economic development, including:

- Finalization of new agreements with advice requesters for recurrent and special requests; notably the UK
- Evidence of a balance between costs and income indicating progress towards 100% cost recovery for recurrent advisory products.

Bureau notes that, with the exception of NASCO, all advice requesters receiving recurrent advice in 2021 have been invoiced according to the weighted number of stocks for which they receive recurrent advice.

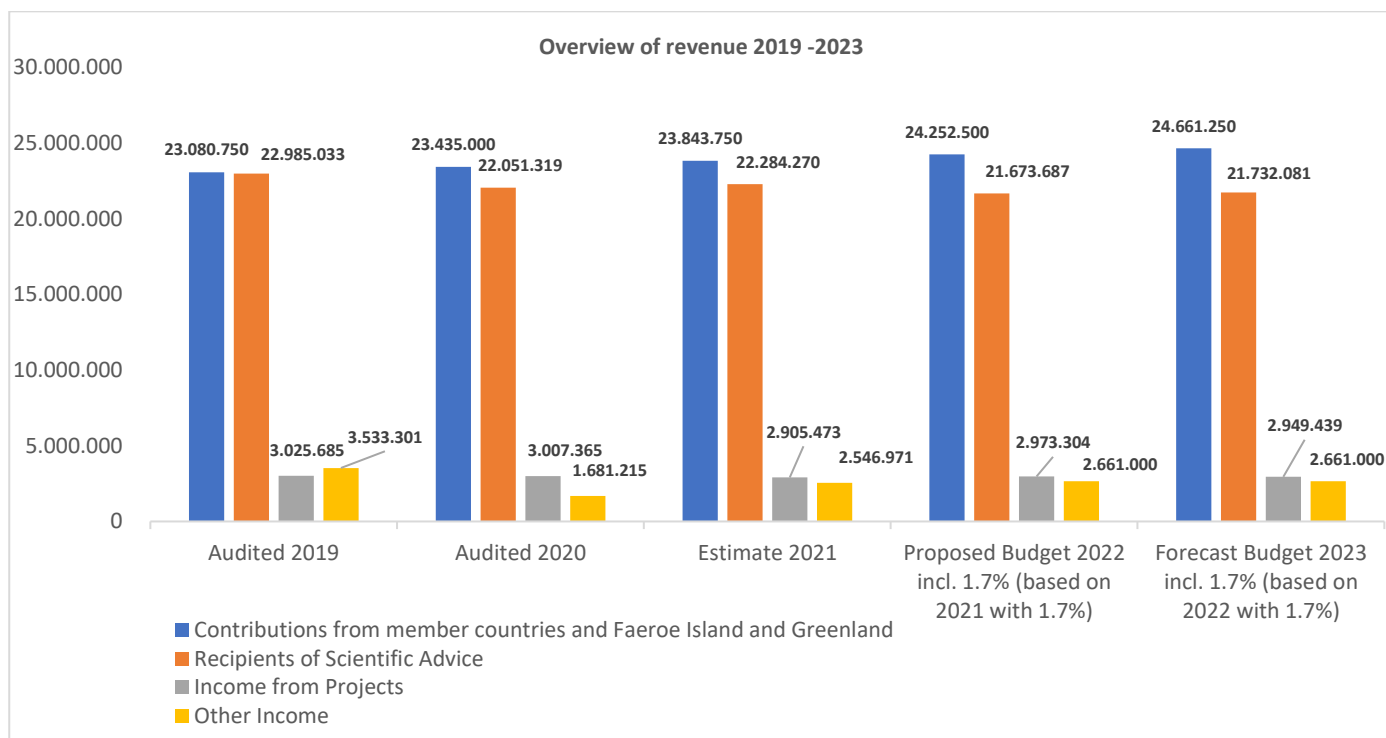
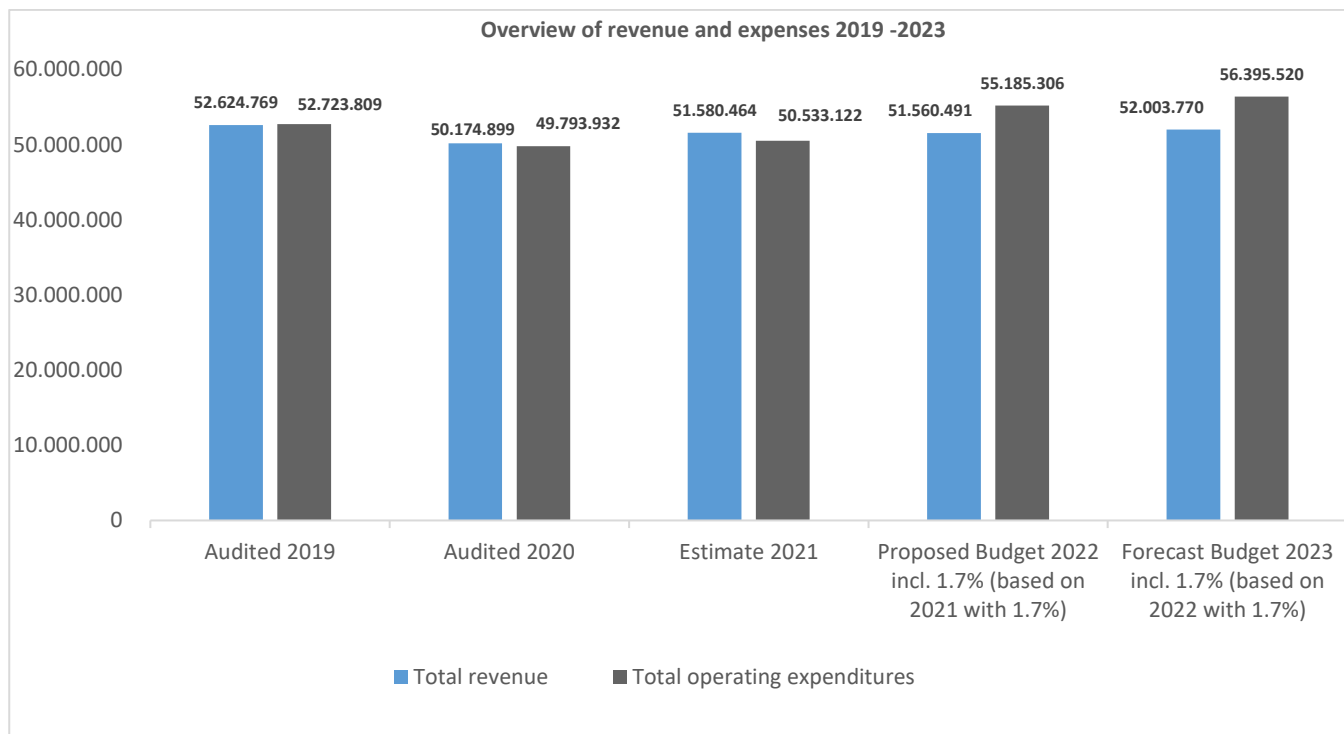
The budget takes a conservative and risk averse approach, which specifically for the 2022 and 2023 forecast budget means that the travel costs are not expected to increase and the total income on EU DGMARE/UK may increase. Projects are incorporated with signed contracts plus estimated figures for projects with an estimated high probability to be signed. With this revenue as well as an expectation for new projects and contracts, it is anticipated, that a balanced budget will be achieved in 2022 and a small deficit is projected for 2023.

Bureau specifically notes, that the organization has managed well during the COVID-19 pandemic, and that the surplus in 2020 is due to cessation of physical meetings and travels, cancellation of training courses, and cancellation of the physical ASC in both 2020 and 2021.

It is expected that online meetings will continue to some degree throughout the coming budget years, and this has been reflected in decreased travel budget lines. Pending decision, based on the CBSG-COVID-19 some of the travel budget lines might be absorbed to cover costs from additional resources needed in the Secretariat to facilitate and support the community, additional IT infrastructure, and training for the community. It can also be expected that the cost of travel (air tickets) will increase and the limited travels will cost more. Investments from equity could also be foreseen in the coming years.

Bureau recommends that an inflation regulation of 1.7%, of the 2023 national contributions, will be decided by Council.

## Revenue



The total revenue shows a trend of a stable revenue from DKK 52.0 million in 2019 to 52.0 Million in 2023, which is a consequence of our conservative approach to budget for revenue related to Special Request. But, we do expect a slight increase in revenue from 2020-2023, though 2020 and 2021 are affected by the Covid pandemic. This resulted in a decreased income in 2020, mainly related to less income from Special

Requests, and we expect likewise for 2021. We expect to be back to normal level of special requests in 2022 bearing in mind 2019 income from special requests was extremely high due to one complex special request.

#### *National contributions*

Indexation of National Contributions follows the result of the Council approval every year. During 2019-2023 Council adopted yearly indexations between 1.3-1.7%

#### *Revenue from Scientific Advice*

A total of DKK 22.0 million is the level of income from Scientific Advice clients. In 2021-2023 we expect DKK 1.5 million in revenue from Special Requests, which is the normal level. 2019 was abnormal due to a complex special request and 2020 was at a lower level due to the COVID-19 pandemic. 2021 is affected by a budget carried forward from 2020 on EU DG Mare (DKK 0.6 million). Contracts with NEAFC and DG Mare expect to be a constant level of DKK 15-16 million/year over the coming years. In December 2020 we completed an MoU with the UK ensuring full cost recovery on their part of recurrent advice costs.

#### *Revenue from Projects*

In 2022 and 2023 project income from presently signed contracts is calculated adding contracts in the pipeline with an estimated high probability of being signed.

#### *Other revenue (ICES Journal, Training courses, ASC fees)*

Again 2020 was abnormal and, 2021 will be as well. Both years are affected by the cancellation of a physical ASC event and 2020 effected by cancellation of training events, leaving 2020 at a 50-60% level of normal and 2021 at 75-80%, as the year resulted in an extraordinary result from ICES journal (up DKK 0.4 million) Conservatively, we have estimated a normal level of DKK 1.5 million in 2022 and 2023 on ICES journal.

### **Operating expenditures**

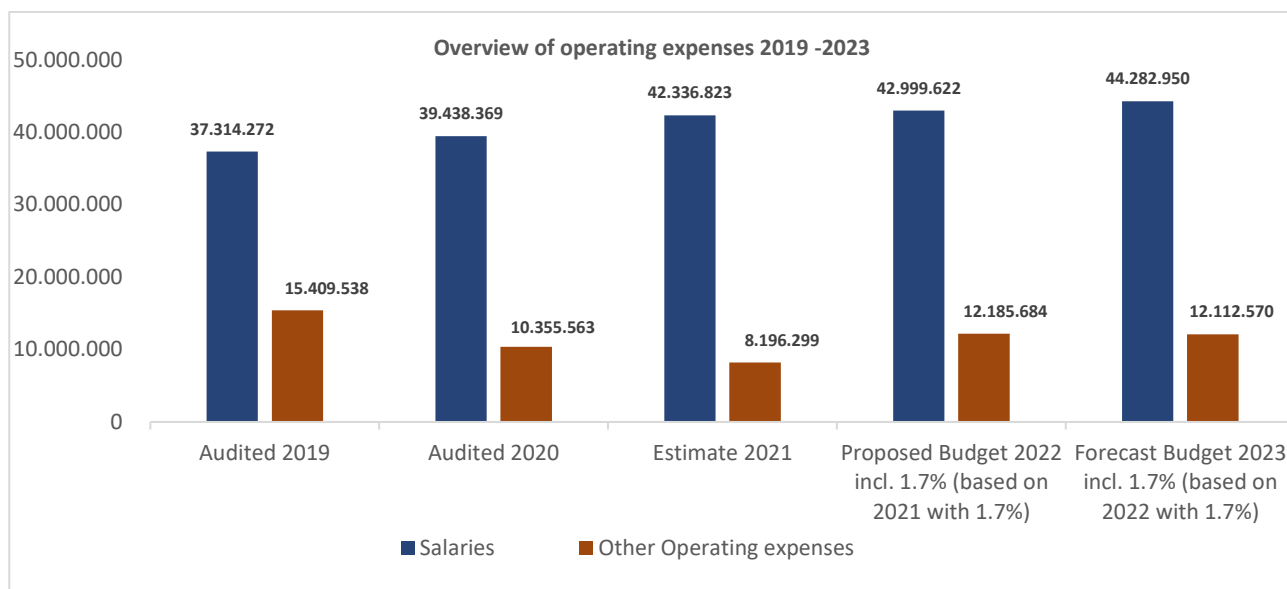
#### *Salaries*

The increase in salaries is a combination of inflation regulation, step-increases and parental maternity leaves according to the Staff Rules, agreed by Bureau and use of equity for additional resources, decided by Council. The figures 2021-2023 are based on best knowledge of recurrent and special requests, projects and general resources required.

#### *Other operating expenses*

The development in *Other operating expenses* is highly affected by the COVID-19 pandemic resulting in huge savings on Travel in 2020, and 2021 leading to an expected move from physical towards more virtual meetings in 2022 and onwards. We do not expect to back to 2019-level prior to COVID-19 and expect a decrease in the travel costs.





The move of ICES office during second quarter of 2022 might require some minor additional expenses, although the Danish Government is responsible for expenditure of the overall move, a smaller amount has been included to cover this.

ASC expenditure, DKK 2.2 million, are taken in 2020 as a result of the cancelled physical event in Copenhagen. Due to the continued COVID-19 restrictions, and the uncertainties about the projections for the autumn in Denmark as well as in other countries, it has not been possible either in 2021 to carry out a physical event. ICES has fulfilled our contractual obligations and paid for the event. Negotiations for receiving a reimbursement are presently ongoing and a result is yet impossible to estimate.

### Operating result

During 2019-2021 we have covered/expect to cover all approved Equity investments from ordinary revenue. 2019 and 2020 created a small surplus of DKK 0.5 million adding to the available equity for future investments. In 2021 we are expecting a surplus of DKK 0.9 million. The budgeted results in 2022 and 2023 reflects the needed approved equity investments of DKK 3.7 and 2.2 million respectively to minimize the deficit. We still believe extra revenue will be possible to obtain by more Special Requests. We will aim for a net deficit matching the approved equity investments.

Please note, that net financial income goes from DKK +200,000 to DK -85,000 over the period. This is due to low return on investment on bonds as well as paying negative interest in current bank accounts as of 2020.

### Costing of recurrent advice

As mentioned above, the MoU with UK was signed end 2020 and all recurrent advice requesters are costed according to their weighted share of the stocks on which they receive advice. There might be some changes

among advice requesters as to their weighted stock share, but overall the total costs mirror the full cost recovery.

An Equity fee for investments related to improve recurrent advice requests has been established as of 2021, which is related to EU DG Mare and NEAFC.

## Attachment 1

## Proposed Budget 2022 and Forecast Budget 2023

		Audited	Estimate	Proposed	Forecast
		2020	2021	Budget 2022 incl. 1.7%	Budget 2023 incl. 1.7% (based on 2022 with 1.7%)
	Note				
Contributions from member countries	1	23.005.000	23.406.250	23.807.500	24.208.750
Contribution from Faeroe Island and Greenland		430.000	437.500	445.000	452.500
Recipients of Scientific Advice	2	22.051.319	22.284.270	21.673.687	21.732.081
Revenue from Projects		3.007.365	2.905.473	2.973.304	2.949.439
Other revenue	3	1.680.915	2.545.971	2.660.000	2.660.000
Sales of publications		300	1.000	1.000	1.000
<b>Total revenue</b>		<b>50.174.899</b>	<b>51.580.464</b>	<b>51.560.491</b>	<b>52.003.770</b>
Salaries	4	39.438.369	42.336.823	42.999.622	44.282.950
Office expenses		1.825.507	1.843.174	2.075.000	1.886.000
IT expenses		3.049.609	4.350.000	3.354.324	3.342.210
Expenses for Council and ASC		2.245.103	-750.000	930.000	1.080.000
Travelling and meeting expenses	5	2.852.100	2.209.906	5.086.000	5.074.000
Publications		383.244	543.219	740.360	730.360
<b>Total operating expenditures</b>		<b>49.793.932</b>	<b>50.533.122</b>	<b>55.185.306</b>	<b>56.395.520</b>
<b>Operating result</b>		<b>380.967</b>	<b>1.047.342</b>	<b>-3.624.815</b>	<b>-4.391.750</b>
Financial revenue		196.054	40.000	40.000	40.000
Financial expenses		-121.343	-125.000	-125.000	-125.000
Transfer from equity	6	0	0	3.739.580	2.230.417
<b>Net result</b>		<b>455.678</b>	<b>962.342</b>	<b>29.765</b>	<b>-2.246.333</b>
<b>1. Contributions from member countries (shares)</b>					
Belgium (2)		860.000	875.000	890.000	905.000
Canada (3)		1.290.000	1.312.500	1.335.000	1.357.500
Denmark (3)		1.290.000	1.312.500	1.335.000	1.357.500
Estonia (1)		430.000	437.500	445.000	452.500
Finland (1,5)		645.000	656.250	667.500	678.750
France (4)		1.720.000	1.750.000	1.780.000	1.810.000
Germany (4)		1.720.000	1.750.000	1.780.000	1.810.000
Iceland (3)		1.290.000	1.312.500	1.335.000	1.357.500
Ireland (2)		860.000	875.000	890.000	905.000
Latvia (1)		430.000	437.500	445.000	452.500
Lithuania (1)		430.000	437.500	445.000	452.500
The Netherlands (3)		1.290.000	1.312.500	1.335.000	1.357.500
Norway (4)		1.720.000	1.750.000	1.780.000	1.810.000

	Audited	Estimate	Proposed	Forecast
	2020	2021	Budget 2022 incl. 1.7%	Budget 2023 incl. 1.7% (based on 2022 with 1.7%)
Poland (3)	1.290.000	1.312.500	1.335.000	1.357.500
Portugal (2)	860.000	875.000	890.000	905.000
Russia (3)	1.290.000	1.312.500	1.335.000	1.357.500
Spain (3)	1.290.000	1.312.500	1.335.000	1.357.500
Sweden (3)	1.290.000	1.312.500	1.335.000	1.357.500
United Kingdom (4)	1.720.000	1.750.000	1.780.000	1.810.000
The USA (3)	1.290.000	1.312.500	1.335.000	1.357.500
	<b>23.005.000</b>	<b>23.406.250</b>	<b>23.807.500</b>	<b>24.208.750</b>

## 2. Recipients of Scientific Advice

European Commission	14.338.134	11.307.938	10.701.761	10.701.761
NEAFC	2.486.515	1.500.000	1.506.500	1.532.111
OSPAR	1.086.653	1.404.213	1.200.000	1.200.000
HELCOM	705.530	484.000	484.000	484.000
NASCO	569.198	520.000	526.240	532.555
Norway	973.010	984.686	1.001.426	1.018.450
United Kingdom		4.128.062	4.198.239	4.198.239
Iceland	539.758	539.758	555.521	564.965
Special request and contracts	1.352.521	1.415.613	1.500.000	1.500.000
	<b>22.051.319</b>	<b>22.284.270</b>	<b>21.673.687</b>	<b>21.732.081</b>

## 3. Other revenue

Revenue from ICES Journal	1.456.417	1.917.971	1.600.000	1.600.000
Revenue from Training courses	163.825	550.000	550.000	550.000
ASC Fees	1.805	70.000	490.000	490.000
Miscellaneous	58.868	8.000	20.000	20.000
	<b>1.680.915</b>	<b>2.545.971</b>	<b>2.660.000</b>	<b>2.660.000</b>

## 4. Salaries

Salaries	34.814.981	37.014.282	37.733.701	38.913.182
Fees external consultants	120.915	50.000	250.000	250.000
Overtime for Secretariat staff	0	15.000	15.000	15.000
Social activities and training	329.234	1.000.000	650.000	650.000
Honorarium ACOM/SCICOM Chair and ACOM Vice Chairs	4.029.523	4.107.541	4.140.921	4.244.768
ATP pensions 2/3 share	143.717	150.000	210.000	210.000
	<b>39.438.369</b>	<b>42.336.823</b>	<b>42.999.622</b>	<b>44.282.950</b>

	Audited	Estimate	Proposed	Forecast
	2020	2021	Budget 2022 incl. 1.7%	Budget 2023 incl. 1.7% (based on 2022 with 1.7%)
<b>5. Travelling and meeting expenses</b>				
President, Bureau + sub Groups, statutory meeting, Finance Committee	84.274	266.000	300.000	300.000
Expenses special request (incl. travel)	786281,52	257.906	211000	211000
Secretariat travel	207.742	85.000	410.000	500.000
External reviewing of assessments/benchmarking	237.236	250.000	300.000	300.000
Expenses projects (incl. travel)	351964,63	100.000	190000	138.000
Travel costs for RAC			60.000	60.000
ACOM travel and meeting costs	201.661	350.000	260.000	260.000
ACOM Chairs and vice chairs travel	224.396	150.000	540.000	540.000
Advice Drafting Groups travel	14.653	50.000	1.050.000	1.050.000
SCICOM travel and meeting costs	116.404	10.000	400.000	400.000
ICES co-sponsored Symposia	286.835	150.000	300.000	250.000
SCICOM strategic activities	51.186	50.000	115.000	115.000
Rent of meeting rooms	1.000	1.000	0	0
Steering Group Chairs budget (travel)		40.000	550.000	550.000
Course revenue/expenses	288.468	450.000	400.000	400.000
	<b>2.852.100</b>	<b>2.209.906</b>	<b>5.086.000</b>	<b>5.074.000</b>
<b>6. Transfer from Equity</b>				
Quality assurance - computer Scientists and technical Science manager and Head of Finance			2.764.876	2.080.417
UN Decade of Ocean Science			124.704	
4th ICES/PICES Early Career Scientist Congress			500.000	
Bring academic leaders from member countries			300.000	100.000
Training regarding remote meetings			50.000	50.000
	<b>0</b>	<b>0</b>	<b>3.739.580</b>	<b>2.230.417</b>

**Attachment 2**

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

ICES project engagement can be summarized as follows:

- Table 1 lists the 13 ongoing projects and the estimated income received during 2021, 2022 and 2023. Projects are funded by Horizon 2020, DG Environment, European Environment Agency and European Marine Observation and Data Network
- Table 2 lists 4 pending proposals (Horizon Europe, European Environment Agency and European Marine Observation and Data Network)
- Table 3 shows ongoing contracts and subcontracts

Table 1 – On going project and income 2021-2023

Project	2021 –Estimated income in DKK	2022 – Estimated income in DKK	2023 – Estimated income in DKK
<b>2065-QUIETSEAS</b> (Assisting sub - regional cooperation for the practical implementation of the MSFD second cycle by providing methods and tools for D11 (underwater noise))	139,072	171,296	54,413
<b>2067-SEAWISE</b> (Shaping ecosystem-based fisheries management)	402,670	606,626	606,626
<b>2045-PANDORA</b> (Paradigm for New Dynamic Ocean Resource Assessments and Exploitation)	276,972	88,804	
<b>2049-ETC/ICM</b> (European Topic Centre on Inland, Coastal and Marine Waters 2019-2021)	374,795		
<b>2057-MEESO</b> (Ecologically and Economically Sustainable Mesopelagic Fisheries)	273,440	204,800	227,332
<b>2051-QuitMed2</b> (Joint programme for GES assessment on D11-noise in Mediterranean Marine Region)	22,318		
<b>2062-Mission Atlantic</b> (Mapping and assessing the present and future status of Atlantic marine ecosystems under the influence of climate change and exploitation)	250,071	219,743	289,229
<b>2056-EMODnet Physics IV + next phase</b> (European Marine Observation and Data Network –Physics)	139,362	167,625	108,118
<b>2043-EMODnet Biology extension +next phase</b> (European Marine Observation and Data Network-Biology)	180,491	178,875	54,259
<b>2044-EMODnet Chemistry IV+ next phase</b> (European Marine Observation and Data Network-Chemistry)	257,832	372,500	283,410
<b>2040-EMODnet Ingestion II</b> (European Marine Observation and Data Network-Ingestion)	39,057		
<b>2063- Baltic Data Flow</b>	549,394	478,784	257,552
<b>2066 – HELCOM BLUES</b> (Biodiversity, Underwater noise and Effective regional measures for the Baltic Sea)		111,750	
<b>Sub-total</b>	<b>2,905,474</b>	<b>2,600,803</b>	<b>1,880,939</b>
Expected income from the projects in pipeline in Table 2		372,500	1,068,500
<b>Total</b>	<b>2,905,474</b>	<b>29,73,303</b>	<b>2,949,439</b>

Table 2 - Pending proposals (Projects in pipeline)

Project	Project Period	Approx. Grant in DKK	2022-Expected income in DKK	2023- Expected income in DKK	Comments
ETC BE – European Topic Centre on Biodiversity and Ecosystem	2022	Not known yet	Not known yet		To be negotiated on an annual basis depending on the project's needs. Proposal is in drafting phase
<b>Horizon Europe - Proposals</b> Expected income from the following two proposals – 1- B-USEFUL (User oriented Solutions for Improved Monitoring and Management of Biodiversity and Ecosystem services in vulnerable European Seas) 2- ACTNOW (Advancing understanding of cumulative impacts on European marine biodiversity, ecosystem functions and services for human wellbeing)	2022-2026	4,030,450	372,500	745,000	Proposals have been submitted to EU in early October 2021- Budget EUR 541,000
European Marine Observation and Data Network (EMODnet)- Ingestion, Chemistry, Physics and Biology)	2023-2025	1,538,574		323,500	Will be first negotiated in 2022. The expected portfolio for these projects would be around DKK 1,538,574 with start date in late 2023. The expected income from these projects in 2023 is around DKK 323,500 and the rest is expected in 2024 and 2025.
<b>Total</b>		<b>5,569,024</b>	<b>372,500</b>	<b>1,068,500</b>	



Table 3 - Ongoing contracts and sub-contracts

Contract name	Contract Period	Payments 2021	Payments 2022
AMAP-ICES Development of assessment portal and related tool and services	2021(Final payment)	30,461	
Joint Cetacean Database Programme (JCDP)	2020-2022	143,704	41,058
HELCOM-ICES Contract impulsive and underwater noise database hosting	2021-2022		67,050
HELCOM-ICES Contract hosting and maintaining biological community data	2021	31,886	
<b>Total</b>		<b>206,051</b>	<b>108,108</b>

**Attachment 3**

2020 Final Accounts and Audit book comments.

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

H.C. Andersens Boulevard 44-46  
1553 København V  
Business Registration No 12063814

**Final Accounts 2020**

## **Contents**

	<b><u>Page</u></b>
Organisation details	1
General Secretary's and Finance Committee's statement	2
Independent auditor's report	3
General Secretary's review	6
Income statement for 2020	1
Balance sheet at 31 December 2020	9
Notes	11
Accounting policies	15

## **Organisation details**

### **Organisation**

International Council for the Exploration of the Sea

Business Registration No: 12063814

Registered at: H.C. Andersens Boulevard 44-46, 1553 Copenhagen V, Denmark

Phone: 0045 3338 6700

Fax: 0045 3393 4215

Internet: [www.ices.dk](http://www.ices.dk)

E-mail: [info@ices.dk](mailto:info@ices.dk)

### **General Secretary**

Anne Christine Brusendorff

### **Finance Committee**

Chair: Ari Leskelä, Finland

Members: Karin Victorin, Sweden; Markus Vetemaa, Estonia; Pablo Abaunza, Spain; Fritz Köster, Denmark.

### **Bank**

Nykredit Bank A/S

Kalvebod Brygge 47

1780 Copenhagen V, Denmark

### **Organisation auditors**

Deloitte Statsautoriseret Revisionspartnerselskab

Weidekampsgade 6

2300 Copenhagen C, Denmark

## 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 2020.

The annual report is presented in accordance with the Danish Financial Statements Act.

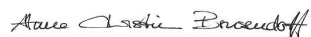
We consider the accounting policies applied appropriate and the accounting estimates made reasonable. Therefore, in our opinion, the Final Accounts give a true and fair view of the financial position at 31 December 2020 of International Council for the Exploration of the Sea and of the results of its operations for the financial year 1 January to 31 December 2020.

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, 11 May 2021

### 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 (May 24, 2021 16:42 GMT+3)

Ari Leskelä  
Chair  
Finland



Karin Victorin  
Sweden



Markus Vetemaa (May 25, 2021 16:38 GMT+3)

Markus Vetemaa  
Estonia



Pablo Abaunza  
Spain



Friedrich W. Köster (Jun 2, 2021 21:19 GMT+2)

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 01.01.2020 - 31.12.2020, 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 18 October 2018.

In our opinion, the financial statements give a true and fair view of the Entity's financial position at 31.12.2020 and of the results of its operations for the financial year 01.01.2020 - 31.12.2020 in accordance with the Rules of Procedure of 18 October 2018.

#### **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 18 October 2018, 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 18 October 2018, 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 18 October 2018.

Copenhagen, 11 May 2021

### **Deloitte**

Statsautoriseret Revisionspartnerselskab  
Business Registration No 33963556



Susanne Arnfred Møller  
Identification no mne24625  
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.

---

<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.

**Primary activities**

The Final Accounts for the year 2020 show total revenue for ICES of DKK 50,174,899 of which DKK 23,005,000 was from national contributions. Another major component was income received from recipients of scientific advice amounting to DKK 20,698,798. The difference between revenue and expenditures for 2020 resulted in a minor surplus of DKK 455,978.

National contributions to ICES are due in advance, or by the end of January of the budget year. As of April 2021, one national contribution has not yet been paid (reminder has been sent). There are no outstanding contributions from previous years.

**Development in activities and finances**

Over a twelve-year period (2009-2020), increases in national contributions were agreed in 2011 (2%), 2016 (1.9%), 2019(1.3%) as well as 2020 (1.5%) with reference to the need for inflation adjustment; in the other years, national contributions remained stable. The relative share of national contributions in 2020 was 46% (2019: 40%). Council has approved an inflation regulation in 2021 (1.7%) and 2022 (1.7%).

On the expenditure side, salaries increased by the annual cost of living increase (based on the Danish consumer index/inflation regulation) and by the step increases. The secretariat salary cost in 2020 was DKK 35,408,846 (roughly equivalent to the 2019 amount – the additional increase is due to additional human-resources in the Secretariat, covered from equity). The total amount of salaries, including honoraria for the ACOM Chair, four (4) ACOM Vice-Chairs, and SCICOM Chair, amounted to DKK 39,438,369.

In 2020 we have continued to follow up on Councils direction to achieve full cost recovery for the advisory services. Brexit had an impact as the UK as of 2021 becomes an independent advisory client, and in December we finalized and signed a MoU with the UK on Provision of Scientific Information and Advice, including advisory cost coverage.

The COVID-19 pandemic also affected the ICES activities as well as our organization, and we have been operating online from March 2020. The on-line meetings will continue until at least 31 July 2021, dependent on the COVID-19 situation in the Member Countries. Similarly ICES staff have followed recommendations from the Danish Health Authorities and have been working from home, to the extent possible. .

The pandemic also affected the Annual Science Conference 2020 to be held in Copenhagen, which in April 2020 was postponed until September 2021. Due to the present uncertain situation ICES has decided to conduct the 2021 conference virtually instead of physically.

The financial effects of the COVID-19 pandemic are related to less income on training activities, some special requests and entry fees on Annual Science Conference. On the cost side we have saved a substantial amount on travel costs also related to the Covid-19 pandemic.

**Income statement for 2020**

	<b>Notes</b>	<b>2020 DKK</b>	<b>2019 DKK'000</b>
Contributions from member countries	1	23.005.000	22.657
Contribution from Faeroe Island and Greenland		430.000	424
Recipients of Scientific Advice	2	22.051.319	22.985
Income from Projects		3.007.365	3.026
Other income	3	1.680.915	3.524
Sales of publications		300	9
<b>Total revenue</b>		<b>50.174.899</b>	<b>52.625</b>
Salaries	4	(39.438.369)	(37.314)
Office expenses		(1.825.507)	(2.327)
IT expenses		(3.049.609)	(3.739)
Expenses for Council and ASC		(2.245.103)	(1.026)
Travelling and meeting expenses		(2.852.100)	(7.731)
Publications		(383.244)	(587)
<b>Total expenditure</b>		<b>(49.793.932)</b>	<b>(52.724)</b>
<b>Result of revenue and expenditure</b>		<b>380.967</b>	<b>(99)</b>
Financial income	5	196.054	275
Financial expenses	6	(121.343)	(84)
<b>Income over expenditure</b>		<b>455.678</b>	<b>93</b>
The years income over expenditure is distributed as follows			
Accumulated income over expenditure (equity)		455.678	93
<b>Total</b>		<b>455.678</b>	<b>93</b>

**Balance sheet at 31 December 2020**

	<b>Notes</b>	<b>2020 DKK</b>	<b>2019 DKK'000</b>
Capital Reserve Fund – Investment & cash at bank	10	<u>10.723.593</u>	<u>9.543</u>
<b>Non-current assets</b>		<b><u>10.723.593</u></b>	<b><u>9.543</u></b>
Receivable member contribution	7	1.376.000	85
Other receivables	8	5.540.467	6.253
Prepayments	9	<u>845.616</u>	<u>310</u>
<b>Receivables</b>		<b><u>7.762.083</u></b>	<b><u>6.648</u></b>
<b>Investments</b>	10	<b><u>15.560.700</u></b>	<b><u>15.561</u></b>
<b>Cash at bank and in hand</b>		<b><u>5.853.352</u></b>	<b><u>7.558</u></b>
<b>Current assets</b>		<b><u>29.176.135</u></b>	<b><u>29.457</u></b>
<b>Assets</b>		<b><u>39.899.728</u></b>	<b><u>39.310</u></b>

**Balance sheet at 31 December 2020**

	<b>Notes</b>	<b>2020 DKK</b>	<b>2019 DKK'000</b>
Capital Reserve Fund (CRF)		10.542.090	10.525
Accumulated income over expenditure		14.870.903	14.415
<b>Equity</b>	<b>11</b>	<b>25.412.993</b>	<b>24.940</b>
Prepaid/pre-invoiced contributions		11.156.250	11.180
Prepaid projects funded by third parties		1.685.689	1.198
Other payables	12	1.261.946	1.531
Deferred income		382.850	461
<b>Total short-term liabilities</b>		<b>14.486.735</b>	<b>14.370</b>
<b>Equity and liabilities</b>		<b>39.899.728</b>	<b>39.310</b>
Lease of IT equipment	13		
Morgages and securities	14		

## Notes

	<b>2020 DKK</b>	<b>2019 DKK'000</b>
<b>1. Contributions from member countries (shares)</b>		
Belgium (2)	860.000	847
Canada (3)	1.290.000	1.271
Denmark (3)	1.290.000	1.271
Estonia (1)	430.000	424
Finland (1,5)	645.000	635
France (4)	1.720.000	1.694
Germany (4)	1.720.000	1.694
Iceland (3)	1.290.000	1.271
Ireland (2)	860.000	847
Latvia (1)	430.000	424
Lithuania (1)	430.000	424
The Netherlands (3)	1.290.000	1.271
Norway (4)	1.720.000	1.694
Poland (3)	1.290.000	1.271
Portugal (2)	860.000	847
Russia (3)	1.290.000	1.271
Spain (3)	1.290.000	1.271
Sweden (3)	1.290.000	1.271
United Kingdom (4)	1.720.000	1.694
The USA (3)	1.290.000	1.271
	<b><u>23.005.000</u></b>	<b><u>22.657</u></b>
<b>2. Recipients of Scientific Advice</b>		
European Commission DG Mare	14.338.134	13.674
NEAFC	2.486.515	2.442
OSPAR	1.086.653	1.404
HELCOM	705.530	593
NASCO	569.198	559
Norway	973.010	956
Iceland	539.758	530
Special request	1.352.521	2.827
	<b><u>22.051.319</u></b>	<b><u>22.985</u></b>

## Notes

	<b>2020 DKK</b>	<b>2019 DKK'000</b>
<b>3. Other income</b>		
Income from ICES Journal	1.456.417	1.662
Income from Training courses	163.825	848
ASC Fees	1.805	714
Miscellaneous	58.868	300
	<b>1.680.915</b>	<b>3.524</b>
<b>4. Salaries</b>		
Salaries are divided as follows:		
Salaries Secretariat	(33.999.517)	(32.608)
Other salaries relating costs	(1.409.329)	(915)
	<b>(35.408.846)</b>	<b>(33.524)</b>
Honorarium to external Chairs	(4.029.523)	(3.791)
	<b>(39.438.369)</b>	<b>(37.314)</b>
<b>5. Financial income</b>		
Interest	196.054	275
	<b>196.054</b>	<b>275</b>
<b>6. Financial expenses</b>		
Exchange losses	(53.854)	(19)
Bank charges	(18.833)	(64)
Negative interest (expense)	(48.656)	(0)
	<b>(121.343)</b>	<b>(84)</b>



## Notes

	<b>2020 DKK</b>	<b>2019 DKK'000</b>
<b>7. Receivable member contributions</b>		
Spain	1.290.000	0
Greenland	86.000	85
<b>Related to the following year</b>	<b>1.376.000</b>	<b>85</b>

## 8. Other Receivables

European Commission and NEAFC	2.908.088	3.894
VAT due from the Ministry of Foreign Affairs	600.264	516
Deposits due from parking spaces	8.191	8
Miscellaneous receivables	586.895	1.098
Project receiveables	980.145	738
Accrued income	456.884	0
	<b>5.540.467</b>	<b>6.253</b>

## 9. Prepayments

Prepaid pensions	159.235	310
Prepayments	686.381	0
	<b>845.616</b>	<b>310</b>

## 10. Investments

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

## 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 2020	10.524.953	14.415.225	24.940.178
Unrealised fair value of bonds	17.137	0	17.137
Transferred to Capital Reserve Fund	0	0	0
Profit/loss for the year	0	455.678	455.678
<b>Equity at 31 December 2020</b>	<b>10.542.090</b>	<b>14.870.903</b>	<b>25.412.993</b>

## Notes

	<b>2020 DKK</b>	<b>2019 DKK'000</b>
<b>12. Other Payables</b>		
Accounts payable	1.204.578	1.476
Danish State Pension (ATP)	<u>57.368</u>	<u>54</u>
	<b><u>1.261.946</u></b>	<b><u>1.531</u></b>
<b>13. Lease commitments</b>		
Lease obligations falling due within:		
0-1 years	1.354.120	1.281
1-5 years	1.109.860	2.370
> 5 years	<u>0</u>	<u>0</u>
	<b><u>2.463.980</u></b>	<b><u>3.651</u></b>

## 14. Mortgages and securities

Investments and cash in bank DKK 27.427.725 have been provided as security for bank debt, see note 10.

## **Accounting policies**

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

In 2020 ICES have made a change regarding presentation of receivable member contribution 2021, the amount had balanced between the assets and liabilities and do not affect the result in 2020 or 2019. The correction is similarly made in the comparative figures (in the 2019 amounts ).

Except from this 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.

Cost are accrued except for holiday pay obligation to employees, as this obligation is not eligible and can't be recognized in projects in accordance with the third parties guidelines.

## **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.

## **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.

#### **Short-term liabilities**

Short-term liabilities are recognized at invoiced amounts to clients including prepayments for the next financial year. This also includes prepaid funds received from third parties, deferred income and other payables.

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

### **Audit book comments on the final accounts 2020**

## Contents

	<b><u>Page</u></b>
1. Our audit of the final accounts	73
1.1 Final accounts	73
1.2 Affairs and conditions materially influencing the evaluation of the final accounts	73
1.2.1 Segregation of duties	73
1.2.2. Inquiries of the General Secretary and Finance Committee about the risk of fraud	74
2. Audit of business processes and internal controls	74
3. Comments on the final accounts	75
3.1 Income statement	75
3.2 Balance sheet	76
4. Other comments	77
4.1 Letter of representation and unadjusted misstatements in the final accounts	77
4.2 Insurance	77
4.3 General IT controls	78
5. Conclusion	78
6. Objective and scope of the audit, including definition of responsibilities	78
7. Auditor's declaration	78

## **Audit book comments on the final accounts for 2020**

### **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 2020 presented by the General Secretary and the Finance Committee. The final accounts show the following:

	<b>2020</b> <b>DKK'000</b>	<b>2019</b> <b>DKK'000</b>
Income over expenditure (minus is deficit)	456	93
Assets	39,900	39,310
Equity	25,413	24,940

#### **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 book comments of 19 May 2011, 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's 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 misstatements 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.

We observed that one employee has a Mastercard with a credit maximum of DKK 50-150 thousand. This fact increases the risk of both intentional and unintentional errors. We recommend that the finance department follows up on a monthly basis as a compensatory check.

We have been informed that the organisation reconciles the monthly statements for the credit cards every month.

We note that, during our audit, we did not identify any errors as a result of the lack of segregation of duties.

### **1.2.2. Inquiries of the General Secretary and Finance Committee 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 organisation, 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 to the financial reporting areas and the financial account 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 accounts.

Internal controls are those established in and around the organisation'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 account item
Revenue	Income from projects
Salaries	Salaries and time recording
Cash and payment systems	Cash at bank and in hand

For the financial reporting areas Revenue and Cash and payment systems, we have tested if controls have been designed appropriately and if they have actually been implemented in the organisation. We have also for this area 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 organisation'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 approval of the time registrations. We recommend, that the approval of the time registrations will be made every month.

Further, we have in our audit observed several registrations, especially regarding the DG Mare project, in connection with the closing of the accounts. We have been informed that the DG Mare economic followup are made manually in Excel on an ongoing basis. We recommend, that the registrations, as far as possible, will be made on an ongoing basis.

### 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 test samples, made analyses and reconciliations to verify the reliability of the registrations.

We have checked that contributions from member countries are recognised in accordance with agreed amounts with the ICES. A total of DKK 23,005 thousand 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 the memorandum of understanding and other agreements between ICES and the donor. A sample of contracts have been reviewed, which did not give rise to any comments.

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

We have examined costs, and checked them against invoices, contracts or other basis material. We have compared salary costs to contracts and to the Salary Table.

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

We have by sample checked cut-off regarding recurrent expenses. We recommend that ICES is more consistent in its accounting policies meaning that the expense should be accrued in the month to which it belongs. We have observed that ICES have improved this in 2020.

In March, ICES decided to cancel the physical Annual Science Conference in Copenhagen. It should have been held in September 2021 - originally postponed from September 2020 due to Covid-19. Therefore, ICES has in 2020 expensed the prepaid amount of DKK 2,202 thousand, because the amount will not be repaid – which is in line with the contract. We have been informed that there is an ongoing negotiation of getting a refund and it is not yet completed. General Secretary consider it is less likely that there will be a refund. We have no basis for making another assessment.

### **3.2 Balance sheet**

On 31 December 2020, the Capital Reserve Fund (CRF) in equity amounts to DKK 10,542 thousand, corresponding to 20% of total revenue in line with rule 20.3 of the Rules of Procedure (RoP) guidelines. The investments and cash at bank regarding CRF amount to DKK 10,724 thousand at 31 December 2020.

We have made an unannounced cash audit on 18 December 2020. Furthermore, we have checked the procedures regarding bank reconciliation and follow-up during the interim audit.

We have compared ICES' cash at bank and investments to confirmation letters from the bank at 31 December 2020. The audit of cash at bank and investments did not give rise to any comments.

We have analysed or reconciled receivables with supporting documentation that were recognised in the final accounts. The receivables consist primarily of member contributions (DKK 1,376 thousand), prepayments (DKK 2,908 thousand) and other receivables (DKK 2,632 thousand).

In 2020, ICES has made a change regarding presentation of receivable member contribution 2021, the amount had balanced between the assets and liabilities and does not affect the result in 2020 or 2019. The correction is similarly made in the comparative figures (in the 2019 amounts). We agree that this presentation is in line with the accounting policies.

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

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

In line with the accounting policies holiday pay obligation to employees are not recognized in the financial statements, as this obligation is not eligible and can't be recognized in projects in accordance with the third parties guidelines. The obligation amounts to 1,703 DKK thousand at 31. December 2020.

The audit of the balance sheet did not give rise to any further 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 2020.

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, the General Secretary has confirmed 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.

We have been informed that ICES is following our previous recommendations of reviewing the insurance coverage on a yearly basis with the insurance company.

### 4.3 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 have been informed that the Agresso system is part of the daily back-up.

## 5. Conclusion

If the Finance Committee approves the final accounts 2020 in their present form, we will provide the final accounts with an unqualified auditor's report without emphasis of matter or other matter paragraphs or other reporting requirements.

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

Our audit book comments of 19 May 2011, 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 book comments. 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 final accounts 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.

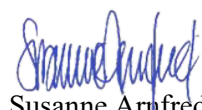
## 7. Auditor's declaration

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

Copenhagen, 11 May 2021

**Deloitte**

Statsautoriseret Revisionspartnerselskab



Susanne Arnfred Møller

State-Authorised Public Accountant

Presented at the Finance Committee's meeting on 11 May 2021

## Finance Committee



Ari Leskelä (May 24, 2021 16:41 GMT+3)

Ari Leskelä

Chair



Karin Victorin



Pablo Abaunza



Friedrich W. Köster (Jun 12, 2021 12:49 GMT+2)

Fritz Köster



Markus Vetemaa (May 25, 2021 16:39 GMT+3)

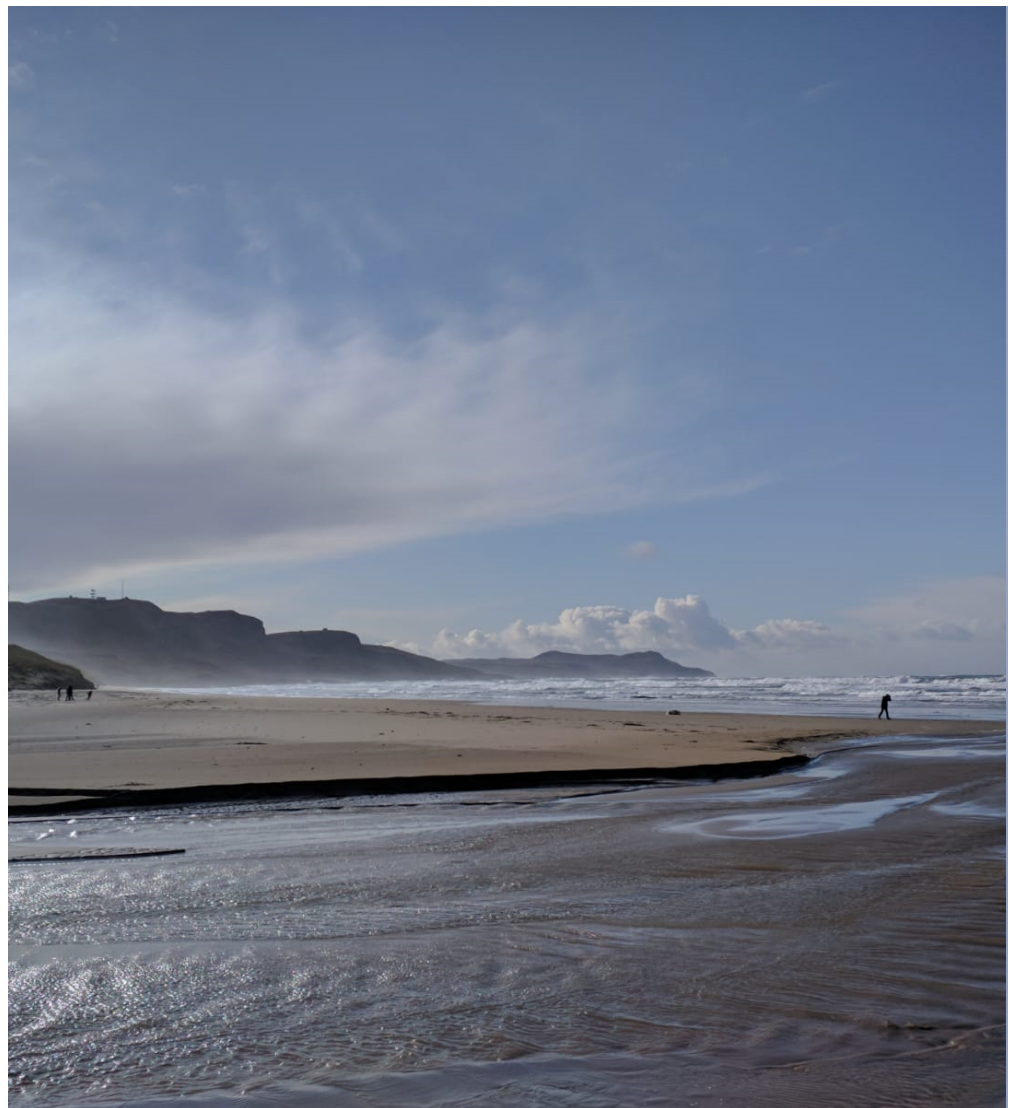
Markus Vetemaa

# SCICOM Progress Report 2021

***DRAFT***

VOLUME 1 | ISSUE x

ICES BUSINESS REPORTS



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

H. C. Andersens Boulevard 44–46  
DK-1553 Copenhagen V  
Denmark  
Telephone (+45) 33 38 67 00  
Telefax (+45) 33 93 42 15  
[www.ices.dk](http://www.ices.dk)  
[info@ices.dk](mailto:info@ices.dk)

Cover Image: © Crown Copyright / Marine Scotland. All rights reserved.

This document has been produced under the auspices of an ICES Expert Group or Committee. The contents therein do not necessarily represent the view of the Council.

© 2021 International Council for the Exploration of the Sea.

This work is licensed under the Creative Commons Attribution 4.0 International License (CC BY 4.0). For citation of datasets or conditions for use of data to be included in other databases, please refer to ICES data policy.



# ICES Business Reports

Volume Vol. 1: Issue X

## SCICOM Progress Report 2021

Recommended format for purpose of citation:

ICES. 2021. SCICOM Progress Report 2021.

ICES Business Reports, Vol. 1:x. 81 pp. <http://doi.org/DOI NO>



**ICES**  
**CIEM**

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



# Contents

Extended Summary .....	iv
1 Introduction.....	1
1.1 Purpose of the progress report.....	1
1.2 Role of the Science Committee.....	1
1.3 Summary of Science Committee scientific and operational structures.....	2
2 COVID-19 pandemic effects on work .....	3
3 Science priorities, planning and delivery.....	4
3.1 Science Plan and Science Plan implementation.....	4
3.2 Increasing international collaboration.....	4
3.3 Link to national science activities .....	5
3.4 UN Decade of Ocean Science.....	6
3.5 Science collaboration.....	7
3.6 Symposia .....	7
3.7 Interactions with Expert Groups.....	8
3.7.1 Engagement and guidance.....	9
4 Steering Groups.....	9
4.1 Overview .....	9
4.2 Aquaculture SG (Mike Rust, term started June 2017, ending December 2021) .....	9
4.2.1 Introduction .....	9
4.2.2 Summary of progress in relation to Terms of Reference.....	10
4.2.3 Science highlights.....	11
4.2.4 Science to Advice activities .....	12
4.2.5 Communication with EG .....	12
4.2.6 Summary of new EG proposals and EG closing.....	12
4.2.7 Forward look .....	13
4.3 Data Science and Technology Steering Group (Jens Rasmussen; term started 2021) .....	13
4.3.1 Introduction .....	13
4.3.2 Summary of progress in relation to Terms of Reference.....	14
4.3.3 Science highlights.....	16
4.3.4 Science to Advice activities .....	16
4.3.5 Communication with EG (summary paragraph of activities undertaken) .....	16
4.3.6 Summary of new EG proposals and EG closing.....	17
4.3.7 Forward look (including actions for SG and SCICOM/ ACOM) .....	17
4.4 Ecosystem Processes and Dynamics SG (Steven Degraer, term started January 2021) .....	17
4.4.1 Introduction .....	17
4.4.2 Summary of progress in relation to Terms of Reference.....	18
4.4.3 Science highlights.....	19
4.4.4 Science to Advice activities .....	20
4.4.5 Communication with EGs.....	20
4.4.6 Summary of new EG proposals and EG closing.....	20
4.4.7 Forward look .....	20
4.5 Ecosystem Observation SG (Joël Vigneau, term started January 2021) .....	21
4.5.1 Introduction .....	21
4.5.2 Summary of progress in relation to Terms of Reference.....	21
4.5.3 Science highlights.....	23
4.5.4 Science to Advice activities .....	23
4.5.5 Communication with EG .....	24
4.5.6 Summary of new EG proposals and EG ending.....	24

	4.5.7	Forward look .....	25
	4.6	Human Activities, Pressures and Impacts SG (Sarah Bailey, term started January 2019) .....	26
	4.6.1	Introduction .....	26
	4.6.1	Summary of progress in relation to Terms of Reference .....	26
	4.6.2	Science highlights .....	28
	4.6.3	Science to Advice activities .....	29
	4.6.4	Communication with EG .....	30
	4.6.5	Forward look .....	31
	4.7	Integrated Ecosystem Assessments SG (Debbi Pedreschi, term started January 2021) .....	31
	4.7.1	Introduction .....	31
	4.7.2	Summary of progress in relation to Terms of Reference .....	32
	4.7.3	Science highlights .....	32
	4.7.4	Science to Advice activities .....	33
	4.7.5	Communication with EG .....	33
	4.7.6	Summary of new EG proposals and EG closing .....	34
	4.7.7	Forward look (including actions for SG and SCICOM/ ACOM) .....	34
	4.8	Fisheries Resources SG (Patrick Lynch, Chair, term started February 2019) .....	35
	4.8.1	Summary of progress in relation to Terms of Reference .....	36
	4.8.2	Science Highlights .....	36
	4.8.3	Science to Advice .....	37
	4.8.4	Communication with EG .....	37
	4.8.5	Summary of new EG proposals and EG closing .....	37
	4.8.6	Forward Look .....	37
5		Operational Groups .....	39
	5.1	Data and Information Group (DIG) .....	39
	5.1.1	Summary .....	39
	5.1.2	Data Licencing and ICES Data Policy .....	39
	5.1.3	Hosting datasets and visualisations .....	39
	5.1.4	Data Profiling Tool (DPT) .....	39
	5.1.5	Data preservation plan .....	40
	5.1.6	Oceanographic format change .....	40
	5.1.7	ICES Data portal .....	40
	5.2	Training Group (TG) .....	41
	5.2.1	ICES training courses 2021 .....	41
	5.2.2	Contract update for online training courses regarding recording policies .....	41
	5.2.3	Develop and run an engaging training programme .....	42
	5.2.4	Participant selection for TG courses .....	42
	5.3	Science Impact and Publication Group (SIPG) .....	42
	5.3.1	SIPG status update .....	43
	5.3.1.1	New ICES Library (ToR a and b) .....	43
	5.3.1.2	Digitizing ICES historical publications (ToR b) .....	43
	5.3.1.3	Follow-up on other actions from 2020 SCICOM (ToR a, b, c, and e) .....	43
	5.3.2	Review of ICES peer-reviewed publications .....	43
	5.3.2.1	General updates .....	43
	5.3.2.2	Publication overview .....	44
6		Strategic Initiatives .....	45
	6.1	Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME) .....	45
	6.1.1	SICCME leadership .....	45
	6.1.2	Status of SICCME relevant ICES working groups .....	45
	6.1.3	Recent SICCME relevant events .....	46
	6.1.4	Upcoming SICCME relevant events .....	47

6.2	Strategic Initiative on the Human Dimension (SIHD) .....	48
6.2.1	Recent SIHD activities and coordination activities.....	48
6.2.2	Specific activities of SIHD-Related Expert Groups .....	48
6.2.3	Recent external research and communications activities .....	49
6.2.4	Recent SIHD-related activities include:.....	49
6.2.5	Upcoming SIHD planned activities.....	49
6.2.6	Update the SIHD Roadmap .....	50
6.2.7	Additional planned activities: .....	50
6.3	Strategic Initiative on Integration of Early Career Scientists (SIECS) .....	50
6.3.1	Background .....	50
6.3.2	Recent activities .....	51
6.3.3	Understanding who is in the SIECS community (ToR F) .....	52
7	Guidelines for ICES groups .....	52
8	Annual Science Conference (ASC) .....	53
8.1	ASC 2021 .....	53
9.1	ASC 2022 .....	53
Annex 1:	Implementation plan .....	54
Annex 2:	ICES co-sponsored symposia.....	60
Annex 3:	List of ICES SCICOM Expert Groups that were dissolved, established, changed committee or were renamed in 2021 .....	64
Annex 4:	Peer-reviewed publications linked to Expert groups 2020/21 .....	65
Annex 5:	Expert Group Science highlights .....	78

## Extended Summary

The ICES Council is requested to:

- Approve the revised data policy and licence
- Take note of the BCSGC19 recommendations, especially on the future of the Annual Science Conference (5), on gender awareness, diversity, equity, and inclusion (4), on a new Paradigm for Expert Group Work (1) and on a Digital Collaboration Strategy (2)
- Take note of and discuss the need for further support of the science network from the secretariat, including strategic leadership on projects
- Continue and further extend the support of national experts as chairs and members of Expert, Operational and Steering Groups as well as Strategic Initiatives to strengthen the scientific network
- Take note of and support national activities linked to ICES science priorities to increase the pool of experts for ICES activities
- Take note of and support the Strategic Initiative on the Integration of Early Career Scientists

The **ICES Science Committee** continues to support ICES science to grow in scale, scope and impact. 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.

2021 has been, and still is, a challenging year for everyone. The **COVID-19 pandemic** continued to have an effect on all aspects of daily life, and therefore also on how science, in general, and the work of ICES expert groups has been carried out. Thanks to immense commitment and tireless work of the whole network, including all individual scientists and especially the Secretariat, the meeting activities and work continued, and ICES was able to reach key achievements.

Two new steering group chairs were elected in August 2021 to lead the Aquaculture Steering Group (ASG) and the Human Activities, Impacts and Pressure Steering Group (HAPISG). A new Chair is also incoming for the Training Group and two new Chairs have been selected for the ICES/PICES Strategic Initiative on Climate Change Impacts on Marine Ecosystems. The incoming chairs will work with the current chairs to ensure a smooth transition for 1 January 2022.

**Notable activities in 2021** included (i) the establishment of the Strategic Initiative on the Integration of Early Career Scientists (SII ECS); (ii) development of an education initiative, (iii) a strong focus on supporting expert groups, including support for online meetings; (vi) furthering the engagement of new scientists participating in the ICES community; (v) an increased frequency and strategic emphasis on science communication; (vi) increasing the links between science and advice; (vii) maintaining and further develop international collaborations, (viii) fostering activities to increase links between national activities and ICES (ix) the initiation of a process to develop a code of ethics and professional conduct, including measures to increase diversity, equity and inclusion, (x) and the first fully virtual ICES Annual Science Conference, including a dedicated day for Early Career Scientists.

These activities have taken place alongside the continued delivery of science outputs and publications by the expert groups.

One hundred and eighteen working groups and forty-five workshops, supported by seven steering groups, were active in 2021. Expert group meetings in 2021 saw again a very high number of new participants, and had a higher overall attendance than in previous years. An overview of the groups are presented in the new ICES Activities Dashboard developed by Secretariat. The Dashboard is still in a beta version, thus should be used with caution.

**The Steering Groups** are now meeting regularly to enable communication and create linkages between the Expert Groups within a Steering Group and across Steering Groups, and the SCICOM Chair meets regular with the Steering Group Chairs to keep informed about developments in the network, and allow SG Chairs to put forward any issues and jointly discuss solutions.

In June the **Strategic Initiative on the Integration of Early Career Scientists** (SII ECS) was approved. This initiative aims to make ICES more visible and accessible to early career scientists from various disciplines and backgrounds. The activities of SII ECS will improve the inclusion of ECS in ICES work and help ECS to contribute to the overall goals of the organization. The initiative will also participate in ongoing efforts to enhance equity, diversity and inclusion in ICES.

The **Workshop on Graduate/Post Graduate Education Strategy to Meet Future ICES Advisory Needs** (WKEDU) held in November 2020 and the follow up meeting in June 2021 identified a process and a list of tasks to develop capacity to meet future ICES science-based advisory needs. The initiative will likely be turned into a Strategic Initiative in 2022 and will work closely with the Training Programme. Benefits include increased cooperation between academic institutions in member countries in support of capacity development and increased academic participation in ICES, supporting the implementation of the Strategic Plan.

Since the last SCICOM, two TIMES, three Identification (ID) Leaflets for Plankton, and one ID Leaflet for Diseases in Fish and Shellfish, have been published. In addition, eight CRR, two TIMES, eight ID Leaflets for Plankton, and 10 ID Leaflet for Diseases in Fish and Shellfish are in the publication process. A project to digitize all ICES historical publications has been initiated. A record of all ICES publications has been compiled, resulting in a list of 42 publication series (the oldest of which started in 1900), and 34 publications out of series. So far, the archive of the Cooperative Research Reports series (CRR) has been digitized in its entirety, in time for the 60th anniversary of the series.

The **Science Impact and Publications Group** together with the secretariat has worked on developing a new library platform for ICES, which is now being implemented by the editorial office together with the company providing the platform (Figshare). The new library will launch in the upcoming months, and will increase the findability and accessibility of ICES publications and support the on-going increase in outside recognition of ICES science.

The training courses went fully online and until October 2021 seven courses were held with high attendance. The feedback was very positive, and although the time-zone difference between Europe and North-America puts challenges on the format, the online format was generally seen as being more inclusive. The **Training Group** started the development of a new strategy for the training programme and is in dialogue with the Education Initiative, which is currently under development.

The **Data and Information Group (DIG)** worked with the Data Centre on the Core Trust Seal (CTS) accreditation application, which was approved in 2021. DIG is also working towards a single data policy proposal that will address all aspects of how data is received, maintained and safeguarded by ICES. SCICOM has recommended to Council the approval of the revised data policy and licence.

**The ASC** was held as a fully virtual event this year and the feedback from the community on the format and content was very positive. The Secretariat has put in a lot of effort to allow a smooth

execution and the conveners ran the theme session successfully as discussion sessions. An extra day was dedicated to Early Career Scientists, which also supported the launch of the new Strategic Initiative on the Integration of Early Career Scientists (SII ECS), as well as highlighting next year's ICES/PICES ECS Conference. The community was highly engaged in the network session on Gender equality, diversity, equity, and inclusion in ICES community.

**Inter-institutional collaborations** in 2021 have included running or setting up joint expert groups, including with PICES, IOC, IMO and PAME. A new cooperation agreement with SCOR is under discussion. At other levels, and with inputs from SCICOM, ICES has engaged in international processes linked to the Arctic, the UN Decade of Ocean Science for Sustainable Development, science and advice in Areas Beyond National Jurisdiction and the World Ocean Assessment. In 2021 three ICES co-sponsored international symposia were held: the International Symposium on Plastics in the Arctic and Sub-Arctic Region, the World Fisheries Congress and the Baltic Sea Science Congress. In 2022, five co-sponsored symposia will be held: the 4th Symposium on Decadal Variability of the North Atlantic and its Marine Ecosystems: 2010–2019, the Fourth ICES PICES Early Career Scientist Conference, "Ocean sciences for the future we want", the Oceans Past IX Conference, the Symposium on Capelin - The canary in predicting effects of climate on the arctic marine environment and the International Symposium on Small Pelagic Fish: New Frontiers in Science for Sustainable Management. In 2023, the 5th International Symposium on the Effects of Climate Change on the World's Oceans is planned.

ICES is currently involved in 10 **projects**. The changing funding landscape as well as new developments in relation to international programmes (UN Ocean Decade) has led to a discussion on international cooperation as well as better links to national activities in SCICOM. Stronger lead and coordination of projects will increase the benefit for member countries.

**The implementation of the ICES Science Plan** will be further progressed and supported by the ongoing efforts to introduce more consistent and concise resolution forms, to improve and quality control expert group descriptions and terms of reference and to implement the resolutions database. The main priorities beyond this are detailed in the implementation plan and include efforts to

- i. 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, increased use of science highlights and an active communications strategy, development of impact case studies, and broader ASC formats;
- ii. continue to provide clear and accessible paths for new participants to engage with ICES;
- iii. continue to strengthen links between science and advice;
- iv. develop measures for to increase diversity, equity and inclusion;
- v. 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);
- vi. increase international scientific cooperation through targeted and concrete activities with scientific partner organisations like PICES, CIESM, IOC, FAO, AMAP; PAME; IASC, GFCM; SCOR; and through the activities within the UN Decade of Ocean Science for Sustainable Development; and
- vii. improve the link to national science activities relevant to ICES.

Beyond the implementation plan, the focus is on further developing effective work environments for expert groups meeting remotely and in hybrid format, early career scientists, and developing formats for online and hybrid symposia and the ASC, which support the scientific exchange and networking capabilities for all scientist.

# 1 Introduction

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.

## 1.1 Purpose of the 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 2021 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 activities in the steering groups, expert groups, strategic initiatives, operational groups as well as the implementation of the 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. It also reports on the outcome of the Annual Science Conference.

## 1.2 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 the ICES science plan. Through planning of the work of ICES groups, the science committee strives to ensure effective working relationships between all parties contributing to the implementation of the 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 the 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) 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,
- (4) 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,
- (5) 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,
- (6) 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,
- (7) promote science activity and collaboration within and beyond the ICES network,
- (8) ensure effective communication and seamless links between science, data collection, storage and processing, and advice.

### **1.3 Summary of Science Committee scientific and operational structures**

Four 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. In addition, SCICOM is supported by the ICES secretariat Science Support.

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 re-viewed 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.

The Strategic Initiative on Integration of Early Career Scientists (SIECS) aims to make ICES more visible and accessible to early career scientists from various disciplines and backgrounds.

**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.

## 2 COVID-19 pandemic effects on work

The COVID-19 pandemic continued throughout 2021 and thus continued to affect the work of the scientific network. Although working remotely has become the norm, the organization has not fully adapted and to some extent continues to operate under exceptional conditions. Expert Groups continue to meet online and although many groups had one meeting in 2021, others started to adapt their workflow by organizing work through more and shorter meetings and adding collaborative work environments, e.g. GitHub, besides the use of the SharePoint System. In November and December 2021, selected pilot groups will meet in a hybrid format, including meetings held at ICES Secretariat. This process will be carefully evaluated to learn from the process and adapt the technical work environment, as well as the skills needed to run meetings in this mixed format.

Since end-2020, the Training Programme successfully started to offer 'fully online' training courses, and so far, until end of October 2021, has run 7 courses. The format does allow wider participation, but there are challenges with respect to the time-zones of participants.

The ASC 2021 was held as a fully virtual event. The feedback was overwhelmingly positive. Details can be found in the ASC 2021 report.

## 3 Science priorities, planning and delivery

### 3.1 Science Plan and Science Plan implementation

The details of the Science plan were reported on last year. The progress of implementation is documented in the Science Implementation table (see Annex 1).

Overall, the implementation is going well, and the missing reporting on mapping science priority areas to Expert Group Terms of Reference will be implemented once the new resolution database is in place. The implementation is pending the feedback to the BCSGC-19 group recommendations.

SCICOM discussed international science collaboration (see Section 3.2) as well as links to national science activities (Section 3.3) and proposed ways to implement measures to increase science cooperation. The SCICOM open forum for national members at the SCICOM September meeting led to the identification of emerging science areas, i) carbon stores and carbon sinks (also addressed by the new Joint ICES/PICES Working Group on Ocean Negative Carbon Emission (WGONCE)), ii) emission reduction in research vessel design, iii) Atlantic cod in trouble in its southern extend, iv) spatial conservation measures including science on MPAs.

### 3.2 Increasing international collaboration

Most international cooperation occurs through joint groups, workshops and co-sponsored theme sessions and symposia. The aims for these collaborations are manifold and include collaboration on common science topics, expanding the knowledge and expertise in the network, sharing financial resources for activities, and expanding participation and representation, such as broader regional representation of both member and non-member countries, and the inclusion of more academics and national scientists.

SCICOM's mandate is to strategically develop the science according to the Strategic and Science plans and support the implementation of the Advice Plan.

Objectives:

- 1) Support science collaboration by coordinating with other regional and international organisations, understanding that links to advice need to be considered as part of this process as some organisations may also be advice requestors:
  - a) Engaging in and developing new joint Expert Groups with a number of regional and international organisations,
  - b) Linking efforts where national interest and engagement on a regional or international level are meaningful.
- 2) Support science collaboration through dialogue with ongoing EU and other international projects:

- a) Scientists in Expert Groups are often working in international projects which have no formal involvement from ICES (e.g. Secretariat); improved communication and knowledge synthesis across projects can be facilitated through Expert Groups, e.g., topical workshops.

**On objective 1:** the current cooperation can be strengthened by reaching out to organizations with similar thematic focus and to extend the pool of experts to be able to cover global topics in a more holistic way. Opportunities for further synergies between ICES and other organisations will also be explored through the UN Decade of Ocean Science activities and especially together with PICES through the joint ICES/PICES decade programme SMARTNET.

**On objective 2:** activities are currently happening on an ad hoc basis and can be strengthened and further developed by developing capacity in the science department, specifically to support coordination and strategic development of projects.

### 3.3 Link to national science activities

A lot of science is funded and carried out in national activities and projects. Much of this work is relevant to ICES science priority areas and is often conducted by scientists from national research institutes and universities. Thus, there is a clear benefit to reaching out and including this expertise, especially in areas where we might have knowledge gaps. On the other hand, national activities can benefit from engagement in ICES to increase impact, visibility, societal relevance and international collaboration.

#### Objectives

- 1) General dimension:
  - a) Integrating science across scales and disciplines,
  - b) Broaden the scientific discourse.
- 2) National dimension:
  - a) Access to expertise not available within the respective country,
  - b) Discussing science related to and needed for international commitments,
  - c) Facilitate dialogue across different ministries.
- 3) Institutional dimension:
  - a) Connect to a wider range of institutes and universities to support EBM development.
- 4) Individual dimension:
  - a) Build and grow their professional network,
  - b) Enhance skillset and knowledge sharing by collaborating in an international setting.

#### Identified tools and mechanisms for implementation

- 1) National ICES workshops (like BICEpS and other national ICES days):
  - a) Open ICES to more national scientists (including academia and government bodies other than fisheries),
  - b) Facilitate the conversation between national researchers and national policy makers.
- 2) ICES can participate in or offer networking with national research projects on topics of interest:

- a) ICES issues letter of support to national proposals when it is clear how the projects will interact with expert groups,
- b) ICES can facilitate interaction between national projects on same topics (e.g., through topical workshops).

### 3.4 UN Decade of Ocean Science

The main activities are organized through the joint ICES/PICES UN Ocean Decade programme SMARTNET (read also the article in the ECO magazine: <http://digital.ecomagazine.com/publication/frame.php?i=707374&p=1&pn=&ver=html5>).

SMARTNET is one of 34 programmes endorsed by the UN Decade Advisory Board, the full list of programmes can be found on the Ocean Decade webpage. The programme is a good opportunity to develop joint activities with existing partner organisations as well as start expanding this collaboration to include organizations and institutes and individuals beyond our member countries, and to facilitate ocean science research and collaboration among countries in both the Northern and Southern hemisphere.

The ICES/PICES Ocean Decade Steering Committee (IPOD SC) has held three meetings in April, July, and August, to outline concrete activities to be implemented within the joint Decade Programme SMARTNET and to develop an implementation plan for the period 2021 to 2024. The implementation plan will outline:

- Program Objectives
- Program Coordination and Governance Structure
  - ICES/PICES Expert Group (IPOD) & Initial Membership
  - Terms of Reference
- Program Activities
  - Outreach and Communications
  - Diversity and Inclusion
  - Early Career Ocean Professional Development
  - Partner Organizations & Programs
  - Networking within UNDOS
  - Capacity Development
  - Anticipated Outcomes
- Contributions to UN Ocean Decade Objectives & Challenges
- Contributions to UN Sustainable Decade Goals

SCICOM has identified national UNDOS committees or focal points for some countries. The ICES/PICES UN Decade Steering Committee (IPOD-SC) will contact these when appropriate, but national committees and focal points are invited to actively reach out to ICES and PICES with suggestions for activities.

Most of the funding for Ocean Decade Activities will probably be leveraged on the national level. Thus, we encourage Council delegates to inform the SCICOM Chair about national coordination bodies and funding opportunities, to help SMARTNET meaningfully support activities across member countries.

ICES, represented by Jörn Schmidt, SCICOM Chair, is also participating in the high-level stakeholder advisory board of the UN Ocean Decade endorsed project of the [Empowering women for the United Nations Decade of Ocean Science for Sustainable Development](#) lead by the Global Ocean Institute at the World Maritime University. A WMU team, including ICES Coordinating Officer, Ellen Johannesen is conducting research with a focus on gender equality and the empowerment of women in the practice and delivery of ocean scientific research, in particular in

relation to fisheries, oceanography, hydrography and climate change. A greater focus on collecting demographic information for the ICES network, in connection with nominations will be part of the project, in line with the Strategic Plan

### 3.5 Science collaboration

Scientific cooperation on the community level happened through 15 joint Experts Groups in 2021. On an organisational level, the General Secretary, the SCICOM and ACOM Chair as well as the Heads of the Science and Advisory Department and Head of Data and Information attended high level meetings. On the science side, activities in 2021 included the participation in the 3rd Arctic Science Ministerial (ASM3), the 12th Ministerial meeting of the Arctic Council, Arctic Council observer event on Arctic Governance, and the Second meeting on the Implementation of the Agreement on Enhancing International Arctic Science Cooperation. The Ocean Decade – Arctic Action Plan was completed 1 June.

The joint ICES/PICES Ocean Decade Steering Committee was established in late 2020 and the joint UNDOS programme SMARTNET was endorsed by the Decade Advisory Board in February 2021. The group aims to encourage broader participation from the ICES community and increasing international science cooperation and is currently working on an implementation plan. The cooperation with PICES is very strong with five joint groups and one joint Strategic Initiative and continues to grow.

ICES and PICES will hold a joint annual conference in 2023, hosted by the USA, and the Early Career Scientists Conference in 2022, hosted by Canada.

ICES is currently a partner in 10 projects. The project Mission Atlantic held a successful virtual kick-off meeting from 30 September to 2 October 2020. Mission Atlantic is one of several HORIZON 2020 projects with focus on Transatlantic cooperation through the Galway and Belem declarations. ICES is currently partner or part of the stakeholder or advisory board in 4 Horizon Europe proposals.

### 3.6 Symposia

Symposia held in 2021 were:

- 1) International Symposium on Plastics in the Arctic and Sub-Arctic Region, 2-4 March, online;
- 2) World Fisheries Congress 20-24 September, online; and
- 3) Baltic Sea Science Congress 18-22 October in Aarhus, Denmark.

Symposia to be held in 2022 are:

- 1) ICES 4th Decadal Variability of the North Atlantic and its Marine Ecosystems: 2010-2019 will be held 26-28 April, Bergen, Norway; endorsed as UNDOS activity;
- 2) Fourth ICES PICES Early Career Scientist Conference, 9-12 May in St. Johns, Newfoundland, Canada; endorsed as UNDOS activity;
- 3) Oceans Past IX Conference, 22-25 June, Seattle, USA;
- 4) Symposium on Capelin— The canary in predicting effects of climate on the Arctic marine environment, 10-15 October, Bergen, Norway; endorsed as UNDOS activity
- 5) International Symposium on Small Pelagic Fish: New Frontiers in Science for Sustainable Management, 7-11 November, Lisbon, Portugal; endorsed as UNDOS activity.

ICES will also be contributing to multiple sessions at the Ocean Sciences Meeting, 27 February – 4 March 2022.

The Marine Socio-Ecological Systems (MSEAS) Conference originally scheduled for 25–29 May 2020 in Yokohama, is planned for 2022 (dates still being finalised).

For 2023 the 5<sup>th</sup> Effects of Climate Change on the World's Oceans (ECCWO) is planned for 17–21 April in Bergen, Norway.

There are already three anticipated symposium resolutions for 2023 and 2024. The announcement for resolution submissions will be made in the beginning of December and collated for approval from SCICOM at the March 2022 meeting. The ICES Secretariat has enhanced the [ICES Activities Dashboard](#) to include a new tab for conferences, symposia, and training. A full list of Symposia 2020–2023 with details can be found in Annex 2.

### 3.7 Interactions with Expert Groups

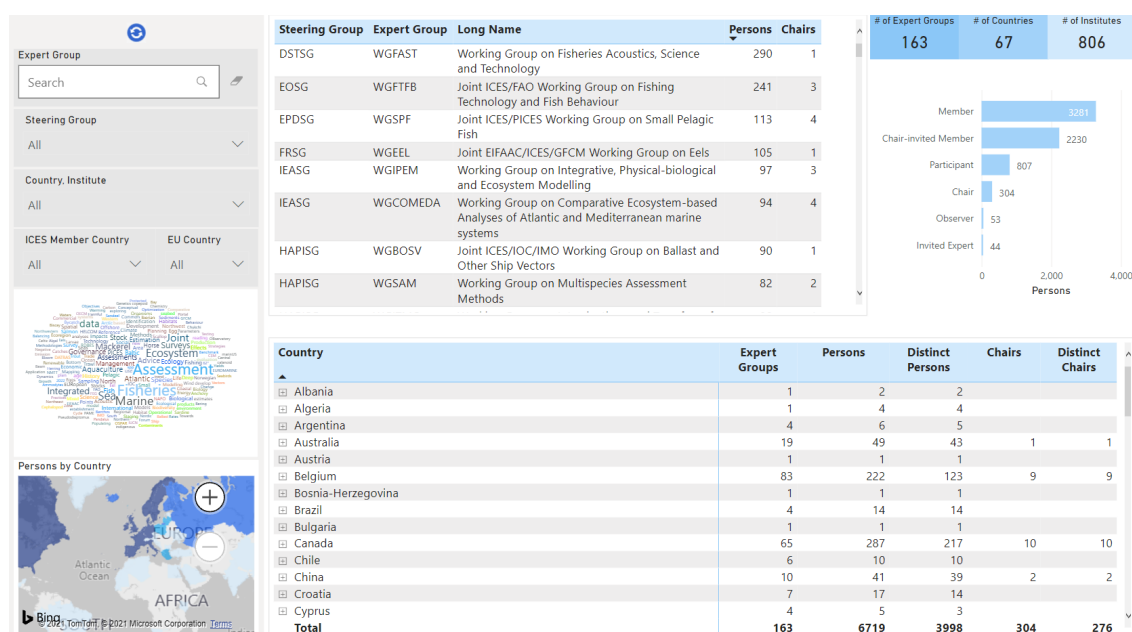


Figure 3.1. Screenshot from [ICES Activities Dashboard](#).

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 coordination and impact of expert groups and their science. One hundred and eighteen working groups, forty-five workshops were active in 2021 (see Annex 3 for new and dissolved groups). The groups can be explored now using the [ICES Activities Dashboard](#) developed by Secretariat. The Dashboard is still in a beta version, thus should be used with caution.

### 3.7.1 Engagement and guidance

SCICOM is continuously working to improve the engagement with Expert Groups. Measures introduced in the last years have been the WGCHAIRS forum, and the extension of the WGCHAIRS meeting. The forum is used as a means to keep EG Chairs informed in a consistent way and to provide a platform for feedback.

The WGCHAIRS meeting continues to be a valuable event to foster exchange and communication both among expert group chairs, and between the chairs and SCICOM, ACOM and the secretariat. The 2021 was held as a fully virtual meeting and attracted up to 140 participants. A new element in 2021 was a 3-hour time-slot dedicated to incoming and new chairs, but open as well to experienced and current chairs. The exchange with the new chairs and the SCICOM and ACOM chair as well as between chairs was very productive and was seen as very helpful for incoming chairs. The WGCHAIRS meeting for 2022 will be held again as a fully virtual event to keep inclusion high.

Guidance for groups in general is given in the Guidelines for ICES groups. This document is continuously updated and contains a thorough and complete set of guidelines for all aspects of EG work.

ICES science continues to flourish and attract new participants to our expert groups. The measures taken over the last years seem to have had an effect. This year has again seen an increase of participation in expert groups due to the ability to more easily join groups remotely. A larger proportion of members participated in meetings and we saw an increase in new participants again.

## 4 Steering Groups

### 4.1 Overview

The following section is the reporting from the seven Steering Groups. All Expert Groups active in the network and being described in the SG reports can be explored using the [ICES Activities Dashboard](#). A list of all peer-reviewed publications that came out of the work of the Expert Groups can be found in Annex 4 and an overview of Science Highlights from Experts Groups is in Annex 5.

### 4.2 Aquaculture SG (Mike Rust, term started June 2017, ending December 2021)

#### 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 consequences of aquaculture operations





Terms of Reference	Progress
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;	See below.
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;	Regular webinars. Attended some WG meetings. Session at ASG. Operational group activities.
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. Transitioning to new ASG chair.
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. See below. Transitioning to new ASG chair.
i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;	Encouraged in annual web meeting. See below.
j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;	Ongoing. See below. Transitioning to new ASG chair.
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 addressed adequately and within the advisory re-request timeframe;	Ongoing, see below. Transitioning to new ASG Chair.
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;	Yes.
m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;	Worked with chair of WGPDMO on Viewpoint and former chair of WGEIA on Aquaculture Overview.
n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.	Attended all meetings.
o) Establish a core group of ASG Expert Group chairs who, together with the ASG Chair, will share responsibility for implementing the work of ASG;	Chairs regularly attend and discuss ICES aquaculture progress at webinars.
p) Generate a position paper on the contribution of ASG to ICES science, data and advice;	<b>Aquaculture vision document delayed:</b> draft and obtaining signoff from ACOM/SCICOM chairs, inform ICES communications team of plans. Will revisit with new ASG chair in 2022.

### 4.2.3 Science highlights

Paraphrasing from several papers published and a survey of stakeholders

- ICES countries more or less have similar laws governing aquaculture so need similar types of advice,
- Risk assessments will be important but there is not yet an ICES standard,

- ICES countries are not able to provide the region with enough seafood to meet their needs,
- With only a couple of exceptions, ICES countries have no real plans to increase aquaculture for seafood – they are lost, floundering,
- Regulations are often blamed – but this is a call for good science-based governance tools which is ICES strength and opportunity!

*Publications – note this list is incomplete:*

#### 4.2.4 Science to Advice activities

- Aquaculture Overviews: Norwegian Sea Aquaculture Overview to be published in December 2021 and the WKNORAO report will be published at the same time.
- [WKNORAO](#) – report done, to be published with advice in December 2021
- [RGNORAO](#) – report done, to be annexed to WKNORAO and published with advice in December 2021.
- ToRs should be drafted in 2021 and sent for approval for the Celtic Seas and Faroes ecoregions Aquaculture Overviews in 2022.
- Aquaculture viewpoint on oyster herpes virus: chair of WGPDMO, Ryan Carnegie, working on background document and have delayed process until 2022.

#### 4.2.5 Communication with EG

Will transition activities to new chair for her to continue or not as she sees fit:

##### *ASG Webinars*

On the main [ASG SharePoint site](#) we have been running monthly [ASG webinars](#). We stopped this before summer, but this was a great way to share science across groups and to have some discussions for how to collaborate. The ASG SO hosts the meeting and works with the ASG chair to come up with topics for each webinar. We have had all groups present, except WGOOA. It may be worthwhile starting up again and thinking of topics that can help prepare science groups for aquaculture advice, i.e. an ICES science to advice workshop, aquaculture overview process with Terje Svåsaand (WKNORAO chair). The schedule for 2020/2021 is available [here](#).

##### *Advice*

Work with communications on setting up a **communication plan** for all new aquaculture advice products in late 2021/2022 - Norwegian Aquaculture Overview, Vision document and viewpoint in 2022.

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

Overview of expert groups with **new** resolutions:

- [WGOOA](#) – New ToRs for 2022-2024 cycle not yet to be submitted. Physical meeting currently being discussed for November.
- [WGPDMO](#) – New ToRs for 2022-2024 cycle not yet to be submitted

- [WGECCA](#) – New ToRs for 2022-2024 cycle not yet to be submitted (expecting submission on 30 September)
- [WGSPA](#) – Pending date for autumn meeting and expecting new resolution after approval meeting in November.

Overview of expert groups with **existing** resolutions:

- [WGSEDA](#) – ToRs submitted with new chair to be approved at approval meeting
- [WGAGFA](#) – no changes to ToRs
- [WGREIA](#) – no changes to ToRs

## 4.2.7 Forward look

### Suggestions for new WG under ASG

- Vulnerabilities and resilience of aquaculture to climate change
- Aquaculture Oceanography and Modelling
- Operationalizing Economic and Social Trade-off Analysis
- Aquaculture Marine Spatial Analysis

### Suggestions for new integrating of aquaculture into:

- SI on Climate Change Impacts on Marine Ecosystems
- SI on Human Dimensions
- SI on Integration of Early Career Scientists
- Data Science
- Oceanography
- UN Decade

## 4.3 Data Science and Technology Steering Group (Jens Rasmussen; term started 2021)

### 4.3.1 Introduction

The Data Science and Technology Steering Group is responsible for guiding and supporting expert groups that are developing, assessing and applying new technologies as well as advancing data science, systems management, quality assurance, and data governance.

Topics covered include:

- Increasing the representation, profile and application of new technologies and data science in ICES
- Ensuring ICES community evaluates and, where relevant, adopts new methods, systems and devices
- Assessing implications of new and emerging technologies
- Supporting continued improvements in monitoring through application of innovative technologies and optimization of sampling designs
- Supporting and advancing effective data governance, data management, analytics and quality assurance methods

### 4.3.2 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;	Discussions around international meeting locations and how to balance different levels of inclusion (regional increase in attendance, infrastructure and legislation of host countries).
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);	Forms part of reporting to SCICOM meetings. In March, examination of the linkage between science plan points and terms of reference was presented.
c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;	DSTSG is in its first year of existing, and in combination with COVID restrictions on travel and meetings, there has been limited opportunities to progress this yet.
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;	Some minor challenges in identifying chairs, but resolved in relatively short time for all relevant expert groups and workshops.  Change in terms of reference between PGDATA and WGQuality has led to a change in the review of recommendations to RCGs. Review is no longer part of WGQuality ToRs and are instead reviewed between Secretariat and chairs of DSTSG and EOSG.
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;	Clarifications were sought from workshop chairs to ensure there was alignment between reference material and methods description for age reading workshops. Different documents were referenced although there is a shared basis.
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;	Initial meeting across Expert group chairs during WGCHAIRS. Follow up meetings to be arranged for increased cross-communication between chairs. It was agreed to have sessions focussed on methods and on technology interchangeably.
g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;	WGQuality has been convened to examine and develop quality framework.  Governance groups are using an assessment framework originally developed in DIG that aligns with best practise.  Shared methodology documents for groups working on biological methods and parameterisation.
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;	Running dialogue with EG chairs and review of outputs ongoing.
i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;	One discussion in progress on establishing either a workshop or working group on improved toolsets for retrieving machine readable datasets to support analysis from both within and out-with ICES.
j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;	Resolutions and ToRs reviewed for  WKARDL2, WKRPD-POP3, WKAMEMSA, WGBIOP, WKRDBS-RAISE&TAF, WGRDB-EST, WKARBLUE3, WKARP2

Terms of Reference	Progress
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 addressed adequately and within the advisory request timeframe;	No specific groups or workshops associated directly with advisory requests. Data and parameters feeding into other groups that use it for advice, so discussions have taken place to ensure that changes to meeting dates do not cause issues for the development of advice.
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	No direct special requests for DSTSG groups.
m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;	N/A
n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.	Attendance at WGCHAIRS, SCICOM (March), and SG Chairs meetings through the year.
o) Represent and provide leadership of technology and data science in ICES	Discussions to improve dialogue between technology focussed and governance groups to ensure awareness of emerging topics and evaluation of capacity within different data governance areas. This is also done in collaboration with DIG since the operational aspects needs to align for longer term implementation plans.
p) Ensure that ICES community is sighted on and responsive to technology and data science developments with potential to advance the tasks identified in ICES Science and Advisory Plans	<p>This year is the final year of WGMLEARN, and once reporting is complete, it will be important to determine how to follow up and identify use of machine learning in ICES and the wider community.</p> <p>The accreditation of the ICES Data Centre will also place expectations on groups to recognise and align with identified workflows.</p>
q) Expand emerging technology and data science areas in ICES (e.g., unmanned systems, artificial intelligence and 'Omics) and guide related and transformative advancements in ICES science, products and services	The working group on technology integration for fishery-dependent data are developing a resolution for a new term as the use of remote sensing tools in commercial fishing is increasing.
r) Support continued improvements in environment and ecosystem monitoring through innovative technologies and optimization of sampling designs	Governance groups are forming links between other expert groups that carry out and plan monitoring, and provide a broader base for discussion. A good example is the work conducted by the DATRAS governance group, bringing a common reporting format in to make data submissions easier and more transparent and at the same time addressing consistency and reference questions across groups.
s) Foster the complementarity and interoperability of different technologies and data streams to achieve a digital ocean representation	Most progress on this is within the ICES Data centre at the moment in the development of the new ices data platform. As it is increasing in maturity, DSTSG groups will be early adopters and providers of/contributors to some data flows.
t) Contribute to the development of a world-leading data collection-to-advice quality assurance framework	<p>WGQuality has been established, and are starting work on a quality manual and the implementation of PGDATA recommendations.</p> <p>In addition, ICES Data Centre are developing the workflow diagrams to identify and lay out the flow of data from Collection to advice. DSTSG will possibly need to establish workshops or expert groups to review the governance structures</p>

Terms of Reference	Progress
	and identify a way of managing the number of workflows in close collaboration with DIG (e.g. DSTSG dealing with the strategic and new aspects, while DIG is working with data centre on the implementation and operation of the flows)
u) Advise on new data management and data science methods and infrastructure, and support ICES Data Centre in strengthening data governance, quality assurance and systems design	Also see above for aspects of governance that needs to involve both technology and infrastructure as well as scientific and advice input.  Some of these aspects are slightly unusual in setup since they span strategic, scientific, advice, and operational aspects, and as such will require a wide collaboration based.

### 4.3.3 Science highlights

A total of 35 meetings across 22 expert groups and workshops are planned for 2021, 19 of which are still to take place. The data governance groups tend to meet more frequently to discuss priorities – hence the higher number of meetings relative to the number of groups.

Reports are still being prepared or not yet available from several groups, but some highlights have emerged through dialogue:

- TAF user survey conducted (<https://www.ices.dk/news-and-events/news-archive/news/Pages/TAF.aspx>),
- DATRAS governance group has created a unified data submission format, working with the ICES Data Centre to implement and successfully launch it. This means that the guidance and format for submitting data is now the same and compatible across [many surveys](#),
- ICES Smartdots video tutorial and release update: [ICES SmartDots - YouTube](#);
- WGFAST online meeting was very well attended with more than 100 participants, 38 presentations, covering acoustic models, open-source software for acquiring, processing, and analyzing data, and machine learning and artificial intelligence applications to acoustic data (<https://ftfb-fast.imr.no/>),
- WGRFS: Skov *et. Al.* Expert opinion on using angler Smartphone apps to inform marine fisheries management: status, prospects, and needs, ICES Journal of Marine Science, Volume 78, Issue 3, July 2021, Pages 967–978, <https://doi.org/10.1093/icesjms/fsaa243>.

### 4.3.4 Science to Advice activities

N/A

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

The first main meeting in DSTSG took place during WGCHAIRS. In the time since then, most communication has been on a case by case basis with individual chairs or smaller groups of chairs. This has primarily been down to SG Chair availability, and follow up meetings are being planned for autumn and winter to ensure dialogue is maintained or increased within DSTSG.

The chair of DSTSG also participated in the Data and Information Group meeting – an important collaboration since forward planning and development also needs to fit in with the operational

and best practice aspects. DIG will be reporting separately to SCICOM, but remains important to ensuring that forward looking aspects from groups in DSTSG can be implemented following best practice.

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

No Groups have closed yet this year. WGTIFID and WGMLEARN are in their final year of reporting, but have not yet had their meetings. It is however already known that at least WGTIFID will be working towards a new resolution to submit.

One new group is in drafting stage of resolutions – Data governance for the joint cetacean data programme (JCDP).

### **4.3.7 Forward look (including actions for SG and SCICOM/ ACOM)**

There are activities that link together with progress on WGQuality and the data workflows that form part of the accreditation of the ICES Data Centre. These activities will link together existing DSTSG groups in terms of governance groups seeing and providing feedback to data workflows, and technology and methodology focussing groups providing input with the development of a quality manual.

In a wider context, the outcomes and observations of WGMLEARN's progress will need to be taken on board to evaluate if and where ICES are exploring and making use of new technologies and opportunities.

DSTSG groups have submitted proposals for 2022 ICES ASC, and as the steering group settles into collaborating across groups, there will hopefully be more collaborative proposals for sessions and workshops.

## **4.4 Ecosystem Processes and Dynamics SG (Steven Degraer, term started January 2021)**

### **4.4.1 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, cephalopods, crustaceans, fish, and other top predators,
- ecosystem services,
- ecosystem resilience.

#### 4.4.2 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;	This year's focus is on building a sense of EPDSG ownership among EG Chairs. For details, see below: "Communication with EGs".
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);	See below "Science highlights".
c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;	The high-level topics that will be identified during the EPDSG September meeting will also serve the identification of research priorities.
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;	The eventual shortfalls in expert availability are explicitly discussed with the EG Chairs during the bilateral meetings. So far, no such shortfalls have been identified.
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;	The eventual overlaps in focus of EGs are explicitly discussed with the EG Chairs during the bilateral meetings. While tight bonds among some EGs were highlighted (incl. high rates of shared memberships), no redundant overlaps were so far highlighted.
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;	The pitch presentations of the EPDSG September meeting will be the basis for promotion videos we will set up for each EG (who wants to do so), while – aside of learning to know each other – the high-level topics may form the basis for an EPDSG-wide position paper.
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 specific action so far.
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;	No specific action so far.  During the bilateral meetings, the wish of receiving feedback on the e-Evaluation reports has been mentioned by several EG Chairs.
i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;	Together with the ACOM Chair, WGSCALLOP is exploring the possibility to draft demonstration advice of scallop stock assessments.
j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;	Draft resolutions for WGZE, WGBIODIV and WGMRES were reviewed. Advice for streamlining the format of the resolutions were provided.
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 addressed adequately and within the advisory re-request timeframe;	No advice requests since 01/01/21.



Terms of Reference	Progress
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;	No such advice requests since 01/01/21.
m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;	No such advice requests since 01/01/21.
n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.	Attendance at WGCHAIRS, SCICOM (March) and SG Chairs meetings (2/3) throughout 2021.
o) Establish a core group of EPDSG Expert Group chairs who, together with the EPDSG Chair, will share responsibility for implementing the work of EPDSG;	This year's focus is on building a sense of EPDSG ownership among EG Chairs; this as a starting point to establishing an EPDSG core group. The EPDSG September meeting is co-organised with Marco Uttieri (Chair WGEUROBUS) and Dave Clarke (Chair WGHABD), which is a first achievement here.
p) Generate a position paper on the contribution of EPD to ICES science, data and advice;	The high-level topics that will be identified during the EPDSG September meeting may form the basis for an EPDSG-wide position paper on EPDSG EG contributions to ICES Science.

### 4.4.3 Science highlights

#### 2020 (late report submissions)

- WGEUROBUS contributed to the publication of observations of the copepod *Pseudodiaptomus marinus* from the moment of its first appearance Sevastopol Bay (in 2016) until December 2018. Gubanova A, Drapun I, Garbazey O, Krivenko O, Vodiasova E (2020) *Pseudodiaptomus marinus* Sato, 1913 in the Black Sea: morphology, genetic analysis, and variability in seasonal and interannual abundance. PeerJ, 8: e10153,
- WGSCALLOP is organizing a concentrated effort to collate all of the information together and to attempt a wider stock assessment for scallops in the Irish Sea (see above, ToR i).

#### 2021

- WGOH highlights new observations of persisting and changing trends in North-Atlantic Ocean water temperature and salinity, and atmosphere (Interim working group evaluation),
- WGBIODIV contributed to a study integrating biological traits of benthic species that are responsive to instantaneous effects of trawling, i.e. sensitivity, and traits expressing recoverability that feeds into the development of a generic approach to the development of a benthic community vulnerability (to fisheries disturbance) indicator that is likely to perform well even in areas with a long history of exploitation over the longer term (i.e. years). Beauchard *et al.* (in press) A generic approach to develop a trait-based indicator of trawling-induced disturbance. MEPS,
- WGZE is working on IJMS Themed Article set on "Marine zooplankton time series: essential tools to understand variability in productivity-determining processes in the oceans". First papers are published (online first); publication in 2022.

#### 4.4.4 Science to Advice activities

- N/A

#### 4.4.5 Communication with EGs

This year's focus is on building a sense of EPDSG ownership among EG Chairs, facilitated by the organisation of:

- 1) Bilateral meetings with the Chairs of all EPDSG EGs are continued with the aim of having had such meetings with all EGs by the end of 2021. So far, seven EGs were dealt with and another four are planned for (out of 21 EGs),
- 2) An EPDSG EG Chairs meeting was organised on 25/05 with the aim of consolidating the consensus operational plan (Annex 1), as preliminary drafted at WGCHAIRS 2021. The meeting was attended by 13 EGs,
- 3) A follow-up "speed dating" meeting with the EPDSG EG Chairs is scheduled for 28/09/21 (further called, EPDSG September meeting). I expect to have 17 EGs attending the meeting. For this meeting, we agreed that (1) each EG will present itself during a pitch presentation, based on which (2) high-level topics uniting EPDSG EGs within the ICES Science context will be identified.

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

- No new EG proposals so far,
- No EGs will close so far:
  - Possibly, WGS2D (last meeting in 2019) will close because of lacking a new chair. WKCLIMAD (under EOSG) which will take place in September/October 2021 may however create a new momentum for this EG. Rather than closing the EG, it is advised to wait for the outcome of this workshop.

#### 4.4.7 Forward look

- Promotion videos for EPDSG EGs (voluntary!) will be produced in collaboration with ICES Communication services; this most likely in spring 2022,
- High-level topics as identified during the EPDSG September meeting should set the scene for the EPDSG position paper (ToR p). While these high-level topics will demonstrate the natural links between EPDSG EGs at short term, they will inform about the topics to be included in the position paper which will be further developed in 2022.

## 4.5 Ecosystem Observation SG (Joël Vigneau, term started January 2021)

### 4.5.1 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 coordinated, 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 coordination 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.

### 4.5.2 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;	<p>The new process of quarterly meeting with all EOSG/EG chairs is now formally set up, with good participation and willingness from all WG chairs to share their experience and participate in strategic discussion.</p> <p>The contribution to both science objectives and advisory needs form a recurrent part of the points in the agendas.</p>
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);	See section on Science highlights below
c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy;	EOSG is currently working on the integration of surveys at a regional scale (WKPILOT-FIRMOG 2022)
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;	WGISUR issues (see text below)
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;	EOSG EG have been entirely reorganised in 2020; it will take some time before lessons can be learned and some adjustments are proposed.

Terms of Reference	Progress
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;	A quarterly meeting gathering all EOSG/EG chairs is in place since the start of 2021 after discussions during the SG session of WGCHAIRS 2021. Only two of these meetings were held so far, with good representation of the EG chairs and a positive atmosphere for exchanging information and develop the prospective.
g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms;	Generally, the quality control of scientific information emanating from the EOSG/EGs is high, with all survey processes described in SISP and transitioning to TIMES series of technical documents.
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;	As the former SG chair reported, the communication on this topic is less than ideal. A point to discuss further.
i) Encourage EGs to come forward with proposals and initiatives for longer term science development in support of ICES advice;	This point is on the agenda of EOSG/EG quarterly meeting.
j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work;	EOSG Chair reviews all EG ToRs and provide detailed comments while also suggesting edits and changes to encourage more scientific advancement and adherence of the resolutions to ICES guidelines.
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 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;	Not occurred yet in 2021
m) To support the ICES Secretariat and/or the ACOM leadership in liaising directly with the Chairs of relevant EG when processing Special Requests;	See above
n) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.	EOSG chair attended all meetings in 2021.
o) Developing more efficient and effective data collection through better integration and evaluation of existing ecosystem monitoring information and support implementation of new methods and technologies.	Work ongoing with the development of two Workshops (i) on Pilot North Sea Fisheries Independent Regional Observation Group (WKPilot NS-FIRMOG) and (ii) on Unavoidable survey effort reduction (WKUSER2). These two groups are planned to meet in 2022. See also details in text below.
p) Collaborating with Regional Co-ordination Groups and national data collectors to evaluate and optimise survey design to better meet the needs of member countries, support advisory requests, and aid ICES science development.	This topic was in the agenda of the June 2021 EOSG quarterly meeting. The point was the follow-up and extension beyond RCG member countries of the coordination of stomach sampling in the North Sea. No major decision taken, but all EOSG/EG were made aware of the RCG initiative.

Terms of Reference	Progress
q) Developing monitoring to meet emerging data, science and advisory needs, with a regional focus on integrated ecosystem assessment and ecosystem-based management	This is part of the initiative on setting up a pilot workshop on survey integration in the North Sea (see point o)
r) Overseeing design, planning and coordination of egg and larval, acoustic and trawl surveys and development of publication of survey protocols	Yet to be discussed with relevant EG chairs.

### 4.5.3 Science highlights

The bullet points below reflect science highlights taken from the most recent e-evaluation reports. A discussion with EOSG/EG chairs will take place in the near future with the aim of enabling a more comprehensive documentation of the science initiatives and products developed in the different EGs.

- WGSINS developed a new molecular method (MALDI-TOF-MS) for improving the identification of eggs of cod-like fish and a ref. library was set up and successfully used during the 2018 Q1 IBTS,
- WGFTFB developed a database of records from compiled literature to support robust meta-analyses on the relative risk of capture and mortality of PETS by gear,
- WGIPS investigated the impact of survey speed on bias on estimates of herring biomass and found little effect between 10 and 13 knots,
- IBTSWG is currently working on a new survey gear and has set up a WK to agree on a final design for field testing; Clear progress has been made on the swept-area calculations and various indices used for assessment purpose and OSPAR indicators on fish and litter,
- WGELECTRA was successful in building collaborative research projects; a total of 4 PhD projects have been conducted on pulse trawling. WG members also actively participated to International Dialogue Meetings on the issue and to ICES ASC,
- WGISUR helped combining an American and a Canadian survey and formed the new WGNAEO with an objective of developing a regional ecosystem monitoring plan; WGISUR also initiated and supervised the CRR on Moving towards Integrated Ecosystem Monitoring (CRR No. 347).

### 4.5.4 Science to Advice activities

Most of the EGs composing EOSG collate and review ocean observations in the North Atlantic Ocean and conduct gap analyses to inform integrated ecosystem assessments and ecosystem science activities. In particular, estimates of biomass and abundance indices of marine resources (eggs, larvae, juveniles and mature fish) provide backbone of relevant stock assessments for key species at relevant WGs (Advisory Requirements) through ICES data services (DATRAS) and TAF.

Links with assessment working groups are effective through Working Group on Improving use of Survey Data for Assessment and Advice (WGISDAA), which also works together with survey working groups to provide resolution to problems associated with index calculations, survey design changes (proposed or realized) to ensure efficient and effective use of survey resources.

The variety and volume of data arising from EOSG/EGs and serving assessment and advice makes it difficult to catalogue comprehensively. One of the terms of references of the WKPILOT initiative (see further) will be to initiate such a data catalogue in a given region, in coordination with ICES data services.

#### **4.5.5 Communication with EG**

From the WGCHAIRS 2021 EOSG breakout session, it has been decided to formalize a quarterly meeting with all EOSG/EG chairs as a forum of discussion and exchange of information. Two of these quarterly meetings happened so far (April and June 2021) and one is in preparation for September. The first meetings showed an interest by all EOSG/EG chairs to communicate with EOSG chair and between them and raise salient issues to resolve from their group.

During the WGCHAIRS 2021 EOSG breakout session and the April 2021 quarterly meeting, ICES secretariat initiated direct discussion with EOSG/EG chairs to help the transition from SISP to TIMES series for the survey manuals and protocols.

The follow-up on WKREO (ICES, 2019) recommendation was initiated during the April 2021 quarterly meeting and a first proposal (see further the WKPILOT proposal) was made and approved by EOSG/EG chairs in the June quarterly meeting.

Collaborating with Regional Co-ordination Groups and national data collectors to evaluate and optimise survey design to better support advisory requests, and aid ICES science development was also discussed during the June meeting. The RCG North Sea and Eastern Arctic 2021 initiative to propose a stomach sampling plan over the next 6-year period was presented as a test to be implemented in the IBTS surveys; participants from Norway and UK agreed to follow this test in their own surveys.

#### **4.5.6 Summary of new EG proposals and EG ending**

##### **New EGs in 2021:**

- Workshop on the production of swept area estimates for all hauls in DATRAS for biodiversity assessments (WKSAB-DATRAS) met online 31 May–4 June 2021,
- Workshop on the production of annual estimates of abundance of sensitive species (WKABSENS) met online 14–18 June 2021,
- Workshop on the identification of clupeid larvae (WKIDCLUP2) met in 2020 and is currently meeting again in 2021 (30 August – 3 September); (Continuation from 2020)
- Workshop on Mackerel, Horse Mackerel and Hake Eggs Identification and Staging (WKMACHIS) proposed by WGMEGS and agreed in 2020. Expected to meet 11-15 October, format of the meeting is yet to be confirmed,
- Workshop on Adult Egg Production Methods Parameters estimation in Mackerel and Horse Mackerel (WKAPEM) proposed by WGMEGS and agreed in 2020. Expected to meet 22-26 November, format of the meeting is yet to be confirmed,
- Workshop on the Further Development of the New IBTS Gear (WKFDNG) proposed by IBTSWG. Expected to meet in September or October 2021,

##### **EG with a leap year in 2021**

- Working Group on Integrating Surveys for the Ecosystem Approach (WGISUR) will not meet in 2021 in order to give time for renewing their 3-year resolution.

### EG ending in 2021

- Workshop on the production of swept area estimates for all hauls in DATRAS for biodiversity assessments (WKSAE-DATRAS) met online 31 May–4 June 2021,
- Workshop on the production of annual estimates of abundance of sensitive species (WKABSENS) met online 14–18 June 2021,
- Workshop on the identification of clupeid larvae (WKIDCLUP2) met in 2020 and is currently meeting again in 2021 (30 August – 3 September); (Continuation from 2020)
- Workshop on Mackerel, Horse Mackerel and Hake Eggs Identification and Staging (WKMACHIS) proposed by WGMEGS and agreed in 2020. Expected to meet 11-15 October, format of the meeting is yet to be confirmed,
- Workshop on Adult Egg Production Methods Parameters estimation in Mackerel and Horse Mackerel (WKAEPM) proposed by WGMEGS and agreed in 2020. Expected to meet 22-26 November, format of the meeting is yet to be confirmed,
- Workshop on the Further Development of the New IBTS Gear (WKFDNG) proposed by IBTSWG. Expected to meet in September or October 2021,

### EG under development for 2022

- Workshop on unavoidable survey effort reduction (WKUSER2)
- Workshop on Pilot North Sea Fisheries Independent Regional Observation Group (WKPilot NS-FIRMOG)

## 4.5.7 Forward look

In general, EOSG Expert groups coordinating research surveys at sea (10 among the 15 recurrent EOSG/EG) are working well, having appropriate expertise and attendance and are mostly long-lasting mature EGs. It is important to notice this point to secure the smooth continuation of these EGs. Besides these, 5 working groups are in support and providing guidance and advice on two specifics thematic:

- Fishing gear and technology:
  - Fishing technology and fishing behavior (WGFTFB),
  - Size and Species selection (WGSSE),
  - Electrical pulse fishing and new technology for fishing gear (WGELECTRA).
- Statistical estimates and survey designs:
  - Improving use of Survey Data for Assessment and Advice (WGISDAA),
  - Integrating Surveys for the Ecosystem Approach (WGISUR).

EOSG main perspective for the future resides in two approaches: anticipate future evolution of research survey means (technical and budget wise) and shift from a type of survey coordination to a regional survey coordination. Indeed, most survey programs are at one time or another asked to make substantial short-term changes in survey effort due to budgetary constraints or need for more information. Usually these requests leave little time for planning and evaluation. There is a real need to develop methods that provide a better understanding of the different implementation options, and investigation of methods that can help to optimize available resources to maximize information obtained from surveys. Moreover, there are several ways of gaining efficiency in providing robust estimates for assessment and advice, e.g. combining surveys, dealing with gaps, modelling, simulation, tools and technology developments. A workshop (WKUSER2) following up on the WKUSER (ICES, 2020) is being prepared for 2022 to address issues detailed above.

Regarding the shift from survey coordination to regional coordination, EOSG is willing to implement the proposal developed in the Workshop on Realigning of the Ecosystem Observation Group (WKREO, 2019). A Workshop on Pilot North Sea Fisheries Independent Regional Observation Group (WKPilot NS-FIRMOG) is under preparation for a meeting planned October/November 2022 to investigate the workability of a regional group on fisheries independent data using the North Sea as a case study.

The two working groups on statistical estimates and survey designs (WGISDAA and WGISUR) achieved numerous goals in the past years and eventually had difficulties to attract new expertise. In consequence, the number of participants decreased to an unsustainable level in 2020 raising questions on the future of these working groups. EOSG needs such technical fora addressing transversal issues emanating from survey coordination groups. A reflection with SCICOM and ACOM is now engaged for developing new resolutions for the period 2022-2024 in coherence with the EOSG perspectives as detailed above.

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

### 4.6.1 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

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

Terms 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	Routine correspondence with EG chairs and with the ICES secretariat to support production of text and deliverables (e.g. production of annual reports, self-evaluations, setting new ToRs) as needed. Bi-annual meetings of HAPISG to engage with and support EG Chairs. Individual meetings with EG Chairs intermittently, as required. Circulation of HAPISG Report for information and



Terms of Reference	Progress
	feedback. Participation in Advice Drafting Groups for Ecosystem Overviews.
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)	Review of EG interim and final e-evaluations to identify science highlights and priorities. Working with ACOM vice-Chair to facilitate HAPISG contributions to Viewpoints. Working with ICES Communications to facilitate HAPISG contributions to 'In Other Words'. Regular reporting to SCICOM meetings in accordance with deadlines.
ToR c) Provide feedback to SCICOM and ACOM on research priorities and implementation of ICES strategy	Participation in all SCICOM meetings. Work ongoing to communicate priorities to HAPISG EG Chairs and facilitate implementation of ICES Strategic Plan.
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	Coordination with IEASG Chair to increase communication with, and contributions from, HAPISG EGs to Ecosystem Overviews. Participation in SIHD meeting in spring 2021. No other shortfalls identified.
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	Support to WGSHP and WGOWDF during first term (getting EGs established and developing capacity in new strategic areas). Support to merger of MCWG and WGMS to address shortfalls in expert attendance at EG meetings. Supporting coordination between WGOWDF, WGMRED, WGOE to ensure no overlap. No other gaps or overlaps identified.
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	Facilitated communication across EGs and between EGs and ICES Secretariat. Facilitated interactions between WGSHP, ICES and the International Maritime Organization (IMO), and developed written guidelines for such interactions into the future. Facilitated joint proposal from WGMHM, WGHST and WGMRED for theme session at ASC 2022. Supported communication/distribution of WGOWDG survey on impacts of wind development on fisheries resource survey efforts to other SGs
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	Encouraging publication in TIMES, Viewpoints and external peer-reviewed literature, as appropriate. Review of EG reports to ensure appropriate level of scientific (vs. administrative) content.
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	Review of EG reports to provide feedback. Encouraging submissions of relevant work to IMO. Encouraging EG Chairs to make use of ICES Communications Team for wider publicity of scientific outputs.
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 to encourage proposals for new Viewpoints, and to strengthen/propose contributions to Ecosystem Overviews.
ToR j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work	Routine review of ToRs 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 to EGs and addressed	Business as usual. Support provided as requested.

Terms of Reference	Progress
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	ACOM legacy EGs within HAPISG are dealing with special requests monitored by Advisory program on a regular basis.
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 2021 WGCHAIRS, spring and fall SCICOM meetings. Will serve as convener for contributed session at ASC 2021.

## 4.6.2 Science highlights

- MCWG and WGMS publish: Boitsov *et al.* (2020) Background concentrations of polycyclic aromatic hydrocarbons in deep core sediments from the Norwegian Sea and the Barents Sea: A proposed update of the OSPAR Commission background values for these sea areas, *Chemosphere*, 251. <https://doi.org/10.1016/j.chemosphere.2020.126344>.
- SIMWG publishes: Cadrin, S.X. 2020. Defining spatial structure for fishery stock assessment. *Fisheries Research* 221: 105397. <https://doi.org/10.1016/j.fishres.2019.105397>.
- WGBOSV publishes papers related to the experience building phase of the *International Maritime Organization's International Convention for the Control and Management of Ships' Ballast Water and Sediments*:
  - Drake *et al.* (2021) Design and installation of ballast water sample ports: Current status and implications for assessing compliance with discharge standards. *Mar. Poll. Bull.* 167: 112280. <https://doi.org/10.1016/j.marpolbul.2021.112280>.
  - Outinen *et al.* (2021) Exceptions and exemptions under the ballast water management convention – Sustainable alternatives for ballast water management? *Journal of Environmental Management* 293: 112823. <https://doi.org/10.1016/j.jenvman.2021.112823>.
- WGCEAM developed a framework for cumulative effects assessments for management (available in 2020 WGCEAM Report, and in preparation for peer reviewed publication),
- WGFBIT publishes a quantitative and mechanistic framework to assess trawling impact, and has made all code and data products leading to the assessment available on GitHub in a structured and transparent way:
  - <https://github.com/ices-eg/FBIT>.
  - Rijnsdorp *et al.* (2020) Different bottom trawl fisheries have a differential impact on the status of the North Sea seafloor habitats. *ICES J. Mar. Sci.* 77: 1772-1786. <https://doi.org/10.1093/icesjms/fsaa050>.

- WGHIST publishes study highlighting the value of employing ecosystem models for testing management scenarios, and also explores the life, legacy and lessons learned of fisheries giant Sidney Holt:
  - Dias *et al.* (2021) Contrasting fishing effort reduction and habitat connectivity as management strategies to promote alewife (*Alosa pseudoharengus*) recovery using an ecosystem model. *Limnol. Oceanogr.*  
<https://doi.org/10.1002/lno.11871>.
  - Raicevich, S. *et al.* 2021. Sidney Holt, a giant in the history of fisheries science who focused on the future: his legacy and challenges for present-day marine scientists. *ICES J. Marine Science*.  
<https://doi.org/10.1093/icesjms/fsab019>.
- WGMHM publishes: Strong, J.A. 2020. An error analysis of marine habitat mapping methods and prioritised work packages required to reduce errors and improve consistency. *Estuarine, Coastal and Shelf Science*, 240: 106684.  
<https://doi.org/10.1016/j.ecss.2020.106684>.
- WGMEDS publishes: Uhlmann, S.S., Verstockt, S., Ampe, B. 2020. Digital image analysis of flatfish bleeding injury. *Fisheries Research*, 224: 105470.  
<https://doi.org/10.1016/j.fishres.2019.105470>.
- WGMPCZM published review of evaluation approaches for marine spatial planning: Stelzenmüller *et al.* (2021) Evaluation of marine spatial planning requires fit for purpose monitoring strategies. *J. Env. Manage.*, 278: 111545.  
<https://doi.org/10.1016/j.jenvman.2020.111545>.
- WGSHIP submits viewpoint on scrubber discharge water to the International Maritime Organization (with MCWG and WGMS also contributing to the viewpoint content): Risks to the marine environment posed by scrubber water discharge and recommendations to reduce impacts. Submitted as MEPC 76/9/1, 1 March 2021,
- WGOWDF members collaborated with WGMBRED members to contribute to papers in a special issue of *Oceanography* entitled, "Special Issue on Understanding the Effects of Offshore Wind Energy Development on Fisheries."
  - Methratta *et al.* 2020. Offshore wind development in the Northeast US Shelf Large Marine Ecosystem: Ecological, human, and fishery management dimensions. *Oceanography* 33(4):16–27,  
<https://doi.org/10.5670/oceanog.2020.402>.
  - Gill *et al.* 2020. Setting the context for offshore wind development effects on fish and fisheries. *Oceanography* 33(4):118–127  
<https://doi.org/10.5670/oceanog.2020.411>.
  - Degraer *et al.* (2020). Offshore wind farm artificial reefs affect ecosystem structure and functioning: A synthesis. *Oceanography*, 33:48-57.

#### 4.6.3 Science to Advice activities

- WGBYC, WKEMBYC, WKMOMA contributions to advice on emergency bycatch mitigation measures for common dolphin in the Bay of Biscay and harbour porpoise in the Baltic Sea, as well as the likely impacts of fishery bycatch on marine mammals, seabirds and marine turtles,

- WGFBIT framework has been a key component of recent ICES advice process to the EU on a seafloor assessment process for physical loss (D6C1, D6C4) and physical disturbance (D6C2) on benthic habitats,
- WGMRED contribution to the scientific basis leading to advice on the current state and knowledge on wet renewables for OSPAR,
- WGSFD analysis of VMS data and logbook information to produce maps and working collaboratively with WGDEC to support advice activities on Vulnerable Marine Ecosystems (VMEs),
- WKPHM selected 48 criteria to evaluate predictive habitat models to help determine which models could be used in ICES advice on VMEs,
- Joint ICES/ IUCN-CEM FEG Workshop on Testing OECM Practices and Strategies (WKTOPS) investigated how to evaluate areas with spatial fisheries measures in place as Other Effective Area-based Conservation Measures (OECMs),
- Individually, members of WGVHES are advising national governments (France, Denmark, USA) on application of habitat considerations in fisheries management.

#### 4.6.4 Communication with EG

Routine email communication by HAPISG Chair with EG Chairs to solicit contributions to Ecosystem Overviews, Viewpoints, Science Highlights, and 'In Other Words', as well as to identify/facilitate linkages between EGs under HAPISG as well as those under other steering groups. The EGs under HAPI have been actively working and achieving their proposed ToRs. There are no major issues on the work identified and delivered by the EGs, although there are delays with the submission of self-evaluations and final reports by some EGs.

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

- Merger of Marine Chemistry Working Group (MCWG) and Working Group on Marine Sediments (WGMS) – retaining the name MCWG,
- Refresh of Working Group on Offshore Renewable Energy (WGOE; previously Working Group on Marine Renewable Energy WGMRE),
- Workshop on Transboundary issues in Marine Spatial Planning (WKTBMIP),
- A series of two Workshops to develop a suite of management options to reduce the impacts of bottom fishing on seabed habitats and undertake analysis of the trade-offs between overall benefit to seabed habitats and loss of fisheries revenue/contribution margin for these options (WKTRADE3),
- Workshop on the Use of Predictive Habitat Models in ICES Advice (WKPHM),
- Joint ICES/IUCN-CEM FEG Workshop on Testing OECM Practices and Strategies (WKTOPS),
- Workshop on the Socio-economic implications of offshore wind on Fishing Communities (WKSEIOWFC),
- Workshop on estimation of MOrtality of Marine MAMmals due to Bycatch (WKMOMA) [yet to be held],
- Workshop on Geo-Spatial Data for Small-Scale Fisheries (WKSSFGE0) [yet to be held],
- Joint ICES/NMTT Workshop exploring the establishment of a Nordic Climate Change Forum for Fisheries and Aquaculture (WKNCCFFA) [yet to be held],

#### 4.6.5 Forward look

- WGBEC working on an ICES Techniques in Marine Environmental Sciences manuscript on “Nuclear abnormalities in mussel haemocytes and fish erythrocytes”, due in September 2021,
- WGBOSV and WGITMO to convene a workshop on molecular tools for biological invasions at the 11th International Conference on Marine Bioinvasions (ICMB XI <https://www.marinebioinvasions.info/>). Initially, the conference was to be held in 2021, but due to the COVID-19 pandemic, the conference was delayed until 2022,
- Onboarding and handover of duties to incoming HAPISG Chair,
- ACTIONS REQUESTED:
  - Current HAPISG Chair has been serving as ICES Administrator with respect to participation at IMO meetings – it is recommended to transfer this duty to ICES Secretariat by December 2021,
  - Explore areas of collaboration and synergy with IPBES to increase coverage of marine and freshwater dimensions in international research activities, such as climate change and invasive alien species assessments.

### 4.7 Integrated Ecosystem Assessments SG (Debbi Pedreschi, term started January 2021)

#### 4.7.1 Introduction

Integrated Ecosystem Assessments synthesise and evaluate information on physical, chemical, ecological, human and environmental process affecting ecosystems.

This 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, Greenland, Northern Bering-Chukchi, northwest Atlantic and Norwegian seas, the Azores, Bay of Biscay, and Iberian Coast,
- 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.

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

Terms of Reference are on track. Outcomes as a result of the Terms of Reference are reported below.

### 4.7.3 Science highlights

#### 2021 Publications

- Bentley, J.W., Lundy, M.G., Howell, D., Beggs, S.E., Bundy, A., De Castro, F., Fox, C.J., Heymans, J.J., Lynam, C.P., Pedreschi, D. and Schuchert, P., 2021. Refining fisheries advice with stock-specific ecosystem information. *Frontiers in Marine Science*, 8, p.346. <https://doi.org/10.3389/fmars.2021.602072> (WGEAWESS, WKIrish),
- Carvalho-Souza GF, Torres MA, Farias C, Acosta JJ, Tornero J, Sobrino I, Ramos F, Llope M (2021) International politics must be considered together with climate and fisheries regulation as a driver of marine ecosystems *Global Env Change*. 69, 102288. <https://doi.org/10.1016/j.gloenvcha.2021.102288> (WGEAWESS),
- Howell, D., Schueller, A.M., Bentley, J.W., Buchheister, A., Chagaris, D., Cieri, M., Drew, K., *et al.* 2021. Combining ecosystem and single-species modeling to provide ecosystem-based fisheries management advice within current management systems. *Frontiers in Marine Science* 7. <https://doi.org/10.3389/fmars.2020.607831> (WGEAWESS, WKIRISH),
- Pastor, A., Larsen, J., Hansen, F.T., Simon, A., Bierne, N., Maar, M. 2021. Agent-based modeling and genetics reveal the limfjorden as a well-connected system for mussel larvae. *Marine Ecology Progress Series DynMod*. <https://doi.org/10.3354/meps13559> (WGIPEM),
- Skogen, M.D., Ji, R., Akimova, A., Daewel, U., Hansen, C., Hjøllø, S.S., van Leeuwen, S.M., *et al.* 2021. Disclosing the truth: Are models better than observations? *Marine Ecology Progress Series DynMod*. <https://doi.org/10.3354/meps13574> (WGIPEM),
- van de Wolfshaar, K.E., Barbut, L., Lacroix, G. 2021. From spawning to first-year recruitment: The fate of juvenile sole growth and survival under future climate conditions in the north sea. *ICES Journal of Marine Science*. <https://doi.org/10.1093/icesjms/fsab025> (WGIPEM).

#### Additional Highlights

- WGINOSE dynamic mapping of activity and pressure layers: a total of 10 activity/data layers are now mapped and the area of intersection by each activity footprint and individual strata has been calculated. This enables the spatial relationships between multiple pressures/activities and the North Sea assessment strata to be assessed. A dynamic map of the layers can be found and tables of activity strata overlap in km<sup>2</sup> can be found [here](#),
- WGIPEM initiated a special issue of *Marine Ecosystem Progress Series* (estimated for fall 2021 publication) which will focus exclusively on dynamic modelling and includes multiple studies from the group,
- WGMARS systematic review protocol for their behavioural economics work has been accepted for publication in *PLOS One*,
- WGSOCIAL participation in ICES reflections: Understanding the impacts of the COVID-19 pandemic on fisheries, markets, communities, and management [webinar](#),
- WGI BAR annual report “[The state and trends of the Barents Sea ecosystem](#)” has been updated. This report provides ecosystem assessment for ICES WGs on stock assessments, Arctic Council, the Joint Russian-Norwegian Fisheries Commission, the Joint Russian-Norwegian Environmental Commission, the Norwegian Ministry of

Climate and Environment and the Ministry of Natural Resources and Environment of the Russian Federation,

- WGINOR produced Norwegian Sea ecosystem status summary as an annex to their [annual report](#).
- Cross-group (WGEAWESS, WGMARS, WGCOMEDA) funding was received from EuroMarine for a joint ICES-EuroMarine workshop on conceptual modelling ([WKCCMM](#)),
- WGBESEO hosted a panel at the online MARE 2021 conference in June: [“Informing trade-offs for a Sustainable Blue Growth”](#). The panel was run as a workshop and after three kick-off presentations from WGBESEO members, breakout groups answered the question: *What do authorities need to know when taking a decision on conflicting ESEI objectives?* A report on the findings is being prepared at the moment.

#### 4.7.4 Science to Advice activities

- IEASG groups have actively contributed to the development of the Ecosystem Overviews (EOs). WGIEASGS produced the Greenland Sea EO on 2020. WGINOR updated the Norwegian Sea EO in 2021. WGEAWESS updated the Bay of Biscay/Iberian Coast EO in 2020 and is currently updating the Celtic Sea EO for publication later this year. IEASG Chair has participated in ADGECO. The North Sea and Barents Sea are planned for 2022 (subject to change).
- IEASG Chair and WGEAWESS, WGSOCIAL, WGECON, along with non-IEASG groups WGDEC and WKEUVME have all been involved in the first two proposals to go through the ‘Pipeline’ process. Both were successful and will be included in this year’s Celtic Seas Ecosystem Overview. The proposals include maps and description of VMEs within the ecoregion, and a map and description of fishing communities.
- Numerous members of WGEAWESS have participated in the [WKIrish](#) process which has proposed Feco as a mechanism for incorporating ecosystem advice into the single species stock advice. The continue to support and follow the process, and have provided presentations to the ACOM/SCICOM EBM subgroup.
- There was a high turnout of IEASG EG Chairs and members at the [WKTRANSPARENT](#) workshop which was focused on the guidelines relating to developing the EOs. The IEASG Chair co-chaired the workshop.
- IEASG Chair has co-chaired the ACOM/SCICOIM EBM subgroup along with Marie-Julie Roux.
- Two workshops key to ICES advice have taken/ are taking place under IEASG: the Workshop on Stakeholder Engagement Strategy ([WKSHOES](#)) and the Workshop on pathways to climate-aware advice ([WKCLIMAD](#)). The upcoming Joint ICES/EUROMARINE Workshop on Common Conceptual Mapping Methodologies ([WKCCMM](#)) may also have implications for advice via the ICES ecosystem overviews and IEA groups.

#### 4.7.5 Communication with EG

The EGs under IEASG have been actively working and achieving their proposed ToRs. There are no major issues on the work identified and delivered by the EGs, although there are delays with the submission of self-evaluations and final reports by some EGs. Groups have been contacted where relevant.



Communication has been maintained by email communication and quarterly meetings. Ad hoc emails are sent with updates when relevant/required, and an 'open door' policy is maintained by the Chair in relation to the groups. A number of EG Chairs have been in touch with specific issues, and discussions relating to developing their ToRs. The IEASG Chair has also attended a number of EG meetings both within the IEASG and under other SGs to present on IEA in ICES and the role of the Ecosystem Overviews.

The first meeting was held in January at WGCHAIRS with 21 participants. The new IEASG Chair introduced herself and solicited feedback on the expectations for the group moving forward, and preferred modes of communication. This meeting has and will be used to direct efforts and measure progress within the IEASG (see Figure 4.2).



Figure 4.2. Responses from the 21 participants at the IEASG breakout session at WGCHAIRS 2021 to the question 'What would you like to see the IEASG achieve/focus on in the next 3 years?'.

In May, 25 participants attended an IEASG knowledge exchange event featuring presentations from the SIHD groups which included presentations from the SIHD themselves, WGSOCIAL, WGECON and WGBESEO, followed by a general group discussion. These events facilitate alignment of ToRs between groups and identification of collaborative opportunities, with invitations between groups being extended.

Both meetings also provided opportunities for updates from SCICOM, secretariat, development on EO guidelines, gender and diversity guidelines, early career researcher initiatives, etc. The next meeting and knowledge exchange is planned for 6 October, with presentations from WGIPEM and WGICA.

It should be noted that many groups have turned to using intersessional meetings as a way forward through the Covid-19 crisis, and found it a productive way of maintaining momentum in a way that is not possible through week-long online meetings. While useful, it does mean that the number of meetings has overall increased greatly, resulting in additional stress in some areas/groups.

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

None (only closure of WKs).

#### 4.7.7 Forward look (including actions for SG and SCICOM/ ACOM)

- Many groups feel overwhelmed – such broad scope for IEA. Discussions on how best to deal with this, via improved integration and collaboration between groups, managing the number of meetings and workshops, and through the use of sub-group task groups



are ongoing. In some cases we may need to consider restructuring groups. In others the challenge is getting leaders for the tasks.

- IEASG Chair is a member of the newly established Ecosystem Overview Operational (EOOP) group which has been established to improve communication and best practice around the Ecosystem Overviews. The group also comprises of members of the Secretariat and ACOM. The group is currently working with the Data Center on piloting the [Data Profiling Tool \(DPT\)](#). To date, all requested DPT forms have been filled out and returned meaning that this year (2021) should see the publication of the first [FAIR principle](#) compliant Ecosystem Overview (Celtic Seas). Some joint IEA groups have experienced issues in relation to the roles held by the chairs of each group. The higher sensitivity/ political /international nature of these groups often adds additional complexity to their EG & IEA work.
- IEASG Chair will continue to organise meetings and knowledge exchange events within the IEASG, and between IEASG and other SGs to improve understanding and collaboration. Cross-group case studies have been highlighted as a useful tool for rapid progression and will continue to be used moving forward.
- Three IEASG related sessions have been submitted for the 2022 ICES ASC.
- Numerous workshops have been proposed under IEASG over the next year (e.g. on ecosystem services and foodwebs in the EO's, continuing on from [WKEWIEA](#), possible follow-up to [WKCONSERVE](#), a participatory modelling workshop, and one around indigenous knowledge). Work is ongoing to refine details and space them appropriately, likely over 2022 and 2023.
- IEASG will continue to contribute to cross-cutting topics such as the development of the ICES stakeholder strategy (following on from [WKSHOES](#)) and the EBM framework.
- IEASG will continue to improve on harmonisation of cross-group methodologies, through initiatives like [WKCCMM](#), and through the continuation/re-establishment of [WKEWIEA](#), [WKINTRA](#), etc. Training following on from WKTRANSPARENT will be arranged after discussion with the IEASG at the October 6th meeting.
- IEASG chair will continue to work to identify and support groups to propose new topics into the ICES advice pipeline, and to make their EOs [FAIR](#) compliant.
- IEASG will continue to work to improve knowledge, practice and awareness in relation to diversity, gender equality and integration and support of early career researchers within our groups.

## 4.8 Fisheries Resources SG (Patrick Lynch, Chair, term started February 2019)

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.

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

The FRSG continues to adhere to, and make progress in accordance with its Terms of Reference (ToR). In addition to the ToR, the Expert Groups (EGs) within FRSG are also guided by the 10 Principles of ICES Advice and are directly responsive to many of ICES's standing strategic and guidance documents. While the ToR were generally met, the COVID-19 disruption continues to challenge the Steering Group and all activities therein, including the ability for EGs to meet their individual ToR. Aspects of the FRSG ToR that relate to the proposal and development of new strategic activities and initiatives are particularly challenged because of current strain on the advisory system overall. While challenged, the stock assessment groups within FRSG convened as usual and met the demand for the provision of advice. The ability to attend to special requests was certainly limited by the COVID-19 disruption, but some EGs were responsive to special requests when possible. Overall, the FRSG was able to fulfill its responsibilities in the past year, and the Group is optimistic that 2022 will provide an opportunity to be more forward thinking in addition to meeting the basic advisory needs.

#### 4.8.2 Science Highlights

It is worth highlighting that the groups in FRSG successfully conducted and developed the science needed to support the advisory process, despite major challenges imposed by the COVID-19 pandemic. In addition to supporting the development of recurring advice, the Group conducted and participated in a number of additional scientific activities.

There were numerous benchmark and interbenchmark stock assessment workshops held over the past year. One to highlight is the Benchmark Workshop on the development of MSY advice for category 3 stocks using Surplus Production Models in Continuous Time (WKMSYSPiCT). This workshop evaluated 13 category 3 stocks across four EGs to determine whether MSY advice could be provided using a surplus production model. The approach was successful for some, but not all stocks, and the workshop offered scientific recommendations related to data analysis and processing, and understanding various sources of bias within the data. These recommendations are well-suited for the attention of SCICOM.

In addition to benchmarks and interbenchmarks, the FRSG also provided oversight for a number of science-focused workshops. A selection of those workshops is highlighted as follows:

- Workshop on the future of eel advice (WKFEA). This workshop highlighted several science needs for managing European eel, such as the development of spatial stock assessments, better data to conduct stock analysis, and consideration of a whole-ecosystem approach.
- Workshop of Fisheries Management Reference Points in a Changing Environment (WKRPCChange). This was a very timely workshop given that changing environments are increasingly challenging the reliability of advice, particularly when stationarity assumptions are made. The conclusions made during this workshop provide strong justification for coordination between FRSG and other ICES Steering Groups. For instance, there is a need to conduct evaluations at the stock level to determine if there are key drivers in the system that are changing productivity, and when the evidence is strong, these changes should be accounted for when setting reference points.

### 4.8.3 Science to Advice

As noted throughout, nearly all FRSG groups conduct science that forms the basis for the advice. The exception is the Working Group on Transparent Assessment Framework Governance (WGTAFGOV). This body provides governance of an online, and open resource for ICES stock assessments. The Transparent Assessment Framework (TAF) is a relatively new tool for storing and providing public access to stock assessments, and use had been growing over the past few years. Unfortunately, due to the COVID-19 disruption, time was very limited in EG meetings such that assessment authors were not able to input their assessment analyses in TAF to the degree that was done in 2020 and prior. WGTAFGOV is exploring ways to reengage the community in using TAF.

As emphasized previously, FRSG groups successfully met the advisory needs and no advice or assessment groups were cancelled or postponed in 2020 through the first part of 2021. This is certainly a notable accomplishment given the need to work entirely online, but in addition to the inconvenience, the COVID-19 disruption is affecting the data collection process, which may have downstream effects on the quality of future advice. Catch data reporting has been compromised during the pandemic and a number of surveys were cancelled. While the advice is affected when data are compromised, the impacts may be minimal if it's a short-term problem. However, if issues caused by the pandemic continue over a longer term, the performance of stock assessments and quality of resulting advice may be seriously affected. Thus, there is a high priority to evaluate and mitigate effects, such as considered during the Workshop of Unavoidable Survey Effort Reduction (WKUSER)

### 4.8.4 Communication with EG

The EGs remain very active in conducting stock assessments and developing draft advice for ICES/ACOM. Communication within the entire Steering Group occurs a few times per year, with standing meetings at WGCHAIRS and typically at the ICES ASC with additional remote meetings occurring as needed. This past year, the FRSG met remotely at the WGCHAIRS meeting on 28 January, covering topics including diversity among FRSG and EGs, the advice process under COVID-19 pressures, and strategic topics for future meetings. There was an additional FRSG meeting on 11 February that focused specifically on the advice season. Topics discussed included the format of the advice sheets, RDBES, COVID-19 disruptions, survey naming consistency, QA/QC, and the Group received an update on the productivity audit, which is tracking how ecosystem dynamics are being accounted for in the stock assessment process. Given that the ASC is a virtual meeting, the Group decided to postpone the usual meeting that occurs around the ASC to 8 November to avoid "meeting fatigue." There is regular communication between the FRSG Chair and EG Chairs to review TOR and other activities/initiatives within each EG. The EGs themselves follow fairly prescribed operating procedures as they provide directly to the ICES annual advisory process. Overall, concerns and recommendations are communicated to ACOM, SCICOM, and the ICES community.

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

- Working Group on American Eel – pending approval.

### 4.8.6 Forward Look

Given its scope of work, the FRSG is well-positioned to coordinate on strategic and research directions that are advice-relevant. The group is aiming to hold a strategic visioning meeting on

8 November 2021 that will explore potential new directions, initiatives, and methods intended to improve stock assessments and their support for ICES advice. Any activities or initiatives that are a result of this meeting are ripe for coordination with SCICOM and other ICES Steering Groups, particularly if there are recommendations that align with EBFM or EBM objectives.

The two forthcoming workshops on reference points (WKREF1 and WKREF2) are of particular interest, and FRSG members will certainly engage in those workshops. Additionally, the SG is sponsoring and coordinating a session at the 2021 Annual Science Conference related to structural uncertainty in fishery stock assessments. Finally, the SG remains active in supporting the ICES benchmark prioritisation process.

## 5 Operational Groups

### 5.1 Data and Information Group (DIG)

#### 5.1.1 Summary

This document outlines key activities for the Data and Information Group (DIG) and ICES Data Centre between the March 2021 and September 2021 Science Committee (SCICOM) meetings with emphasis on the DIG meeting 18–21 May 2021.

- The data licencing and ICES Data Policy updates are tabled for approval for the Council meeting in October 2021.
- A data profiling tool has been developed and is now being used as part of the decision process for requests to ICES for hosting datasets and services.
- The accreditation of the ICES Data Center as a Core Trust Seal (CTS) data center identified the lack of a coherent data preservation plan. DIG has started the process of creating such a plan and a first draft is scheduled for the May 2022 DIG meeting.
- From the 1st of July 2021 data delivery of oceanographic data to ICES has to be made using one of two formats where one of them is the new Oceanographic Data format. This date marks the end of a time where data delivery to ICES could be made in any documented format.
- A new version of the ICES Data Portal will be made available for the public by the end of September. Beta testing of the new portal was performed by DIG during the annual meeting.
- The ToR's for DIG has been revised to reflect the collaboration with DSTSG.

#### 5.1.2 Data Licencing and ICES Data Policy

Endorsed by SCICOM in March 2021 and will now be tabled for approval for ICES Council meeting October 2021, and should come into effect pending approval after Council meeting.

<https://community.ices.dk/Committees/SCICOM/2021%20March/01.%20Working%20documents/Doc%2019.3-1%20ICES%20Data%20Policy%20and%20Licensing.pdf>

#### 5.1.3 Hosting datasets and visualisations

At the March 2020 SCICOM meeting DIG was tasked with developing clear guidelines and rules for hosting of ad-hoc datasets and visualisations as well as bringing clarity about review of code and methods for these types of datasets. The ACOM Chair has also requested this to also include considering mechanisms in a wider context that could include datasets that cannot currently be hosted on an existing ICES system. This topic continued in the 2021 meeting, and has grown to include standard ICES products, such as Ecosystem and Fisheries overviews.

#### 5.1.4 Data Profiling Tool (DPT)

A Data Profiling Tool (<https://www.ices.dk/data/tools/Pages/Data-profiler.aspx>) has been developed to give a standardized way to gather information about datasets and visualisations being requested to maintain/host/review by ICES Data Centre. The tool will function as a set of questions that the person or group who wishes to either evaluate their data/data products against a set of standards or use the services of the ICES Data Centre will need to answer about the

dataset/product. The results from this tool will be used in the decision-making process needed for these requests.

An outline for the information needs to be collected in such a tool has been developed and was refined during the DIG meeting and can be seen in the figure on the next page. The data profiling tool functions as a schematic and as a questionnaire, which is now in place and available on the landing page for the data profiling tool. There are now a number of groups that have approached as test cases, including the Ecosystem overviews under IEASG, Aquaculture overviews and others.

The next steps for DIG to consider are how to use this tool, in dialogue with the groups, to develop a clear process as to how these described data/data products are relatively prioritised, documented or supported through the ICES infrastructure.

### **5.1.5 Data preservation plan**

Through the process of accreditation of the ICES Data Centre as a Core Trust Seal (CTS) data center it was pointed out that ICES lacks a coherent data preservation plan. A data preservation plan outlines a data custodian's responsibility towards data preservation specified in documentation, including custody transfer, submission information standards, and archival information standards. A lot of the information needed for a data preservation plan already exists at ICES, but they are spread over many different sources, which makes it difficult to identify potential missing documentation.

DIG has been tasked with creating such a data preservation plan and the first steps to draft a coherent data preservation plan was taken during this year meeting where an initial outline for such a plan was drafted.

The timeline for finalizing the data preservation plan well in advance of the renewal of the CTS accreditation within three years has been created. The first step will be to have a draft of the data preservation plan ready for review by all of DIG by next year's meeting in May 2022. A final version of the data preservation plan should be ready by DIG's meeting in May 2023.

### **5.1.6 Oceanographic format change**

The ICES Oceanographic data submission format has, as of July 2021, become one of two supported data submission formats for oceanographic data. This date marks the end of a time where data delivery to ICES could be made in any documented format.

More information about the format can be found on the Oceanographic data submission page available at <https://www.ices.dk/data/data-portals/Pages/ocean-submit.aspx>.

### **5.1.7 ICES Data portal**

The new ICES Data Portal <https://data.ices.dk> will replace the existing ecosystem data portal by the end of September 2021. By using the feedback from DIG member in 2020, many improvements especially in GUI has been implemented. Easier drilled down in topics and showing summary data layer and also search data criteria are some of the new features.

## 5.2 Training Group (TG)

Training Group: Jan Jaap Poos (Chair), Steven Cadrin, Martin Pastoors, Jörn Schmidt, Rafael González-Quirós, Daniel Duplisea, Pieter Jan Schon

Following the end of Jan Jaap Poos' term as Chair of the training group, a new Chair has been identified. Anders Nielsen (Denmark) will take the Chairmanship from January 2022.

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.

### 5.2.1 ICES training courses 2021

In 2021, the ICES Training offered the following courses:

- Analyses of VMS data for ecosystem and economic impacts of fisheries, February 2021, online
- Scientific writing and publishing for marine scientists, April 2021, online
- Training course on Management Strategy Evaluation, August 2021, online
- Introduction to stock assessment, September 2021, online
- Introduction to tag-recapture campaigns, October 2021, online

Courses already planned for 2022

- Reproducible Science, Best Practices and the ICES Transparent Assessment, February 2022, online
- Introduction to Stock Assessment, February 2022, online
- Training course on the design and interpretation of egg surveys, dates TBC.

The training course group are committed to continuing contributions to WKEDU, building capacity to meet future ICES advisory needs through education.

Reports from all previous courses are available online. They can be found at (<https://www.ices.dk/events/Training/Pages/Previous-reports.aspx>).

### 5.2.2 Contract update for online training courses regarding recording policies

To tackle privacy concerns and course material ownership disputes, the contract with instructors was amended with the text below:

“Online training: If necessary, recordings of the live lectures and other sessions of the course can be made to accommodate participants joining from different time zones, or in other ways unable to join for the live sessions. After the training course has ended the recordings will be stored on ICES internal hard drives or SharePoint site. The recording will be deleted after 2 weeks from the final day of the training course. ICES staff, training course instructors and participants presenting material in a training course must ensure that they do not infringe third-party copyrights. Training course recordings will not be used by ICES, outside of the stated purpose to facilitate the participation of students across time zones, unless specifically agreed upon. If you are given

access to the recording, you must not make duplicates. You must not download any recordings to your personal device or to a cloud storage facility.”

### **5.2.3 Develop and run an engaging training programme**

Within the ICES Joint work Plan 2019-2024 the training group is tasked to evaluate, develop, and implement a strategy for the ICES Training Programme, including assessment of training needs, online training courses, considerations of alternative training initiatives (courses arranged by Ph.D/Post.doc), and exploring options for accreditation of the training course. As a first step, we evaluated the impact of the courses that were held over the last 5 years and soliciting views on the future direction of the training courses. This direction will include the content of the courses but also the form of the courses. The latter is especially relevant in the light of the current COVID-19 pandemic, but also the initiatives to reduce the carbon footprint of the work within the ICES community. Once the views of the current program and the direction of the program within ICES is polled, the results can be used to develop and implement a strategy in 2021 and 2022. The outcomes of the survey can be found under the background documents.

### **5.2.4 Participant selection for TG courses**

Currently, when registration for courses opens, there are no restrictions for potential participants to register. The registration date is registered for all participants. For most courses, the participant limit that is set for the course to prevent too many participants is not met. For some courses, however, we have reached the maximum number of participants, and participants were put on a waiting list. The selection of participants for the course was based on registration date: those who registered first were allowed to take part in the course.

This approach of “first come, first served” has several advantages: it keeps the administration burden for the secretariat and the TG low. The drawback of the approach is that there is limited steering in who will join in case of over subscription. This means that e.g. participants from ICES countries do not have precedence over participants from other countries. Having said that: there is already an incentive structure for this particular example in place: participants from ICES countries pay lower fees than others. Another example of situations where more steering could be beneficial is where low numbers of participants from a specific ICES country are turned down, whereas a large number of other participants from a single country are all accepted based on the registration date.

While these are drawbacks of the current system of selection by registration date, we feel that the benefits (of being simple and reducing administration) outweigh these drawbacks, and we propose to keep the current system. Having said that, we do suggest to make sure that in the future, participants that were not selected are explicitly notified when a course is rerun. This will ensure that those participants are given the opportunity to register early.

## **5.3 Science Impact and Publication Group (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, and has eight external members and four members from the ICES Secretariat (ICES Editor, Editorial Associate, Head of ICES Data, and Web analyst).



### 5.3.1 SIPG status update

#### 5.3.1.1 New ICES Library (ToR a and b)

At the 2020 SCICOM meeting, SCICOM approved that ICES use a commercial repository to host the ICES library. An SIPG subgroup carried out a detailed evaluation of five repository options, and determined that Figshare most adequately met our needs. Since January 2021, SIPG and the ICES Editorial Office have been working closely with Figshare to develop the new ICES library platform, establish the hierarchy and organizational structure for our publications in the new library, and prepare the existing library for migration. Figshare has so far proven to be a very competent, responsive, and reliable partner. The soft-launch of the new ICES library is currently anticipated for October 2021, with the full release occurring shortly after. A full presentation of the new library, including all new and improved features, will be carried out after the launch.

#### 5.3.1.2 Digitizing ICES historical publications (ToR b)

ICES has been publishing reports, advice, and scientific outputs since the 1900s. However, we currently only have a fraction of these publications digitised and openly available to the public on our online library. SIPG has compiled a list of all ICES publications we have a record of, resulting in a list of 42 publication series (the oldest of which started in 1900), and 34 publications out of series. The publications have been priority ranked, and ICES Editorial office commenced in January 2021 the work of digitizing them and adding them to the ICES online library. So far, the archive of the Cooperative Research Reports series (CRR) has been digitized in its entirety, in time for the 60th anniversary of the series (see newspiece [here](#)).

Through SCICOM, SIPG is enquiring whether member country libraries have digitized copies of ICES publications which could be made accessible to ICES.

#### 5.3.1.3 Follow-up on other actions from 2020 SCICOM (ToR a, b, c, and e)

**Licensing and disclaimers** - During the 2020 SCICOM meeting, SCICOM approved that ICES should: (a) adopt a Creative Commons CC-BY 4.0 licence for all ICES publications; and (b) adapt a new general disclaimer that fits publication series with invited expert authors ("This document has been produced under the auspices of an ICES Expert Group or Committee. The contents therein do not necessarily represent the view of the Council"). Both measures were successfully implemented in January 2021, and are now standard across our publications.

**New ICES Business Reports Series** - The ICES Business Report Series hosts reports from Expert Groups and ICES committees that produce reports with an ICES procedural, rather than a scientific, focus, and which do not fit under the umbrella of ICES Scientific Reports. During the 2020 SCICOM, it was approved that this series should be issued a DOI and ISSN numbers, and that the series could use different disclaimers depending on the content type. The measures have been successfully implemented (though there have been some delays with the ISSN number, due to COVID-related issues), and the new series launched in 2021.

### 5.3.2 Review of ICES peer-reviewed publications

#### 5.3.2.1 General updates

(i) The ICES publications website has now been almost fully updated and includes an updated summary on the scope and purpose of our main publication series, and links to relevant guidance, among other information.

(ii) ICES Editorial Office noted that in 2020 there was severe gender imbalance in potential peer-reviewers suggested by authors to review CRR or TIMES manuscripts – only 3 out of 33 were women. A sentence to encourage considering gender, geographic, and career stage diversity will be added to the e-mails sent to request potential reviewers names.

(iii) The CRR/TIMES Guidelines for authors have been updated (here) to clarify how to submit a resolution in accordance to the new resolution template, along with a number of smaller changes. In addition, a version history and record of changes is now included.

### **5.3.2.2 Publication overview**

#### **Cooperative research reports (CRR)**

CRR published since 2020 SCICOM Meeting: 0; CRR reports in publication process (in preparation or under review): 8; cancelled CRR since the 2020 SCICOM meeting: 0; proposed CRR with resolutions in preparation: 7.

The CRR series has had a low publication rate in 2020 and, so far, in 2021. However, this is circumstantial, due partly to high number of very large and/or complex CRR currently undergoing review. The balance of reports in preparation and proposed remains healthy.

#### **Techniques in Marine Environmental Sciences (TIMES)**

TIMES published since 2020 SCICOM Meeting: 2; TIMES reports in publication process (in preparation or under review): 2; cancelled TIMES since the 2020 SCICOM meeting: 0; proposed TIMES with resolutions in preparation: 7. Published TIMES since the 2020 SCICOM meeting:

No. 65 – ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., and Wieland, K. May 2021. 44 pp. C. Res. 2020/PUB/EOSG02. <https://doi.org/10.17895/ices.pub.8014>.

No. 64 – ICES Survey Protocols – Manual for acoustic surveys coordinated under ICES Working Group on Acoustic and Egg Surveys for Small Pelagic Fish (WGACEGG). Doray, M., Boyra, G., and van der Kooij, J. (Eds.). April 2021. 104 pp. C. Res. 2019/PUB/EOSG04. <https://doi.org/10.17895/ices.pub.7462>.

#### **ID Leaflets for Plankton**

Leaflets published since 2020 SCICOM Meeting: 4; Leaflets in process (in preparation or under review): 8. Published Plankton ID leaflets since the 2020 SCICOM meeting:

No.195 – Temora Baird, 1850. Di Capua, I. April 2021. 17 pp.

No.194 – Acartiidae Sars G.O, 1903. Belmonte, G. February 2021. 29pp

No.193 – Chaetognatha. Pierrot-Bults, A.C. November 2020. 16pp.

#### **ID Leaflets for Diseases in Fish and Shellfish**

Leaflets published since 2020 SCICOM Meeting: 1. Leaflets in process (in preparation or under review): 10. Published Disease ID leaflets since the 2020 SCICOM meeting:

No. 72 – Coccidiosis of the liver of the blue whiting. Xavier, R. and Saraiva, A. June 2021. 7 pp.

## 6 Strategic Initiatives

### 6.1 Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME)

SICCME continues to struggle to establish momentum and build a community in the face of constant upheaval. The onset of the global COVID-19 pandemic has challenged the entire ICES community, both for the working groups themselves and also for the individual members: dealing with these changes has limited the available energy of all to consider over-arching, broader scale initiatives such as SICCME. To compound these challenges further, both ICES chairs of SICCME will be stepping down prematurely at the end of the term: Christian Möllmann due to other work commitments and Mark Payne due to a new position in terrestrial climate science. The simultaneous timing of these changes is unfortunate and will make the role of the incoming chairs even more challenging.

Nevertheless, the ICES climate change community has adapted well to the new working methods enforced by the global pandemic with two new working groups being established and starting work entirely remotely. The general change in working practice, from in person to online, should in principle work to the benefit of large initiatives such as SICCME, which are generally challenged by getting people together in one place at one time. It is hoped that these changes can therefore be exploited by the incoming chairs in the future.

#### 6.1.1 SICCME leadership

SICCME Chairs, Mark Payne and Christian Möllmann, are ending their terms as the ICES Chairs of SICCME. They will be replaced by Alan Baudron (Marine Scotland, UK) and Katherine Mills (GMRI, USA).

#### 6.1.2 Status of SICCME relevant ICES working groups

- 1) The **Working Group on Integrative Physical-biological and Ecosystem Modelling (WGIPEM)** has completed its most recent three-year TOR period. Highlights of this period include the initiation of a special issue in the journal *Marine Ecological Progress Series* to be published in Autumn 2021 focussing on dynamic modelling. Two joint publications were also developed. The working group will also host theme session O at this year's ASC. Updated TORs for the period 2022-24 have been approved, with Solfrid Sætre Hjøllø (Norway), Sonja van Leeuwen (Netherlands) and Ute Daewel (Germany) as chairs. The next meeting is planned for March/April 2022, at the Royal Belgian Institute of Natural Sciences, Brussels.
- 2) The joint **ICES/PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields (WGGRAFY)**, chaired by Tara Marshall (UK), Paul Spencer (USA), Alan Baudron (UK), Shin-ichi Ito (Japan) and John Morrongiello (Australia) was established and had its first series of online meetings during 2020 and 2021. The group brings together worldwide scientific expertise to assess the impact of warming on fish growth, and the implications for fisheries yield, on a global scale. Work on evaluating and developing statistical models growth models has been initiated and is starting to show results. Analyses of long-term growth patterns across the North Sea and North Pacific ecosystems have found significant temporal trends in size at age across 15 species. Work on

the assessment and forecasting of impacts of warming and temperature-dependent growth on commercial fisheries yields has also made good progress, while efforts to source additional global length-at-age datasets have yielded success in Japan and SE Australia. The next meeting is on 7<sup>th</sup> September 2021 and will be held online.

- 3) The **Workshop on Pathways to Climate-aware Advice (WKCLIMAD)**, chaired by Mark Dickey-Collas (Denmark), Kirstin Holsman (USA), Michael Rust (USA) was established and held its first online meeting during May 2021. The workshop aims to address how the short-, medium- and long-term influences of climate change on aquaculture, fisheries, and ecosystems be accounted for in ICES Advice. Preparations for WKCLIMAD are progressing well. The participants have engaged already, providing examples of impact of climate change on fisheries and aquaculture. A Delphi-method questionnaire is being sent out asking participants to rate the magnitude and likelihood of impacts of climate change. This will be used to run the workshop as it explores the consequences of the impacts, who is impacted, how ICES should develop advice and prioritise resources. The next meeting will be held online on 29-30 September 2021.
- 4) The **ICES/ PICES Working Group on Small Pelagic Fish (WGSPF)**, chaired by Akinori Takasuka (Japan), Ignacio Catalán (Spain), Myron Peck (Netherlands) and Ryan Rykaczewski (USA) aims to advance understanding how drivers (environmental and/or anthropogenic) impact the population dynamics of SPF, perform comparative analyses, and coordinate research. The group is also planning a symposium for 2022 (see below). The next meeting will take place online on September 10th, 13th and 14<sup>th</sup> 2021.
- 5) The **Working Group on Seasonal-to-Decadal Predictions of Marine Ecosystems (WGS2D)**, chaired by Mark Payne (Denmark), completed its terms of reference at the end of 2020. Highlights of this first period include the successful development and regular production of forecasts of blue whiting spawning distribution and the recruitment of North Sea Sandeel stocks, as well as several scientific manuscripts detailing these forecasts. The working group will also host a networking session on ecological forecasting at this year's ASC. However, the chair of the group, Mark Payne, is leaving marine science for a new position and is unable to continue, and while the group's work has been positively received and supported by the ICES community, a replacement chair has not been found. It therefore appears unlikely that this group will be renewed.

### 6.1.3 Recent SICCME relevant events

- 6) **September 2020: Kick-off meeting of EU H2020 *Future-MARES***, a large (32 partner, 15 nations) 4-year programme advancing knowledge on climate change impacts to marine and transitional waters and the effectiveness of nature-based solutions to safeguard / enhance ecosystem services. *FutureMARES* has three over-arching case studies: Habitat Restoration (e.g. seagrasses, shellfish), Habitat Conservation (e.g. MPAs, charismatic megafauna), and Sustainable Harvesting (e.g. ecosystem-based fisheries, IMTA). Projections of climate impacts including effectiveness of scenarios of NBS will be made for 7 regional European marine ecosystems contributing to SICCME activities. *FutureMARES* is coordinated by Myron Peck. John Pinnegar and several other members of SICCME are involved in the programme.
- 7) **October 21<sup>st</sup> – November 1<sup>st</sup>, 2020: PICES Annual Meeting** was held online in the form of business meetings, but the planned sessions were cancelled, including many SICCME-relevant climate sessions. A S-CCME business meeting was however held with participation from Mark Payne representing ICES SICCME and a fruitful discussion was held about ways to collaborate in the future between the ICES SICCME and PICES S-CCME groups.

- 8) **August 9 2021. Launch of IPCC AR6 WGI report.** The first (of four) reports in the IPCC's sixth assessment cycle (AR6) was launched. Produced by Working Group I and entitled "The Physical Science basis", this report is focussed primarily on the earth system and climate science, and therefore has relatively limited input from the ICES community (which is typically involved in WGII). The basic message of this report (that human activities are changing the planet's climate) remains largely unchanged, but there is an ever increasing amount of detail provided. Notable from a marine perspective was the inclusion of a detailed section on Marine Heatwaves, which was not previously seen in the main IPCC reports. Further reports will be published in 2022.
- 9) **September 2021: ICES Annual Science Conference (ASC).** Several theme sessions were held in the online format are of relevance to SICCME (and which cite the Strategic Initiative). These include: [K] Taking stock on ocean acidification research for provision of future efforts (Silvana Birchenough *et al.*); [O] Impacts of human pressures on ecosystem components assessed by dynamic modelling (Solfrid Sætre Hjøllo *et al.*); [D] Past, present and future of marine plankton assemblages and communities (Dafne Eerkes-Medrano *et al.*); [E] Connecting economic, social science, and interdisciplinary research and management advice (Alan Haynie). In addition, a Networking Session entitled "Marine Ecological Forecasts – what do we need?" (Mark Payne and Sevrine Sailley) was also held.

#### 6.1.4 Upcoming SICCME relevant events

- **December 9-10, 2021.** A Joint NMTT-ICES Workshop launching the **Nordic Climate Change Forum for Fisheries & Aquaculture** will be held in Helsingør, Denmark. The workshop aims to provide an opportunity for fisheries and aquaculture stakeholders, scientists, and policy-makers to discuss, exchange ideas, and identify practical steps the fisheries and aquaculture sectors can adopt to reduce its contribution to climate change.
- **February 2022: Launch of IPCC AR6 WG II report.** Authors contributing to this report from the ICES/PICES SICCME community include Christian Möllmann (lead author – 'Europe'), John Pinnegar (lead author – 'Small Islands'), Kirstin Holsman (lead author – 'North America'), Shin-ichi Ito and Mette Skern-Mauritzen (lead author – 'Ocean and coastal ecosystems and their services'). This report is the most SICCME-relevant of the three main reports produced by the IPCC.
- **April 26-28 2022, ICES 4th Decadal Variability of the North Atlantic and its Marine Ecosystems: 2010-2019. Bergen, Norway.** This symposium is part of a series of decadal symposiums organized by ICES, where researchers gather to review the variability of North Atlantic environmental conditions and marine ecosystems over the past decade. Researchers aim to understand the relationship between ecosystem components and how they influence the distribution, abundance and productivity of living marine resources. In addition, researchers will review recent advances in sub-decadal forecasts of ecosystem change.
- **October 10-15, 2022. Symposium on Capelin—The canary in predicting effects of climate on the Arctic marine environment. Bergen, Norway.** This symposium seeks to determine how the link between capelin migration and environmental change can help identify realistic timescales for tipping points and major disruptions in the Arctic marine environment.
- **November 7-11, 2022 International Symposium on Small Pelagic Fish: New Frontiers in Science for Sustainable Management Lisbon, Portugal.** The symposium will highlight the state-of-the-art in the following and other topics surrounding the sustainable exploitation of SPF within an ecosystem context. Climate change impacts are expected to be a recurring theme of this symposium.

- **April 17-21, 2023, 5th International Symposium on the Effects of Climate Change on the World's Oceans. Bergen, Norway.** The 5th International Symposium Ecosystem Effects of Climate Change on the World's Ocean (ECCWO-5) brings together experts from around the world to better understand climate effects on ocean ecosystem, what adaptation and mitigation measures could look like, and how to implement them. The symposium is continuing the successful series of ECCWO symposia over the last years.

## 6.2 Strategic Initiative on the Human Dimension (SIHD)

Katell Hamon (Netherlands) joined Alan Haynie (USA) as SIHD Chair earlier this year. The Chairs will work with ICES leadership and SIHD members to identify new chair(s), balancing diversity goals.

### 6.2.1 Recent SIHD activities and coordination activities

This year SIHD Chairs and members have engaged in a variety of activities, all of which have been online due to COVID-19. This has been unfortunate in terms of social connections, but the meetings of SIHD-related expert groups have been very well attended and robust progress continues.

SIHD Chairs led several Coordination Meetings of SIHD-related Expert Group chairs this year, which has been very useful to promote ongoing collaboration and discussion of common goals across these groups. We will continue these efforts. These meetings included a diversity of human dimensions researchers, including those involved in aquaculture, which has expanded connections among groups. SIHD Chairs have participated in meetings of the IEASG ACOM/SCICOM EBM subgroup and attended an IEASG knowledge exchange. We have also been working hard on the SIHD Roadmap (see below).

### 6.2.2 Specific activities of SIHD-Related Expert Groups

Online meetings may have particularly benefited group members whose travel funding limits attending physical ICES meetings.

The Working Group on Balancing Economic, Social, and Ecological Objectives in Integrated Assessments ([WGBESEO ToR](#)), chaired by David Goldsborough (The Netherlands), David Langlet (Sweden), and Paulina Ramirez-Monsalve (Denmark) was formed just before the COVID-19 outbreak had regular, relatively short follow-up meetings since then.

The Group has conducted a literature review of relevant work, which was presented at the ASC. Under the supervision of the group, a student intern made a social science glossary providing a consistent set of definitions, for terms used within ecological- and social sciences in many different contexts. WGBESEO hosted a session at the online MARE 2021 conference in June: "Informing trade-offs for a Sustainable Blue Growth".

In accordance with its [ToRs](#), [WGMARS](#) members are conducting i) research on behavioural economics/nudging in fisheries, ii) research on integrated ecosystem assessments in the context of ICES Regional Groups, and iii) carry out a social network analysis of ICES expert groups. The review protocol for the review of behavioural economics in fisheries (i) has been published ([Wieczorek et al, 2021](#)). Jennifer Bailey (Norway) has joined Leyre Goti (Germany) and Patricia Clay (USA) as Chair of WGMARS..

The WGECON and WGSOCIAL expert groups held joint, overlapping online meetings in June 2020 and June 2021. This format provided lots of great interdisciplinary discussions and collaboration and research planning.

[WGECON](#), chaired by Rasmus Nielsen, Denmark, Olivier Thebaud, France, and Arina Motova, UK, has focused on the development of economic metrics and the development of core economic analyses for fisheries advice and contributing economic indicators for ICES ecosystem overviews. The final report of the first 3 years is available [here](#).

[WGSOCIAL](#), chaired by Lisa Colburn (USA), Amber Himes-Cornell (FAO), and Marloes Kraan (The Netherlands) has continued its work on developing social indicators in several ICES ecoregions. The reports of WGSOCIAL first 3 years are available [here](#) and members of the group have given lots of attention to COVID-19 research and policy analysis.

### 6.2.3 Recent external research and communications activities

Many SIHD members have been very active in their countries in response to the myriad management challenges of COVID-19. The crisis reveals both the value of economic and social data and expertise and the need for more support to help communities and diverse stakeholders adapt to dramatic changes.

### 6.2.4 Recent SIHD-related activities include:

- In September 2020, SIHD members held an [ICES Webinar](#), featuring SIHD members' work and research on COVID-19. Talks were given by Alan Haynie (USA), Doug Lipton (USA), Cristina Pita (Portugal), and Marloes Kraan (The Netherlands).
- The Workshop on Stakeholder Engagement Strategy ([WKSHOES, report](#)) was held online in June 2021.
- SIHD Chair Alan Haynie is a member of the Joint ICES/PICES Study Group/ICES Council Strategic Initiative to plan participation in the UN Decade of Ocean Science (ICES-PICES Ocean Decade/IPOD-SC).
- Workshop on the Socio-economic implications of offshore wind on Fishing Communities ([WKSEIOWFC, report](#)) had active participation from SIHD members.

### 6.2.5 Upcoming SIHD planned activities

The following table summarizes a number of planned activities of SIHD groups.

Group(s)	Event	Month/Year
SIHD	Share Roadmap	September 2021
All Groups	ASC	September 2021
SIHD	Informal Online SIHD Webinar	November 2021
SIHD	MSEAS Online Webinar	December 2021
WGBESEO	Online meetings	Ongoing
MSEAS	MSEAS in person	Spring / Summer 2022
WGECON, WGSOCIAL	Annual meeting	June 2022

IIFET	Biannual Meeting and ICES Activities	July 2022
SIHD + All	ASC Dublin 2022	Sept 2022
SIHD + All	ICES ASC / PICES Annual Meeting	Sept/Oct 2023

## 6.2.6 Update the SIHD Roadmap

We have been working to update the SIHD Roadmap in order to promote an ongoing discussion about how ICES can continue to become a more active and influential contributor to social and economic science.

We are considering the development of several possible expert groups as part of this process:

- WKINTER - a workshop (or workgroup) focused on interdisciplinary research and collaboration methods.
- WKCONSERVE2 - more work is needed to build on the October 2019 Workshop on Challenges, Opportunities, Needs and Successes in including human dimensions in Integrated Ecosystem Assessments (IEAs) ([WKCONSERVE report](#)).
- An interdisciplinary workshop focused on fisher behaviour.
- WGIMM (Working Group on Integrating Ecological and Economic Models) - discussions will continue about whether there is a role for this group beyond WGECON.
- An expert group that will build on WKSHOES, focused on stakeholder interaction methods.

SIHD and other ICES human dimensions EG members are working to plan the ICES/PICES MSEAS Symposium which was scheduled to be held this spring in Yokohama, Japan and has been rescheduled for Summer 2022. An online webinar related to MSEAS is planned for the end of this year.

WGMARS is contributing to an SIHD-relevant joint ICES-EuroMarine [workshop](#) on conceptual modelling to be held in November.

## 6.2.7 Additional planned activities:

- Hold an autumn informal SIHD Webinar
- Work with SIIECS promoting early career scientists involved in interdisciplinarity of ICES and involving them in the SIHD community.
- Develop content on the SIHD forum.
- Contribute to ICES diversity efforts.

## 6.3 Strategic Initiative on Integration of Early Career Scientists (SIIECS)

### 6.3.1 Background

The Strategic Initiative on the Integration of Early Career Scientists (SIIECS) was begun in March 2021 at the request of ICES Chair Jörn Schmidt. A group of 23 early career scientists (ECS) was assembled to determine the scope and key areas of interest for the activities of SIIECS. A smaller



group of members stayed on to produce the resolution which was submitted and approved by SCICOM in July 2021.

### 6.3.2 Recent activities

With the resolution approved, the group is focusing on recruiting additional Term of Reference (ToR) leaders to help execute its tasks. An online form has been designed to coordinate the registration of interest and an email was sent out to all WG chairs on the 20/08/2021 to advertise this opportunity. Registration of interest for these will be reviewed during the next monthly SIIECS meeting (30/09/2021) and reviewed on an annual basis thereafter. All ECS willing to join SIIECS as general members are welcomed to join at any point.

With recruitment ongoing, the group has already begun to progress on a number of its ToR:

#### *Presented ICES and SIIECS at VECOPs Days (ToR a)*

The Virtual Early Career Ocean Professional (V.ECOP) day took place on the 1st of June 2021. Together with Celine Byrne from the ICES secretariat we produced and compiled informative material to promote ICES, the ICES/PICES ECS conference and SIIECS to early career ocean professional (ECOPs) attending the event. These were displayed in a virtual stand which was attended by Amanda Schadeberg and Fedor who were available throughout most of the event to engage with ECOPs attending the event and to answer any questions they may have. Although the whole event was attended by a little number of participants, the ICES stand was among the stands which attracted the most attention. Some participants of the event have already joined SIIECS as active contributors. The information materials compiled for the event will be of use to SIIECS in the future.

#### *Connected with other ECS organisations (ToR b)*

The current ToR leader team already includes ECS who are also on the organising committee of the PICES/ICES ECS conference which will allow for SIIECS to contribute to and engage with the event. We also have invited Hannah Lachance (PICES and ECOPs) to attend our monthly meeting which already proved useful in sharing ideas and planning for collaborative projects in the future. Furthermore, we met with Evgeniia Kostianaia, the newly appointed global representative of ECOPs, which provided an update on the strategic plan of ECOPs and will ensure future information flow between ICES and ECOPs. One SIIECS member is delegated as a representative of ICES ECS in IOC to contribute to the development of ECOP-related initiatives in the UN Decade of Ocean Science. Furthermore, Amanda Schadeberg and Alina Wieczorek are also involved in the EuroMarine ECS network OYSTER and we expect that new members will bring other connections and affiliations with other groups as well.

#### *Contribute to DE&I network session at ASC 2021 (ToR c)*

Two SIIECS members (Rasa Morkune and Alina Wieczorek) have put themselves forward as co-conveners of the networking session on diversity, equity and inclusion during this year's ASC, and have contributed to the planning, organisation and will contribute to the execution of the networking session which is led by Ellen Johannesen and supported by Mark Dickey-Collas.

#### *Proposed ECS keynote speaker for ICES ASC 2022 (ToR d)*

The ToR d) leaders have developed a proposal for an ECS to be allocated a keynote speaker slot during the 2022 ASC and thereafter. Through several meetings and discussion, a speech format, nomination and selection process were drawn up which is in coherence with the strategic plan of ICES and the overall aims of SIIECS. The proposal was submitted to SCICOM on the 20th of August 2021.

#### *Proposed ECS and ICES WG member networking session for ASC 2022 (ToR d)*

The Chairs of SIIECS have put forward a proposal for a networking session for the 2022 ASC. The aim of the networking session is to connect ECS with ICES WGs in a fun and interactive way. Through this session SIIECS hopes to integrate ECS more closely within ICES WGs and to allow them to contribute to the WGs which will eventually benefit ECS and ICES WG chairs and current members alike. Table 6.1 contains a detailed breakdown of the networking session agenda and content.

**Table 6.1. Proposed agenda for Network Session in ASC 2022**

Agenda	Who	Time
Introduce initiative and share experiences with WG involvement	SIIECS chairs	20 min
How do ICES WG operate?	Invited WG chairs	10 min
Present visual pitch of WGs (props, drawings...)	WG chairs/members	5 min
ECS roam around to find WG of interest and get the opportunity to ask questions: <i>How did you get involved in the group?</i> <i>What has been the most exciting output of the group?</i> <i>What can an ECS bring to the WG? And what will they get in return?</i>	ECS and WG representative, facilitated by SIIECS	45 min
Plenary summary, SIIECS will collect ideas on how to help facilitate ECS integration in WGs in the future	SIIECS	10 min

### 6.3.3 Understanding who is in the SIIECS community (ToR F)

In order to provide better understanding of ECS engagement in ICES activities, some data (country of origin, gender identity, involvement of ICES expert groups, fields of interest) of the SIIECS members is being collected as part of their application to become involved with the SI.

*SIIECS members are getting to know one another to plan interdisciplinary research (ToR e).*

Okko Outinen has collected data on the research interests and fields of expertise of present SIIECS members to support planning of the interdisciplinary studies proposed within a ToR e. The potential for developing an interdisciplinary review is already widely recognised within the group.

## 7 Guidelines for ICES groups

The guidelines for expert groups will be updated to be available for the WGCHAIRS meeting in January 2022. It will be augmented by a Frequently Asked Question webpage, to make information about the organisation and especially the Expert Groups more easily available. The current version of the guidelines can be found here: [https://www.ices.dk/about-ICES/Documents/Guidelines for ICES Groups.pdf](https://www.ices.dk/about-ICES/Documents/Guidelines%20for%20ICES%20Groups.pdf).

## 8 Annual Science Conference (ASC)

### 8.1 ASC 2021

The first virtual ASC was held 6–10 September 2021, with the online conference app available from the 23 August. The conference was held on the application called Whova, available both on mobile and desktop view. This made presentations and posters available on the app, for all registered participants to view. Participants were encouraged to view all pre-recorded presentation before the conference, so as to participate in active discussion during the live sessions. Live sessions were based on the theme sessions, of either one- or two-hour sessions from 15:00–20:00. Conveners were urged to run interactive sessions, allowing for lots of interaction. Networking in between sessions was facilitated by online meeting on the app during the coffee breaks.

Some statistics from the Whova app:

- 234 six-minute oral presentations
- 77 posters
- 18 theme sessions
- 3 network sessions
- 12 job openings were posted
- 762 active users throughout the week
- 82 discussion topics were started
- 344 joined via their mobile phone
- 692 joined on the web app
- 199 articles were shared
- 113 break the ice messages
- 91 photos were shared

The most popular streams, based on attendee numbers

- 1) Keynote Rebuilding marine life, A grand challenge and an ethical obligation
- 2) Opening ceremony
- 3) Keynote: Uncertainty in scenarios and models of biodiversity

Feedback to the conference was generally positive. Full feedback can be provided by [anna.davies@ices.dk](mailto:anna.davies@ices.dk) upon request.

### 9.1 ASC 2022

A venue has now been identified for the ASC 2022, the Aviva Stadium in Dublin. Dates are confirmed at 12–15 September, with meetings on the 11 and 16.

The hybrid format of the ASC is still being developed by the SCICOM ASC subgroup in cooperation with the conference planning group.

## Annex 1: Implementation plan

### a) To 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

Establish terms of reference (ToR) and new expert groups as appropriate: to address all science priorities identified in the Science Plan. Ensure effective and ongoing review of expert group activity and outputs.

Action and code	Lead entity	2021-04-11, narrative on progress
A1. Work with the expert group chairs to ensure their ToR, individually and collectively, address the priorities identified in the science plan	SCICOM (lead)	Work to do. Terms of reference for majority of workshops and all new fixed-term working groups mapped to science plan codes. Generally little or no mapping of ACOM legacy group terms of reference to Science Plan. Challenge to date is existence of four separate resolution forms, with only one providing an explicit requirement for codes. This will be rectified with the introduction of a common resolution form for all expert groups in 2022 (ongoing)
A1. Work with the expert group chairs to ensure their ToR, individually and collectively, address the priorities identified in the science plan	SCICOM (lead)	Analytical tools not in place. This will be fixed by the introduction and adoption of the resolutions database, scheduled for 2022
A2. Identify needs for new expert groups and rationalization of existing groups	SCICOM (lead)	Analytical tools not in place. This will be fixed by the introduction and adoption of the resolutions database, scheduled for 2022
A2. Identify needs for new expert groups and rationalization of existing groups	SCICOM (lead)	On target, supported by direct review of terms of reference by EG chairs, SG chairs and on forum.
A3. Develop and prepare resolutions and web text for expert groups with all fields completed and ToR linked to science plan codes	Expert group chairs (lead)	Ongoing. Terms of reference for majority of workshops and all new fixed-term working groups mapped to science plan codes. Generally little or no mapping of ACOM legacy group terms of reference to Science Plan. Challenge to date is existence of four separate resolution forms, with only one providing an explicit requirement for codes. This will be rectified with the introduction of a common resolution form for all expert groups in 2021 (ongoing)
A4. Conduct final and/ or interim evaluations of expert group activity using forms provided	Expert group chairs (lead)	On track. New interim and final evaluation process introduced and completion on target at present time. Evaluations on SCICOM forum for review.
A4. Conduct final and/ or interim evaluations of expert group activity using forms provided	Expert group chairs (lead)	New interim and final evaluation process introduced in 2019. Not achieving 100% return in 2020, but very few overdue in practice
A5. Complete work in support of ToR to timescales specified in EG resolution	Expert group chairs (lead)	Analytical tools not in place. This will be fixed by the introduction and adoption of the resolutions database, scheduled for completion 2022

Action and code	Lead entity	2021-04-11, narrative on progress
A6. Submit timely reports to the Secretariat for final formatting and publication and provide follow up responses to Secretariat requests for support	Expert group chairs (lead)	Almost on track. There are still recurrent issues with some late reports.
A7. Ensure that the work of expert groups is well co-ordinated to increase interaction and synergy and avoid inefficiencies and repetition of work	Steering group chairs (lead)	On target.
A7. Ensure that the work of expert groups is well co-ordinated to increase interaction and synergy and avoid inefficiencies and repetition of work	Steering group chairs (lead)	On target, supported by direct review of terms of reference by EG chairs, SG chairs and on forum.
A8. Effective review of expert group descriptions, ToR and expert group outputs for science content and clarity of presentation	Steering group chairs (lead)	On target for ToR. Not on target for group descriptions. For descriptions this will be rectified with the introduction of a common resolution form in 2022. A format for descriptions has been agreed with WGCHAIRS and SCICOM

Strengthen our expert groups, creating stronger and more dynamic links between science and advice, attracting and engaging a wider range of scientists from the natural and social sciences and supporting and capturing innovation

Action and code	Lead entity	2021-04-11, narrative on progress
A9. Publish ICES science plan in an attractive and accessible format for physical circulation at ICES events and for web viewing	Secretariat (lead)	Complete
A10. Opening link to science content on front page of ICES website	Secretariat (lead)	Completed and site launched April 2020, link cleaning in progress
A11. Identify and promote science priorities, nationally and internationally	SCICOM (lead)	On target. 2021: DFO workshop with ACOM and SCICOM Chair presenting on ICES; presentation of SCICOM chair at national marine science conference Lithuania
A11. Identify and promote science priorities, nationally and internationally	SCICOM (lead)	Progress in 2021: Joint ICES/PICES UN Decade of Ocean Science for Sustainable Development Steering Committee and programme proposal SMARTNET endorsed; Contribution to SCAR-Fish; Arctic activities (see SCICOM September doc 13.2_1)
A11. Identify and promote science priorities, nationally and internationally	SCICOM (lead)	Lead transferred to ACOM vice-chairs (2019).

Action and code	Lead entity	2021-04-11, narrative on progress
A12. Support diversification of ICES research topics by co-organizing science symposia with strategic partners	Secretariat (lead)	On target, for 2021 and 2022; co-sponsored symposia now signed off address six of the seven science priorities. New process was introduced for symposium review and selection from 2020, to ensure equitable review by year in SCICOM. Still seeking to co-sponsor or develop a symposium focused on data science and/or emerging technologies, WGMLEARN Chairs interested in proposing and leading on a symposium in 2023.

**b) To ensure expert groups have flexibility to innovate and explore new topics and encourage and support cross-cutting science activity**

Capturing and highlighting innovation by the expert groups and working quickly to review and respond to this innovation

Action and code	Lead entity	2021-04-11, narrative on progress
B1. Annual review of all expert group outputs and recommendations	SCICOM (co-lead)	On target, increasing frequency of recommendations review meetings, review of content through introduction of interim and final e-evaluations
B1. Annual review of all expert group outputs and recommendations	Steering group chairs (co-lead)	On target, increasing frequency of recommendations review meetings, review of content through introduction of interim and final e-evaluations, feedback by SG chairs
B2. Regular review of science priorities to meet current and emerging advisory needs, with distribution of highest priority work to expert group network	ACOM and SCICOM (lead)	On track. ACOM and FRSG report on priorities to SCICOM meeting Sept 2021.

**c) To increase the visibility of, and access to, our science, data and advice and recognize, promote and use the science outputs from expert groups**

Provide outlets for publishing the science catalysed by this plan, measuring its impact and sharing it via a range of media channels, within our existing network and beyond. Develop services and tools to enable visualization and easy access to data to meet the needs of users in our groups

Action and code	Lead entity	2021-04-11, narrative on progress
C1. Identify authors (group members) and editors (chairs) on the cover of ICES expert group reports and state citation and DOI on cover of all expert group final reports. [and place in a series with ISSN]	Secretariat (lead)	On track. On target for majority of 2021 meetings, but with publication of a small number of reports overdue owing to late submission by expert groups. New guidance issued on executive summaries and review process introduced. Quality of summaries and adherence to guidance now improving.
C2. Increase ICES impact through communication and publication of science highlights	Secretariat (lead)	On track. Secretariat initiated clear process for collation of highlights and prioritised topics with SG chairs, first outputs published, including long format highlight on monitoring by EOSG groups and on UN Decade- plans in place for forthcoming series in biodiversity, in other words and aquaculture
C3. Project ICES work in new engaging/branded/relevant formats (infographics that communicate ICES products effectively)	Secretariat (lead)	New project by Communication Team: video series "Eye on the Expert": 20 Expert Groups across the network (all SGs covered) highlighted through interviews with Early Career Scientists from the groups

Action and code	Lead entity	2021-04-11, narrative on progress
C4. Continue editing/formatting/checking, cataloguing and digitalizing of in-house publications	Secretariat (lead)	On track. Ruth Andersen leading project to address these and related aspects of ICES publication processes
C5. Roll out Digital Object Identifiers (DOI's) for data outputs and ICES publications for better citation and traceability	Secretariat (lead)	On track, all published in 2019, 2020 and 2021 to date with DOI
C6. Bibliographic analysis of ICES publication output and impact	Science impact and publication group (lead)	Ongoing. Complete and also checked by EG mailing for 2017-2020, but past years incomplete at present. 2021 processed and checked by SG chairs.
C6. Bibliographic analysis of ICES publication output and impact	Science impact and publication group (lead)	Not progressed as dependent on completion of database. Will be possible in new library system (FigShare)
C7. Annual analyses of ICES science impact for reporting to SCICOM ASC meeting and Council October meeting	Science impact and publication group (lead)	Ongoing

**d) To provide an efficient, collaborative, respectful and rewarding working environment for all scientists, as well as the resources and infrastructure needed by groups to develop and share knowledge and expertise**

Provide effective support and appropriate facilities for meetings. Institute and raise awareness of ICES codes regarding work practices and expected behaviours in expert groups.

Action and code	Lead entity	2021-04-11, narrative on progress
D1. Sign-off and implement ICES code of conduct, conflict of interest policy and standard of conduct policy	ICES Council (lead)	On target, completed. New process on developing a Code of Ethics and Professional Conduct initiated.

Give effective guidance on running expert groups, support chairs with implementation and ensure all scientists in the network know how and where to get support. Institute and raise awareness of ICES codes regarding work practices and expected behaviours in expert groups.

Action and code	Lead entity	2021-04-11, narrative on progress
D2. Update and make available revised "Guidelines for ICES groups" and highlight the update to expert group chairs.	SCICOM (lead)	On target for all issues to date (latest version 1-2021 published in January 2021)

**e) To provide more and better networking opportunities and encourage engagement of a new and emerging generation of scientists with ICES and expert groups**

Ensure that the scientific programme at the ASC and symposia provides opportunities for everyone, from students and early career scientists through established leaders of large research institutes, to engage and contribute.

Action and code	Lead entity	2021-04-11, narrative on progress
E1. Develop topical and engaging ASC programme	SCICOM (lead)	ASC 2021 currently be analysed to evaluate how the online format impacted diversity and inclusion.
E2. Support the Science Committee to deliver a relevant, inclusive and modern annual conference programme	Secretariat (lead)	Very positive feedback on ASC 2021 speakers

Develop and implement a training strategy

Action and code	Lead entity	2021-04-11, narrative on progress
E3. Evaluate and develop a strategy for the ICES Training Programme, including assessment of training needs, online training courses, considerations of alternative training initiatives (courses arranged by PhD/Post.doc), and exploring options for accreditation of the training course (ICES work plan 1.3.x)	Council (lead)	Ongoing, TG lead
E4. Implement ICES Training Programme	Secretariat (lead)	Training Group started the process. Survey on past Training Courses sent to former participants to develop baseline

**f) To 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**

Strengthening our relationships with existing strategic partners through joint missions and activities. 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. Developing new partnerships to increase reach and impact of science and support capacity building (training issues addressed under 'training')



Action and code	Lead entity	2021-04-11, narrative on progress
F1. Work with partners to identify needs and opportunities for joint expert groups conducting work of mutual and added benefit and initiate these expert groups	SCICOM (lead)	On track, groups initiated: 14 joint Expert Groups to date (2021-09-15)
F2. Contact in cooperation with ICES Member Countries relevant public and non-profit institutes, academia currently not actively involved in ICES with the aim of including them in ICES community. Plan to be presented to Council based on suggestion from SCICOM and the Secretariat. Identify funding schemes in Member Countries to highlight different models of participation (especially for academia)	Secretariat (lead)	In Progress. Consultation with national SCICOM members in 2020/21. Work at SCICOM March meeting to be completed for SCICOM September meeting 2021 and to be presented to Council.
F3. Develop and co-sponsor conferences with partners and ensure partners have a visible role at the annual science conference	Secretariat and SCICOM (co-lead)	On track, co-sponsoring symposia in 2019-2020-2021-2022-2023 with PICES, FAO, PAME, CAFF, AMAP, Arctic Council, Nordic Council of Ministers, OSPAR and IOC.
F4. Develop integrated ecosystem assessments and ecosystem overviews for new regions with partners.	Integrated ecosystem assessment SG (lead)	On track

Develop and coordinate cross cutting science activities related to climate change and the sea and society

Action and code	Lead entity	2021-04-11, narrative on progress
F5. Strategic initiatives to establish and implement cross-cutting plans	Strategic initiatives (lead)	SIHD and SICCME on target- SIHD identified links with several groups (see SIHD webpage) and engagement is facilitated through regular online meetings. SICCME engagement format is ongoing, network session at ASC 2021.

**g) To monitor and report on progress towards meeting the goals of the science plan**

Monitor implementation of the science plan and report on progress, innovation and science highlights through reports to Council, web communications and publications.

Action and code	Lead entity	2021-04-11, narrative on progress
G1. Regularly and actively solicit inputs from member country institutions, partners, clients and stakeholders on the development of our science	SCICOM (lead)	Ongoing for 2021 and 2022
G2. Annually report to ICES Council on implementation of the science plan and summarize activity and output from the expert group network and at the Annual Science Conference and symposia	SCICOM (lead)	Q3 2021 report published
G3. Identify and shape emerging areas of science and maintain preparedness for future science planning	SCICOM	Completed 2020. Ongoing for 2021

## Annex 2: ICES co-sponsored symposia

An overview of ICES co-sponsored symposia is also available [at this link](#).

YEAR	DATE	TITLE	RESOLUTION NO	VENUE	CONVENERS	CO-SPONSORS	SUPPORT/COMMENTS	PUBLICATION	ICES SUPPORTS & WORK ORDER
<b>2023</b>									
2023	17-21 April	5 <sup>th</sup> Effects of Climate Change on the World's Oceans (ECCWO)	RES-2	Bergen, Norway	Geir Huse (Norway), Jörn Schmidt (ICES)	PICES, FAO, IOC	Financial support of <b>€10,000</b> to fund travel support for early career scientists.  ICES Communications support to advertise the symposium	<b>IJMS requested</b>	Jörn Schmidt, Julie Krogh Hallin, Terhi Minkinen  (1071-59)
<b>2022</b>									
2022	10-15 October	Symposium on Capelin—The canary in predicting effects of climate on the Arctic marine environment	RES-1	Bergen, Norway	Samuel Subbey (Norway), Johanna Fall (Norway), Warsha Singh (Iceland), Kerim Aydin (USA), Hannah Murphy (Canada)	Norwegian Research Council	Financial support of <b>€9,000</b> to fund travel support for early career scientists.	<b>IJMS requested</b>	Julie Kellner, Maria Lifentseva  (1071-58)
2022	7-11 November	International Symposium on Small Pelagic Fish: New Frontiers in Science for Sustainable Management	2020/3/EPDSG01	Gulbenkian Foundation, Lisbon, Portugal	Susana Garrido (Portugal, ICES), Myron Peck (Germany, ICES), Ryan Rykaczewski (USA, PICES), Ignacio Catalán (Spain, ICES), Akinori Takasuka (Japan, PICES)	PICES, FAO, DFO, DPPO, GFCM, IFFO, MOF, NOAA, NPFC, NPRB, PFA, SCOR	Financial support of <b>€10,000</b> to fund travel support for early career scientists.  UNDOS endorsement pending	<b>No IJMS requested</b>  Plans to publish in other peer reviewed journals	Julie Kellner, Celine Byrne & Malene Eilersen  (1071-54)

YEAR	DATE	TITLE	RESOLUTION NO	VENUE	CONVENERS	CO-SPONSORS	SUPPORT/COMMENTS	PUBLICATION	ICES SUPPORTS & WORK ORDER
2022	26-28 April	ICES 4 <sup>th</sup> Decadal Variability of the North Atlantic and its Marine Ecosystems: 2010-2019	<b>2020/3/EPDSG02</b>	Bergen, Norway	Kjell Arne Mork (Norway), Cesar Gonzalez-Pola (Spain), Paula Frantoni (USA), Caroline Cusack (Ireland), Stephen Dye (UK) and Barbara Berx (Scotland)	NAFO, IMR, Marine Institute Ireland, NOAA	Financial support requested: <b>10,000€</b> from ICES to support travel of selected early career scientists  UNDOS endorsement approved  ICES Secretariat support: IT- abstract, and online registration, Finance - handle registration fees, Sec – flyers, early career selection, physical attendance	<b>IJMS requested and approved by Editor-in-Chief</b>	Julie Kellner, Julie Krogh Hallin  (1071-55)
2022	9-12 May	Fourth ICES PICES Early Career Scientist Conference	<b>APPROVED</b>	St. John's, Newfoundland, Canada	Sonia Batten, PICES, Andrea White, Fisheries and Oceans Canada, Wojciech Wawrzynski, ICES	PICES, DFO	ICES lead organiser with PICES and DFO		Wojciech Wawrzynski, Karolina Reducha, Celine Byrne, Terhi Minkinen
2022	22-25 June  *Online workshops in 2021	Oceans Past IX Conference	<b>2018/3/HAPISG04</b>	Seattle, Washington, United States	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 conference ( <b>€2,000</b> ) and; Subsidise travel costs for two keynote speakers to attend from underrepresented countries further afield ( <b>€2,000</b> )  Postponed from 2020	<b>No IJMS requested</b>	Julie Kellner, Malene Eilersen  (1071-50)

YEAR	DATE	TITLE	RESOLUTION NO	VENUE	CONVENERS	CO-SPONSORS	SUPPORT/COMMENTS	PUBLICATION	ICES SUPPORTS & WORK ORDER
<b>2021 (POSTPONED FROM 2020)</b>									
2021	20-24 September	World Fisheries Congress	<b>2018/3/HAPISG05</b>	Online	Bronwyn Gillanders(Australia) and Tim Ward (Australia)	Brand South Australia, PIRSA, SARDI, Adelaide Convention Bureau, Adelaide Convention Centre, FRDC, CSIRO, Austral Fisheries, FMA, IMAS	Financial support of <b>€10,000</b> to fund travel support for early career scientists.  ICES IT support  ICES coordinating selection of early career scientists.	The WFC2020 International Program Committee Chairs are currently exploring options for publishing proceedings from the Congress.	Julie Kellner, Malene Eilersen, Anna Davies  (1071-49)
2021	18-22 October	Baltic Sea Science Congress	<b>2020/3/IEASG03</b>	Århus, Denmark	Bioscience), Charlotte Hviid (Department of Bioscience), and Anne van Acker (Department of Bioscience).	Århus University	Financial support of <b>€10,000</b> to fund travel support for early career scientists.  ICES Communications support to advertise BSSC2021	<b>No IJMS requested</b>	Wojciech Wawrzynski & Karolina Reducha  (1071-56)
2021	TBD  *Teaser event planned for Dec 2021	Marine Socio-Ecological Systems - MSEAS 2020: Navigating global change in the marine environment with socio-ecological knowledge	<b>2016/3/IEASG07</b>	TBD	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  UNDOS endorsement approved	<b>IJMS not requested</b>	Wojciech Wawrzynski & Alondra Sofia Rodriguez  (1071-46)

YEAR	DATE	TITLE	RESOLUTION NO	VENUE	CONVENERS	CO-SPONSORS	SUPPORT/COMMENTS	PUBLICATION	ICES SUPPORTS & WORK ORDER
2021	2-4, 8-9 March	International Symposium on Plastics in the Arctic and Sub-Arctic Region	<b>2018/3/HAPISG01</b>	Online	Hrönn Jörundsdóttir, Matis, Reykjavík, 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	No financial support	<b>No IJMS requested</b>	Vivian Piil, Wojciech Wawrzynski & Terhi Minkkinen  (1071-45)
<b>2020</b>									
All 2020 Symposia were postponed due to COVID-19									

## Annex 3: List of ICES SCICOM Expert Groups that were dissolved, established, changed committee or were re-named in 2021

Will be submitted after 22 October.

## Annex 4: Peer-reviewed publications linked to Expert groups 2020/21

These are peer-reviewed papers identified before 12 October 2021 and acknowledging inputs from parts of the ICES community. Please inform the ICES Editorial team if you are familiar with peer-reviewed publications that you know to be facilitated by ICES groups but have not yet been included.

- A. Maureaud, A., Frelat, R., Pécuchet, L., Shackell, N., Mérigot, B., Pinsky, M. L., Amador, K., *et al.* 2020. Are we ready to track climate-driven shifts in marine species across international boundaries? - A global survey of scientific bottom trawl data. *Global Change Biology*, 27: 220-236. (Expert Group or Strategic Initiative: **WGCOMEDA**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1111/gcb.15404>
- Abad, E., Pennino, M. G., Valeiras, J., Vilela, R., Bellido, J. M., Punzón, A., and Velasco, F. 2020. Integrating spatial management measures into fisheries: The *Lepidorhombus* spp. case study. *Marine Policy*, 116: 103739. (Expert Group or Strategic Initiative: **WGBIE**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1016/j.marpol.2019.103739>
- Aguzzi, J., Chatzievangelou, D., Company, J. B., Thomsen, L., Marini, S., Bonofiglio, F., Juanes, F., *et al.* 2020. The potential of video imagery from worldwide cabled observatory networks to provide information supporting fish-stock and biodiversity assessment. *ICES Journal of Marine Science*, 77: 2396-2410. (Expert Group or Strategic Initiative: **WGNEPS**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa169>
- Andrade, H., van der Sleen, P., Black, B. A., Godiksen, J. A., Locke, W. L., Carroll, M. L., Ambrose, W. G., *et al.* 2020. Ontogenetic movements of cod in Arctic fjords and the Barents Sea as revealed by otolith microchemistry. *Polar Biology*, 43: 409-421. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1007/s00300-020-02642-1>
- Annasawmy, P., Cherel, Y., Romanov, E. V., Le Loc'h, F., Ménard, F., Ternon, J.-F., and Marsac, F. 2020a. Stable isotope patterns of mesopelagic communities over two shallow seamounts of the south-western Indian Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 176: 104804. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.dsr2.2020.104804>
- Annasawmy, P., Ternon, J.-F., Lebourges-Dhaussy, A., Roudaut, G., Cotel, P., Herbette, S., Ménard, F., *et al.* 2020b. Micronekton distribution as influenced by mesoscale eddies, Madagascar shelf and shallow seamounts in the south-western Indian Ocean: an acoustic approach. *Deep Sea Research Part II: Topical Studies in Oceanography*, 176: 104812. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.dsr2.2020.104812>
- Arroyo, G. M., Cruz, A. d. I., and Delgado, D. 2020. How adequately are the critically endangered Balearic Shearwaters protected by the Special Protection Areas (SPAs) for seabirds? A case study in the Gulf of Cadiz. *Global Ecology and Conservation*, 21: e00861. (Expert Group or Strategic Initiative: **WGACEGG**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.gecco.2019.e00861>
- Authier, M., Galatius, A., Gilles, A., and Spitz, J. 2020. Of power and despair in cetacean conservation: estimation and detection of trend in abundance with noisy and short time-series. *PeerJ*, 8: e9436. (Expert Group or Strategic Initiative: **WGMME**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.7717/peerj.9436>
- Bailey, S. A., Brown, L., Campbell, M. L., Canning-Clode, J., Carlton, J. T., Castro, N., Chainho, P., *et al.* 2020. Trends in the detection of aquatic non-indigenous species across global marine, estuarine and freshwater ecosystems: A 50-year perspective. *Diversity and Distributions*, 26: 1780-1797. (Expert Group or Strategic Initiative: **WGBOSV**, **WGITMO**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1111/ddi.13167>

- Barroeta, Z., Villate, F., Uriarte, I., and Iriarte, A. 2020. Differences in the colonization success and impact of non-indigenous and other expanding copepod species on the zooplankton of two contrasting estuaries of the Bay of Biscay. *Biological Invasions*, 22: 3239-3267. (Expert Group or Strategic Initiative: **WGZE**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1007/s10530-020-02320-7>
- Bassett, C., Lavery, A. C., Stanton, T. K., and Cotter, E. D. 2020. Frequency- and depth-dependent target strength measurements of individual mesopelagic scatterers. *Journal of the Acoustical Society of America*, 148: EL153. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1121/10.0001745>
- Bastille, K., Hardison, S., deWitt, L., Brown, J., Samhouri, J., Gaichas, S., Lucey, S., *et al.* 2020. Improving the IEA approach using principles of open data science. *Coastal Management*: 1-18. (Expert Group or Strategic Initiative: **WGNARS**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1080/08920753.2021.1846155>
- Baudron, A. R., Brunel, T., Blanchet, M.-A., Hidalgo, M., Chust, G., Brown, E. J., Kleisner, K. M., *et al.* 2020. Changing fish distributions challenge the effective management of european fisheries. *Ecography*, 42: 1-12. (Expert Group or Strategic Initiative: **WKFISHDISH**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1111/ecog.04864>
- Belmonte, G. 2021. Acartiidae Sars G.O, 1903. ICES Identification Leaflets for Plankton No. 194. 29 pp. <http://doi.org/10.17895/ices.pub.7680>
- Bennema, F. P., Engelhard, G. H., and Lindeboom, H. 2020. *Ostrea edulis* beds in the central North Sea: delineation, ecology, and restoration. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGHIST**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1093/icesjms/fsaa134>
- Bentley, J. W., Lundy, M. G., Howell, D., Beggs, S. E., Bundy, A., de Castro, F., Fox, C. J., *et al.* 2021. Refining fisheries advice with stock-specific ecosystem information. *Frontiers in Marine Science*, 8. (Expert Group or Strategic Initiative: **WKIRISH**; Steering Group or Committee: **FRSG**). <https://doi.org/10.3389/fmars.2021.602072>
- Bentley, J. W., Serpetti, N., Fox, C. J., Heymans, J. J., and Reid, D. G. 2020. Retrospective analysis of the influence of environmental drivers on commercial stocks and fishing opportunities in the Irish Sea. *Fisheries Oceanography*, 29: 415-435. (Expert Group or Strategic Initiative: **WGEAWESS**, **WKIRISH**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1111/fog.12486>
- Berge, J., Geoffroy, M., Daase, M., Cottier, F., Priou, P., Cohen, J. H., Johnsen, G., *et al.* 2020. Artificial light during the polar night disrupts Arctic fish and zooplankton behaviour down to 200 m depth. *Communications biology*, 3: 102. <https://doi.org/10.1038/s42003-020-0807-6>
- Birchenough, S. N. R., and Degraer, S. 2020. Science in support of ecologically sound decommissioning strategies for offshore man-made structures: taking stock of current knowledge and considering future challenges. *ICES Journal of Marine Science*, 77: 1075-1078. (Expert Group or Strategic Initiative: **BEWG**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1093/icesjms/fsaa039>
- Birkenbach, A. M., Cojocaru, A. L., Asche, F., Guttormsen, A. G., and Smith, M. D. 2020. Seasonal Harvest Patterns in Multispecies Fisheries. *Environmental and Resource Economics*, 75: 631-655. <https://doi.org/10.1007/s10640-020-00402-7>
- Boswell, K. M., Pedersen, G., Taylor, J. C., LaBua, S., and Patterson, W. F. 2020. Examining the relationship between morphological variation and modeled broadband scattering responses of reef-associated fishes from the Southeast United States. *Fisheries Research*, 228: 105590. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.fishres.2020.105590>
- Bouch, P., Minto, C., Reid, D. G., and Zhou, S. 2020. Comparative performance of data-poor CMSY and data-moderate SPiCT stock assessment methods when applied to data-rich, real-world stocks. *ICES Journal of Marine Science*. <https://doi.org/10.1093/icesjms/fsaa220>
- Breen, M. and Catchpole, T. (Eds.). 2021. ICES guidelines for estimating discard survival. ICES Cooperative Research Reports No. 351. 219 pp. <https://doi.org/10.17895/ices.pub.8006>



- Brown, S. K., Shivilani, M., Koeneker, R. F., Agnew, D., Byrd, J., Cryer, M., Dichmont, C., *et al.* 2020. Patterns and practices in fisheries assessment peer review systems. *Marine Policy*, 117. <https://doi.org/10.1016/j.marpol.2020.103880>
- Cadrin, S. X. 2020. Defining spatial structure for fishery stock assessment. *Fisheries Research*, 221: 105397. (Expert Group or Strategic Initiative: **SIMWG**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1016/j.fishres.2019.105397>
- Canada, Denmark, Germany, and ICES. 2020. Revised proposed protocol for the verification of ballast water compliance monitoring devices. Submitted by Canada, Denmark, Germany, and ICES to PPR 8 as document PPR 8/11., pp. 1-13. International Maritime Organization.
- Capua, I. D. 2021. *Temora* Baird, 1850. ICES Identification Leaflets for Plankton No. 195. 17 pp. <http://doi.org/10.17895/ices.pub.7719>
- Castillo, R., La Cruz Aparco, L., Grados, D., Cornejo, R., Guevara, R., and Csirke, J. 2020. Anchoveta (*Engraulis ringens*) biomass in the Peruvian marine ecosystem estimated by various hydroacoustic methodologies during spring of 2019. *Journal of Marine Biology & Oceanography*, 9. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**)
- Caswell, B. A., Klein, E. S., Alleway, H. K., Ball, J. E., Botero, J., Cardinale, M., Eero, M., *et al.* 2020. Something old, something new: Historical perspectives provide lessons for blue growth agendas. *Fish and Fisheries*, 21: 774-796. (Expert Group or Strategic Initiative: **WGHIST**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1111/faf.12460>
- Charitonidou, K., Kjesbu, O. S., Dominguez-Petit, R., Garabana, D., Korta, M. A., Santos, M., van Damme, C. J. G., *et al.* 2020. Contrasting post-ovulatory follicle production in fishes with different spawning dynamics. *Fisheries Research*, 231: 105710. (Expert Group or Strategic Initiative: **WGALES**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.fishres.2020.105710>
- Crouch, K. E., Blanco-Bercial, L., Richardson, D. E., Copley, N. J., Wiebe, P. H., and Bucklin, A. 2020. Species-specific patterns of distribution and abundance of the cryptic copepods *Pseudocalanus moultoni* and *P. newmani* on Georges Bank (NW Atlantic Ocean) during spring 1995–2012. *Continental Shelf Research*, 208. (Expert Group or Strategic Initiative: **WGZE**, **WGIMT**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.csr.2020.104242>
- Cuesta, J. A., and González-Gordillo, J. I. 2020. Varunidae H. Milne-Edwards, 1853, and Ocypodidae Rafinesque, 1815. ICES Identification Leaflets for Plankton No. 190. 19 pp. <http://doi.org/10.17895/ices.pub.5995>
- Culhane, F. E., Frid, C. L. J., Gelabert, E. R., Piet, G., White, L., and Robinson, L. A. 2020. Assessing the capacity of European regional seas to supply ecosystem services using marine status assessments. *Ocean & Coastal Management*, 190. <https://doi.org/10.1016/j.ocecoaman.2020.105154>
- Currie, J. C., Atkinson, L. J., Sink, K. J., and Attwood, C. G. 2020. Long-term change of demersal fish assemblages on the inshore Agulhas Bank between 1904 and 2015. *Frontiers in Marine Science*, 7. (Expert Group or Strategic Initiative: **WGHIST**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.3389/fmars.2020.00355>
- Dalpadado, P., Arrigo, K. R., van Dijken, G. L., Skjoldal, H. R., Bagøien, E., Dolgov, A. V., Prokopchuk, I. P., *et al.* 2020. Climate effects on temporal and spatial dynamics of phytoplankton and zooplankton in the Barents Sea. *Progress in Oceanography*, 185. (Expert Group or Strategic Initiative: **WGIBAR**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1016/j.pocean.2020.102320>
- Dannheim, J., Bergström, L., Birchenough, S. N. R., Brzana, R., Boon, A. R., Coolen, J. W. P., Dauvin, J.-C., *et al.* 2020. Benthic effects of offshore renewables: Identification of knowledge gaps and urgently needed research. *ICES Journal of Marine Science*, 77: 1092–1108. (Expert Group or Strategic Initiative: **WGBRED**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1093/icesjms/fsz018>
- Darling, J. A., Martinson, J., Pagenkopp Lohan, K. M., Carney, K. J., Pilgrim, E., Banerji, A., Holzer, K. K., *et al.* 2020. Metabarcoding quantifies differences in accumulation of ballast water borne biodiversity among three port systems in the United States. *Sci Total Environ*, 749: 141456. (Expert Group or Strategic Initiative: **WGBOSV**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1016/j.scitotenv.2020.141456>

- De la Cruz, A., Ramos, F., Navarro, G., Cózar, A., Bécares, J., and Arroyo, G. M. 2021. Drivers for spatial modelling of a critically endangered seabird on a dynamic ocean area: Balearic Shearwaters are non-vegetarian. *Aquatic Conservation: Marine and Freshwater Ecosystems*. (Expert Group or Strategic Initiative: **WGACEGG**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1002/aqc.3542>
- Denechaud, C., Smolinski, S., Geffen, A. J., Godiksen, J. A., and Campana, S. E. 2020. A century of fish growth in relation to climate change, population dynamics and exploitation. *Global Change Biology*, 26: 5661-5678. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1111/gcb.15298>
- Dias Bernardes, I., Ona, E., and Gjøsaeter, H. 2020. Study of the Arctic mesopelagic layer with vessel and profiling multifrequency acoustics. *Progress in Oceanography*, 182: 102260. (Expert Group or Strategic Initiative: **WGFAST**, **WGICA**; Steering Group or Committee: **EOSG**, **FRSG**). <https://doi.org/10.1016/j.pocean.2019.102260>
- Dobby, H., Doyle, J., Jónasson, J., Jonsson, P., Leocádio, A., Lordan, C., Weetman, A., *et al.* 2021. ICES Survey Protocols – Manual for Nephrops underwater TV surveys, coordinated under ICES Working Group on Nephrops Surveys (WGNEPS). ICES Techniques in Marine Environmental Science. Vol. 65. 44 pp. (EG: **WGACEGG**; SG: **EOSG**). <https://doi.org/10.17895/ices.pub.8014>
- Doray, M., Boyra, G., and van der Kooij, J. (Eds). 2021. ICES Survey Protocols – Manual for acoustic surveys coordinated under ICES Working Group on Acoustic and Egg Surveys for Small Pelagic Fish (WGACEGG). 1<sup>st</sup> edition. ICES Techniques in Marine Environmental Science. Vol. 64. 100 pp. (EG: **WGACEGG**; SG: **EOSG**). <https://doi.org/10.17895/ices.pub.7462>
- Drake, L. A., Bailey, S. A., Brydges, T., Carney, K. J., Ruiz, G. M., Bayly-Stark, J., Drillet, G., *et al.* 2021. Design and installation of ballast water sample ports: Current status and implications for assessing compliance with discharge standards. *Marine Pollution Bulletin*, 167: 112280. (Expert Group or Strategic Initiative: **WGBOSV**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1016/j.marpolbul.2021.112280>
- Dupont, N., Durant, J. M., Langangen, Ø., Gjøsaeter, H., and Stige, L. C. 2020. Sea ice, temperature, and prey effects on annual variations in mean lengths of a key Arctic fish, *Boreogadus saida*, in the Barents Sea. *ICES Journal of Marine Science*, 77: 1796-1805. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1093/icesjms/fsaa040>
- Endo, C. A. K., Vikebø, F. B., Yaragina, N. A., Hjøllo, S. S., and Stige, L. C. 2020. Effects of climate and spawning stock structure on the spatial distribution of Northeast Arctic cod larvae. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1093/icesjms/fsaa057>
- Eriksen, E., Bagøien, E., Strand, E., Primicerio, R., Prokhorova, T., Trofimov, A., and Prokopchuk, I. 2020a. The record-warm Barents Sea and 0-Group fish response to abnormal conditions. *Frontiers in Marine Science*, 7. (Expert Group or Strategic Initiative: **WGIBAR**; Steering Group or Committee: **IEASG**). <https://doi.org/10.3389/fmars.2020.00338>
- Eriksen, E., Benzik, A. N., Dolgov, A. V., Skjoldal, H. R., Vihtakari, M., Johannesen, E., Prokhorova, T. A., *et al.* 2020b. Diet and trophic structure of fishes in the Barents Sea: The Norwegian-Russian program “Year of stomachs” 2015 – Establishing a baseline. *Progress in Oceanography*, 183: 102262. (Expert Group or Strategic Initiative: **WGIBAR**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1016/j.pocean.2019.102262>
- Escobar-Flores, P. C., O'Driscoll, R. L., Montgomery, J. C., Lacroix, Y., and Jendersie, S. 2020. Estimates of density of mesopelagic fish in the Southern Ocean derived from bulk acoustic data collected by ships of opportunity. *Polar Biology*, 43: 43-61. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1007/s00300-019-02611-3>
- Fall, J., Wenneck, T. d. L., Bogstad, B., Fuglebakk, E., Gjøsaeter, H., Seim, S. E., Skage, M. L., *et al.* 2020. Fish investigations in the Barents Sea winter 2020. IMR-PINRO Joint Report Series 2-2020. 98 pp. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**)
- Ferreira, A. S. A., Stige, L. C., Neuheimer, A. B., Bogstad, B., Yaragina, N., Prokopchuk, I., and Durant, J. M. 2020. Match-mismatch dynamics in the Norwegian-Barents Sea system. *Marine Ecology Progress Series*,

- 650: 81-94. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.3354/meps13276>
- Fischer, S. H., De Oliveira, J. A. A., Kell, L. T., and Siddeek, M. S. M. 2020. Linking the performance of a data-limited empirical catch rule to life-history traits. *ICES Journal of Marine Science*, 77: 1914-1926. (Expert Group or Strategic Initiative: **WKLIFE**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1093/icesjms/fsaa054>
- Fischer, S. H., De Oliveira, J. A. A., Mumford, J. D., and Kell, L. T. 2021. Using a genetic algorithm to optimise a data-limited catch rule. *ICES Journal of Marine Science*, In press. (Expert Group or Strategic Initiative: **WKLIFE**; Steering Group or Committee: **FRSG**). <https://dx.doi.org/10.1093/icesjms/fsab018>
- Fox, C. J., Albalat, A., Valentinsson, D., Nilsson, H. C., Armstrong, F., Randall, P., and Catchpole, T. 2020. Survival rates for Nephrops norvegicus discarded from Northern European trawl fisheries. *ICES Journal of Marine Science*, 77: 1698-1710. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa037>
- Garcia, D., Dolder, P. J., Iriondo, A., Moore, C., Prellezo, R., Urtizberea, A., and Jardim, E. 2020. A multi-stock harvest control rule based on “pretty good yield” ranges to support mixed-fisheries management. *ICES Journal of Marine Science*, 77: 119–135. (Expert Group or Strategic Initiative: **WGBIE**, **WKMIXFISH**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1093/icesjms/fsz181>
- Garcia, T., Planque, B., Arneberg, P., Bogstad, B., Skagseth, Ø., and Tiedemann, M. 2020. An appraisal of the drivers of Norwegian spring-spawning herring (*Clupea harengus*) recruitment. *Fisheries Oceanography*, n/a. (Expert Group or Strategic Initiative: **WGINOR**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1111/fog.12510>
- Gilbey, J., Carvalho, G., Castilho, R., Coscia, I., Coulson, M. W., Dahle, G., Derycke, S., *et al.* 2021. Life in a drop: Sampling environmental DNA for marine fishery management and ecosystem monitoring. *Marine Policy*, 124: 104331. (Expert Group or Strategic Initiative: **WGAGFA**; Steering Group or Committee: **ASG**). <https://doi.org/10.1016/j.marpol.2020.104331>
- Gill, A. B., Degraer, S., Lipsky, A., Mavraki, N., Methratta, E., and Brabant, R. 2020. Setting the context for offshore wind development effects on fish and fisheries. *Oceanography*, 33: 118-127. (Expert Group or Strategic Initiative: **WGOWDF**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.5670/oceanog.2020.411>
- Gjørøseter, H., Huserbråten, M., Vikebø, F., and Eriksen, E. 2020a. Key processes regulating the early life history of Barents Sea polar cod. *Polar Biology*, 43: 1015-1027. (Expert Group or Strategic Initiative: **WGIBAR**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1007/s00300-020-02656-9>
- Gjørøseter, H., Ingvaldsen, R., and Christiansen, J. S. 2020b. Acoustic scattering layers reveal a faunal connection across the Fram Strait. *Progress in Oceanography*, 185: 102348. (Expert Group or Strategic Initiative: **WGICA**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1016/j.pocean.2020.102348>
- Gogina, M., Zettler, M. L., Vanaverbeke, J., Dannheim, J., Van Hoey, G., Desroy, N., Wrede, A., *et al.* 2020. Interregional comparison of benthic ecosystem functioning: Community bioturbation potential in four regions along the NE Atlantic shelf. *Ecological Indicators*, 110: 105945. (Expert Group or Strategic Initiative: **BEWG**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.ecolind.2019.105945>
- González-Gordillo, J. I., and Cuesta, J. A. 2020. Pinnotheridae de Haan, 1833. ICES Identification Leaflets for Plankton No. 191. 17 pp. <http://doi.org/10.17895/ices.pub.5961>
- Gonzalez-Pola, C., Larsen, K. M. H., Fratantoni, P., Beszczynska-Möller, A., and (Eds.) 2020. ICES Report on Ocean Climate 2019. ICES Cooperative Research Reports No. 350. 136 pp. <https://doi.org/10.17895/ices.pub.7537>
- Greathead, C., Magni, P., Vanaverbeke, J., Buhl-Mortensen, L., Janas, U., Blomqvist, M., Craeymeersch, J. A., *et al.* 2020. A generic framework to assess the representation and protection of benthic ecosystems in European marine protected areas. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 30: 1253-1275. (Expert Group or Strategic Initiative: **BEWG**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1002/aqc.3401>

- Gubanova, A., Drapun, I., Garbazey, O., Krivenko, O., and Vodiasova, E. 2020. Pseudodiaptomus marinus Sato, 1913 in the Black Sea: morphology, genetic analysis, and variability in seasonal and interannual abundance. *PeerJ*, 8: e10153. (Expert Group or Strategic Initiative: **WGEUROBUS**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.7717/peerj.10153>
- Gullestad, P., Sundby, S., and Kjesbu, O. S. 2020. Management of transboundary and straddling fish stocks in the Northeast Atlantic in view of climate-induced shifts in spatial distribution. *Fish and Fisheries*, 21: 1008-1026. <https://doi.org/10.1111/faf.12485>
- Hansel, M. C., Schmidt, J. O., Stiasny, M. H., Stoven, M. T., Voss, R., and Quaas, M. F. 2020. Ocean warming and acidification may drag down the commercial Arctic cod fishery by 2100. *PLoS One*, 15: e0231589. <https://doi.org/10.1371/journal.pone.0231589>
- Hassellöv, I.M., Koski, M., Broeg, K., Marin-Enriquez, O., Tronczynski, J., Dulière, V., Murray, C., Bailey, S., Redfern, J., de Jong, K., Ponzevera, E., Belzunce-Segarra, M.J., Mason, C., Iacarella, J.C., Lyons, B., Fernandes, J.A. and Parmentier, K. 2020. ICES Viewpoint background document: Impact from exhaust gas cleaning systems (scrubbers) on the marine environment (Ad hoc). ICES Scientific Reports. 2:86. 40 pp. <http://doi.org/10.17895/ices.pub.7487>
- Hernandez-Leon, S., Koppelman, R., Fraile-Nuez, E., Bode, A., Mompean, C., Irigoien, X., Olivar, M. P., *et al.* 2020. Large deep-sea zooplankton biomass mirrors primary production in the global ocean. *Nat Commun*, 11: 6048. (Expert Group or Strategic Initiative: **WGZE**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1038/s41467-020-19875-7>
- Howell, D., Schueller, A. M., Bentley, J. W., Buchheister, A., Chagaris, D., Cieri, M., Drew, K., *et al.* 2021. Combining ecosystem and single-species modeling to provide ecosystem-based fisheries management advice within current management systems. *Frontiers in Marine Science*, 7. (Expert Group or Strategic Initiative: **WGEAWESS**, **WKIRISH**; Steering Group or Committee: **IEASG**). <https://doi.org/10.3389/fmars.2020.607831>
- ICES. 2020. ICES VIEWPOINT: Scrubber discharge water from ships – risks to the marine environment and recommendations to reduce impacts. In Report of the ICES Advisory Committee, 2020. ICES Advice 2020, vp.2020.01, <https://doi.org/10.17895/ices.advice.7486>
- Idczak, J., Brodecka-Goluch, A., Łukawska-Matuszewska, K., Graca, B., Gorska, N., Klusek, Z., Pezacki, P. D., *et al.* 2020. A geophysical, geochemical and microbiological study of a newly discovered pockmark with active gas seepage and submarine groundwater discharge (MET1-BH, central Gulf of Gdańsk, southern Baltic Sea). *Science of The Total Environment*, 742: 140306. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.scitotenv.2020.140306>
- Johannesen, E., Yoccoz, N. G., Tveraa, T., Shackell, N. L., Ellingsen, K. E., Dolgov, A. V., and Frank, K. T. 2020. Resource-driven colonization by cod in a high Arctic food web. *Ecology and Evolution*, 10: 14272-14281. (Expert Group or Strategic Initiative: **WGIBAR**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1002/ece3.7025>
- Jokar, M., Subbey, S., and Gjørseter, H. 2021. A logistic function to track time-dependent fish population dynamics. *Fisheries Research*, 236: 105840. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1016/j.fishres.2020.105840>
- Khodabandelloo, B., Ona, E., Macaulay, G., and Korneliussen, R. 2021. Nonlinear crosstalk in broadband multi-channel echosounders. *The Journal of the Acoustical Society of America*, 149: 87-101. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1121/10.0002943>
- Koehn, L. E., Essington, T. E., Levin, P. S., Marshall, K. N., Anderson, L. G., Bundy, A., Carothers, C., *et al.* 2020. Case studies demonstrate capacity for a structured planning process for ecosystem-based fisheries management. *Canadian Journal of Fisheries and Aquatic Sciences*, 77: 1256-1274. (Expert Group or Strategic Initiative: **WGIAB**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1139/cjfas-2019-0202>
- Koutsidi, M., Moukas, C., and Tzanatos, E. 2020. Trait-based life strategies, ecological niches, and niche overlap in the nekton of the data-poor Mediterranean Sea. *Ecology and Evolution*, 10: 7129-7144. (Expert



- Group or Strategic Initiative: **WGCOMEDA**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1002/ece3.6414>
- Krause, G., Billing, S.-L., Dennis, J., Grant, J., Fanning, L., Filgueira, R., Miller, M., *et al.* 2020. Visualizing the social in aquaculture: How social dimension components illustrate the effects of aquaculture across geographic scales. *Marine Policy*, 118. (Expert Group or Strategic Initiative: **WGSEDA**; Steering Group or Committee: **ASG**). <https://doi.org/10.1016/j.marpol.2020.103985>
- Kubilius, R., Macaulay, G. J., and Ona, E. 2020. Remote sizing of fish-like targets using broadband acoustics. *Fisheries Research*, 228: 105568. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.fishres.2020.105568>
- Kvamsdal, S. F., Sandal, L. K., and Poudel, D. 2020. Ecosystem wealth in the Barents Sea. *Ecological Economics*, 171: 106602. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1016/j.ecolecon.2020.106602>
- Laakmann, S., Blanco-Bercial, L., and Cornils, A. 2020. The crossover from microscopy to genes in marine diversity: from species to assemblages in marine pelagic copepods. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375. (Expert Group or Strategic Initiative: **WGIMT**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1098/rstb.2019.0446>
- Ladroit, Y., Escobar-Flores, P. C., Schimel, A. C. G., and O'Driscoll, R. L. 2020. ESP3: An open-source software for the quantitative processing of hydro-acoustic data. *SoftwareX*, 12: 100581. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.softx.2020.100581>
- Larsen, J., Mohn, C., Pastor, A., and Maar, M. 2020. A versatile marine modelling tool applied to arctic, temperate and tropical waters. *PLoS One*, 15: e0231193. (Expert Group or Strategic Initiative: **WGIPEM**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1371/journal.pone.0231193>
- Le Pape, O., Vermard, Y., Guitton, J., Brown, E. J., van de Wolfshaar, K. E., Lipcius, R. N., Støttrup, J. G., *et al.* 2020. The use and performance of survey-based pre-recruit abundance indices for possible inclusion in stock assessments of coastal-dependent species. *ICES Journal of Marine Science*, 77: 1953-1965. (Expert Group or Strategic Initiative: **WGVHES**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1093/icesjms/fsaa051>
- LeBlanc, M., Geoffroy, M., Bouchard, C., Gauthier, S., Majewski, A., Reist, J. D., and Fortier, L. 2020. Pelagic production and the recruitment of juvenile polar cod *Boreogadus saida* in Canadian Arctic seas. *Polar Biology*, 43: 1043-1054. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1007/s00300-019-02565-6>
- Licandro, P. 2020. Tubulariidae Fleming, 1828. ICES Identification Leaflets for Plankton No. 192. 8 pp. <http://doi.org/10.17895/ices.pub.6017>
- Lillehaug, A., and Colquhoun, D. 2020. Vibriosis caused by *Vibrio anguillarum* and *V. ordalii* In ID Leaflets for Diseases and Parasites in Fish and Shellfish, p. 6. <https://doi.org/https://doi.org/10.17895/ices.pub.7622>
- Lishchenko, F., Perales-Raya, C., Barrett, C., Oesterwind, D., Power, A. M., Larivain, A., Laptikhovsky, V., *et al.* 2021. A review of recent studies on the life history and ecology of European cephalopods with emphasis on species with the greatest commercial fishery and culture potential. *Fisheries Research*, 236. (Expert Group or Strategic Initiative: **WGCEPH**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.fishres.2020.105847>
- Long, A. P., O'Donnell, C., Haberlin, D., Lawton, C., and Doyle, T. K. 2020. A novel platform for monitoring gelatinous mesozooplankton: the high-speed Gulf VII sampler quantifies gelatinous mesozooplankton similar to a ring net. *Limnology and Oceanography: Methods*, 18: 696-706. (Expert Group or Strategic Initiative: **WGIPS**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1002/lom3.10395>
- Macaulay, G. J., Chu, D., and Ona, E. 2020. Field measurements of acoustic absorption in seawater from 38 to 360 kHz. *J Acoust Soc Am*, 148: 100. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1121/10.0001498>

- Majaneva, S., Fridolfsson, E., Casini, M., Legrand, C., Lindehoff, E., Margonski, P., Majaneva, M., *et al.* 2020. Deficiency syndromes in top predators associated with large-scale changes in the Baltic Sea ecosystem. *PLoS One*, 15: e0227714. (Expert Group or Strategic Initiative: **WGBAST**; **WGBIFS**; Steering Group or Committee: **FRSG**; **EOSG**). <https://doi.org/10.1371/journal.pone.0227714>
- Marsac, F., Annasawmy, P., Noyon, M., Demarcq, H., Soria, M., Rabearisoa, N., Bach, P., *et al.* 2020. Seamount effect on circulation and distribution of ocean taxa in the vicinity of La Pérouse, a shallow seamount in the southwestern Indian Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 176: 104806. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.dsr2.2020.104806>
- Mazzocchi, M. G. 2020. *Clausocalanus* Giesbrecht, 1888. ICES Identification Leaflets for Plankton No. 189. 19 pp. <http://doi.org/10.17895/ices.pub.5464>
- McKeown, N. J., Carpi, P., Silva, J. F., Healey, A. J. E., Shaw, P. W., and van der Kooij, J. 2020. Genetic population structure and tools for the management of European sprat (*Sprattus sprattus*). *ICES Journal of Marine Science*, 77: 2134-2143. (Expert Group or Strategic Initiative: **WGACEGG**, **WGIPS**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa113>
- Menze, S., Ingvaldsen, R. B., Nikolopoulos, A., Hattermann, T., Albretsen, J., and Gjørseter, H. 2020. Productive detours – Atlantic water inflow and acoustic backscatter in the major troughs along the Svalbard shelf. *Progress in Oceanography*, 188: 102447. (Expert Group or Strategic Initiative: **WGICA**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1016/j.pocean.2020.102447>
- Methratta, E., Hawkins, A., Hooker, B. R., Lipsky, A., and Hare, J. A. 2020. Offshore wind development in the northeast US Shelf Large Marine Ecosystem: ecological, human, and fishery management dimensions. *Oceanography*, 33: 16-27. (Expert Group or Strategic Initiative: **WGOWDF**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.5670/oceanog.2020.402>
- Mikkelsen, E., Fanning, L., Kreiss, C., Billing, S.-L., Dennis, J., Filgueira, R., Grant, J., *et al.* 2021. Availability and usefulness of economic data on the effects of aquaculture: a North Atlantic comparative assessment. *Reviews in Aquaculture*, 13: 601-618. (Expert Group or Strategic Initiative: **WGSEDA**; Steering Group or Committee: **ASG**). <https://doi.org/10.1111/raq.12488>
- Muffley, B., Gaichas, S., DePiper, G., Seagraves, R., and Lucey, S. 2020. There Is no I in EAFM - adapting Integrated Ecosystem Assessment for Mid-Atlantic fisheries management. *Coastal Management*: 1-17. (Expert Group or Strategic Initiative: **WGNARS**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1080/08920753.2021.1846156>
- Munoz-Benavent, P., Puig-Pons, V., Andreu-Garcia, G., Espinosa, V., Atienza-Vanacloig, V., and Perez-Arjona, I. 2020. Automatic bluefin tuna sizing with a combined acoustic and optical sensor. *Sensors (Basel)*, 20. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.3390/s20185294>
- Nilsen, I., Kolding, J., Hansen, C., and Howell, D. 2020. Exploring Balanced Harvesting by Using an Atlantis Ecosystem Model for the Nordic and Barents Seas. *Frontiers in Marine Science*, 7. (Expert Group or Strategic Initiative: **WGIBAR**, **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.3389/fmars.2020.00070>
- NOAA. 2020a. Artificial Intelligence Strategy: Analytics for Next-Generation Earth Science.
- NOAA. 2020b. Cloud Strategy: Maximizing the Value of NOAA's Cloud Services.
- NOAA. 2020c. Data Strategy: Maximizing the Value of NOAA Data.
- NOAA. 2020d. 'Omics Strategy: Strategic Application of Transformational Tools.
- NOAA. 2020e. Uncrewed Systems Strategy: Maximizing Value for Science-based Mission Support.
- Oosterwind, D., and Schaber, M. 2020. First evidence of *Illex coindetii* (Vérany, 1839) in the Baltic Sea and the Kattegat. *Thalassas: An International Journal of Marine Sciences*, 36: 143-147. (Expert Group or Strategic Initiative: **WGCEPH**, **WGBIFS**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1007/s41208-019-00178-8>

- Oesterwind, D., Bianca Bobowski, B., Brunsch, A., Laptikhovsky, V., van Hal, R., Sell, A. F., and Pierce, G. J. 2020. First evidence of a new spawning stock of *Illex coindetii* in the North Sea (NE-Atlantic). *Fisheries Research*, 21: 105384. (Expert Group or Strategic Initiative: **WGCEPH**; **IBTSWG**; Steering Group or Committee: **EPDSG**; **EOSG**). <https://doi.org/10.1016/j.fishres.2019.105384>
- Olmos, M., Payne, M. R., Nevoux, M., Prevost, E., Chaput, G., Du Pontavice, H., Guitton, J., *et al.* 2020. Spatial synchrony in the response of a long range migratory species (*Salmo salar*) to climate change in the North Atlantic Ocean. *Glob Chang Biol*, 26: 1319-1337. (Expert Group or Strategic Initiative: **WGNAS**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1111/gcb.14913>
- Ona, E., Zhang, G., Pedersen, G., Johnsen, E., and Demer, D. 2020. In situ calibration of observatory broadband echosounders. *ICES Journal of Marine Science*, 77: 2954-2959. (Expert Group or Strategic Initiative: **WGFASST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa177>
- Pastor, A., Larsen, J., Hansen, F. T., Simon, A., Bierne, N., and Maar, M. 2021. Agent-based modeling and genetics reveal the Limfjorden as a well-connected system for mussel larvae. *Marine Ecology Progress Series*, DynMod. (Expert Group or Strategic Initiative: **WGIPEM**; Steering Group or Committee: **IE-ASG**). <https://doi.org/10.3354/meps13559>
- Peck, M. A., Alheit, J., Bertrand, A., Catalán, I. A., Garrido, S., Moyano, M., Rykaczewski, R., *et al.* 2020. Small pelagic fish in the new millennium: A bottom-up view of global research effort. *Progress in Oceanography*, 191: 102494. (Expert Group or Strategic Initiative: **WGSPE**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.pocean.2020.102494>
- Peña, M., Cabrera-Gámez, J., and Domínguez-Brito, A. C. 2020. Multi-frequency and light-avoiding characteristics of deep acoustic layers in the North Atlantic. *Marine Environmental Research*, 154: 104842. (Expert Group or Strategic Initiative: **WGFASST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.marenvres.2019.104842>
- Pérez-Arjona, I., Godinho, L., and Espinosa, V. 2020. Influence of fish backbone model geometrical features on the numerical target strength of swimbladder fish. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGFASST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa160>
- Phillips, J. A., Banks, A. N., Bolton, M., Brereton, T., Cazenave, P., Gillies, N., Padget, O., *et al.* 2021. Consistent concentrations of critically endangered Balearic shearwaters in UK waters revealed by at-sea surveys. *Ecology and Evolution*. (Expert Group or Strategic Initiative: **WGACEGG**, **WGIPS**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1002/ece3.7059>
- Pierrot-Bults, A. C. 2020. Chaetognatha. ICES Identification Leaflets for Plankton No. 193. 16 pp. <https://doi.org/10.17895/ices.pub.7564>
- Pinnegar, J. K., Wright, P. J., Maltby, K., and Garrett, A. 2020. The impacts of climate change on fisheries, relevant to the coastal and marine environment around the UK. *MCCIP Science Review*, 2020: 456-481. <https://doi.org/10.14465/2020.arc20.fis>
- Pita, C., Roumbedakis, K., Fonseca, T., Matos, F. L., Pereira, J., Villasante, S., Pita, P., *et al.* 2021. Fisheries for common octopus in Europe: socioeconomic importance and management. *Fisheries Research*, 235. (Expert Group or Strategic Initiative: **WGCEPH**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.fishres.2020.105820>
- Pitois, S. G., Graves, C. A., Close, H., Lynam, C., Scott, J., Tilbury, J., van der Kooij, J., *et al.* 2021. A first approach to build and test the Copepod Mean Size and Total Abundance (CMSTA) ecological indicator using in-situ size measurements from the Plankton Imager (PI). *Ecological Indicators*, 123. (Expert Group or Strategic Initiative: **WGACEGG**, **WGIPS**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.ecolind.2020.107307>
- Pittman, S. J., Yates, K. L., Bouchet, P. J., Alvarez-Berastegui, D., Andréfouët, S., Bell, S. S., Berkström, C., *et al.* 2021. Seascape ecology: identifying research priorities for an emerging ocean sustainability science. *Marine Ecology Progress Series*, 663: 1-29. <https://doi.org/10.3354/meps13661>
- Probst, W. N., Kempf, A., Taylor, M., Martinez, I., and Miller, D. 2021a. Six steps to produce stock assessments for the Marine Strategy Framework Directive compliant with Descriptor 3. *ICES Journal of Marine*

- Science. (Expert Group or Strategic Initiative: **WKIND3.3i**; **WKIND3.3ii**; Steering Group or Committee: **ACOM**). <https://doi.org/10.1093/icesjms/fsaa244>
- Probst, W. N., Stelzenmüller, V., Rambo, H., Moriarty, M., and Greenstreet, S. P. R. 2021b. Identifying core areas for mobile species in space and time: A case study of the demersal fish community in the North Sea. *Biological Conservation*, 254: 108946. (Expert Group or Strategic Initiative: **WGBIODIV**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.biocon.2020.108946>
- Proud, R., Mangeni-Sande, R., Kayanda, R. J., Cox, M. J., Nyamweya, C., Ongore, C., Natugonza, V., *et al.* 2020. Automated classification of schools of the silver cyprinid *Rastrineobola argentea* in Lake Victoria acoustic survey data using random forests. *ICES Journal of Marine Science*, 77: 1379-1390. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa052>
- Raicevich, S., Caswell, B. A., Bartolino, V., Cardinale, M., Eddy, T. D., Giovos, I., Lescrauwaet, A.-K., *et al.* 2021. Sidney Holt, a giant in the history of fisheries science who focused on the future: his legacy and challenges for present-day marine scientists. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGHIST**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1093/icesjms/fsab019>
- Receveur, A., Kestenare, E., Allain, V., Ménard, F., Cravatte, S., Lebourges-Dhaussy, A., Lehodey, P., *et al.* 2020a. Micronekton distribution in the southwest Pacific (New Caledonia) inferred from shipboard-ADCP backscatter data. *Deep Sea Research Part I: Oceanographic Research Papers*, 159: 103237. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.dsr.2020.103237>
- Receveur, A., Menkes, C., Allain, V., Lebourges-Dhaussy, A., Nerini, D., Mangeas, M., and Ménard, F. 2020b. Seasonal and spatial variability in the vertical distribution of pelagic forage fauna in the South-west Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 175: 104655. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.dsr2.2019.104655>
- Renfree, J. S., Andersen, L. N., Macaulay, G., Sessions, T. S., and Demer, D. A. 2020. Effects of sphere suspension on echosounder calibrations. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa171>
- Rijnsdorp, A. D., Hiddink, J. G., van Denderen, P. D., Hintzen, N. T., Eigaard, O. R., Valanko, S., Bastardie, F., *et al.* 2020. Different bottom trawl fisheries have a differential impact on the status of the North Sea seafloor habitats. *ICES Journal of Marine Science*, 77: 1772-1786. (Expert Group or Strategic Initiative: **WKFBIT**, **WKTRADE**, **WGFBIT**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1093/icesjms/fsaa050>
- Rindorf, A., Cadigan, N., Howell, D., Eero, M., and Gislason, H. 2020. Periodic fluctuations in recruitment success of Atlantic cod. *Canadian Journal of Fisheries and Aquatic Sciences*, 77: 236-246. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1139/cjfas-2018-0496>
- Romagnoni, G., Kvile, K. Ø., Dagestad, K. F., Eikeset, A. M., Kristiansen, T., Stenseth, N. C., and Langangen, Ø. 2020. Influence of larval transport and temperature on recruitment dynamics of North Sea cod (*Gadus morhua*) across spatial scales of observation. *Fisheries Oceanography*, 29: 324-339. <https://doi.org/10.1111/fog.12474>
- Rossel, S., Barco, A., Kloppmann, M., Martínez Arbizu, P., Huwer, B., and Kneibelsberger, T. 2021. Rapid species level identification of fish eggs by proteome fingerprinting using MALDI-TOF MS. *Journal of Proteomics*, 231: 103993. (Expert Group or Strategic Initiative: **WGSINS**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.jprot.2020.103993>
- Salvetat, J., Lebourges-Dhaussy, A., Travassos, P., Gastauer, S., Roudaut, G., Vargas, G., and Bertrand, A. 2020. *In situ* target strength measurement of the black triggerfish *Melichthys niger* and the ocean triggerfish *Canthidermis sufflamen*. *Marine and Freshwater Research*, 71: 1118-1127. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1071/MF19153>
- Sarr, J.-M. A., Brochier, T., Brehmer, P., Perrot, Y., Bah, A., Sarré, A., Jeyid, M. A., *et al.* 2020. Complex data labeling with deep learning methods: Lessons from fisheries acoustics. *ISA Transactions*. (Expert Group



- or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.isa-tra.2020.09.018>
- Schroeder, A., Stanković, D., Pallavicini, A., Gionechetti, F., Pantera, M., and Camatti, E. 2020. DNA metabarcoding and morphological analysis - Assessment of zooplankton biodiversity in transitional waters. *Marine Environmental Research*, 160: 104946. (Expert Group or Strategic Initiative: **WGEUROBUS**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.marenvres.2020.104946>
- Scoulding, B., and Kloser, R. 2020. Industry-collected target strength of high seas orange roughy in the Indian Ocean. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa101>
- Scoulding, B., Kloser, R., and Gastauer, S. 2020. Evaluation of unmanned surface vehicle acoustics for gas seep detection in shallow coastal waters. *International Journal of Greenhouse Gas Control*, 102: 103158. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1016/j.ijggc.2020.103158>
- Silvar-Viladomiu, P., Minto, C., Halouani, G., Batts, L., Brophy, D., Lordan, C., and Reid, D. G. 2021. Moving reference point goalposts and implications for fisheries sustainability. *Fish and Fisheries*, 00: 1-14. <https://doi.org/10.1111/faf.12591>
- Skogen, M. D., Ji, R., Akimova, A., Daewel, U., Hansen, C., Hjøllø, S. S., van Leeuwen, S. M., *et al.* 2021. Disclosing the truth: Are models better than observations? *Marine Ecology Progress Series*, DynMod. (Expert Group or Strategic Initiative: **WGIPeM**; Steering Group or Committee: **IEASG**). <https://doi.org/10.3354/meps13574>
- Smolinski, S., Deplanque-Lasserre, J., Hjørleifsson, E., Geffen, A. J., Godiksen, J. A., and Campana, S. E. 2020. Century-long cod otolith biochronology reveals individual growth plasticity in response to temperature. *Sci Rep*, 10: 16708. (Expert Group or Strategic Initiative: **AFWG**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1038/s41598-020-73652-6>
- Smoliński, S., Schade, F. M., and Berg, F. 2020. Assessing the performance of statistical classifiers to discriminate fish stocks using Fourier analysis of otolith shape. *Canadian Journal of Fisheries and Aquatic Sciences*, 77: 674-683. <https://doi.org/10.1139/cjfas-2019-0251>
- Soares, S. M. C., Blackadder, L., Stagg, H. E. B., Munro, E. S., and McLay, A. 2020. The presence of Apicomplexan parasites in king scallops (*Pecten maximus*) in Scottish waters. *J Invertebr Pathol*, 178: 107508. (Expert Group or Strategic Initiative: **WGScallop**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.jip.2020.107508>
- Sobradillo, B., Boyra, G., Pérez-Arjona, I., Martinez, U., Espinosa, V., and O'Driscoll, R. 2021. Ex situ and in situ target strength measurements of European anchovy in the Bay of Biscay. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1093/icesjms/fsaa242>
- Sobrinho, I., Rueda, L., Tugores, M. P., Burgos, C., Cojan, M., and Pierce, G. J. 2020. Abundance prediction and influence of environmental parameter in the abundance of octopus (*Octopus vulgaris* Cuvier, 1797) in the Gulf of Cadiz. *Fisheries Research*, 221: 105382. (Expert Group or Strategic Initiative: **WGCEPH**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.fishres.2019.105382>
- Solvang, H. K., and Planque, B. 2020. Estimation and classification of temporal trends to support integrated ecosystem assessment. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGIBAR**, **WGINOR**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1093/icesjms/fsaa111>
- Sparholt, H., Bogstad, B., Christensen, V., Collie, J., van Gemert, R., Hilborn, R., Horbowy, J., *et al.* 2020. Estimating Fmsy from an ensemble of data sources to account for density dependence in Northeast Atlantic fish stocks. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **AFWG**, **WGSAM**; Steering Group or Committee: **FRSG**). <https://doi.org/10.1093/icesjms/fsaa175>
- Stelzenmüller, V., Cormier, R., Gee, K., Shucksmith, R., Gubbins, M., Yates, K. L., Morf, A., *et al.* 2021. Evaluation of marine spatial planning requires fit for purpose monitoring strategies. *Journal of Environmental Management*, 278: 111545. (Expert Group or Strategic Initiative: **WGMPCZM**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1016/j.jenvman.2020.111545>

- Stokesbury, K. D., and Bethoney, N. D. 2020. How many sea scallops are there and why does it matter? *Frontiers in Ecology and the Environment*, 18: 513-519. (Expert Group or Strategic Initiative: **WGScallop**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1002/fee.2244>
- Strong, J. A. 2020. An error analysis of marine habitat mapping methods and prioritised work packages required to reduce errors and improve consistency. *Estuarine, Coastal and Shelf Science*, 240: 106684. (Expert Group or Strategic Initiative: **WGMHM**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1016/j.ecss.2020.106684>
- Tamburri, M. N., Bailey, S. A., Everett, R. A., First, M. R., Gollasch, S., Outinen, O., and Drake, L. 2020. Protocol for the verification of ballast water compliance monitoring devices. *ICES Techniques in Marine Environmental Sciences*, Vol. 63. 13 pp. <http://doi.org/10.17895/ices.pub.5465>
- Thompson, M. S. A., Couce, E., Webb, T. J., Grace, M., Cooper, K. M., and Schratzberger, M. 2021. What's hot and what's not: making sense of biodiversity 'hotspots'. *Global Change Biology*, 27: 521-535. (Expert Group or Strategic Initiative: **WGBIODIV**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1111/gcb.15443>
- Thompson, M. S. A., Pontalier, H., Spence, M. A., Pinnegar, J. K., Greenstreet, S. P. R., Moriarty, M., Hélaouët, P., *et al.* 2020. A feeding guild indicator to assess environmental change impacts on marine ecosystem structure and functioning. *Journal of Applied Ecology*, 57: 1769-1781. (Expert Group or Strategic Initiative: **WGBIODIV**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1111/1365-2664.13662>
- Tzanatos, E., Moukas, C., and Koutsidi, M. 2020. Mediterranean nekton traits: distribution, relationships and significance for marine ecology monitoring and management. *PeerJ*, 8: e8494. (Expert Group or Strategic Initiative: **WGCOMEDA**; Steering Group or Committee: **IEASG**). <https://doi.org/10.7717/peerj.8494>
- Uhlmann, S. S., Verstockt, S., and Ampe, B. 2020. Digital image analysis of flatfish bleeding injury. *Fisheries Research*, 224: 105470. (Expert Group or Strategic Initiative: **WGMEDS**; Steering Group or Committee: **HAPISG**). <https://doi.org/10.1016/j.fishres.2019.105470>
- Uttieri, M., Aguzzi, L., Aiese Cigliano, R., Amato, A., Bojanić, N., Brunetta, M., Camatti, E., *et al.* 2020. WGEUROBUS – Working Group “Towards a EUROpean OBServatory of the non-indigenous calanoid copepod *Pseudodiaptomus marinus*”. *Biological Invasions*, 22: 885-906. (Expert Group or Strategic Initiative: **WGEUROBUS**, **WGZE**, **WGIMT**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1007/s10530-019-02174-8>
- van de Wolfshaar, K. E., Barbut, L., and Lacroix, G. 2021. From spawning to first-year recruitment: the fate of juvenile sole growth and survival under future climate conditions in the North Sea. *ICES Journal of Marine Science*. (Expert Group or Strategic Initiative: **WGIPEM**; Steering Group or Committee: **IEASG**). <https://doi.org/10.1093/icesjms/fsab025>
- van Putten, I., Kelly, R., Cavanagh, R. D., Murphy, E. J., Breckwoldt, A., Brodie, S., Cvitanovic, C., *et al.* 2021. A Decade of Incorporating Social Sciences in the Integrated Marine Biosphere Research Project (IMBeR): Much Done, Much to Do? *Frontiers in Marine Science*, 8. <https://doi.org/10.3389/fmars.2021.662350>
- Vasilyev, D. A., Kovalev, Yu. A., and Chetyrkin, A. A. 2020. УТОЧНЕНИЕ КОГОРТНОЙ МОДЕЛИ ДЛЯ ОЦЕНКИ СОСТОЯНИЯ ЗАПАСА ТРЕСКИ БАРЕНЦЕВА МОРЯ [The clarified cohort model for the Barents Sea cod stock assessment]. *Problems of Fisheries*, 21: 98-105. (EG: **AFWG**; SG: **FRSG**). <http://dx.doi.org/10.36038/0234-2774-2020-21-1-98-105>
- Villarino, E., Irigoien, X., Villate, F., Iriarte, A., Uriarte, I., Zervoudaki, S., Carstensen, J., *et al.* 2020. Response of copepod communities to ocean warming in three time-series across the North Atlantic and Mediterranean Sea. *Marine Ecology Progress Series*, 636: 47-61. (Expert Group or Strategic Initiative: **WGZE**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.3354/meps13209>
- Waggitt, J. J., P.G.H., E., Andrade, J., Banks, A., Boisseau, O., Bolton, M., Bradbury, G., *et al.* 2020. Distribution maps of cetacean and seabird populations in the north-east Atlantic. *Journal Of Applied Ecology*, 57: 253-269. (Expert Group or Strategic Initiative: **WGACEGG**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1111/1365-2664.13525>

- Wang, J. Y., Kuo, T. C., and Hsieh, C. H. 2020. Causal effects of population dynamics and environmental changes on spatial variability of marine fishes. *Nat Commun*, 11: 2635. (Expert Group or Strategic Initiative: **IBTSWG**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1038/s41467-020-16456-6>
- Whitton, T. A., Jackson, S. E., Hiddink, J. G., Scoulding, B., Bowers, D., Powell, B., D'Urban Jackson, T., *et al.* 2020. Vertical migrations of fish schools determine overlap with a mobile tidal stream marine renewable energy device. *Journal of Applied Ecology*, 57: 729-741. (Expert Group or Strategic Initiative: **WGFAST**; Steering Group or Committee: **EOSG**). <https://doi.org/10.1111/1365-2664.13582>
- Wiech, M., Frantzen, S., Duinker, A., Rasinger, J. D., and Maage, A. 2020. Cadmium in brown crab *Cancer pagurus*. Effects of location, season, cooking and multiple physiological factors and consequences for food safety. *Science of The Total Environment*, 703: 134922. (Expert Group or Strategic Initiative: **WGCRAB**; Steering Group or Committee: **EPDSG**). <https://doi.org/10.1016/j.scitotenv.2019.134922>
- Winter, A. M., Richter, A., and Eikeset, A. M. 2020. Implications of Allee effects for fisheries management in a changing climate: evidence from Atlantic cod. *Ecological Applications*, 30: e01994. <https://doi.org/10.1002/eap.1994>
- Xavier, R., and Saraiva, A. 2021. Coccidiosis of the liver of the blue whiting. ICES Identification Leaflets for Diseases and Parasites in Fish and Shellfish No. 72. 7 pp. <http://doi.org/10.17895/ices.pub.5437>

## Annex 5: Expert Group Science highlights

Steering Group	Science highlights
Aquaculture Steering Group	<p>Paraphrasing from several papers published and a survey of stakeholders</p> <p>ICES countries more or less have similar laws governing aquaculture so need similar types of advice, Risk assessments will be important but there is not yet an ICES standard,</p> <p>ICES countries are not able to provide the region with enough seafood to meet their needs,</p> <p>With only a couple of exceptions, ICES countries have no real plans to increase aquaculture for sea-food – they are lost, floundering,</p> <p>Regulations are often blamed – but this is a call for good science-based governance tools which is ICES strength and opportunity!</p> <p><i>Publications – note this list is incomplete:</i></p> <p>Couture, J. L., Froehlich, H. E., Buck, B. H., Jeffery, K. R., Krause, G., Morris Jr, J. A., Pe´rez, M., Stentiford, G. D., Vehviläinen, H., and Halpern, B. S. Scenario analysis can guide aquaculture planning to meet sustainable future production goals. – ICES Journal of Marine Science, doi:10.1093/icesjms/fsab012.</p>
Data Science and Technology Steering Group	<p>A total of 35 meetings across 22 expert groups and workshops are planned for 2021, 19 of which are still to take place. The data governance groups tend to meet more frequently to discuss priorities – hence the higher number of meetings relative to the number of groups.</p> <p>Reports are still being prepared or not yet available from several groups, but some highlights have emerged through dialogue:</p> <p>TAF user survey conducted (<a href="https://www.ices.dk/news-and-events/news-archive/news/Pages/TAF.aspx">https://www.ices.dk/news-and-events/news-archive/news/Pages/TAF.aspx</a>),</p> <p>DATRAS governance group has created a unified data submission format, working with the ICES Data Centre to implement and successfully launch it. This means that the guidance and format for submitting data is now the same and compatible across <a href="#">many surveys</a>,</p> <p>ICES Smartdots video tutorial and release update: <a href="#">ICES SmartDots - YouTube</a>;</p> <p>WGFAST online meeting was very well attended with more than 100 participants, 38 presentations, covering acoustic models, open-source software for acquiring, processing, and analyzing data, and machine learning and artificial intelligence applications to acoustic data (<a href="https://ftfb-fast.imr.no/">https://ftfb-fast.imr.no/</a>),</p> <p>WGRFS: Skov <i>et al.</i> Expert opinion on using angler Smartphone apps to inform marine fisheries management: status, prospects, and needs, ICES Journal of Marine Science, Volume 78, Issue 3, July 2021, Pages 967–978, <a href="https://doi.org/10.1093/icesjms/fsaa243">https://doi.org/10.1093/icesjms/fsaa243</a>.</p>
Ecosystem Processes and Dynamics Steering Group	<p><i>2020 (late report submissions)</i></p> <p>WGEUROBUS contributed to the publication of observations of the copepod <i>Pseudodiaptomus marinus</i> from the moment of its first appearance Sevastopol Bay (in 2016) until December 2018. Gubanova A, Drapun I, Garbazey O, Krivenko O, Vodiasova E (2020) <i>Pseudodiaptomus marinus</i> Sato, 1913 in the Black Sea: morphology, genetic analysis, and variability in seasonal and interannual abundance. PeerJ, 8: e10153,</p> <p>WGSCALLOP is organizing a concentrated effort to collate all of the information together and to attempt a wider stock assessment for scallops in the Irish Sea (see above, ToR i).</p> <p><i>2021</i></p> <p>WGOH highlights new observations of persisting and changing trends in North-Atlantic Ocean water temperature and salinity, and atmosphere (Interim working group e-evaluation),</p> <p>WGBIODIV contributed to a study integrating biological traits of benthic species that are responsive to instantaneous effects of trawling, i.e. sensitivity, and traits expressing recoverability that feeds into the development of a generic approach to the development of a benthic community vulnerability (to fisheries disturbance) indicator that is likely to perform well even in areas with a</p>

Steering Group	Science highlights
	<p>long history of exploitation over the longer term (i.e. years). Beauchard <i>et al</i> (in press) A generic approach to develop a trait-based indicator of trawling-induced disturbance. MEPS,</p> <p>WGZE is working on IJMS Themed Article set on “Marine zooplankton time series: essential tools to understand variability in productivity-determining processes in the oceans”. First papers are published (online first); publication in 2022.</p>
Ecosystem Observation Steering Group	<p>The bullet points below reflect science highlights taken from the most recent e-evaluation reports. A discussion with EOSG/EG chairs will take place in the near future with the aim of enabling a more comprehensive documentation of the science initiatives and products developed in the different EGs.</p> <p>WGSINS developed a new molecular method (MALDI-TOF-MS) for improving the identification of eggs of cod-like fish and a ref. library was set up and successfully used during the 2018 Q1 IBTS,</p> <p>WGFTFB developed a database of records from compiled literature to support robust meta-analyses on the relative risk of capture and mortality of PETS by gear,</p> <p>WGIPS investigated the impact of survey speed on bias on estimates of herring biomass and found little effect between 10 and 13 knots,</p> <p>IBTSWG is currently working on a new survey gear and has set up a WK to agree on a final design for field testing; Clear progress has been made on the swept-area calculations and various indices used for assessment purpose and OSPAR indicators on fish and litter,</p> <p>WGELECTRA was successful in building collaborative research projects; a total of 4 PhD projects have been conducted on pulse trawling. WG members also actively participated to International Dialogue Meetings on the issue and to ICES ASC,</p> <p>WGISUR helped combining an American and a Canadian survey and formed the new WGNABO with an objective of developing a regional ecosystem monitoring plan; WGISUR also initiated and supervised the CRR on Moving towards Integrated Ecosystem Monitoring (CRR No. 347).</p>
Human Activities, Pressures and Impacts Steering Group	<p>MCWG and WGMS publish: Boitsov <i>et al.</i> (2020) Background concentrations of polycyclic aromatic hydrocarbons in deep core sediments from the Norwegian Sea and the Barents Sea: A proposed update of the OSPAR Commission background values for these sea areas, <i>Chemosphere</i>, 251. <a href="https://doi.org/10.1016/j.chemosphere.2020.126344">https://doi.org/10.1016/j.chemosphere.2020.126344</a>,</p> <p>SIMWG publishes: Cadrin, S.X. 2020. Defining spatial structure for fishery stock assessment. <i>Fisheries Research</i> 221: 105397. <a href="https://doi.org/10.1016/j.fishres.2019.105397">https://doi.org/10.1016/j.fishres.2019.105397</a>,</p> <p>WGBOSV publishes papers related to the experience building phase of the <i>International Maritime Organization's International Convention for the Control and Management of Ships' Ballast Water and Sediments</i>:</p> <ul style="list-style-type: none"> <li>• Drake <i>et al.</i> (2021) Design and installation of ballast water sample ports: Current status and implications for assessing compliance with discharge standards. <i>Mar. Poll. Bull.</i> 167: 112280. <a href="https://doi.org/10.1016/j.marpolbul.2021.112280">https://doi.org/10.1016/j.marpolbul.2021.112280</a>,</li> <li>• Outinen <i>et al.</i> (2021) Exceptions and exemptions under the ballast water management convention – Sustainable alternatives for ballast water management? <i>Journal of Environmental Management</i> 293: 112823. <a href="https://doi.org/10.1016/j.jenvman.2021.112823">https://doi.org/10.1016/j.jenvman.2021.112823</a>,</li> </ul> <p>WGCEAM developed a framework for cumulative effects assessments for management (available in 2020 WGCEAM Report, and in preparation for peer reviewed publication),</p> <p>WGFBIT publishes a quantitative and mechanistic framework to assess trawling impact, and has made all code and data products leading to the assessment available on GitHub in a structured and transparent way:</p> <ul style="list-style-type: none"> <li>• <a href="https://github.com/ices-eg/FBIT">https://github.com/ices-eg/FBIT</a>,</li> <li>• Rijnsdorp <i>et al.</i> (2020) Different bottom trawl fisheries have a differential impact on the status of the North Sea seafloor habitats. <i>ICES J. Mar. Sci.</i> 77: 1772-1786. <a href="https://doi.org/10.1093/icesjms/fsaa050">https://doi.org/10.1093/icesjms/fsaa050</a>.</li> </ul> <p>WGHIST publishes study highlighting the value of employing ecosystem models for testing management scenarios, and also explores the life, legacy and lessons learned of fisheries giant Sidney Holt:</p> <ul style="list-style-type: none"> <li>• Dias <i>et al.</i> (2021) Contrasting fishing effort reduction and habitat connectivity as management strategies to promote alewife (<i>Alosa pseudoharengus</i>) recovery using an ecosystem model. <i>Limnol. Oceanogr.</i> <a href="https://doi.org/10.1002/lno.11871">https://doi.org/10.1002/lno.11871</a>,</li> </ul>

Steering Group	Science highlights
	<ul style="list-style-type: none"> <li>• Raicevich, S. <i>et al.</i> 2021. Sidney Holt, a giant in the history of fisheries science who focused on the future: his legacy and challenges for present-day marine scientists. ICES J. Marine Science. <a href="https://doi.org/10.1093/icesjms/fsab019">https://doi.org/10.1093/icesjms/fsab019</a>.</li> </ul> <p>WGMHM publishes: Strong, J.A. 2020. An error analysis of marine habitat mapping methods and prioritised work packages required to reduce errors and improve consistency. <i>Estuarine, Coastal and Shelf Science</i>, 240: 106684. <a href="https://doi.org/10.1016/j.ecss.2020.106684">https://doi.org/10.1016/j.ecss.2020.106684</a>.</p> <p>WGMEDS publishes: Uhlmann, S.S., Verstockt, S., Ampe, B. 2020. Digital image analysis of flatfish bleeding injury. <i>Fisheries Research</i>, 224: 105470. <a href="https://doi.org/10.1016/j.fishres.2019.105470">https://doi.org/10.1016/j.fishres.2019.105470</a>.</p> <p>WGMPZM published review of evaluation approaches for marine spatial planning: Stelzenmüller <i>et al.</i> (2021) Evaluation of marine spatial planning requires fit for purpose monitoring strategies. <i>J. Env. Manage.</i>, 278: 111545. <a href="https://doi.org/10.1016/j.jenvman.2020.111545">https://doi.org/10.1016/j.jenvman.2020.111545</a>.</p> <p>WGSHP submits viewpoint on scrubber discharge water to the International Maritime Organization (with MCWG and WGMS also contributing to the viewpoint content): Risks to the marine environment posed by scrubber water discharge and recommendations to reduce impacts. Submitted as MEPC 76/9/1, 1 March 2021,</p> <p>WGOWDF members collaborated with WGMRED members to contribute to papers in a special issue of <i>Oceanography</i> entitled, "Special Issue on Understanding the Effects of Offshore Wind Energy Development on Fisheries."</p> <ul style="list-style-type: none"> <li>• Methratta <i>et al.</i> 2020. Offshore wind development in the Northeast US Shelf Large Marine Ecosystem: Ecological, human, and fishery management dimensions. <i>Oceanography</i> 33(4):16–27, <a href="https://doi.org/10.5670/oceanog.2020.402">https://doi.org/10.5670/oceanog.2020.402</a>,</li> <li>• Gill <i>et al.</i> 2020. Setting the context for offshore wind development effects on fish and fisheries. <i>Oceanography</i> 33(4):118–127 <a href="https://doi.org/10.5670/oceanog.2020.411">https://doi.org/10.5670/oceanog.2020.411</a>,</li> <li>• Degraer <i>et al.</i> (2020). Offshore wind farm artificial reefs affect ecosystem structure and functioning: A synthesis. <i>Oceanography</i>, 33:48-57.</li> </ul>
Integrated Ecosystem Assessments Steering Group	<p><i>2021 Publications</i></p> <p>Bentley, J.W., Lundy, M.G., Howell, D., Beggs, S.E., Bundy, A., De Castro, F., Fox, C.J., Heymans, J.J., Lynam, C.P., Pedreschi, D. and Schuchert, P., 2021. Refining fisheries advice with stock-specific ecosystem information. <i>Frontiers in Marine Science</i>, 8, p.346. <a href="https://doi.org/10.3389/fmars.2021.602072">https://doi.org/10.3389/fmars.2021.602072</a> (WGEAWESS, WKIrish),</p> <p>Carvalho-Souza GF, Torres MA, Farias C, Acosta JJ, Tornero J, Sobrino I, Ramos F, Llope M (2021) International politics must be considered together with climate and fisheries regulation as a driver of marine ecosystems. <i>Global Env Change</i>. 69, 102288. <a href="https://doi.org/10.1016/j.gloenvcha.2021.102288">https://doi.org/10.1016/j.gloenvcha.2021.102288</a> (WGEAWESS),</p> <p>Howell, D., Schueller, A.M., Bentley, J.W., Buchheister, A., Chagaris, D., Cieri, M., Drew, K., <i>et al.</i> 2021. Combining ecosystem and single-species modeling to provide ecosystem-based fisheries management advice within current management systems. <i>Frontiers in Marine Science</i> 7. <a href="https://doi.org/10.3389/fmars.2020.607831">https://doi.org/10.3389/fmars.2020.607831</a> (WGEAWESS, WKIRISH),</p> <p>Pastor, A., Larsen, J., Hansen, F.T., Simon, A., Bierne, N., Maar, M. 2021. Agent-based modeling and genetics reveal the limfjorden as a well-connected system for mussel larvae. <i>Marine Ecology Progress Series DynMod</i>. <a href="https://doi.org/10.3354/meps13559">https://doi.org/10.3354/meps13559</a> (WGIPEM),</p> <p>Skogen, M.D., Ji, R., Akimova, A., Daewel, U., Hansen, C., Hjøllø, S.S., van Leeuwen, S.M., <i>et al.</i> 2021. Disclosing the truth: Are models better than observations? <i>Marine Ecology Progress Series DynMod</i>. <a href="https://doi.org/10.3354/meps13574">https://doi.org/10.3354/meps13574</a> (WGIPEM),</p> <p>van de Wolfshaar, K.E., Barbut, L., Lacroix, G. 2021. From spawning to first-year recruitment: The fate of juvenile sole growth and survival under future climate conditions in the north sea. <i>ICES Journal of Marine Science</i>. <a href="https://doi.org/10.1093/icesjms/fsab025">https://doi.org/10.1093/icesjms/fsab025</a> (WGIPEM).</p> <p><i>Additional Highlights</i></p> <ul style="list-style-type: none"> <li>• WGINOSE dynamic mapping of activity and pressure layers: a total of 10 activity/data layers are now mapped and the area of intersection by each activity footprint and individual strata has been calculated. This enables the spatial relationships between multiple pressures/activities and the North Sea assessment strata to be assessed. A dynamic map of the layers can be found and tables of activity strata overlap in km2 can be found <a href="#">here</a>,</li> </ul>



Steering Group	Science highlights
	<ul style="list-style-type: none"> <li>• WGIPEM initiated a special issue of Marine Ecosystem Progress Series (estimated for fall 2021 publication) which will focus exclusively on dynamic modelling and includes multiple studies from the group,</li> <li>• WGMARS systematic review protocol for their behavioural economics work has been accepted for publication in PLOS One,</li> <li>• WGSOCIAL participation in ICES reflections: Understanding the impacts of the COVID-19 pandemic on fisheries, markets, communities, and management <a href="#">webinar</a>,</li> <li>• WGI BAR annual report <a href="#">“The state and trends of the Barents Sea ecosystem”</a> has been updated. This report provides ecosystem assessment for ICES WGs on stock assessments, Arctic Council, the Joint Russian-Norwegian Fisheries Commission, the Joint Russian-Norwegian Environmental Commission, the Norwegian Ministry of Climate and Environment and the Ministry of Natural Resources and Environment of the Russian Federation,</li> <li>• WGINOR produced Norwegian Sea ecosystem status summary as an annex to their <a href="#">annual report</a>,</li> <li>• Cross-group (WGEAWESS, WGMARS, WGCAMEDA) funding was received from EuroMarine for a joint ICES-EuroMarine workshop on conceptual modelling (<a href="#">WKCCMM</a>),</li> <li>• WGBESEO hosted a panel at the online MARE 2021 conference in June: <a href="#">“Informing trade-offs for a Sustainable Blue Growth”</a>. The panel was run as a workshop and after three kick-off presentations from WGBESEO members, breakout groups answered the question: <i>What do authorities need to know when taking a decision on conflicting ESEI objectives?</i> A report on the findings is being prepared at the moment.</li> </ul>
Fisheries Re-sources Steering Group	<p>It is worth highlighting that the groups in FRSG successfully conducted and developed the science needed to support the advisory process, despite major challenges imposed by the COVID-19 pandemic. In addition to supporting the development of recurring advice, the Group conducted and participated in a number of additional scientific activities.</p> <p>There were numerous benchmark and interbenchmark stock assessment workshops held over the past year. One to highlight is the Benchmark Workshop on the development of MSY advice for category 3 stocks using Surplus Production Models in Continuous Time (WKMSYSPICT). This workshop evaluated 13 category 3 stocks across four EGs to determine whether MSY advice could be provided using a surplus production model. The approach was successful for some, but not all stocks, and the workshop offered scientific recommendations related to data analysis and processing, and understanding various sources of bias within the data. These recommendations are well-suited for the attention of SCICOM.</p> <p>In addition to benchmarks and interbenchmarks, the FRSG also provided oversight for a number of science-focused workshops. A selection of those workshops is highlighted as follows:</p> <ul style="list-style-type: none"> <li>• Workshop on the future of eel advice (WKFEA). This workshop highlighted several science needs for managing European eel, such as the development of spatial stock assessments, better data to conduct stock analysis, and consideration of a whole-ecosystem approach.</li> <li>• Workshop of Fisheries Management Reference Points in a Changing Environment (WKRP-Change). This was a very timely workshop given that changing environments are increasingly challenging the reliability of advice, particularly when stationarity assumptions are made. The conclusions made during this workshop provide strong justification for coordination between FRSG and other ICES Steering Groups. For instance, there is a need to conduct evaluations at the stock level to determine if there are key drivers in the system that are changing productivity, and when the evidence is strong, these changes should be accounted for when setting reference points.</li> </ul>

## Strategic Project Participation

*Council is invited to support the development of a new ICES project participation strategy for approval at the 2022 Council meeting.*

Roles of ICES in projects:

- ICES secretariat as a project partner, to build capacity in-house for the benefit of all countries (e.g., Data Centre)
- ICES secretariat as a project partner, to offer syntheses, products based on the work of the expert groups or to offer communication or meeting facilities;
- ICES secretariat as an organisation, to collaborate with other organizations in global or regional frameworks (e.g., UN Decade);
- ICES secretariat as an organisation, to contribute to marine science strategic agendas
- Other

**Rationale:** In response to the changing landscape of project funding programmes and schemes, and the different roles that ICES has had in projects in the past, the Bureau initiated a discussion on a new ICES projects strategy. The created Bureau sub-group suggests the below outlined considerations and action points:

The objectives are:

- to scrutinize the benefits gained from project participation and their impact on the implementation of the ICES Strategic Plan, as well as factors hampering participation in research development and programming;
- improve ICES secretariat capacity to guide participation and administer projects;
- re-strengthening of ICES science-cooperation based on project participation;
- to improve the effective collaboration of ACOM with projects, leading to improved take up of project findings into advice;



- position ICES as an important player with different roles in the changing international research landscape in a long-term perspective.

**Actions timeline:**

- Bureau creating a task group for current overview and guidance of the strategy development, summer 2021;
- Preliminary brainstorming and forward-looking discussion at ICES Council 2021 – action points / resource requirements;
- Analysis of current project involvement, roles, themes, benefits and challenges, and of research programming landscape – with special emphasis on the Horizon Europe 2021-2027 Programme, its Missions and Partnerships, winter 2021/2022;
- Analysis of projects as a tool for underpinning of ICES Strategic Plan, building scientific relationships with partner organizations, incl. transatlantic and global dimensions, 2022;
- Meetings with DG R&I and several ICES institutes' project offices 2021/2022;
- Consultation with SCICOM, spring 2022;
- Submission of the strategy proposal to ICES Council 2022.

## ICES Education Initiative

Council is invited to:

- 1) Review progress on the Education Initiative consistent with Council support at the 2020 meeting
- 2) Recognize and comment on plans for 2022 and beyond

At the 2020 Council meeting, an update on progress was provided regarding the Council Strategic Initiative on Resources (CSI Resources). One aspect of this update concerned the concept of building long-term capacity through education. The Council was informed about work which had begun to develop a strategy which will involve coordination among North American and European Universities to develop transdisciplinary, multi-institutional coursework, research opportunities and scientific personnel exchanges that will build capacity (through graduate- and post-graduate education) for meeting future ICES science-based advisory needs. To further this initiative, a workshop was conducted online in late November and early December of 2020.

WKEDU (Workshop on Graduate/Post Graduate Education Strategy to Meet Future ICES Advisory Needs) met remotely in November/December 2020 to address the following Terms of Reference:

- 1) Summarize expertise required to meet current advisory needs and identify likely future expertise requirements for providing advice that supports ecosystem-based decision-making for the management of human activities in marine ecosystems.
- 2) Evaluate opportunities and impediments related to building interdisciplinary, multi-institutional, international graduate/post graduate programs (while the primary focus is to address future ICES advisory needs, broader capacity building needs should also be taken into account)
- 3) Review/summarize current single- and multi-institutional programs that support needs identified above and identify successful models
- 4) Identify issues that must be resolved to allow this initiative to move forward, describe next steps and a draft a roadmap for developing a curriculum within 3 years
- 5) Describe/propose a process for accomplishing these TORs, including possible formation of an expert group and further workshops
- 6) Evaluate and incorporate approaches for improving (post) graduate education opportunities for women, underrepresented minorities, indigenous people and fishers through this initiative

A follow-up planning meeting of the group was held online in June 2021 to continue work on these TORs and plan next steps.

Both meetings were well-attended with participation from approximately 20 academic institutions representing 10 ICES member countries in North America and Europe.

Participants expressed strong interest in working collaboratively to address the goals of this initiative and recognized additional benefits including increased academic participation in ICES, especially for from North America. Participants representing EU DGMARE and the Canadian Ocean Frontiers Institute suggested possibilities for broader collaboration on this initiative and discussions with them have continued.

Details can be found in the WKEDU report:

<https://www.ices.dk/sites/pub/Publication%20Reports/Forms/DispForm.aspx?ID=37421>

There is broad consensus among participants of the need for substantive work to fully address the goals of this initiative, and of the potential benefits to ICES, as well as academic institutions and government agencies throughout and beyond the community of member countries. Under new leadership (Gavin Faye (US) and Margarida Castro (PT) have kindly agreed to act as co-chairs as Bill Karp (US), Tim Essington (US) and Steve Cadrin (US) step down). They will work with the group and SCICOM to develop a proposal for a Strategic Initiative on Education. Draft TORs for this SI are:

- 1) Evaluate opportunities and impediments related to building interdisciplinary, multi-institutional, international graduate/post graduate programs and develop a curriculum/consortium which will build capacity to address future ICES advisory needs
- 2) In coordination with the ICES Training Group, consider and develop recommendations regarding short-term approaches for educating and training experts including:
  - Summer schools
  - Short courses
  - Sharing courses across institutions (e.g. “open courses”, sharing of teaching materials)
  - Internships/fellowships
  - Shared mentoring/advising of students {e.g. student exchanges, co-advising)
- 3) Evaluate, enhance, and incorporate approaches for implementing and promoting gender equality, diversity, equity, and inclusion in ocean training and education opportunities. Reach out broadly and network with other organizations to expand knowledge and further build opportunities in the DEI space for collaboration in the broader marine science community.
- 4) Consult broadly with agencies, universities, early-career professionals, and others to ensure the program will be inclusive and address current and future needs
- 5) Coordinate with other programs with similar objectives and seek synergies

# ICES Data Policy

## Data policy for data managed by ICES

xxx 2021



## Scope

This policy applies to data managed by ICES. By maximizing the availability of data to the community at-large, ICES promotes the use of these data, thereby ensuring that their maximum value can be realised and thus contribute to an increased understanding of the marine environment.

This policy states the general principles for the ICES data life cycle in order to facilitate the production of science based advice and status reports, and serve the scientific community.

Please refer to this [link](#) for more information on data licences.

## Definitions

- a. **You** means the individual or entity
- b. **Restricted Data** means data within the Database that is classified as not publicly accessible as determined by the data owner
- c. **Public Data** means data within the Database that is classified as publicly accessible as determined by the data provider;
- d. **Data provider** means the organization and/or individual that control/organizes the ownership access for the data
- e. **Data owner** means the organization and/or individual that retains the ownership rights for the data
- f. **Database(s)** means the data repository or data portal where the data reside
- g. **PID** a digital persistent identifier, long-lasting reference to a document, file, web page, or other object
- h. **Metadata**: descriptive information about detail or aggregate data sets, necessary to interpret, use and disclose data

## Contextual information

- a. You can obtain publicly available data as soon as is feasible
- b. You have sole responsibility for correct and appropriate data interpretation
- c. Results, conclusions, and/or recommendations derived from the data do not imply endorsement from ICES
- d. You are requested to inform ICES of any suspected problems in the data

## Contribution of Data

- a. All data provided to ICES are considered to be public data under CC-BY, unless otherwise explicitly specified as restricted data.
- b. The data provider must be authorized by the data owner to provide the data
- c. Data contributions should be made as soon as possible after the data collection event. The system allows for re-submission of data throughout the quality control process. For example, preliminary data can be submitted immediately after collection and replaced later by cleaned data
- d. All data should be provided using standard codes, formats, and protocols to the extent possible. Further guidance can be found on the ICES website <https://www.ices.dk/data>
- e. The data provider retains overall responsibility for data quality

## Quality Assurance

- a. ICES develops and applies quality assurance procedures as appropriate and feasible, and in cooperation with data providers, ICES Expert groups and other organizations
- b. ICES may be informed of potentially erroneous data. ICES will ensure that data providers are informed of quality issues
- c. The ICES Data Centre will never change the original data record from a data provider, but may undertake conversions or transformations of that data to allow its inclusion in ICES databases
- d. Although the ICES Data Centre may perform some data quality control, the data provider always retains complete responsibility for data quality, including re-submission of data.

### ***Data security and storage***

- a. ICES makes every effort to ensure that data received are handled and stored in a way that preserves the integrity of the data as it was provided to them
- b. ICES maintains an accession system that ensures that all data can be identified in the system, and any resubmissions of data are recorded as such
- c. All data, metadata and supporting information are stored as original files and also as part of the database systems backups

### ***Citation of Data***

Data Sources should be acknowledged by a citation. The citation must include as a minimum a reference to the ICES database where the data extraction was made and the year in which the database was referenced. Preferably, data is cited by using the dataset's PID. When no PID is available, one can cite the dataset using one of the options below:

#### **Standard citations**

"ICES Acoustic trawl dataset 2019. ICES, Copenhagen"

"ICES Impulsive noise portal, 2020. ICES, Copenhagen"

#### **Extended citations**

"ICES Database of Trawl Surveys (DATRAS), Extraction 3 JUNE 2012 of International Bottom Trawl Survey (IBTS). ICES, Copenhagen"

"ICES Environmental database (DOME), Extractions 3-10 JUNE 2012; Chemical data for the OSPAR CEMP, Reporting laboratory(s) via British Oceanographic Data Centre (UK). ICES, Copenhagen"

A Data Citation may also include a URL to the database, and/or a URL to the metadata record. Additional citation information is made available in the Disclaimer file that accompanies the data download under the section 'Data Acknowledgement'.

### ***Change log***

<b>Description</b>	<b>Responsible</b>	<b>Date</b>
Initial version created from 2016 ICES data policy, and aligned to language used in revised restricted data licences.	Neil Holdsworth; Sjur Ringheim Lid; Chris Moulton (DIG sub-group on data policy revision)	03/02/2021

# ICES Data License

Data use license for biodiversity  
data managed by ICES

15 February, 2021





## **Definitions**

- a) **Licensor** means the individual(s) or entity(ies) granting rights under this License.
- b) **You** means the individual or entity exercising the Licensed Rights under this License.
- c) **Licensed Rights** means the rights granted to You subject to the terms and conditions of this License
- d) **Restricted Data** means data within the Database that is classified as not publicly accessible as determined by the data owner
- e) **Public Data** means data within the Database that is classified as publicly accessible as determined by the data provider;
- f) **Data Provider** means the organization and/or individual that controls/organizes access to the data
- g) **Data owner** means the organization and/or individual that retains the ownership rights for the data
- h) **Databases** means the data repository or data portal where the data reside, in this context:
  - a. vme.ices.dk
  - b. biodiversity.ices.dk
- i) **ICES Advice Requester** means an organisation or country that has signed an [agreement](#) with ICES to provide management advice services;

## **Scope**

This license applies to anyone granted licensed rights to use restricted data uploaded into the databases. Public data access rights are otherwise described in the ICES Data Policy. DOI 10.17895/ices.data.XXXX

## **License Grant**

Full access to use restricted data are granted to the following:

- a) an ICES group with related Advice terms of reference;
- b) an ICES advice requestor, where data have been provisioned under a data call from the ICES advice requestor;

## **License Conditions**

- a) Correct and appropriate data interpretation is solely your responsibility.
- b) You must not expressly or otherwise imply ICES substantiation of your work, results, conclusions and/or recommendations.
- c) You are obliged to inform ICES of any suspected problems in the data.
- d) Data provided to you shall not be kept on your computer/database upon completion of the task related to the term of reference.
- e) You shall treat the data as confidential and the transmission or sharing of these data are not allowed

## **Attribution**

These data should be cited as per guidance provided in the ICES Data Policy.

## **Disclaimer of Warranties and Limitation of Liability**

- a) Unless otherwise separately undertaken by the Licensor, to the extent possible, the Licensor offers the Licensed Material as-is and as-available, and makes no representations or warranties of any kind concerning the Licensed Material, whether express, implied, statutory, or other. This includes, without limitation, warranties of title, merchantability, fitness for a particular purpose, non-infringement, absence

of latent or other defects, accuracy, or the presence or absence of errors, whether or not known or discoverable. Where disclaimers of warranties are not allowed in full or in part, this disclaimer may not apply to You.

- b) To the extent possible, in no event will the Licensor be liable to You on any legal theory (including, without limitation, negligence) or otherwise for any direct, special, indirect, incidental, consequential, punitive, exemplary, or other losses, costs, expenses, or damages arising out of this Public License or use of the Licensed Material, even if the Licensor has been advised of the possibility of such losses, costs, expenses, or damages. Where a limitation of liability is not allowed in full or in part, this limitation may not apply to You.
- c) The disclaimer of warranties and limitation of liability provided above shall be interpreted in a manner that, to the extent possible, most closely approximates an absolute disclaimer and waiver of all liability.

## Change Log

Description	Responsible	Date
<p>Headings and terminology based on <a href="https://creativecommons.org/licenses/by/4.0/">https://creativecommons.org/licenses/by/4.0/</a></p> <p>Use case adopted from existing 'data access arrangements' for VME data (<a href="http://ices.dk/data/Documents/VME_DataAccess_ICES_2016.pdf">http://ices.dk/data/Documents/VME_DataAccess_ICES_2016.pdf</a>)</p> <p>Scope to include VME, Birds and Seals and Cetaceans (pipeline dataflow) – so called 'biodiversity' data that have a similar user story in terms of data access restrictions</p> <p>A landing page describing how you request access to restricted data will need to be put in place to avoid this being part of the licence (the licence should cover what you can do with the data once you have access)</p>	Neil Holdsworth; DIG sub-group on data licence revision	26/01/2021

# Commercial Fisheries Data

Data licence for the Regional  
Database (RDB) and Regional  
Database and Estimation System  
(RDBES)



## Definitions.

1. **Licensor** means the individual(s) or entity(ies) granting rights under this License.
2. **You** means the individual or entity exercising the Licensed Rights under this License.
3. **Licensed Rights** means the rights granted to You subject to the terms and conditions of this License
4. **Restricted Data** means data within the Database that is classified as not publicly accessible as determined by the data provider
5. **Public Data** means data within the Database that is classified as publicly accessible as determined by the data provider;
6. **Data provider** means the organization and/or individual that control/organizes the ownership access for the data
7. **Data owner** means the organization and/or individual that retains the ownership rights for the data
8. **Databases** means the data repository or data portal where the data reside, in this context:
  - a. Regional Database (RDB)
  - b. Regional Database & Estimation System (RDBES)
9. **ICES Advice Requester** means an organisation or country that has signed an agreement with ICES to provide management advice services;
10. The present Regional Database, and the new Regional Database and Estimation System are herein referred to as the **RDBES**.
11. The Regulation (EU) 2017/1004<sup>1</sup> is hereafter referred to as the **Data Collection Framework (DCF)**.
  - a. For the European Union Member States, the basis for data policy rules are the provisions of the DCF.
12. The database herein is a **regional database** as referred to in Article 18(1) of the DCF.
13. The DCF defines:
  - a. **Detailed data** as data based on primary data in a form that does not allow natural persons or legal entities to be identified directly or indirectly
  - b. **Aggregated data** as the output resulting from summarising the primary or detailed data for specific analytical purposes.

## Scope

This license applies to anyone granted licensed rights to use restricted data uploaded into the databases.

---

<sup>1</sup> Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008 (recast)

## **License grant**

1. Data use for fisheries management:
  - a. Advice to Fisheries Management
    - i. Countries grant permission for aggregated data, see Annex 1, to be used by ICES in the provision of scientific advice to the European Commission and other ICES clients of scientific advice. A list of the ICES groups that require access to aggregated data will be provided to the RCG's and ACOM members by 31 Jan each year.
    - ii. EU Member States (MS) grant permission for detailed data to be used by the RCG's for the purposes of Article 9 of the DCF.
    - iii. An ICES entity on the approved list in (i), requiring detailed data from the RDBES, via the RDBES host can request access in writing to each country and EU MS<sup>2</sup>. The EU MS will be obliged to respond within one month from the date of the request. If approval is given users of detailed data must sign the "Conditions for detailed RDBES data use" agreement.
    - iv. EU MS / ICES countries can choose to pre-approve access to detailed data for all EGs on the list in (i) – this approval must be given in writing to the RDBES host. This approval must be renewed by 31 Jan each year in writing to the RDBES host. Users of detailed data must sign the "Conditions for detailed RDBES data use" agreement.
2. Other uses
  - a. An entity requiring detailed or aggregated data from the RDBES, can request access in writing to each Country. The EU MS will be obliged to respond two months from the date of the request. If approval is given users of detailed data must sign the "Conditions for detailed RDBES data use" agreement.
3. For requests related to scientific publication, for EU MS Article 17(7) of the DCF applies.
4. Persons from the European Commission have full access to, or can receive, EU countries' data from the RDB/RDBES.

## **License Conditions.**

- a) Correct and appropriate data interpretation is solely your responsibility.
- b) You must not expressly or otherwise imply ICES substantiation of their work, results, conclusions and/or recommendations.
- c) You are obliged to inform ICES of any suspected problems in the data.
- d) Data provided to you shall not be kept on your computer/database upon completion of the task related to the term of reference.
- e) You shall treat the data as confidential and the transmission or sharing of these data are not allowed
- f) Data can be shown in reports as described in Annex 1

---

<sup>2</sup> The focal point in EU MS being National Correspondents in consultation with individual countries or autonomous data providers within member states. For non EU countries the ICES delegate is considered the focal point.

## **Attribution**

These data should be cited as per guidance provided in the ICES Data Policy.

## **Disclaimer of Warranties and Limitation of Liability.**

1. Unless otherwise separately undertaken by the Licensor, to the extent possible, the Licensor offers the Licensed Material as-is and as-available, and makes no representations or warranties of any kind concerning the Licensed Material, whether express, implied, statutory, or other. This includes, without limitation, warranties of title, merchantability, fitness for a particular purpose, non-infringement, absence of latent or other defects, accuracy, or the presence or absence of errors, whether or not known or discoverable. Where disclaimers of warranties are not allowed in full or in part, this disclaimer may not apply to You.
2. To the extent possible, in no event will the Licensor be liable to You on any legal theory (including, without limitation, negligence) or otherwise for any direct, special, indirect, incidental, consequential, punitive, exemplary, or other losses, costs, expenses, or damages arising out of this Public License or use of the Licensed Material, even if the Licensor has been advised of the possibility of such losses, costs, expenses, or damages. Where a limitation of liability is not allowed in full or in part, this limitation may not apply to You.
3. The disclaimer of warranties and limitation of liability provided above shall be interpreted in a manner that, to the extent possible, most closely approximates an absolute disclaimer and waiver of all liability.

## **Other Terms and Conditions.**

1. For non-EU countries, the basis for data policy rules is in accordance with the limitations on data use specified by each country<sup>3</sup>.
2. According to the DCF, provision on access rights and time frame are described under Articles 17(1), 17(3) and 17(4).
3. The RDBES follows the principles of personal data protection, as referred to in Article 2 of the DCF.
4. Data ownership - the national data in RDBES is owned by the individual countries.
5. An inventory of data housed in the RDBES is available without restriction on the RDBES website.
6. According to Articles 14(1) of the DCF Member States are responsible for the quality and completeness of the primary data collected under national work plans, and for the detailed and aggregated data derived therefrom which are transmitted to end-users of scientific data. For non-EU countries, with reference to the ICES Data policy, data providers are responsible for the quality and completeness of data delivered to ICES.

---

<sup>3</sup> In response to official data calls to the RDBES

## **ANNEX 1 Use and Publication of data**

### **Detailed and Aggregated data**

According to the definitions in this Data Policy, which is taken from the EU Regulation 2017/1004, landing (CL) and effort data (CE) are considered aggregated data, and sample data (CS) are considered detailed data. The sample data (CS) will have to be aggregated to month and sub-division/unit to be considered aggregated.

### **Rules for use of data from the RDBES**

Data shall be used only for the purposes of facilitating scientific advice, or other work specifically approved by the countries, and will be strictly related to the agreed terms of reference of the activity executed by the data user. Downloaded data shall be secured by appropriate safeguards, such as encryption and password protection of the computer on which it is held. Electronic data provided to the data user(s) shall not be kept on a user's computer/database upon completion of the task related to the term of reference. Data users shall treat the data as confidential and the transmission or sharing of these data are not allowed. Data users shall ensure that visualisations or data products derived from the data adhere to Annex 1 of the RDBES Data Policy. Users of detailed data must sign the "Conditions for detailed RDBES data use" agreement.

### **Showing data in public reports**

#### **General Rule**

Sample data (CS), landing data (CL) and effort data (CE) can always be shown when data are disaggregated at the following level:

Year	Quarter	Species	Metier level 4-6	Area <sup>4</sup>
------	---------	---------	---------------------	-------------------

#### **Landings (CL) and Efforts (CE) specific rules**

The data that will be publicly available through the RCGs or ICES Expert Groups reports must be aggregated to at least the following highest resolution level.

In the overall data there in general must be more than two different units in each variable to be able to aggregate over the variables (e.g. to aggregate by country the data must include at least 2 different countries). When showing landings and/or effort data in a public report the highest resolution is determined by selecting at least 4 out of the 9 following variables. Only one option/figure can be shown to ensure conclusions cannot be drawn from a combination of several figures:

Vessel flag country	Year	Month	Species	Metier level 4-6	Vessel length category	Statistical rectangle	Landing Country	Harbour
---------------------------	------	-------	---------	---------------------	------------------------------	--------------------------	--------------------	---------

---

<sup>4</sup> Subdivision or unit (FAO definition, <http://www.fao.org/fishery/area/Area27/en> )



The following are some examples of this rule

Examples:

Landings data can be plotted by species, statistical rectangles and year when data are aggregated over country, month, metier level 4-6 and vessel length category.

Effort data can be plotted by metier level 4-6, statistical rectangles and year when data are aggregated over country, month and vessel length category and species.

If it is needed to publish data at higher resolution the relevant National Correspondents have to be asked for approval.

### **Sample (CS) specific rules**

The data that will be public available through the RCGs or ICES Expert Groups reports should be aggregated to the same level as the landings data.

The CS data holds information (auxiliary variables and obtained data) from sampled trips. **It is not allowed to publish CS data in a report in such a way that the individual catches from a given trip are shown.**

Data need to be aggregated before shown in tables or figures. In this context data covers both the data in the CS and data derived from the CS data e.g. estimated discard.

In the overall data there in general must be more than three different samples in each variable to be able to aggregate over the variables. When showing sample data in a public report the highest resolution is determined by selecting at least 3 out of the 9 following variables, and only one option/figure can be shown to ensure conclusions cannot be drawn from a combination of several figures:

Vessel flag country	Year	Month	Species	Metier level 4-6	Vessel length category	Vessel size category	Vessel power category	Statistical rectangle
---------------------	------	-------	---------	------------------	------------------------	----------------------	-----------------------	-----------------------

The following are some examples of this rule

Sampling example:

Sampling data can be plotted by species, statistical rectangles and year only when data are aggregated over country, month, metier level 4-6, vessel length category, vessel size category, vessel power category.

### **Map Plotting**

Individual hauls (HH) holds information on the geographical positions from sampled fishing operations. It is sometimes valuable to show these positions (e.g. for QA purposes). If doing so only meta data or auxiliary variables can be used in the plots - never the result of the actual sampling. When plotting maps a *maximum* of three of the following variables can be used.

Vessel flag country	Year	Month	Species	Metier level 4- 6	Vessel length category	Vessel size category	Vessel power category	Position
---------------------------	------	-------	---------	-------------------------	------------------------------	----------------------------	-----------------------------	----------

This rule does not apply if the amount of data in the map is so sparse that individual vessels or trips might be identified. It is the responsibility of the data user to ensure that maps do not plot data that comes from a small number of vessels or trips.

Example: It is allowed to plot the positions of fishing operations by year, species and countries as long as metiers, vessel size category, vessel power category, vessel length category and month are left out. If the data user wanted to include metiers instead then one of the other variables (year, species or country) would need to be left out

If it is needed to publish data at higher resolution the relevant National Correspondent have to be asked for approval.

### ***Individual fish***

Individual fish (CA) holds information on measurement from individual fish. It is always acceptable to show these as individual measurements.

## ANNEX 2 Document History

When	Where	What	Why
3/12/2020	-	RDB Data Policy split into two separate documents: RDB Data License (this document) and RDB Data Governance.	ICES will have a single overall Data Policy to cover all data, with a number of Data Licenses specifying the usage conditions of specific data sets
3/12/2020	Section 2a	The date for publishing the list of pre-approved ICES WGs has been changed from "01 Dec" to "31 Jan".	Practical reasons.
3/12/2020	Section 2a	The time limit for responding to requests from pre-approved ICES WGs for access to detailed data has been reduced from two months to one month to comply with the DCF recast.	Compliance with article 17(3) of the re-cast DCF.
3/12/2020	Section 2a	Added 3 sentences to explicitly state that users of detailed data must sign the "Conditions for detailed RDBES data use" agreement.	Clarification
3/12/2020	Annex 2	Aggregation rules for CE and CL data have been updated to include Harbour and Landing country variables.	Recommendation from the RCGs
3/12/2020	Annex 3	Added this table of changes as a separate Annex	To give detailed information on changes to the licence

# ICES Data License

Data use license for VMS and logbook data managed by ICES

01 February, 2021



## **Definitions**

- a) **Licensor** means the individual(s) or entity(ies) granting rights under this License.
- b) **You** means the individual or entity exercising the Licensed Rights under this License.
- c) **Licensed Rights** means the rights granted to You subject to the terms and conditions of this License
- d) **Restricted Data** means data within the Database that is classified as not publicly accessible as determined by the data owner
- e) **Public Data** means data within the Database that is classified as publicly accessible as determined by the data provider;
- f) **Data Provider** means the organization and/or individual that controls/organizes access to the data
- g) **Data owner** means the organization and/or individual that retains the ownership rights for the data
- h) **Databases** means the data repository or data portal where the data reside.
- i) **ICES Advice Requester** means an organisation or country that has signed an [agreement](#) with ICES to provide management advice services;

## **Scope**

This license applies to anyone granted licensed rights to use restricted data uploaded into the databases. Public data access rights are described in the ICES Data Policy. DOI 10.17895/ices.data.XXXX

## **License Grant**

Full access to use restricted data are granted to the following:

- a) an ICES group with related Advice terms of reference;
- b) an ICES advice requestor, where data have been provisioned under a data call from the ICES advice requestor;

## **License Conditions**

- a) Correct and appropriate data interpretation is solely your responsibility.
- b) You must not expressly or otherwise imply ICES substantiation of your work, results, conclusions and/or recommendations.
- c) You are obliged to inform ICES of any suspected problems in the data.
- d) Data provided to you shall not be kept on your computer/database upon completion of the task related to the term of reference.
- e) You shall treat the data as confidential and the transmission or sharing of these data are not allowed
- f) You shall ensure that visualisations or data products derived from the data adhere to the confidentiality rules detailed in the latest ICES datacall for VMS/log book data.

## **Attribution**

These data should be cited as per guidance provided in the ICES Data Policy.

## **Disclaimer of Warranties and Limitation of Liability**

- a) Unless otherwise separately undertaken by the Licensor, to the extent possible, the Licensor offers the Licensed Material as-is and as-available, and makes no representations or warranties of any kind concerning the Licensed Material, whether express, implied, statutory, or other. This includes, without limitation, warranties of title, merchantability, fitness for a particular purpose, non-infringement, absence

of latent or other defects, accuracy, or the presence or absence of errors, whether or not known or discoverable. Where disclaimers of warranties are not allowed in full or in part, this disclaimer may not apply to You.

- b) To the extent possible, in no event will the Licensor be liable to You on any legal theory (including, without limitation, negligence) or otherwise for any direct, special, indirect, incidental, consequential, punitive, exemplary, or other losses, costs, expenses, or damages arising out of this Public License or use of the Licensed Material, even if the Licensor has been advised of the possibility of such losses, costs, expenses, or damages. Where a limitation of liability is not allowed in full or in part, this limitation may not apply to You.
- c) The disclaimer of warranties and limitation of liability provided above shall be interpreted in a manner that, to the extent possible, most closely approximates an absolute disclaimer and waiver of all liability.

## Change Log

Description	Responsible	Date
<p>Headings and terminology based on <a href="https://creativecommons.org/licenses/by/4.0/">https://creativecommons.org/licenses/by/4.0/</a></p> <p>Use case adopted from existing 'Conditions for detailed VMS/log book data use' (<a href="https://www.ices.dk/sites/pub/Publication%20Reports/Guidelines%20and%20Policies/VMS_DataAccess_ICES.pdf">https://www.ices.dk/sites/pub/Publication%20Reports/Guidelines%20and%20Policies/VMS_DataAccess_ICES.pdf</a>)</p> <p>A landing page describing how you request access to the restricted data covered by this licence will need to be put in place to avoid this being part of the licence (the licence should cover what you can do with the data once you have access)</p>	Christian von Dorrien; DIG sub-group on data licence revision	26/01/2021

## Data and Information Services<sup>1</sup>

### 1 Summary

Section	Action required by Council
2 Data Policy and Data Licencing	Approve
3 Data Governance	Take Note
4 Transparent Assessment Framework (TAF)	Take Note in relation to Bureau-Council Sub-group COVID-19 recommendation 3
5 Regional Database and Estimation System (RDBES)	Take Note
6 Infrastructural changes	Take Note
7 Projects, Contracts and sub-contracts of note	Take Note
8 Annex 1: Status of equity tasks (2019)	Take Note of Challenges

### 2 Data Policy and Data Licencing

Clear and equitable access to data hosted at ICES is core to the ICES Strategic, Advisory and Science Plans. Council is invited to approve a package of updates to the over-arching ICES Data policy, and licences related to open access and controlled access datasets. SCICOM reviewed the package in March 2021<sup>2</sup>, and recommended them for adoption at Council.

#### 2.1 Background and the need for change

The [ICES Data Policy](#) is reviewed on a 4-year basis by DIG, the last revision was in 2016. In the 2019 DIG report it was recognised that a data policy typically sets out

<sup>1</sup> ICES Data Centre and Data and Information Group (DIG)

<sup>2</sup> <https://doi.org/10.17895/ices.pub.8148>



a set of principles to guide decisions or achieve outcomes, while a license is a permission to do, use, or own something. Currently the ICES Data Policy encompasses both aspects, stating the principles in operation for data from ICES, as well outlining the permissions for use and redistribution of data. In addition, over a period of time restricted access data licences have been necessary to deal with data that are controlled by legislation (EU Fisheries Control Regulation), commercially valuable (EU Data Collection Framework), or where biologically sensitive habitats may be exposed (Vulnerable Marine Ecosystems, Bird nesting sites).

The current data policy, coupled with the restricted data user licences are therefore:

- difficult to interpret for both data providers and data users
- inconsistent in terminology and definitions
- written by thematic, rather than legal experts
- not machine readable
- misaligned with other licence arrangements in regional/international data provision
- an identified weakness in the evaluation of ICES data management for external accreditation

## 2.2 Recommended Changes

A [package](#) of the finalized version of the new data policy and restricted data licenses that has been developed in collaboration with the respective governance groups.

### 2.2.1 Data Policy

The overall ambition of the policy is unchanged, as stated in the scope:

“By maximizing the availability of data to the community at-large, ICES promotes the use of these data, thereby ensuring that their maximum value can be realised and thus contribute to an increased understanding of the marine environment.”

The data policy is reduced to only aspects concerning overall principles of providing data to ICES, the quality assurance aspects and guidance on appropriate citation of data. The terminology has been aligned to the language in the licenses in this package.

### 2.2.2 Open data license

Rather than create a bespoke user license for open data, DIG propose that ICES adopt the Creative Commons Attribution - International [CC-BY 4.0 license](#), which

is also the license that was adopted for ICES publications in the 2020 SCICOM decision.

DIG reviewed a number of open license models, and also the variants of the creative commons licenses; it was concluded that CC-BY is the closest to the existing open data approach at ICES, where licensees must give appropriate credit to the providers of data.

### 2.2.3 Restricted data licenses

The existing restricted data licenses (RDBES, VMS access and VME/Birds and Seals) have all been refactored to follow the same language, definitions and headings as the CC-BY license. The principles and specifics of the conditions of the license grant in each of these remain unchanged compared to the original licenses they were derived from. These have been reviewed by the respective governance groups.

## 3 Data Governance

---

### 3.1 Data Centre Accreditation

In March 2021, ICES Data Centre had its application for accreditation for life cycle data management accepted by the CoreTrustSeal. The full accepted application is available on the [CoreTrustSeal website](#), and is valid for a period of 3 years.

The application responds to the 16 requirements of the CoreTrustSeal accreditation certification, each requirement is scored on a scale of 0-4 (from not applicable to fully implemented). In the application, ICES have self-assessed as follows:

- 13 requirements are fully implemented in the (ICES) repository
- 3 requirements are in the implementation phase

Within the next 3 year cycle, ICES would expect to move the implementation phase requirements to fully implemented, this would specifically be achieved by:

- Through DIG, develop and publish a **data preservation plan**;
- Through Council, agree a **new data licence**
- Through governance groups, complete the publication of **Dataflow Schematics**

### 3.2 Data Preservation Plan

Through the process of accreditation of the ICES Data Centre as a Core Trust Seal (CTS) data centre, it was pointed out that ICES lacks a coherent data preservation plan. A data preservation plan outlines a data custodian's responsibility towards data preservation specified in documentation, including custody transfer, submission information standards, and archival information standards. A lot of the information needed for a data preservation plan already exists at ICES, but they are spread over many different sources, which makes it difficult to identify potential missing documentation.

DIG, with the ICES Data Centre, has been tasked with creating such a data preservation plan and the first steps to draft a coherent data preservation plan were taken during the DIG 2021 meeting. The timeline for finalizing the data preservation plan well in advance of the renewal of the CTS accreditation within three years has been created. The first step will be to have a draft of the data preservation plan ready for review by all of DIG by next year's meeting in May 2022. A final version of the data preservation plan should be ready by May 2023.

### **3.3 Hosting of Datasets and Data and Visualisation Products**

At the March 2020 SCICOM meeting DIG was tasked with developing clear guidelines and rules for hosting of ad-hoc datasets and visualisations as well as bringing clarity about review of code and methods for these types of datasets. The ACOM chair has also requested this to also include considering mechanisms in a wider context that could include datasets that cannot currently be hosted on an existing ICES system. This topic continued in the 2021 meeting, and has grown to include standard ICES products, such as Ecosystem and Fisheries overviews.

#### **3.3.1 Data Profiling Tool**

A Data Profiling Tool (<https://www.ices.dk/data/tools/Pages/Data-profiler.aspx>) has been developed to give a standardized way to gather information about datasets and visualisations being requested to maintain/host/review by ICES Data Centre. The tool will function as a set of questions that the person or group who wishes to either evaluate their data/data products against a set of standards or use the services of the ICES Data Centre will need to answer about the dataset/product. The results from this tool will be used in the decision-making process needed for these requests.

An outline for the information needs to be collected in such a tool has been developed and was refined during the DIG meeting and can be seen in this [figure](#). The data profiling tool functions as a schematic and as a questionnaire, which is now in place and available on the landing page for the data profiling tool. There are now a number of groups that have approached as test cases, including the Ecosystem overviews under IEASG, Aquaculture overviews and others.

#### **3.3.2 Next Steps**

A core group formed from DIG and ICES Data Centre has been formed to regularly review the submitted entries to the profiler, to field questions on specifics to relevant governance groups and to provide a feedback to the submitter of the profile. Through this approach, the aim is to develop a clear process, or playbook, as to how these described data/data products are relatively prioritised, documented or supported through the ICES infrastructure. In discussion with the Ecosystem, Aquaculture and Fisheries Operational Groups (EOOP, AOOP and FOOP), the eventual aim is to incorporate these reviews into the production of advice, as part of the quality assurance and transparency priorities.

### 3.4 DSTSG

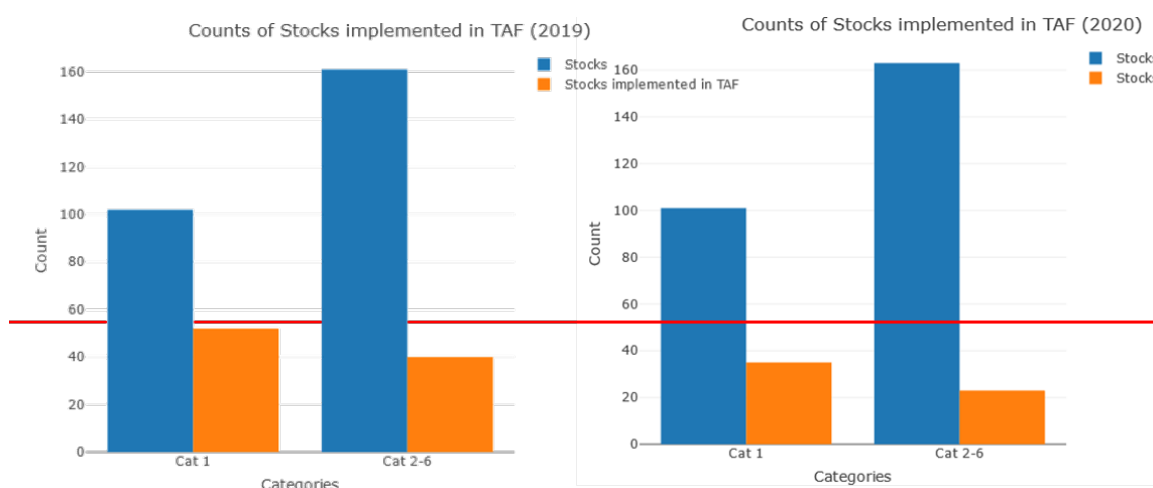
The Data Science and Technology Steering Group (DSTSG), chaired by Jens Rasmussen (UK), has a clear relation to both DIG and the ICES Data Centre.

To that end, the terms of reference for DIG have been updated for 2022 to reflect the collaboration with DSTSG. The updated ToR reads:

- a ) Evaluate and monitor current and future challenges and opportunities in data management and new technologies for ICES to ensure that DSTSG is sighted on and responsive to technology and data science developments with potential to advance the tasks identified in ICES Science and Advisory Plans

## 4 Transparent Assessment Framework (TAF)

A review of the number of available stocks in TAF at the beginning of 2021 raised the alarm, portraying a stalled uptake and application of the Transparent Assessment Framework (TAF) throughout the assessment process. Signals in the number of TAF stocks indicate that there are some underlying barriers to use of the TAF workflow/tool, which appear to coincide with the onset of the global pandemic and the subsequent change in meeting and work behaviour.



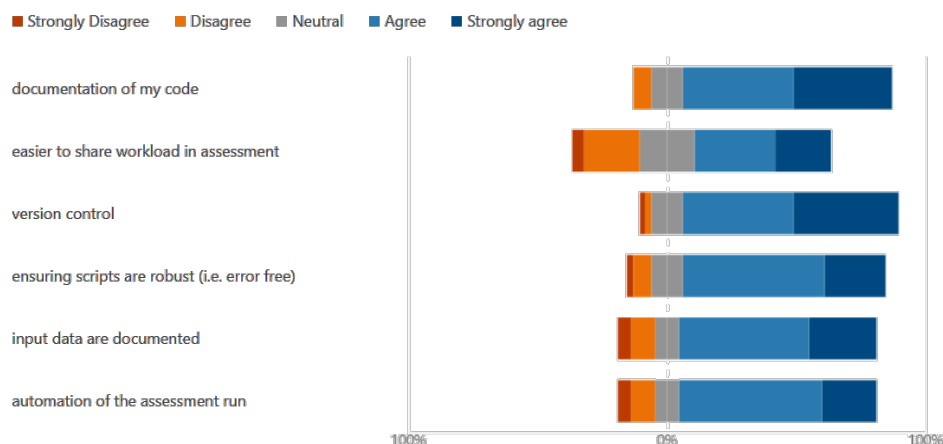
WGTAFGOV instigated a survey among users and potential users (48 respondents) of the TAF system, to better understand the barriers to, and opportunities for, its uptake by assessment experts. The survey found that the main barriers to its use were:

- Time investment
- Technical issues
- Guidance (documentation) and Hands-on Training

Despite this, respondents were generally positive to the perceived benefits of TAF:

#### 4. What are the main advantages for you in using TAF in its current form?

[More Details](#)



An action plan has been devised by WGTAFGOV with support from ACOM to re-emphasise the role of TAF and prioritise guidance and online documentation. However, as noted in the Bureau Council Sub Group on COVID-19 final report - (BCSGC19) Recommendation 3: On the quality of ICES Advice and TAF, this needs resourcing at the ICES Secretariat and support from member countries within their institutes to ensure this is successful. In the COVID-19 survey (114 respondents), 78% Strongly agreed, or agreed with the recommendation to support TAF.

## 5 Regional Database and Estimation System (RDBES)

### 5.1 Progress

The RDBES core group have had 34 web meetings in 2020, and so far 29 in 2021. In 2021 a new version of the RDBES was made available for the WKRDB-POP3. The second [Data Call](#) for data to the RDBES was published in June. The WGRDBES-EST (focused on estimation procedures) and was held in September. The WKRDB-RAISE&TAF that was postponed from 2020 is still without a chair, and is therefore not scheduled for this year.

### 5.2 Timeline for development, acceptance and implementation

The RDBES will still be in development during 2021, and it is scheduled to move into production in 2022 – running in parallel with the existing InterCatch and RDB systems. It is planned to have a data call in 2022 for all 2021 data – this data will be used to develop and test the process for providing estimates for “all stocks” using the RDBES and TAF. In 2020 the WGRDBESGOV changed the data call from including sampling data for all stocks to sampling data for selected stocks. A total of 19 stocks were selected in the 2021 Data Call, 11 stocks were the same as the previous Data Call, and additionally eight stocks were selected;

herring stocks, nephrops stocks, harbour porpoise (bycatch) and northern gannet (bycatch). The test of estimations was also changed from aiming at all stocks in 2021 to only aim at test estimations for the 19 selected stocks. The WGRDBES-EST is working on making the first estimation. Its success will rely on the effort and contributions from a large number of people in the wider ICES/EU data collection community. The process of moving from InterCatch to RDBES/TAF will be discussed at the WGRDBESGOV meeting in 2021 (December) in light of the progress made during the year.

### **5.3 Achievements since 2020 Council**

- Second test data call where detailed biological sample data for 19 selected stocks and all landing and effort data to be uploaded
- Dialogue with WGBYC and bycatch representatives which should ensure WGBYC can use the data in the RDBES
- Continued Governance across International ICES domain/EU via WGRDBESGOV; including rationalisation of coding and standards
- A further developed and stable skeleton operational system for receiving and handling detailed sample data and aggregated catch and effort data

### **5.4 Challenges still faced**

- timeframe – reviewed regularly by WGRDBESGOV
- Roll-out – operationalisation will be a massive task for all countries, especially as their levels of readiness are very different;
- Available expertise within the ICES community
- Writing/designing new estimation routines for all statistical sound sampling schemes; and documenting current and historic estimation
- Specifications of roles and permissions
- Full test of bycatch data by WGBYC and approval of the RDBES as data storage of all relevant data from WGBYC
- In dialogue with WGRFS to include recreational fisheries data preferred at detail level
- Test of all hierarchies and expected data combinations

### **5.5 UK data access and provision to the RDB/RDBES**

The UK has now transitioned out of the EU data collection system, and this entailed some ambiguity in the use of data the UK had already provided to the RDB, and the status of future data submissions. The UK clarified this position in September 2021:

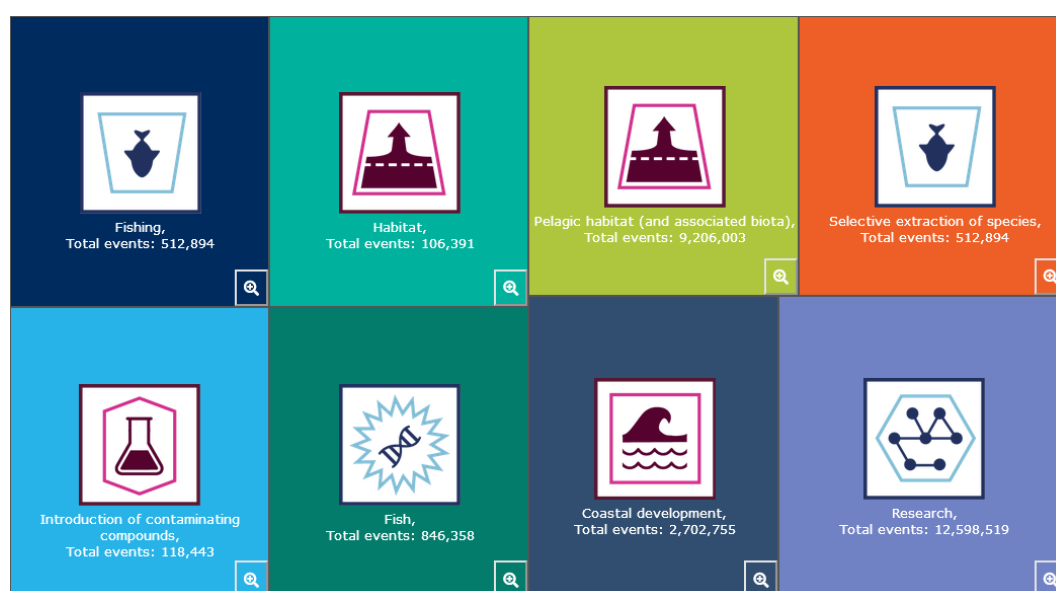
- The EU has no right to UK data collected after 2020, and the UK will not report to the EU on data collected after 2020. The UK maintained obligations to report on data collected under the DCF until the end of 2020, therefore the EU does have right to access UK DCF data collected prior to 1st January 2021.
- The UK will not respond to Regional Coordination Groups (RCG) data calls going forward.
- In the future, the UK will seek to use available ICES expert groups and forums wherever possible to coordinate efforts with the EU and other third countries.

- The UK will continue to contribute data to the RDBES (once properly rolled out) under the ICES data call. Until the RDBES is properly rolled out, both databases (RDB and RDBES) will be used to provide data under the ICES data call

## 6 Infrastructural changes

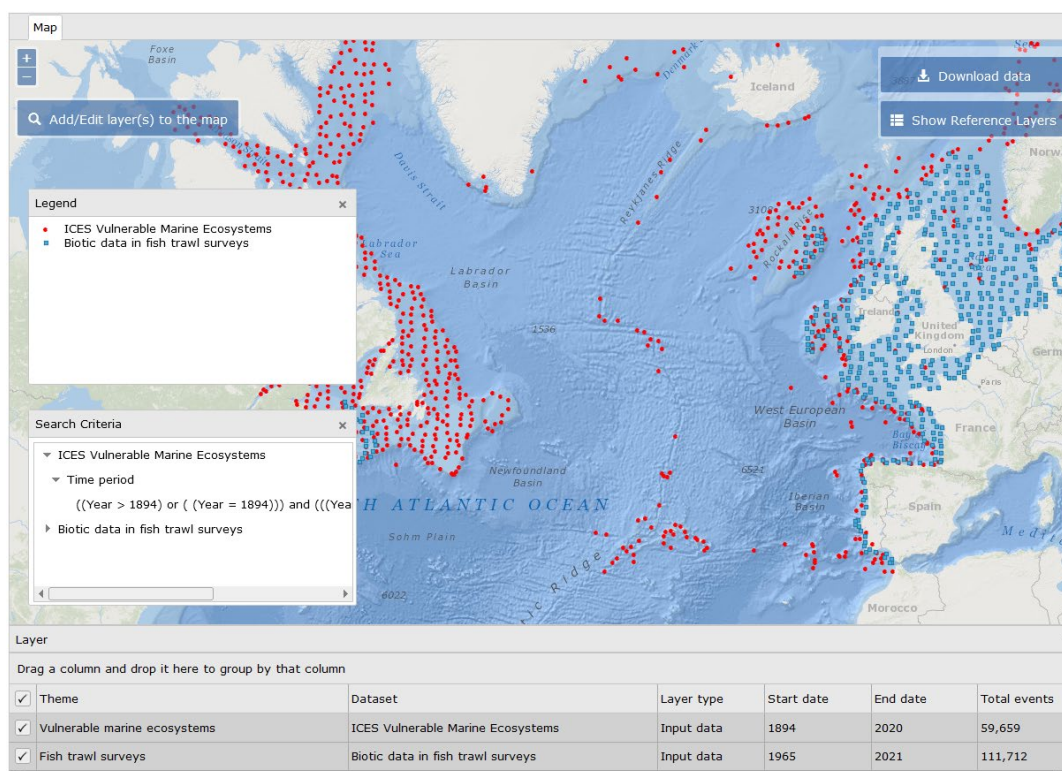
### 6.1 New ICES Data Portal

The new ICES Data Portal <https://data.ices.dk> replaced the existing Ecosystemdata portal in September 2021. The portal has a new interface, easier and clearer ways to overview datasets, and improved map and web service functions.



The majority of open access datasets are already available in the Data Portal. In the next phase of development, the authentication feature will be implemented which gives the possibility of presenting the restricted datasets i.e. RDBEs, VMS, etc. In addition, in the extended release, users can save the search criteria in their profile in order to use again or share the layers with other.





## 6.2 Oceanographic data submission

The ICES Oceanographic data submission format has, as of July 2021, become one of two supported data submission formats for oceanographic data. This date marks the end of a time where data delivery to ICES could be made in any documented format.

More information about the format can be found on the Oceanographic data submission page available at <https://www.ices.dk/data/data-portals/Pages/ocean-submit.aspx>

## 7 Projects, Contracts, and Special Requests of note

### 7.1 Swept-area and abundance index outputs in the Northeast Atlantic based on DATRAS data as input to OSPAR common indicator

Published in October 2021<sup>3</sup>, this request is the culmination of a dialogue between OSPAR and ICES, that dates back to the OSPAR Intermediate Assessment (2017). The wider application of fisheries independent trawl surveys for biodiversity indicators has been in focus in a number of ICES working groups, and OSPAR groups for a period of time. The delivery of an operational code base and data product enables OSPAR to calculate swept-area for all relevant hauls in DATRAS



surveys, and to calculate annual estimates of abundance indices of 50 species or species groups in OSPAR regions II, III, and IV. ICES considers that these estimates are currently the best available information for calculating OSPAR common indicators relating to the biodiversity of fish communities and the status of marine foodwebs.

## 7.2 Baltic Dataflows (HELCOM) <https://balticdataflows.helcom.fi/>

The ICES Data centre is one of the main partner beneficiaries to a project, led by HELCOM, that started in October 2020 related to enhancing the infrastructure of managing and sharing data within the Baltic regional sea. ICES is involved/leading in several work packages, and highlights include:

- Upgrading the ICES Oceanographic data portal (to conform to internationally recognised vocabularies and state of the art standards, with interoperability and data exchange with other national and international systems in mind)
- Working with SMHI and SYKE, developing an API-based data harvesting system for 3 dataflows: Biological community, Contaminants and Eutrophication (oceanographic). Furthermore, working to ensure that all Baltic partners can make consistent use of Darwin Core Extended Format for data sharing with ICES, EMODnet and GBIF, thus streamlining reporting requirements for data providers
- Development of the HELCOM Hazardous substances assessment tool (HHAT) see <https://dome.ices.dk/HHAT2/>

## 7.3 Joint Cetacean Data Programme (JCDP)

Under a UK Governmental contract, ICES is contracted to establish the data platform for the JCDP within the ICES Data Centre. This initiative, which has ties to the Marine Mammal Ecology (WGMME) and Bycatch (WGBYC) expert groups will bring together cetacean survey datasets from the northeast Atlantic, establish a data standard to guide data collection and storage to enable a high-quality collation of data. Ultimately, the portal will provide regularly updated open access data products for use in strengthening cetacean science and subsequent decision-making, which will be of great benefit to ICES in its advisory work. Currently, a resolution to establish a governance group under DSTSG is under review, and the data portal will be online in 2022.

See <https://jncc.gov.uk/our-work/joint-cetacean-data-programme>

## 8 Annex 1: Status of relevant deliverables from Council Equity Investments (Table 2, [CM\\_2019\\_Del-3.3\\_Equity](#))

Del	Description	2020	2021	2022	2023	2024	Status
							<b>Colour Legend</b>
QA and QC of Fisheries independent and dependent data							<div>ok</div> <div>Time or resource issues</div> <div>Not started</div>
1	Assist acoustic survey groups in using the ICES TAF for their abundance indices estimates that are used in stock assessments						<p>Assisted WGIPS in using TAF in a mini workshop using (2021). WGACOUSTICGOV have now started an initiative to standardise the reporting part of acoustic TAF repositories in association with StoX.</p> <p>Although the objective is accomplished, it is just the beginning to get all the acoustic indices estimations into using TAF. This will demand that WGTAFGOV put acoustic on their list of priorities.</p>
2	Align the DATRAS (biotic) and the Acoustic (biotic) format						WGDG (Datras governance) are now comparing format definitions of the unified format for DATRAS surveys with WGACOUSTIGOV, which enables the alignment of the DATRAS and Acoustic biotic format. Expected in Spring 2022
3	Redesign and new functionality on DATRAS web portal, including an updated data screening facility						Machine-to-machine service-based data screening and uploading facility framework

Del	Description	2020	2021	2022	2023	2024	Status
							drafted in Q2 of 2021. Development work started with different test cases, the first user of facility will be the Dutch data submitter from Wageningen University. In Q1 2022 open for all data submitters as a pilot submission. Datawarehouse update facility for data manager and data comparison tool for submission is not started yet, it will be the 2022 project workplan
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						Commencing through WGRDBES, and RDBES core group;
5	Incorporate detailed data on Bycatch and PETS AND/OR Recreational data (to be determined by SC-RDB)						Not planned to start until 2022
<b>QA and QC of Assessment</b>							
6	200 unique stocks available in TAF						Stalled progress, see report section 4
7	Managed through TAF, functioning system and QA process to enable transparent documented reviews of data and code behind stock assessment results						Progressing through DIG and WGQUALITY, see section 3.2
<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						Progressing, a dedicated resource is leading this with a core group from ACOM and Secretariat

## 9 Annex 2: Active managed data flows; dataflow governance

Active data flows (April 2020)		
Name	Title	Purpose
Acoustic	Acoustic	To store and make acoustic trawl data available to the stock assessment and ICES community
Biodiversity	Biodiversity birds	Birds data (breeding and non-breeding) for regional biodiversity assessments
ByCatch	ByCatch	To underpin the bycatch advice, overseen by WGBYC
No data portal	Catch statistics	To unify and store annual nominal catches in the Northeast Atlantic region coming from different sources
UnderwaterNoise	Continuous underwater noise	To implement and host the HELCOM continuous underwater noise database and to set up a soundscape planning tool for HELCOM.
DATRAS	DATRAS	Database of trawl surveys and related data products
DOME	DOME Biological Community	Temporal and spatial trend data for monitoring the environmental quality
DOME	DOME contaminants, biological effects and fish disease	Temporal and spatial trend data for monitoring the environmental quality by regional sea conventions and ICES groups
EggsAndLarvae	EggsAndLarvae	Store the eggsnadlarvae data for assessment purposes
Oceanography	HELCOM Eutrophication Assessment Tool (HEAT)	To facilitate the HELCOM Eutrophication Assessments
Oceanography	ICES Report on Ocean Climate (IROC)	To support the generation of the annual ICES Report on Ocean Climate (IROC) for the Working Group on Oceanic Hydrography
Vocab	ICES Vocabulary	Store reference codes controlled by ICES and external for use in ICES data collections

Active data flows (April 2020)		
Name	Title	Purpose
UnderwaterNoise	Impulsive Underwater Noise	This registry is specifically purposed with supporting OSPAR and HELCOM in providing information that will feed their regional assessments, and in reporting by its contracting parties to MSFD descriptor 11.1.1 (Low and mid frequency impulsive noise)
InterCatch	InterCatch	Data is the basis for the ICES stock advice
_No data portal	Litter data	To provide litter data for the regional environmental assessments from DATRAS and DOME
Marine Aggregates	Marine aggregates	To provide a summary of data on marine sediment extraction, marine resource and habitat mapping.
Oceanography	Oceanography	Oceanography focuses on understanding the interplay between physical, chemical and biological conditions in the ocean and how these factors impact the living conditions for marine organisms
DOME	Phytoplankton Biovolume Report	To support HELCOM PEG with publishing updates for Phytoplankton biomass calculation data and to provide basis information for DOME PP biomass calculations
Vocab	Platform requests	Assigning codes to the vessels used to collect data, to include them in the vocabulary used in data submissions.
Rec12	Preliminary catches	Provide preliminary catch figures of the last year for stock assessments
RDB	RDB, Regional DataBase	The data basis for the RCG groups, Regional Coordinating Groups Baltic, NA and NS & EA
RDBES	RDBES, Regional DataBase and Estimation System	Data basis for the RCGs (Regional Coordination Groups Baltic, NA and NS & EA, LDF and ICES Expert Groups
SmartDots	SmartDots	Calibration of age estimates for support to stock assessments
Vocab	Station Requests	To provide common platform for managing national stations for data reporting and assessments
SAG	Stock Assessment Graphs	Produce the stock assessment graphs, summary table and stock status table for the stock advice

Active data flows (April 2020)		
Name	Title	Purpose
SID	Stock Information Database	A central repository for all stock data and attributes
TAF	Transparent Assessment Framework (TAF)	To make the data, methods and results from ICES assessments easy to find, explore and re-run
_No data portal	Vessel Monitoring System (VMS) - NEAFC data call	Support assessment and ICES advice products (e.g VME advice)
_No data portal	Vessel Monitoring System (VMS) data	Support Assessment and ICES products
VME	Vulnerable Marine Ecosystems	A central portal for data on the distribution and abundance of Vulnerable Marine Ecosystems used for the advice on NEAFC closure areas

Dataflow	Governance type
Vessel Monitoring System (VMS) data	Dedicated
Vessel Monitoring System (VMS) - NEAFC data call	Dedicated
Acoustic	Dedicated
DATRAS	Dedicated

<b>Dataflow</b>	<b>Governance type</b>
ICES Report on Ocean Climate (IROC)	Dedicated
RDB, Regional DataBase	Dedicated
RDBES, Regional DataBase and Estimation System	Dedicated
SmartDots	Dedicated
Transparent Assessment Framework (TAF)	Dedicated
Litter data	Devolved
Catch statistics	Devolved
Biodiversity birds	Devolved
Phytoplankton Biovolume Report	Devolved
DOMÉ Biological Community	Devolved
DOMÉ contaminants, biological effects and fish disease	Devolved
HELCOM Eutrophication Assessment Tool (HEAT)	Devolved
OSPAR Common Procedure Eutrophication Assessment Tool (COMPEAT)	Devolved

<b>Dataflow</b>	<b>Governance type</b>
Continuous underwater noise	Devolved
Impulsive Underwater Noise	Devolved
Platform requests	Devolved
Station Requests	Devolved
Oceanography	Not assigned
Preliminary catches	Secretariat
Stock Information Database	Secretariat
ICES Vocabulary	Devolved
ByCatch	Semi-dedicated
EggsAndLarvae	Semi-dedicated
InterCatch	Semi-dedicated
Marine aggregates	Semi-dedicated
Stock Assessment Graphs	Semi-dedicated



<b>Dataflow</b>	<b>Governance type</b>
Vulnerable Marine Ecosystems	Semi-dedicated

---

## **Document 14.0 ACOM Chair report to Council October 2021**

---

This report is structured around three sections:

1. Summary of advice activities in 2020
2. Issues relevant to Council
3. Assessment of implementation of ICES advisory plan tasks

Council is requested to:

- take note of the advice produced in 2020, of the further developments of the advisory framework and of the COVID-19 pandemic mitigation measures enacted in 2020.
- take note the findings of WKSHOES and the agreed process for the development of the Stakeholder Engagement Strategy.
- approve recommendation 3 of Bureau Council Sub Group on COVID-19 (BCSGC19)- On the Quality of the ICES Advice and TAF.
- approve the proposed measures on diversity, equity, and inclusion.
- consider the implementation of ICES advisory plan tasks and offer insights to further assist implementation.

### **Expertise**

The issue of paucity/availability across the existing network in expertise and training on management strategy evaluation (fisheries and ecosystems), mixed fisheries, stakeholder engagement and bycatch monitoring, assessment and mitigation measures was raised in 2020. This paucity is still apparent but will not be further addressed in this report.

### **Acknowledgements**

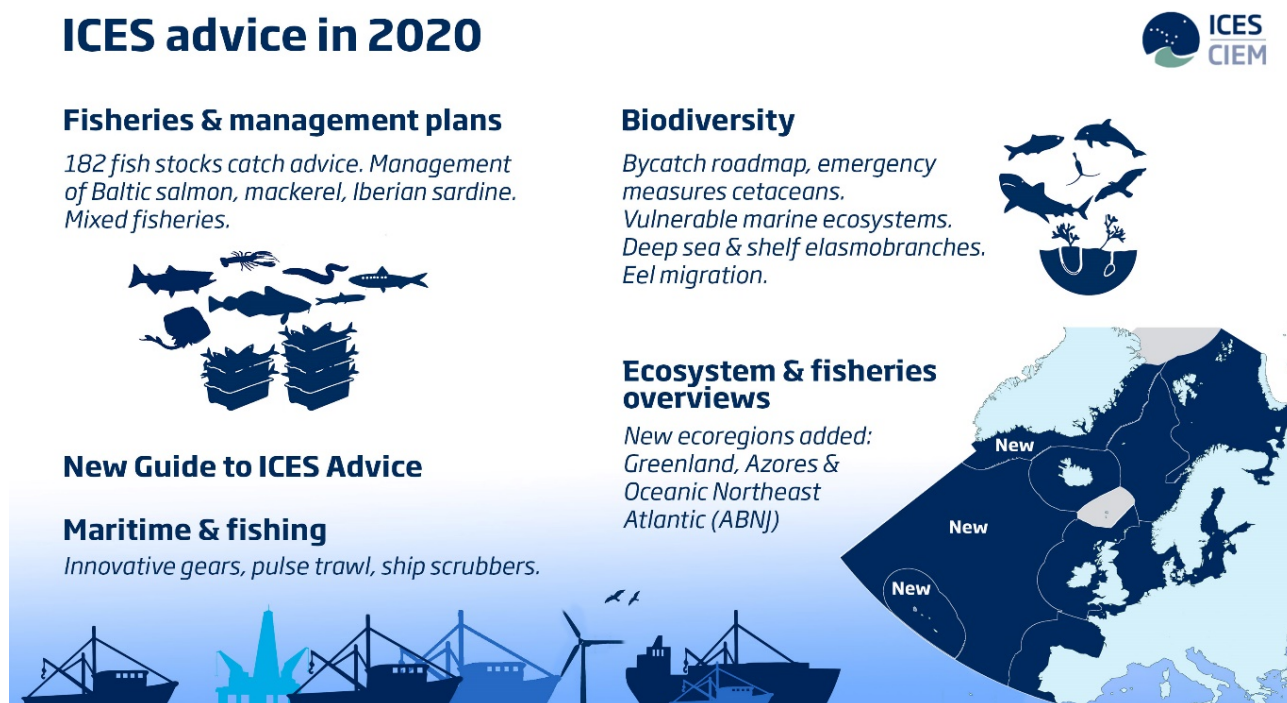
The efforts and dedication of the ICES network of experts, the oversight and vision of ACOM and the support and guidance of the ICES secretariat are acknowledged as crucial to the delivery of advice and progress made in 2020.

ICES was one of the few providers of marine scientific advice that delivered all their commitments in 2020.

## 1 Summary of advice activities in 2020

The section reports on the main activities of advice in ICES. The year was dominated by mitigation measures and adapting to the impact of the Covid-19 pandemic.

### 1.1 2020 advice issued in a nutshell



Advice in a nutshell.

The advice by type issued by ICES from 2014–2020 is as follows:

Advice type\year	2014	2015	2016	2017	2018	2019	2020
Fishing opportunity	252	225	222	206	192	205	183
Special requests and other advice	19	14	29	31(24)	38 (26)	44 (23)	32 (22*)
Technical services	9	7	4	2	9	5	5

\*Other advice for 2020 includes 7 EOs, 10 FOs, 5 Other (BYC, VME, VP).

### 1.2 Details of advice produced in 2020

#### 1.2.1 Recurring requests for advice

ICES advice on fishing opportunities covered 183 stocks in 2020

Area	No. of stocks for which advice was provided in 2020
Iceland and East Greenland	6
Barents Sea	9
Faroe Plateau	3
Celtic Sea and West of Scotland	58
North Sea, Eastern Channel, Skagerrak & Kattegat	37
Bay of Biscay and Atlantic Iberian Waters	30
Baltic Sea	15
Widely distributed and migratory stocks	25

Advice on re-opening was not requested in 2020

In addition to the recurrent advice on fishing opportunities ICES has provided advice in response to recurrent requests on ecosystem impacts of fisheries to:

#### **EU Commission:**

- Bycatch of small cetaceans and other marine animals – review of national reports under Council Regulation (EC) No. 812/2004 and other information
- New information regarding the impact of fisheries on other components of the ecosystem

#### **NEAFC:**

- New information regarding vulnerable habitats in the NEAFC Regulatory Area
- Information on vulnerable habitats in subareas of the NEAFC Regulatory Area closed to fishing for purposes other than VME protection

### **1.2.2 Fisheries and Ecosystem Overviews**

ICES expanded the number of published Fisheries and Ecosystem Overviews during 2020. ICES published one new [Ecosystem Overviews](#) for the Greenland Sea and updates for the Azores, the Barents Sea, Bay of Biscay and the Iberian Coast, Celtic Seas, Greater North Sea, Icelandic Waters, Norwegian Sea, and the Oceanic Northeast Atlantic (ABNJ).

[The Fisheries Overviews](#) are updated annually and in 2020, the Greenland Sea, Oceanic Northeast Atlantic (are beyond national jurisdiction, ABNJ) and Azores ecoregions are now included in the areas covered.

### **1.2.3 Responses to special requests published**

ICES provided advice in response to 10 special requests in 2020; while the number of special requests has been approximately at the same level in recent years, the diversity and complexity of the requests are increasing. Examples are the requests to evaluate management strategies, where both the technical complexity of the analyses and the number of management scenarios to be reviewed are increasing.

#### **EU:**

- Developing appropriate lists for Descriptor 3, commercially exploited fish and shellfish, for reporting by EU Member States under MSFD Article 17 in 2024

- Emergency measures to prevent bycatch of common dolphin (*Delphinus delphis*) and Baltic Proper harbour porpoise (*Phocoena phocoena*) in the Northeast Atlantic
- Evaluation of a draft multiannual plan for the Baltic salmon stock and the fisheries exploiting the stock
- Review of innovative gears for potential use in EU waters and their impacts
- Temporal migration patterns of European eel (*Anguilla anguilla*)

**EU, Faroe Islands and Norway:**

- Long-term management strategies for Northeast Atlantic mackerel (full feedback approach)

**NEAFC and OSPAR:**

- Status and distribution of deep-water elasmobranchs

**Netherlands**

- Impacts of pulse trawling on the ecosystem and environment from the sole (*Solea solea*) fishery in the North Sea

**OSPAR**

- Scientific knowledge on selected elasmobranch species to update the assessments for the OSPAR List of Threatened and/or Declining Species and Habitats

**Portugal and Spain:**

- Updated advice for 2020 on catch opportunities for sardine (*Sardina pilchardus*) in divisions 8.c and 9.a (Cantabrian Sea and Atlantic Iberian waters)

**1.2.4 Viewpoint**

- Scrubber discharge water from ships – risks to the marine environment and recommendations to reduce impacts

**1.2.5 Technical services published**

In addition to the special requests, ICES provided 5 technical services in 2019:

**EU:**

- Brief analysis of the data received in response to the 2020 data call on landings by vessel and métier for sea bass (*Dicentrarchus labrax*) in divisions 4.b–c, 7.a, and 7.d–h (recurrent in the Grant Agreement)
- Catch scenarios for zero TAC stocks 2020
- Evaluation of data accuracy (precision and bias) for design-based estimation at a national level in the form of a report
- Production of matrices by year and age with F-at-age for stocks corresponding to the latest published advice for each stock

**Sweden**

- Production of yearly (2009–2018) swept-area ratio (SAR) values in the Swedish EEZ

### 1.3 Cooperation agreements

Two cooperation agreements were signed in 2020:

**EU DG environment** – [specific grant agreement](#) to cover the provision of science to support marine strategy framework directive (MSFD) and the habitats and birds directives through the answering of ad hoc requests.

**United Kingdom** – [memorandum of understanding](#) to provide recurrent science and information on fishing opportunities, information on the state of marine ecosystems and human impacts, overviews, and answer ad hoc requests.

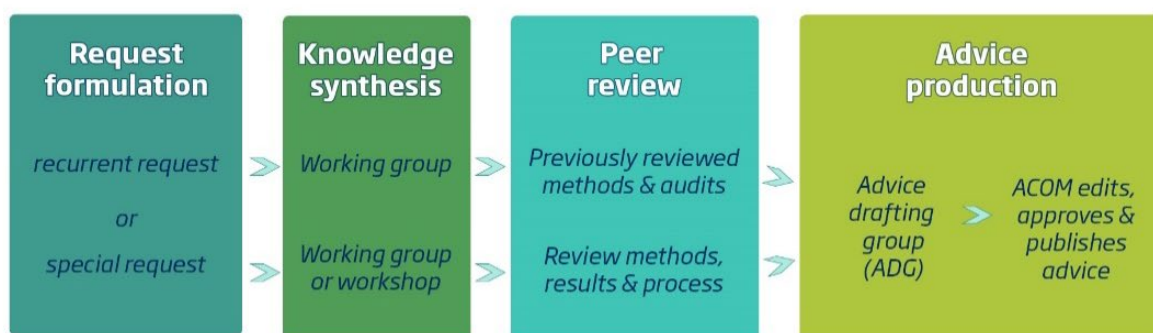
A full list of existing agreements can be found here: <https://www.ices.dk/about-ICES/global-cooperation/Pages/Cooperation-agreements.aspx>

### 1.4 New guide to ICES advice, and ten principles

A new [guide to ICES advice](#) was published in 2020. The new framework for ICES advice as an umbrella for fisheries and ecosystem advice. It describes the four main steps in the production of advice and the ten principles that cover those steps.

Each year, ICES receives requests to provide advice on a growing range of issues, from marine environmental policies to the management of marine living resources including fisheries policy. The special requests are becoming increasingly complicated. As we lead and respond to calls to support ecosystem-based management, our advice framework needs to evolve and integrate. The “General context of ICES advice” that has been the basis of ICES advice for many years was drawn up to address advice regarding the management of the exploitation of living marine resources – primarily fisheries. For the past four years, ACOM has been developing a more appropriate framework that incorporates the ecosystem approach in all sectors.

#### Framework for ICES provision of advice



**Four key steps of ICES advice to address both recurrent and special requests.**

For ICES advice to be respected, the scientists preparing it should have no vested interests and no agenda other than to deliver the best available science independent of political influence. ICES works to maintain this scientific integrity, to which ICES owes its distinguished position in the marine science world. Thus the ten principle are key to maintaining trust and integrity.

## 10 Principles of ICES advice

### Overall

1. Document openly

### Request formulation

2. Formulate request iteratively
3. Clarify objectives & risks

For regular & *ad hoc* advice, overviews & viewpoints

### Knowledge synthesis

4. Deliver knowledge timely
5. Use best available science
6. Apply data FAIR principles



### Peer review

7. Undergo peer review

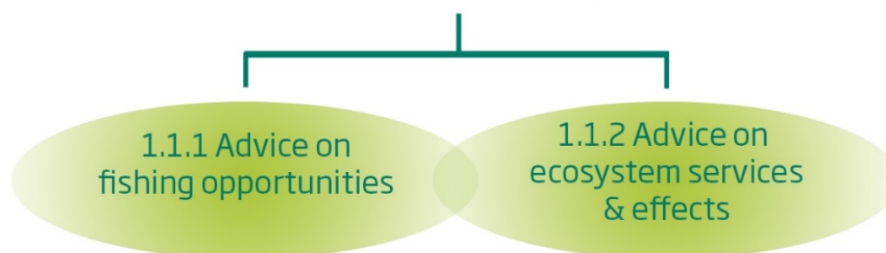
### Advice production

8. Create clear & consistent advice
9. Agree by consensus
10. Explain without advocacy

Summary of the ten principles of ICES advice which are further described in the guide

ICES the methods and framework used to provide advice will also be provided in two subsections: fishing opportunities advice and ecosystem services and impacts.

### 1.1 Guide to ICES advisory framework & principles



1.1

[https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/2020/Guide to ICES Advice.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/2020/Guide%20to%20ICES%20Advice.pdf)

1.1.1

[https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2021/2021/Advice on fishing opportunities.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2021/2021/Advice%20on%20fishing%20opportunities.pdf)

1.1.2

To be published online just after Bureau meeting.

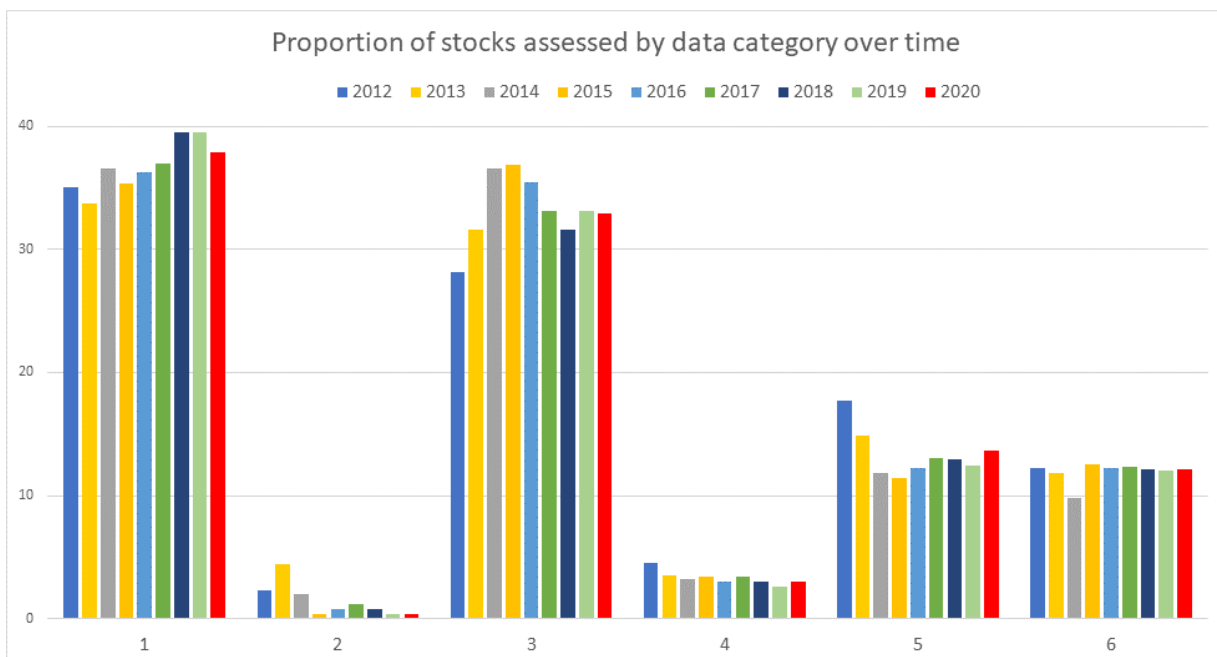
## 1.5 Fishing opportunities advice – charting delivery

### 1.5.1 MSY and management plan advice

Fishing opportunities advice given in 2020 (by category) and number of stocks with MSY/Management plan advice.

	All Stocks	Categories 1+2	Category 3	Categories 4+5+6
Number of stocks	264	101	87	76
Number of stocks with MSY or MP advice	96	95	1	0
% stocks with MP or MSY advice	36%	94%	1%	0%

### 1.5.2 Number of stocks in categories (2012–2020)



### 1.5.3 Number of stock assessments with large retrospective inconsistency between years

Retrospective inconsistencies are systematic changes in estimates of population size, or other assessment model-derived quantities, that occur as additional years of data are added to, or removed from, a stock assessment. These patterns are a problem, and can lead to major annual revisions when providing management advice. Mohn's rho is a metric calculated to show the degree of retrospective inconsistency in a time series. Since 2018, all stock assessment working groups have been asked to provide an analytical performance of category 1 and 2 age-based assessments, reporting the mean Mohn's rho (assessment retrospective analysis) values for R, SSB and F. A **large** retrospective inconsistency is considered to be a greater than 20%, or less than -20%, average change in SSB over the last 5 years.



	2018	2019	2020
Stocks with Mohn's rho values reported	63	71	49
Stocks <b>without large</b> retrospective inconsistency	46 (73%)	56 (79%)	33 (67%)
Stock <b>with large</b> retrospective inconsistency	17 (27%)	15 (21%)	16 (33%)

## 1.6 Ecosystem services and impacts in detail

In 2020, ICES published the [bycatch roadmap](#) that describes the legislative background, the science needs, and a path for ICES to strengthen its advice on incidental bycatch. It was well received and the importance of improving the evidence base for decision making for bycatch was highlighted with the advice requested on [emergency measures for cetacean bycatch](#) in addition to the [recurrent bycatch advice](#). The issues of gear became more prominent in 2020 when the EU requested a definition of [innovative fishing gears](#), and also advice was published on the environmental impact of [pulse trawling](#) compared to beam trawling.

A [Viewpoint](#) that highlights the risks associated with ships' scrubber discharge water. It made recommendations to tackle the emerging global problems. This issue is of growing concern for a number of ICES member countries and also for IMO.

Advice on the selection of [national lists for criteria D3](#)- commercial fish and shellfish was published to inform guidance on the EU Marine strategy framework directive (MSFD). Ongoing work on the impact of trawling on the seabed is continuing. Plus also information to OSPAR for consideration of their list of threatened and [declining species of elasmobranch](#).

It became apparent, while working with NEAFC and the EU on vulnerable marine ecosystems, that the evidence base and advice needs to develop further. The advice in 2021 is likely to be different in structure.

## 1.7 Changes to advice in 2020

### 1.7.1 Headline advice

ICES re-issues advice if a correction to the advice sheet has been necessary. Two corrections had an impact on the headline advice:

Cod (*Gadus morhua*) in Division 7.a (Irish Sea) - Advice was revised due to a correction to the biomass index, decrease in advised catch from 108 t to 93 t.

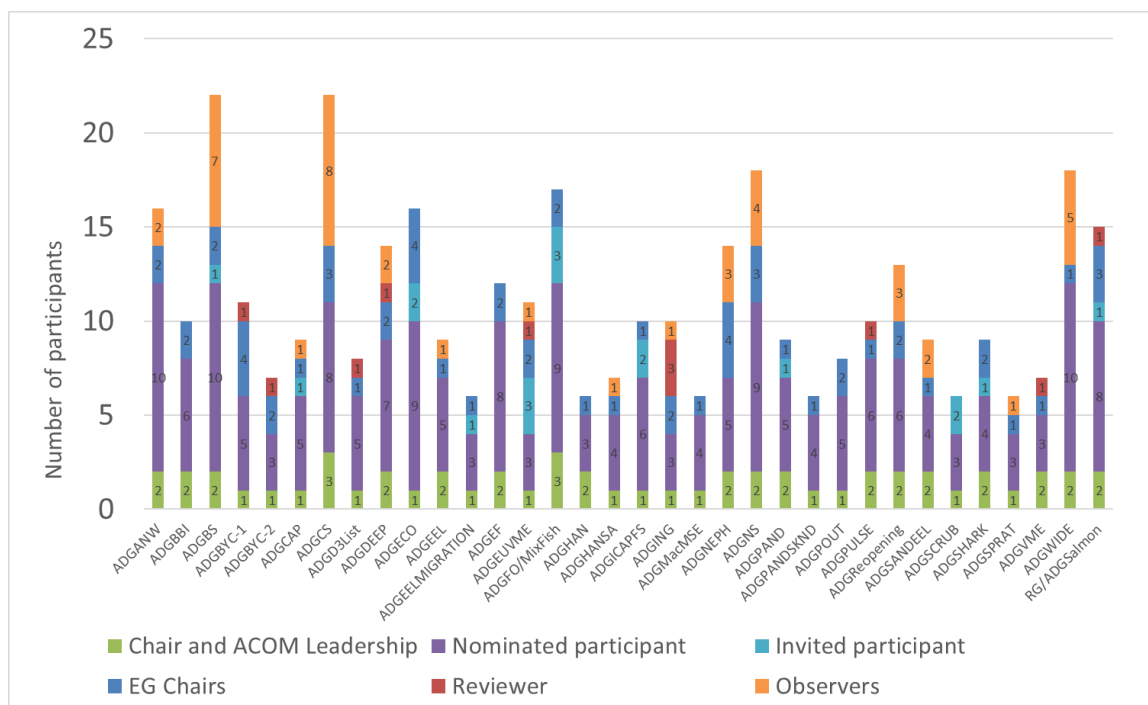
Thornback ray (*Raja clavata*) in Subarea 8 (Bay of Biscay; rjc.27.8) released for 2019 and 2020 – Advice was revised due to a correction in the biomass index, increase in advised catch from 276 t is revised to 417 t.

### 1.7.2 Minor changes to advice sheets per year

In 2020, ICES re-issued 12 single-stock advice sheets due to minor issues (corrections of tables or figures as well as formatting issues); one Special Request (from 2019, EU request for further information on the distribution and unavoidable bycatches of eastern Baltic cod) and 1 Technical Service (EU standing request on catch scenarios for zero TAC stocks 2020; cod (*Gadus morhua*) and whiting (*Merlangius merlangus*) in Division 6.a (West of Scotland), and whiting in Division 7.a (Irish Sea)) were updated.

## 1.8 Advice drafting groups (ADG) participation in 2020

There was a good participation in advice drafting groups in 2020.



Participation in advice drafting groups in 2020.

## 1.9 Presentation of advice in 2020

The MoUs with EU, NEAFC, OSPAR and NASCO ICES include commitments for ICES to present the advice at meetings organized by the commissions. In addition the leadership has been requested to give presentations at Coastal State meetings, regional meetings and conferences.

### Presentations of advice higher level engagement by ICES in 2020.

Organisation	Meeting	Venue	Date
OSPAR	OSPAR Commission	remote	8-9 Dec
	CoG	remote	19-20 Nov
	EIHA	remote	23-26 Mar
	EIHA	remote	12-14 Oct
	BBC	remote	23-26 Mar
	BDC	remote	30 Sep
	ICG-Eut.	Dublin	21-24 Jan
	ICG-POSH	remote	30- Nov
	HASEC	remote	5-7 Oct
	HASEC	remote	23-27 Mar
	Fish Ass WK	Dublin	21-24 Jan
	Bilateral	ICES HQ	13 Jan
NEAFC	PECMAS	Remote	8-9 Oct
	Annual meeting	remote	10-13 Nov

	Bilateral	ICES HQ	15 Jan
NASCO	Annual meeting	remote	5-8 Nov
Norway	Bilateral	ICES HQ	14 Jan
EU DGMARE	Bilateral	remote	18 may
	Bilateral	remote	29 july
	Bilateral	remote	1 October
EU DGENV	WGGES - MSFD	remote	13 Oct
	TGSEABED	remote	9-10 Dec
	WGGES Guidance	remote	30 Sept
	TGNOISE	remote	2 June
	TGNOISE	remote	8 Oct
	Bilateral	ICES HQ	12 Jan
	Bilateral	remote	2 July
EU - general	Our Baltic Conference	remote	28 Sept
	Roundtable on preventing by-catch of common dolphins and harbour porpoises in fisheries	remote	26 Jun
EU Parliament	ICES advice on pulse trawl – PECHE	remote	16 Nov
EU ACs	PELAC (Herring)	remote	9 July
	PELAC (WIDE)	remote	7 Oct
	NSAC	remote	2 July
	NSAC	remote	13 Nov
	BSAC	remote	10 June
	NWWAC	remote	7-8 July
	NWWAC / EFCA / NWW CEG Joint Workshop on	remote	6 July
	BSAC EBM WG	remote	21 Sept
Reg Fish Bodies	BALTFISH	remote	9 June
Coastal States	Mackerel	remote	26 Oct
	Blue whiting	remote	19 Oct
	Redfish	remote	15 Oct
	NSS Herring	remote	20 Oct
	Mackerel MSE	remote	26 Oct
Arctic	Agreement to Prevent Unregulated High Seas Fisheries in the Central arctic Ocean	ISPRA, Italy	10-13 Feb

	Senior arctic Officials SMM EBM session (keynote)	remote	22 Oct
IMO	Annual meeting of Subcommittee on pollution, prevention and response	London, UK	17-19 Feb

## 1.10 Quality Control

### 1.10.1 Data Centre Accreditation

First evaluation response of the Data Centre Accreditation through Core Trust Seal, was received in Autumn 2020, a revised application will be submitted in early January 2021

The application responds to the 16 requirements of the CoreTrustSeal accreditation certification, each requirement is scored on a scale of 0-4 (from not applicable to fully implemented). In the application, the original evaluation (in parentheses) as opposed to the revised evaluation based on the 1<sup>st</sup> round feedback from CoreTrustSeal:

- 11 (13) requirements are fully implemented in the (ICES) repository
- 5 (3) requirements are in the implementation phase

Of the requirements in the implementation phase, these relate to the planned changes to the data policy/data licencing, description of the dataflows through schematics and a fully documented data preservation plan.

### 1.10.2 Dataflow Schematics

This complements the wider effort on addressing quality control of data, and quality assurance of advice – where process flows of the overall advice are seen as key to understanding where control checks are needed, and where they will have the greatest impact.

A new publication type series has been created specifically for these schematics in the ICES publications library. Each data flow schematic will contain the following:

The first schematic was published in June as [Data Flow Schematic for Vessel Monitoring System \(VMS\) and Catch Data in the North East Atlantic Fisheries Commission \(NEAFC\) regulatory area](#).

The aim is to publish all 30 dataflow schematics in the next 2 years.

### 1.10.3 Data Governance

Two governance groups have come into operation in 2020, related to the Transparent Assessment Framework (TAF) and the acoustic data portal

The latest addition to the governance groups, is the Acoustic Trawl Data Portal Governance ([WGACOUSTICGOV](#)) chaired by Ciaran O'Donnell (Ireland) – they will oversee the continued and future development of the [acoustic portal](#) in order to meet the requirements of end users and the wider community. This includes deliverables related to improved QA and QC of fisheries independent data for use in the advice process.

Data governance in the ICES context has developed quite rapidly in the last years, and there is some need to clarify the governance landscape related to ICES managed dataflows.

#### **1.10.4 Quality Assurance overarching groups**

##### **WGQUALITY**

Establishment of WGQUALITY (Governance of Quality Management of Data and Advice), which is the successor to PGDATA. A clear 3 year plan to map out the existing quality management processes, and operationalise an ICES Quality Assessment Framework.

##### **DSTSG**

The agreement to establish a new Steering Group under SCICOM - the Data Science and Technology Steering Group (DSTSG) strengthens and consolidates activities towards data governance and quality assurance of data production methods.

##### **WKDSG**

The Workshop on Standards and Guidelines for fisheries dependent data meet online in November 2020. This workshop arose as a recommendation from the Workshop on Industry-Science Initiatives. The group reviewed existing documentation from ICES and other sources on science and data standards and also discussed the connections and relationships between the existing components of ICES work on science quality assurance. The output from this workshop synthesises available material around quality assurance for stock assessments.

#### **1.10.5 Clearer Data Policy and Data Licencing**

Work has continued in 2020 in reviewing data access, with a consensus that the current data policy should be retained and focussed on the overall processes for receiving, cataloguing and holding data submitted to ICES. While the data usage and citation of data are to be housed in a separate data licence. For open access data, it will be proposed for adoption that ICES should adopt an existing licence model (i.e. Creative Commons), rather than create a bespoke version. Likewise, the existing restricted access data licences i.e. for VMS/Logbook would be revised to align to the same structure as to the licence model chosen for open data.

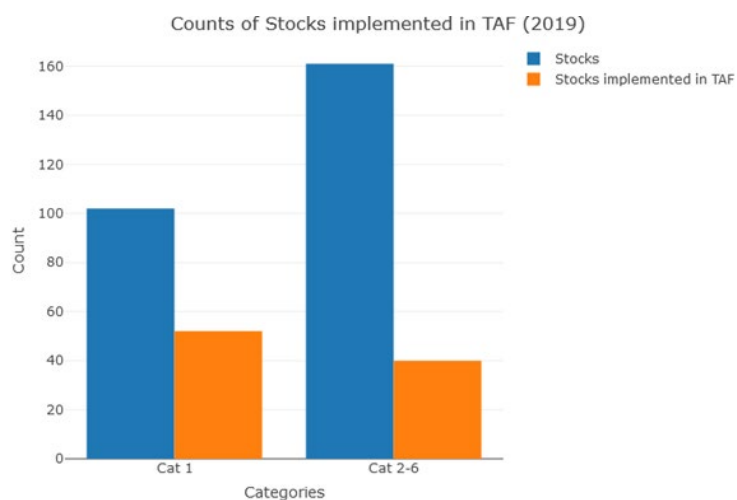
Inter-sessional work is now commencing to prepare a package of a revised data policy, and data licences, which will be brought to ACOM and SCICOM in Spring of 2021, and if agreed for adoption by Council in October 2021.

#### **1.10.6 Transparent Assessment Framework (TAF)**

Currently, there are 58 fully entered stocks and 150 partially entered, 60 of these are draft 2020 assessments. All data input and output is fully traceable and versioned. So far, 7 training workshops have been held.

The Working Group on Transparent Assessment Framework Governance (WGTAFGOV), chaired by Nils Olav Handegard (Norway) which will oversee the governance of TAF as it develops has had 5 meetings in 2020 primarily focussed on establishing the 'manifesto' which outlines the main vision, goals and scope for TAF. WGTAFGOV also identifies and prioritises key tasks based on estimates of the resources they require. An important discussion has been on how TAF will deal with the portfolio of assessment and product types, this is critical for the future success of TAF (and ICES in general) in being able to deal with wider ecosystem assessments other than single species, as well as products that are not an assessment, but contribute to an assessment i.e. a specific indicator.

However see update in section 2.2 below.



### 1.10.7 Regional Database and Estimation System (RDBES)

#### Timeline for development, acceptance and implementation

The RDBES will still be in development during 2020 and 2021 and it is scheduled to move into production in 2022. Currently it is planned to have a data call in 2022 for 2021 data - this will be used to provide estimates for “all stocks”. The feasibility of this “big-bang” approach must be carefully reviewed during 2020 and 2021. Its success will rely on the effort and contributions from a large number of people in the wider ICES/EU data collection community, and not just the relatively small groups who attend the SCRDB or Core Group meetings

## 2 Issues relevant to Council

---

This section address three issues relevant to Council about the strategic development of ICES advice and the advisory services.

### 2.1 Stakeholder engagement and ICES advice

ICES has been exploring the future needs for stakeholder engagement, primarily through the Workshop on Stakeholder Engagement Strategy (WKSHOES). The workshop participants came with academic and operational expertise in engagement. Their recommendations built on our previous discussions and proposed the structure and elements for a stakeholder engagement strategy for ICES. The report can be found here

<https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/IEASG/2021/WKSHOES%20report%202021.pdf>.

A broad range of issues were covered in the report including the rationale and objectives for engagement; the history of engagement in ICES; who is a stakeholder; the roles and power dynamics in ICES; gaps, risks and opportunities; monitoring and evaluating engagement and potential ways forward.

Stakeholder engagement has taken an increasingly important role in ICES with requesters of advice asking for specific stakeholder consultations on methods, data and communication of advice. WKSHOES had strong consensus that stakeholder engagement is essential to ICES' work, as has been captured by the most recent ICES Strategic, Science, and Advisory Plans. The question is how to do it best? While WKSHOES recognized the essential nature of stakeholder engagement for addressing environmental challenges, understanding human impacts and values, the group discussed the valid concern that if stakeholder engagement is done incorrectly, it could compromise the perceived objectivity of ICES science and its independence. WKSHOES participants challenged the idea of objective or "pure" science, but also recognized the practical need to have ICES advice be transparent and science-based. Participants also understood that when providing advice, tradeoffs have to be made that are informed by the different weights that stakeholders place on various management objectives.

WKSHOES explored the question "Who is a stakeholder?" A central challenge for ICES is recognizing that the network of stakeholders is a subset of the people impacted by ICES science and advice. Any Stakeholder Engagement Strategy should therefore primarily focus on ensuring that people who are part of the ICES network have clear roles and responsibilities and that ICES performs its work fairly and transparently. However, participants also recognize the need to increase opportunities for diverse resource users and citizens to have clear avenues to engage with the different aspects of the ICES network. Considering and promoting diversity and inclusion and avoiding implicit bias are crucial in this process.

WKSHOES suggested five principles that ICES should consider when engaging with stakeholders.

1. Opportunities for stakeholder involvement are inclusive and proportional to the relevant issue.
2. Active stakeholder participation is consistent with the impartiality, independence and integrity of ICES.
3. The roles, responsibilities and expectations of participation are transparent, and participants understand and respect their roles and that of others.
4. ICES communication strategy is aligned with the engagement strategy.

5. Stakeholders' participation is assessed, the engagement process is monitored, and constant organizational learning occurs.

It is essential to define clear goals for stakeholder engagement in general, and tangible objectives for each engagement activity in particular. Hence the need for a Stakeholder Engagement Strategy. Engagement objectives already formulated in various ICES documents were outlined in the WKSHOES report. WKSHOES recommended that in order to both complete the development of the strategy and conduct successful stakeholder engagement about it, a suite of communication activities is needed that should best be coordinated from a central contact point within ICES.

In the next few months, we will invite comments on the findings of the workshop from stakeholder organisations and observers. We will further explore the findings of the workshop during the MIACO and MIRIA meetings in January 2022. The report will be further discussed at ACOM in December. Please feel free to circulate the report widely. We would like to thank the participants of the workshop for their efforts, insights and analysis.

ACOM and SCICOM have approved the formation of a small operational group to work on the next steps for the development of the strategy. The process is:

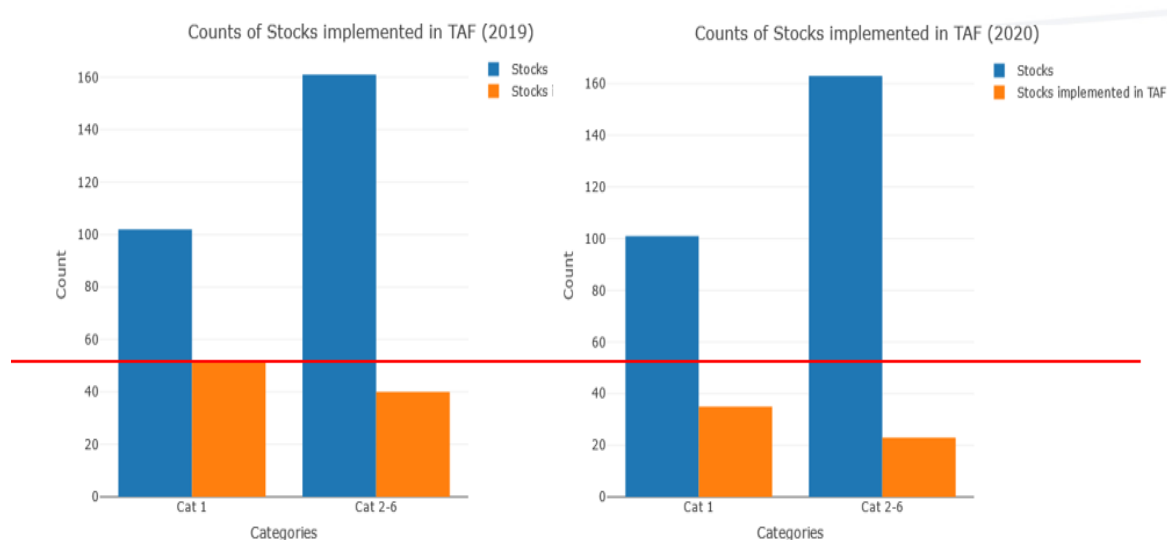
1. Council be consulted in October 2021.
2. Consultations with stakeholder organisations and observers on the WKSHOES report, with discussions at MIACO and MIRIA 2022.
3. A stakeholder engagement strategy drafting group take the findings of WKSHOES and draft the strategy. Draft to be ready by January 2022. The group consists of:
  - ACOM and SCICOM Chairs
  - 1 representative from ACOM and 1 from SCICOM
  - Two Chairs of WKSHOES – Alan Haynie and Vera Köpsel
  - Lotte Worsøe Clausen and Wojciech Wawrzynski
4. The draft engagement strategy to be discussed at ACOM and SCICOM March 2022.
5. The draft be presented to ICES Bureau for comment.
6. The draft to go out to consultation to requesters of advice and stakeholders April 2022, with feedback requested by June 2022.
7. The stakeholder engagement strategy drafting group addresses feedback from consultations and revises as appropriate.
8. SCICOM and ACOM address the revised draft in Sept 2022, as does Bureau.
9. The draft strategy be presented to Council October 2022, for further discussion and approval.

**Council is asked to note the findings of WKSHOES and the agreed process for the development of the Stakeholder Engagement Strategy.**

## 2.2 Transparent Assessment Framework (TAF)

There has been a deterioration in TAF adoption coinciding with the pandemic, impacting schedule for quality assurance of stock assessments ([TAF](#), Figure 2.1). This was unforeseen, especially as take up was good in 2019, and it was hoped that momentum would continue. A big driver in 2019 were the localised training courses in TAF. These did not continue in 2020. The importance of skill development, training, and capacity building are important for quality of the advice and for the expertise in the institutes. It is expected that with increased use, TAF will improve the effectiveness and efficiency of the advice.





**Figure 2.1 Number of stocks implemented in TAF in 2019 and 2020.**

A survey of TAF users and potential users (n= 42) was conducted in June-July 2021 to understand in more detail the perceived barriers to its use, the benefits of its adoption from the user perspective and the potential improvements that would lead to increased use. Over 60% of respondents were stock assessors or stock coordinators running assessments that lead to ICES advice. A large proportion saw many benefits in using TAF. These included clear documentation of code and data, robust scripting, version control and automation. The issues of sharing of workload was not so highly rated, potentially suggesting that as yet, TAF is not seen as a routine tool for assessment and forecast.

The respondents were quite clear about the potential barriers to implementation. Time investment is required but not being made available. This enables dedicated time to learn/use TAF in regular assessment cycle. There are still some technical issues, such as users experiencing challenging setup issues in configuring their software environment to use the scripts/repositories. More guidance and training is needed with supporting online documentation. Competence in R scripting or GIT was not seen as a barrier to use of TAF.

The COVID-19 pandemic has caused increase in work pressures at home laboratories and at the ICES Secretariat.

- In response to the stalled uptake and application of the Transparent Assessment Framework (TAF) throughout the assessment process, and the results of the recent survey of TAF users; home institutes must make time available for TAF implementation and training, with key messaging that this is a priority for ICES as a quality assured advice provider. It is recognised that COVID19 has had a major impact on the TAF situation in that it has put severe pressure on the Secretariat and Member Countries.
- ACOM and WGTAFGOV will re-emphasise the role of TAF and prioritise guidance and online documentation and assistance/helpdesk which re-quires resourcing in the Secretariat).
- Secretariat to improve the functionality and technical set up (including to export directly into the Stock Assessment Graphs (SAG) database and implementation between years).

**Council is asked to approve Recommendation 3 of Bureau Council Sub Group on COVID-19 - (BCSGC19)- On the Quality of the ICES Advice and TAF.**

## 2.3 Diversity, equity and representation on ACOM and across the advice system

As mentioned in agenda items 2 and 10.2, ICES has an ongoing challenge with diversity, equity, and inclusion. This is very clearly illustrated by the failure of ICES and member countries to address the disproportionate representation of males on ACOM (as of Jan 2022, 21 of 27 ACOM members will be male, 78%). The need for organisations to have diversity plans to apply for Horizon Europe projects and the ground swell of discussions rising from the network, highlight that this is an issue that ICES can no longer ignore. ICES cannot remain passive. It is likely that the current business model discriminates against female participation and engagement in the advisory committee. ICES should consider what drives individuals to work in ACOM, and actively address the barriers to inclusion.

<b>Council is asked to approve the proposed measures on diversity, equity, and inclusion.</b>
---

### 3 Assessment of implementation of ICES advisory plan tasks

---

The advisory plan was launched in December 2019. This document reports on progress of tasks.



#### The objectives of the plan:

1. Enhance credibility and transparency of advice, following FAIR and 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

### 3.1 The priority research areas:



### 3.2 The tasks associated with each priority area.

#### Assuring quality

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

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
2. Seek international quality accreditation for ICES advisory system
3. Develop a comprehensive quality management system for advice including implementing Regional Database and Estimation System (RDBES), TAF, etc
4. Where possible ensure that all advice products are based on data that adhere to the FAIR principals
5. Application and ongoing development of the benchmark system to ensure the advice is fit for the evolving advisory demands

#### Incorporating innovation

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

1. Scan and evaluate new knowledge, from inside and outside ICES community, to assess if it can support state-of-the-art advice on meeting conservation, management, and sustainability goals

2. Review and report on best practices in other agencies and management systems to inform future development of advice
3. Support translation of mature science into Viewpoints or Ecosystem Overviews
4. Engage stakeholders and advice recipients to develop current and future advice products
5. Engage funding agencies to develop/recommend approaches to project calls and design that increase uptake of science into advice

## Highlighting benefits

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

1. Prepare a communication strategy with our Science Committee (SCICOM) and the Secretariat outlining the strengths and future direction of ICES advisory system clarifying the message that we are an organization that operates as a science network with functional, knowledge brokering and boundary organization activities
2. Highlight the ecosystem approach in existing and future advisory products and communicate this to new audiences
3. Communicate the synergy between ICES data, science, and advice by revising ICES website in terms of target audience, levels of detail and clarity, and link this to the visualization of advice on the website
4. Raise the profile of ICES with marine sectors (commercial, managers and policy makers) not currently engaged with us such as energy and shipping
5. Broaden participation in ICES science community by promoting involvement from academia in the advisory process
6. Identify and target specific audiences of advice when concerns are expressed about the advisory process and begin dialogue to resolve such issues
7. Expand the terms of references for annual meetings with requesters and observers to use them as part of the communication strategy

## Sharing evidence

Effectively share evidence and advice with requesters and society, and develop a responsive dialogue with partners to maintain relevance.

1. Improve and ensure branding of all ICES advice products
2. Design and develop a user friendly and dynamic web platform for ICES advice in dialogue with requesters
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
4. Work with the fishing industry to develop a mechanism to bring commercially derived sample data into the RDBES
5. Improve the mechanism for sharing alternative perceptions of the state of stocks and fisheries
6. Simplify the opening advice lines, but connect to the underlying basis and data in an interactive way
7. Ensure that ICES advisory highlights are made available to society in a user-friendly way
8. Ensure corrections in advice and updates in the advisory products will be transparent and easily tracked by the requesters
9. Improve the advice profile in ICES document archive, encourage the creation of an ICES online library for all documents

## Evolving advice

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

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

## Identifying needs

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

1. Conduct an objective stock assessment prioritization and data-gap analysis
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
3. Continuously review training courses run by ICES with the potential to increase the programme for key areas
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
5. Identify potential programme of funding and training in disciplines that are relevant to the institutes and engage funding agencies and requesters of advice to highlight research to meet future advice needs
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
7. Identify disciplines and institutions that could collaborate with ICES and improve and add context to ICES advice (e.g. socio-economics and marine planning)



### 3.3 Delivery of tasks in the advisory plan

ACOM and SCICOM, with the secretariat, are working to deliver the tasks of the plan. The following section lists the tasks, and is indicative in terms of roles and timings. Green = achieved, Amber = ongoing/progress made, Red = no progress/yet to start.

Priority area	Task	By who	Delivery
<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/ WGQUALITY	Ongoing, process flows being mapped for data. Not yet for advice process
	1.2 Seek international quality accreditation for ICES advisory system	ACOM/ secretariat	Data now accredited with Core trust seal, Advice needs consideration (end 2023)
	1.3 Develop a comprehensive quality management system for advice including implementing Regional Database and Estimation System (RDBES), TAF, etc	secretariat	End 2022 - work continuing
	1.4 Where possible ensure that all advice products are based on data that adhere to the FAIR principals	ACOM/SCICOM	End 2021 (80% of advice) all advice by 2023. Intalks with NO and Iceland
	1.5 Application and ongoing development of the benchmark system to ensure the advice is fit for the evolving advisory demands	ACOM	Benchmark Oversight Group now fully operational
<b>Incorporating innovation</b>	2.1 Scan and evaluate new knowledge, from inside and outside ICES community, to assess if it can support state-of-the-art advice on meeting conservation, management, and sustainability goals	ACOM/SCICOM	Ongoing, with annual reporting in Sept. for info; decisions for actions to be taken in March
	2.2 Review and report on best practices in other agencies and management systems to inform future development of advice	ACOM	Revisited periodically, Advice framework published
	2.3 Support translation of mature science into Viewpoints or Ecosystem Overviews	ACOM/SCICOM	Ongoing; with annual reporting in Sept. for info; decisions for actions to be taken in March
	2.4 Engage stakeholders and advice recipients to develop current and future advice products	ACOM	Ongoing – MIRIA, MIACO, Workshops



	2.5	Engage funding agencies to develop/recommend approaches to project calls and design that increase uptake of science into advice	SCICOM/Council	Ongoing, not sure of direct impact as yet
<b>Highlighting benefits</b>	3.1	Prepare a communication strategy with our Science Committee (SCICOM) and the Secretariat outlining the strengths and future direction of ICES advisory system clarifying the message that we are an organization that operates as a science network with functional, knowledge brokering and boundary organization activities	ACOM/ secretariat	SCICOM/ ICES communications strategy now contains advisory plan priorities
	3.2	Highlight the ecosystem approach in existing and future advisory products and communicate this to new audiences	ACOM	Ongoing - progress in advisory plan, guide to advice, web pages
	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, and link this to the visualization of advice on the website	secretariat	Ongoing
	3.4	Raise the profile of ICES with marine sectors (commercial, managers and policy makers) not currently engaged with us such as energy and shipping	ACOM	Ongoing - aquaculture growing, renewables and maritime
	3.5	Broaden participation in ICES science community by promoting involvement from academia in the advisory process	SCICOM/ACOM	Ongoing
	3.6	Identify and target specific audiences of advice when concerns are expressed about the advisory process and begin dialogue to resolve such issues	ACOM	dialogue begun but specific mechanism not developed, thus ongoing
	3.7	Expand the terms of references for annual meetings with requesters and observers to use them as part of the communication strategy	ACOM	Completed
<b>Sharing evidence</b>	4.1	Improve and ensure branding of all ICES advice products	ACOM/ secretariat	not achieved and linked to development of web products
	4.2	Design and develop a user friendly and dynamic web platform for ICES advice in dialogue with requesters	ACOM/ secretariat/ external projects	work has started with equity and external project funding

	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	work has started with equity and external project funding
	4.4	Work with the fishing industry to develop a mechanism to bring commercially derived sample data into the RDBES	ACOM working with workshops	workshops ongoing
	4.5	Improve the mechanism for sharing alternative perceptions of the state of stocks and fisheries	ACOM	End 2023 - still need mechanism for sense testing
	4.6	Simplify the opening advice lines, but connect to the underlying basis and data in an interactive way	ACOM	linked to web advice developments, but simplification is ongoing
	4.7	Ensure that ICES advisory highlights are made available to society in a user-friendly way	ACOM/ secretariat	Format agreed with communications but should be ongoing
	4.8	Ensure corrections in advice and updates in the advisory products will be transparent and easily tracked by the requesters	ACOM/ secretariat	Addressed through conversation with MIRIA
	4.9	Improve the advice profile in ICES document archive, encourage the creation of an ICES online library for all documents	SCICOM/secretariat	New library being brought in, with specific Advice grouping
<b>Evolving advice</b>	5.1	Map with requesters their current and potential future policy initiatives and management objectives; document their potential impact on the provision of advice	ACOM	Ongoing through MIRIA, and bilateral meetings and workshops
	5.2	Develop an ecosystem advice framework	ACOM	Published April 2021
	5.3	Identify and develop new requesters for ICES advice e.g. marine energy and spatial planning	ACOM	Ongoing - linked to 3.4
	5.4	Develop a stronger base in scoping and stakeholder engagement	ACOM/ SCICOM	Ongoing – with workshop on stakeholder engagement strategy
	5.5	Investigate mechanisms and examples of assuring independence of advice in systems with increasing stakeholder participation, and more consultations and iterations with requesters	ACOM/ SCICOM	Ongoing – stakeholder strategy and 10 principles for advice

	5.6	Identify associated data and information needs related to policy developments, the concept of risk and thresholds for ecosystem health	ACOM/ SCICOM	Ongoing – with IEA & CEA expert groups, and with joint ACOM/SCICOM EBM group
<b>Identifying needs</b>	6.1	Conduct an objective stock assessment prioritization and data-gap analysis	ACOM	Role for the BOG and the recommendations reviews to RCGs
	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	Role of BOG
	6.3	Continuously review training courses run by ICES with the potential to increase the programme for key areas	Training Group	ongoing and ACOM leadership also contributing to Council initiative
	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	Ongoing
	6.5	Identify potential programme of funding and training in disciplines that are relevant to the institutes and engage funding agencies and requesters of advice to highlight research to meet future advice needs	SCICOM	Ongoing
	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	Also formalised links to RCGs through SG Chairs and ACOM
	6.7	Identify disciplines and institutions that could collaborate with ICES and improve and add context to ICES advice (e.g. socio-economics and marine planning)	ACOM/ SCICOM	not initiated as yet

## UN Decade of Ocean Science for Sustainable Development as well as Arctic, and Cooperation with PICES

### 1 UN Decade of Ocean Science for Sustainable Development

**Council delegates are requested to**

**Provide information on any national or institute level Ocean Decade Laboratories that SMARTNET could link to or participate in.**

**We received a number of national contact points and activities from SCICOM already, but please send any information on national Ocean Decade activities to the SCICOM Chair.**

- 1) Joint ICES/PICES UN Decade of Ocean Science for Sustainable Development Programme "SMARTNET"



SMARTNET is one of 34 programmes endorsed by the UN Decade Advisory Board, the full list of programmes can be found on the [Ocean Decade webpage](#). The programme is a good opportunity to develop joint activities with existing partner organisations as well as start expanding this collaboration to include organizations and institutes and individuals beyond our member countries, and to facilitate ocean science research and collaboration among countries in both the Northern and Southern hemisphere.

The ICES/PICES Ocean Decade Steering Committee (IPOD SC) ([see doc 6.1-1 of the SCICOM March meeting](#)) has held three meetings in April, July, and August, to outline concrete activities to be implemented within the joint Decade Programme SMARTNET ([link](#)) and to develop an implementation plan for the period 2021 to 2024. The implementation plan will outline:

- Program Objectives
- Program Coordination and Governance Structure
  - ICES/PICES Expert Group (IPOD) & Initial Membership
  - Terms of Reference
- Program Activities
  - Outreach and Communications
  - Diversity and Inclusion
  - Early Career Ocean Professional Development
  - Partner Organizations & Programs
  - Networking within UNDOS
  - Capacity Development
  - Anticipated Outcomes
- Contributions to UN Ocean Decade Objectives & Challenges
- Contributions to UN Sustainable Decade Goals

To reach out to possible partner organisations as well as link with other programmes, the IPOD SC plans to organize side events at Ocean Decade Laboratories ([link](#)). Each Laboratory focuses on one of the seven Outcomes of the Ocean Decade. Laboratory participants leverage the opportunity for exchange, collaboration and the creation of sustainable partnerships. It is a self-standing event and encompasses a Core Event that will be complemented by a diverse range of Satellite Activities during a maximum time slot of 48 hours. The Core Event will be hosted by the German Federal Ministry of Education and Research in partnership with the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO).

The Ocean Decade has also suggested so called “Community of Practice”. Over the course of the Ocean Decade, Communities of Practice will be established to ensure that partners working on similar themes or in similar geographies can find each other and work together to optimize collective impact throughout the Decade. Communities of Practice are a way of loosely organizing and making legible a very complex landscape throughout the Decade. They are not formal structures or mechanisms but rather can be seen as a fluid framework to facilitate connections between partners.

Most of the funding for Ocean Decade Activities will probably be leveraged on the national level. Thus, we encourage Council delegates to inform the SCICOM Chair about national coordination bodies and funding opportunities, to help SMARTNET meaningfully support activities across member countries.

## 2) Empowering women for the UN Decade of Ocean Science for Sustainable Development

ICES, represented by Jörn Schmidt, SCICOM Chair is also participating in the high-level stakeholder advisory board of the UN Ocean Decade endorsed project of the [Empowering women for the United Nations Decade of Ocean Science for Sustainable Development](#) lead by the Global Ocean Institute at the World Maritime University. A WMU team, including ICES Coordinating Officer, Ellen Johannesen is conducting research with a focus on gender equality and the empowerment of women in the practice and delivery of ocean scientific research, in particular in relation to fisheries, oceanography, hydrography and climate change. A greater focus on collecting demographic information for the ICES network, in connection with nominations will be part of the project, in line with the Strategic Plan.

### 3) Ocean Decade endorsed activities

Specific ICES (and PICES) activities are also been submitted for endorsement under the Ocean Decade.

Events already endorsed as Ocean Decade activities:

- Marine Socio-Ecological Systems: Navigating global change in the marine environment (MSEAS 2021)
- Fourth ICES PICES Early Career Scientist Conference (ECSC4)
- The Symposium on Decadal Variability of the North Atlantic and its Marine Ecosystems: 2010-2019
- International Symposium on Small Pelagic Fish: New Frontiers in Science for Sustainable Management

## 2 ICES Arctic-related activities

**Council delegates are invited to take note of the ongoing ICES activities with relevance to the Arctic.**

The Arctic is a strategic regional action area in which ICES has contributed increasingly on the science, the advice, and the institutional level. All eight Arctic Council states (Canada, Denmark, Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States) are ICES member countries and all other ICES member countries are directly or indirectly involved in Arctic research and thus we strive to support activities of all our member countries in the region.

**The following paragraphs are outlining key activities in relation to the Arctic:**

The new **Joint ICES/PICES Working Group on Integrated Ecosystem Assessment of the Northern Bering Sea-Chukchi Sea** (WGIEANS-CS) met online in April. The meeting was attended by SCICOM chair and Secretariat staff. ToR and report details are available here: <https://meetings.pices.int/members/working-groups/wg44>

The **International Symposium on Plastics in the Arctic and Sub-Arctic Region** was held online in March: <https://www.arcticplastics2020.is/index.php/en/>. The program covered a diverse range of themes including presentations on sources and transports of plastics, waste management strategies, research students on macro-



micro- and nano-plastics, monitoring strategies, toxicology, mitigation practices, and a round table discussion on developing a regional action plan for the Arctic.

The Icelandic Ministry of Education, Science and Culture and the Japanese Ministry of Education, Culture, Sports, Science and Technology co-organized the [3rd Arctic Science Ministerial \(ASM3\)](#) which was held in Tokyo in May 2021. The main objective of the meeting was to strengthen international cooperation and respond to the severe threat of climate change and biodiversity loss in the Arctic. ICES HOSS followed the process and participated in its online webinars. Delegates from 27 different countries and the European Commission, as well as representatives from Arctic Indigenous Peoples' Organizations, gathered at the venue and online to discuss developments in international research and commit to future cooperation. This meeting was built on the themes initiated by the first ASM hosted by the United States and held in Washington, DC in 2016, and the second Arctic Science Ministerial co-hosted by the European Commission, Finland and Germany and held in Berlin in 2018. ICES and PICES contributed together to the report. Outcomes of the ASM3 Science Process include the Joint Statement of Ministers and the ASM3 Report: Both available under this [link](#).

The **12th Ministerial meeting of the Arctic Council** marked the end of the two-year Icelandic Chairmanship term. The meeting was held on 20th May 2021 in Reykjavik, Iceland. It provided an opportunity to review the Arctic Council's activities and accomplishments under Iceland's Chairmanship, and sees the Russian Federation assume the role for the next two years. The ICES General Secretary presented a video message to the meeting ([link](#)).

The SCICOM Chair attended an **Arctic Council observer event on Arctic Governance** on 21 April 2021. The event focused on the question of how the Arctic Council could further engage the Observers in its work, and what expertise and knowledge the Observers can bring to the Arctic Council to enhance Arctic governance. ICES has observer status at the Arctic Council since 2017. <https://arctic-council.org/en/news/arctic-governance-an-observer-online-event/>

The **Second meeting on the Implementation of the Agreement on Enhancing International Arctic Science Cooperation** took place on 19 April. The SCICOM Chair gave a presentation on ICES and its work in the Arctic. The eight member states of the Arctic Council vowed to improve cooperation on Arctic science via this legally binding agreement, signed on 11 May 2017 at the Arctic Council Ministerial meeting in Fairbanks, Alaska.

**Ocean Decade – Arctic Action Plan** completed 1 June with participation from 300+ stakeholders including contributions from many ICES community members, the General Secretariat, ICES staff, SCICOM Chair, WGS2D/SICCME chair, and members of WGICA and WGIEANBS-CS. The action plan outlines research,

organizational and uptake challenges, and actions for the decade ahead: <https://www.oceandecade.dk/decade-actions/arctic-action-plan>.

### **Arctic and the UN Decade of Ocean Science for Sustainable Development**

Based on the recommendations in the global Ocean Decade implementation plan and with support from IOC UNESCO, the Arctic Action Plan was developed following input from a series of workshops with simultaneous working groups dedicated to each of the desired societal outcomes of the Ocean Decade. The ICES General Secretary has chaired the workshop on “Productive Ocean” and the SCICOM Chair contributed to the workshop on “An inspiring and engaging Ocean” supported by ICES staff. The plan can be found here: <https://www.oceandecade.dk/decade-actions/arctic-action-plan>.

### **Forthcoming publications and Advice**

A Cooperative Research Report produced by the ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (WGICA) titled “Ecosystem assessment of the Central Arctic Ocean: description of the ecosystem” is currently under peer review.

The advice product Central Arctic Ocean Ecosystem Overview is on target for release on 9 December.

## **3 Update on ICES–PICES Cooperation**

### **Council delegates are invited to take note of the ongoing cooperation between ICES and PICES**

Over the past 20 years, ICES and PICES have worked together to establish joint expert groups within areas of common interest, making use of the respective organizational structures and networks, and importantly, finding synergies between the complimentary expertise in the two scientific communities. The cooperation has taken place through joint workshops, expert groups, symposia and conferences.

There are 5 joint working groups running.

[WGSPF](#) (EPDSG), [WGGRIFY](#) (EPDSG), [WGICA](#) (IEASG), [WGIEANBS-CS](#) (IEASG), [WGONCE](#) (EPDSG)

### **ICES-PICES membership in groups:**

Within the last 12 months: a total of 251 experts involved in these groups and most experts from United States, Japan, Norway, China, and Canada. Representatives of ICES and PICES have been meeting regularly via remote meetings to discuss ongoing collaboration, including potential activities related to the UN Decade of Ocean Science, the joint ICES-PICES conference (2023, USA), and other jointly-organized events.



### **Annual conferences**

Co-sponsored theme sessions at annual science meetings: since 2005 PICES co-sponsored conveners of theme sessions on a diverse range of topics of common scientific interest at ICES ASCs. Since 2007 ICES co-sponsored conveners of topic sessions or workshops at PICES Annual Meetings since, respectively.

*ICES ASC 2021:*

In 2021 PICES co-organized the following sessions:

- A: Top predators, food webs, and ecosystem-based fisheries management
- J: Advances and challenges in marine litter pollution

PICES Executive Secretary, Deputy Executive Secretary and Science Board Chair will participate in the September SCICOM meeting

*PICES 2021 Annual Meeting:*

ICES 1st Vice President and SCICOM Chair have participated as observers in the Science Board and address the PICES Governing Council; ICES HoSS has attended some of the scientific sessions.

### **Co-sponsorship of scientific conferences**

2022 (tentative, postponed from 2020) Marine Socio-Ecological Systems - MSEAS 2020: Navigating global change in the marine environment with socio-ecological knowledge;

2022 Fourth ICES PICES Early Career Scientist Conference;

2022 International Symposium on Small Pelagic Fish: New Frontiers in Science for Sustainable Management;

2023 5th Effects of Climate Change on the World's Oceans (ECCWO).

### **UN Decade of Ocean Science for Sustainable Development**

ICES and PICES are jointly working on the implementation of the SMARTNET programme, a UN Ocean Decade endorsed programme. The programme will develop joint activities with existing partner organisations as well as start expanding this collaboration to include organizations and institutes and individuals beyond our member countries, and to facilitate ocean science research and collaboration among countries in both the Northern and Southern hemisphere. The work is led by the ICES/PICES Ocean Decade Steering Committee (IPOD SC) ([see doc 6.1-1 of the SCICOM March meeting](#)), working on outlining concrete activities to be implemented within the joint Decade Programme SMARTNET ([link](#)) and to develop an implementation plan for the period 2021 to 2024.

## Gender Equality, Diversity, Equity, and Inclusion

*Council is invited to take note of the ongoing work on diversity, equity, and inclusion and to support the development of a gender equality plan for ICES.*

The 2019 ICES strategic plan committed to “...cultivate a welcoming, resourceful, diverse, inclusive, and gender balanced as well as a respectful working environment.”

In the context of Agenda 2030, and the Sustainable Development Goals, including SDG 5 on gender equality, ICES has the opportunity to actively contribute by following best practice to improve gender equality, and taking actions to create a diverse and inclusive working environment.

Specific actions in progress:

- Developing a Code of Ethics and Professional Conduct.
- A retrospective baseline analysis of gender representation in ICES activities.
- Training, first for ICES Secretariat staff, with a view to develop training for the ICES community.
- Review of ICES policies and procedures with emphasis on accountability, fostering diversity and inclusion, and reducing or eliminating bias.
- All of these actions will be integrated into a more specific Gender Equality Plan that will be developed in 2022.

Through collaboration with World Maritime University on the project Empowering Women for the UN Decade of Ocean Science for Sustainable Development, initial steps have been taken to scope the current status and establish the foundation for creating a gender equality plan (GEP) for ICES. While being an established strategic priority for ICES, a gender equality plan is also a requirement for receiving funding from Horizon Europe calls for proposals with deadlines in 2022 and beyond.

While ICES does not currently have a systematically conducted overview of the balance of gender of participants in ICES work, initial analysis (one year of data) reveals an underrepresentation of women in decision-making roles. As part of a long-term plan for the revision of the current administration of the nominations system, the Secretariat is working to ensure this will include the collection of greater demographic information, including gender and career stage, that will help long-term monitoring towards improved gender balance in the organization.

Throughout 2021 there has been dialogue with the ICES community on gender imbalance and diversity. In January, ICES hosted a screening of the film “Picture a scientist” and conducted a follow-up survey, which provided important feedback from the ICES community on their experiences and ideas about how to create a more inclusive environment free from harassment.

A specific discussion on the issues of gender equality, and diversity, equity, and inclusion more broadly has been presented and facilitated at the meeting of WGCHAIRS, SCICOM, and Bureau, and now Council based on the PhD research of Ellen Johannesen, ICES Coordinating Officer.

The new Strategic Initiative on the Integration of Early Career Scientists (SIECS) also has specific Terms of Reference dealing with diversity, equity, and inclusion, and are piloting a process for selecting a keynote speaker aimed at reducing bias in the selection process.

A specific Annual Science Conference network session on gender equality, diversity, equity, and inclusion, and informal meet-up (online in the Whova app) also helped to facilitate discussions and solicit feedback from a diverse range of participants in the ICES Community.

The work of the Bureau Council subgroup on COVID-19 (BCSGC19) has also made recommendations specific to gender and requested resources that are critical to further developing and making progress on issues of diversity, equity, and inclusion, as well as gender equality specifically.



**ICES**  
**CIEM**

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

Council meeting

October 2021

Del– Doc 15.3

Agenda item 15.3

---

## Towards an ICES Code of Ethics and Professional Conduct

**The Council is requested to take note of and support the proposed process of developing a Code of Ethics and Professional Conduct for Council approval in October 2022.**

**Rationale:** The current code of conduct covers only conflict of interest, the meeting etiquette outlines expectations for behaviour which should guide our activities from an ethical perspective, and the ICES Secretariat Environmental Policy outlines responsible and environmentally friendly behaviour. A more coherent approach should be explored, without hampering those elements, which already work in a given context, e.g. the advice system.

ICES as an organization needs to ensure the right of others to equally participate in ICES activities without bias or discrimination based on e.g. family status, gender identity and expression, age, race, ethnicity, political and religious beliefs, sexual orientation, or disability.

ICES needs to ensure that the scientific activities carried out are following good scientific practice and are transparent in relation to conflict of interest.

ICES strives to be an environmentally responsible organisation, including the reduction of emissions.

The Code of Ethics and Professional Conduct will contain all principles relevant for everyone involved in ICES activities, thus the wider ICES community as well as secretariat staff, adopting a modular approach recognizing differences in roles and responsibilities for participants in ICES work.

The document will include:

- Our ethical principles as outlined by the Strategic Plan
- Who the code addresses
- Clear lines of reporting, accountability, and action
- Guidelines for Safeguarding Good Research Practice
- Guidelines for Conflict of Interest
- Environmental responsibilities (sustainability)

The focus of the code will be on prevention, but we are aware that misconduct does happen and we need to ensure that we have clear guidance not only of reporting of wrong doing but also action. Related to this is that we currently do not have trained people to handle potential complaints in relation to ethical misbehaviour.

As much as possible the code shall refer to existing documents and by no means shall or need to outline every detail in itself. Especially with respect to professional conduct and good scientific practice in relation to conflict of interest, detailed guidelines are available and already working effectively.

The document will support the implementation of the gender awareness measures, the diversity, equity and inclusion measures and the CO<sub>2</sub> strategy.

Process:

The document will be drafted following good practice by a group consisting of the President and First Vice-President, ACOM and SCICOM Chair, Line Managers, Coordinating Officer, Staff representatives, and Human Resource department with the potential help of the consultant leading the workplace assessment and in consultation with ACOM and SCICOM, Bureau and final approval by Council.

Given management change, ongoing Secretariat workplace assessment, the timeframe will be aligned with the workplace assessment process. The consultant can also help to develop components required for the Code of Ethics and Professional conduct.

The document will be reviewed on a rolling basis.

Draft components:

ICES Code of conduct (Contents and agreed practice to be maintained – potentially renamed to better fit within the framework of the code of ethics)

Meeting etiquette (To be revised/renamed)

ICES Secretariat Environmental Policy (to be revised/renamed)

A “code of conduct” for staff (To be developed by the consultant)