



Council meeting

October 2018

CM 2018 Del-01

Agenda item 1

ICES 106th Statutory Draft Meeting Agenda

Copenhagen, Denmark

Chair: Cornelius Hammer, ICES President

17–18 October 2018

Day 1 (9:00 – 17:15)

Followed by a reception at ICES headquarters

Day 2 (8:30 – 15:00)

1 Adopt the Agenda

Meeting participants will be invited to adopt the agenda.

1.1 President's review

Council delegates will be invited to review the follow-up, in relation to actions decided at the 2017 Council meeting.

2 ICES Strategic Plan

Meeting participants will be invited to adopt the ICES strategic plan.

3 Finance

3.1 Finance Committee Report

The meeting is invited to comment and approve the report from the Finance Committee, as well as to:

- approve the final accounts 2017, including Audit Book;
- vote on the proposed budget for 2019, noting that the national contributions have already been decided;
- vote on the 2020 national contributions, adjusted with the Danish inflation rate (1.5%);
- agree on the use of equity for investments in quality assurance of the advisory process and the financial administration of the organization

3.2 New Clients and changes to the MoUs and Administrative Agreements

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

3.3 Project participation

An update on the current status of ICES involvement in projects will be provided.

4 Reports from the Council Strategic Initiative on Maritime Trans-Atlantic Cooperation (CSIMTC)

Fritz Köster, First Vice-President will report on the activities of CSIMTC.

5 Council Working Group Code of Conduct (CWGCODE)

Tammo Bult, Chair of CWGCODE will provide an update on the outcome of the working group. Council delegates will be invited to adopt the updated code of conduct and conflict of interest policy for participants in ICES work. This includes a standard of conduct, outlining expectations of behaviour for persons participating in the ICES work.

Published separately – <https://doi.org/10.17895/ices.pub.7463>

6 Elections and Appointments

6.1 Members of Bureau

Council is invited to nominate and elect:

A new President. ICES President, Cornelius Hammer has completed his 3-year term.

A new 1st Vice-President. ICES 1st Vice-President, Fritz Köster has completed his 3-year term.

A new Vice-president. Vice-President Bill Karp (US), has completed his 3-year terms.

To facilitate the election process, nominations will occur on the first day of the meeting. If nominated and willing to stand, potential candidates are encouraged to introduce themselves and give a short introduction to how they will contribute to the work of the organization. The election procedure will then be completed on the second day of the meeting.

Rules of Procedure (extract)

Rule 8 *The President shall be elected for a term of three years and shall not be eligible for re-election 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 (iv)

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

(Currently Bureau consists of President Cornelius Hammer, Germany (term expiring 2018), First-Vice President Fritz Köster (term expiring 2018), Denmark, Carl O'Brien, UK, Piotr Margonski, PL, Per Sandberg, NO, Manuela Azevedo PT, and Bill Karp, US (term expiring 2018).

6.2 Appointments

A new Chair of Finance Committee and three new members will be appointed.

Piotr Margonski (PL), Chair of Finance Committee, as well as Finance Committee members Alain Vezina (CA), Ari Leskelä (FI), and Tomas Zolubas (LT) have all completed 3-year terms.

Rule 24 (iii)

The Finance Committee shall consist of one of the Delegates of Denmark and four other Delegates appointed by the Council for a period of three years, after which they shall not be eligible for re-appointment for the immediately succeeding term unless a member of the committee is appointed as Chair of the Finance Committee in which case he/she may serve one additional term. When a member of the Committee ceases to be a Delegate, he/she shall immediately vacate office.

Rule 30 (ii)

The Chair of the Finance Committee shall be nominated by the Bureau from among the members of the Committee and appointed by the Council; the Chair of the Finance Committee shall vacate office on ceasing to be a Delegate.

7 ICES Science

7.1 Report from the SCICOM Chair

7.1.1 Annual Progress Report

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

7.2 Arctic

The Council will be updated on latest developments within the Arctic, including ICES participation in various meetings under the Arctic Council and the Scientific Experts on Fish Stocks in the Central Arctic Ocean, and invited to discuss how to develop ICES role, including the different potentials for how new Member Countries/scientist from these countries can take part in the work of ICES.

7.3 2018 and forthcoming Annual Science Conferences

A short report from the 2018 Annual Science Conference hosted by Germany will be provided. The 2019 Annual Science Conference will be hosted by Sweden, and the 2021 ASC by UK. Portugal is invited to confirm its availability to host in 2020. Invitations to host the 2022 (and future) conferences will be welcomed.

8 ICES Advisory Services

8.1 Report from the ACOM Chair

8.1.1 Annual Progress Report

Eskild Kirkegaard, (outgoing) Chair of the Advisory Committee, is invited to give a report on the activities of ACOM, with a specific focus on activities carried out to further the implementation of the ICES Strategic Plan as well as issues for which support is required to ensure continued progress.

8.2 Capacity and workload issues in the advisory services

Meeting participants will be invited to review and discuss strategies for reduction of workload, and capacity issues in the advisory services.

9 Data and Information Services

The Head of Data and Information, Neil Holdsworth will provide a 2018 status report on the activities and deliverables by Data and Information Group and the Data and Information Centre.

9.1 Progress on the pilot project on update assessments, the improvements to DATRAS and RDBES

Council will be provided an update on the project: Transparent Assessment Framework, as well as the improvements and status of DATRAS and RDBES.

10 Secretariat

The General Secretary, Anne Christine Brusendorff will provide a 2018 status report on the activities and deliverables by the Secretariat.

10.1 Resource Coordination Tool (RCT)

Information will be submitted for consideration by Council regarding the further progress on the development of the tools for streamlining working procedures.

11 Any other Business

11.1 Rules of Procedure

Council delegates will be invited to approve the proposed changes to the Rules of Procedure;

- following the establishment of full-time positions for the SCICOM and ACOM chairs, and their recruitment procedures;
- following requests to show the non-profit status of ICES
- editorial updates

11.2 Date of the next meeting

The next statutory meeting will take place 9–10 October 2019.

INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA

OCTOBER 2018

Minutes of the 2018 Council Meeting



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International Council for
the Exploration of the Sea

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ICES 106th Statutory Meeting
Copenhagen, Denmark
Chair: Cornelius Hammer, ICES President
17-18 October 2018

1 Welcome and approval of the Agenda

Cornelius Hammer, ICES President welcomed new delegates, and a moment of remembrance was observed in memory of Georgs Kornilovs, former Latvian delegate who passed away in summer.

The agenda was adopted.

1.1 President's review

The President reviewed the follow-up, in relation to actions decided at the 2017 Council meeting as described in CM 2018 Del-1.1. Council noted that all actions had been followed up, or would be addressed during the course of the meeting.

2 ICES Strategic Plan

Anne Christine Brusendorff, the General Secretary, presented the ICES Strategic Plan. The top-level component of the plan has been developed over the past year with feedback sought from Member Countries, as well as the Science Committee (SCICOM), and the Advisory Committee (ACOM). At the 2017 Council meeting, it was agreed to make a new strategic plan based on 3-components:

- a top-level plan aimed at communicating the ICES vision and mission externally,
- a second level of objectives and sub-objectives common to all pillars of the organization, aimed at progress reporting to Bureau and Council, and
- a third level that will link operational tasks to the upper level goals and objectives, for all parts of the organization, to ensure coordinated allocation of resources.

Fritz Köster, ICES 1st Vice-President provided an overview of the process, including revisions made by the Bureau, based on comments received. The plan has been presented in meetings of ACOM and SCICOM, and accounts for the ICES science priorities stipulated in the Science plan.

ACOM, SCICOM, and the Secretariat are working with implementation plans, which are reflected in an overall ICES joint work plan, ensuring that all parts of the organization are coordinating resources in their efforts to achieve joint objectives and sub-objectives. ACOM will consider at its November meeting if additional input will be provided to the Science Plan.

Action: Council adopted the Strategic Plan, endorsing the top-level component, and agreed to the principle of working through the different levels of the plan including the four-year goals and objectives, and annual work plan.

3 Finance

3.1 Finance Committee Report

Piotr Margonski, Chair of Finance Committee presented the work of the Finance Committee as outlined in the report CM 2018 Del-3.1. Noting the considerations taken into account for the budget forecast. For the 2020 Forecast Budget an inflation regulation, a 1.5% increase of the national contributions is recommended. There are financial implications of a stable budget, as the value of national contributions have decreased due to inflation. National contributions were not increased in 2010, 2012– 2015, 2017, and 2018.

The Forecast budget takes a conservative approach with estimating income. The results of negotiations with clients including with the European Union, and on-going negotiations with other clients, as well as the projects in the pipeline are not included but once they are generating income, they will positively influence the budget predictions.

The President thanked the Chair and members of Finance Committee, as well as the Secretariat for their work preparing and reviewing all the budget documents.

During the discussion, the Netherlands stressed the need for long-term considerations for investments from equity, demonstrating the investments can be translated into the forecast budget. Netherlands requested that the information contained in the report of the Finance Committee be summarized with main messages condensed and highlighted when submitted to Council.

Clarification was requested related to potential moving costs for ICES headquarters, the costs of moving are not included in the forecast budget, as they will be paid by the Danish government (who have initiated the move).

Germany highlighted the need for a forecast budget including just 1 year, separate from long-term strategic deliberations to help improve the chances of Germany being able to vote “yes” for 1.5 % increase in national contributions.

Given the increasing complexity of financial administrative demands from clients, Council supported the proposal to strengthen the financial administration of the organization with an extra staff member. Canada noted concerns about using equity to fund an operational position. The General Secretary clarified that the aim is to have the cost of this position covered as part of core operating costs and not funded from equity in the long-term.

Action:

- Council requested Finance Committee to present their report with main messages summarised when submitted for consideration at the Council meeting.
- Council approved the final accounts 2017, including Audit Book;
- Council approved the proposed budget for 2019, noting that the national contributions have already been decided;
- Council deferred the vote on the 2020 national contributions, adjusted with the Danish inflation rate (1.5%) to an electronic vote in January 2019 allowing some countries additional time to secure a specific mandate to vote on the proposal; The Secretariat will work with member countries to develop tailored letters to help countries be prepared for an electronic vote in January 2019. Council delegates are asked to provide information on what would be specifically relevant to include to the letter by 1 November.

3.2 New Clients and changes to the MoUs and Administrative Agreements

The General Secretary provided meeting participants with an update on the status of negotiations with Member Countries wishing to also be recognized as “Advice requesters”, as well as related administrative procedures, and existing agreements as described in CM 2018 DEL-3.2. Initial discussions have begun with the United Kingdom to prepare for an agreement for ICES advice following the (pending) British exit from the European Union (Brexit).

3.3 Project participation

Head of Science Support, Wojciech Wawrzynski reviewed the status of ICES involvement in projects as described in CM 2018 Del-3.3. Council delegates noted the range of projects, as well as their strategic and financial importance to the organization.

During the discussion, the following points were noted:

- Project involvement helps to position ICES in global issues, benefits the wider community, and builds capacity.
- The decision for ICES to participate in projects is evaluated for relevance to the strategic plan, potential for making results available for expert groups, and if Secretariat involvement will add benefit to the community overall.
- According to ICES project policy, Bureau has the mandate to approve project participation where ICES is requested to participate as partner. Coordination group provides input on available resources. An important consideration is the capacity of the Secretariat to support projects prior to committing.
- There is a need to strengthen the link between project work and benefits to the network. The mechanism for feeding the outcome of project work into the science network should be considered. A start could be to make a retrospective analysis of past projects and their outcomes and impact.
- Project involvement helps to ensure good links to the work done by the expert who are working in the projects and ensuring increased uptake into the assessment groups.
- An October workshop, [science2advice](#) completed a systematic review of science from projects and work done in expert groups into the advisory system.
- Greater consideration could be given to how the organization influences funding agencies, putting the right resources into the funding programmes to influence the funds for the network and expert groups.

Action: Council stressed the need for ensuring project work is relevant for the community, resource allocation/prioritization, and more widely the ability of the organization to influence the funding agencies/programming.

This will be further discussed at the February Bureau meeting.

4 Reports from the Council Strategic Initiative on Maritime Trans-Atlantic Cooperation (CSIMTC)

Fritz Köster, First Vice-President reported on the activities of CSIMTC. The group did not meet in 2018, however, there has been effort to expand the work portfolio with specific focus on involvement in H2020 strategic and research projects, including Secretariat facilitation, and considering how to influence programming.

Alain Vezina (CA), Co-Chair of CSIMTC, reported on the development of the Ocean Frontier Institute (OFI) recently established with funding from the Canadian govern-

ment. The OFI is working with international partners, and seeking to develop an international collaboration strategy.. Transatlantic cooperation has been most successful with focus on pooling activities, pooling of resources has been more difficult to agree on. Cooperation on data sharing is important for transatlantic cooperation. The Atlantic Ocean Research Alliance Seabed Mapping working group has been successful in coordinating activities between Canada, the European Union, and the United States. High-level meetings between NOAA fisheries and DFO are planned for spring of 2019; ICES cooperation will be added to the agenda for that meeting.

The strategic importance of CSIMTC has been supported by the Bureau, however, an expanded trilateral (CA, EU, US) Co-Chairmanship would be important to reinvigorate the group with revised ToRs.

Portugal acknowledged that transatlantic joint-financing/resource pooling has been difficult, while it has been possible to agree on cooperation on specific activities within the AORA framework. It would be important to consider how to account for the Belém statement on Atlantic Research and Innovation Cooperation (EU, Brazil, and South Africa) in the context of the AORA Seabed mapping group. Integration of some of the northern countries from the western side of the Atlantic into the work would be useful.

Action: Council Delegates supported the continuation of the Council Strategic Initiative on Maritime Trans-Atlantic Cooperation (CSIMTC) under the Chairmanship of William (Bill) Karp (US), Nuno Lourenco (PT), and Alain Vezina (CA). The Terms of Reference will be revised by the Co-Chairs and circulated. All delegates interested in contributing to the work of the initiative are encouraged to contact the Chairs.

5 Council Working Group Code of Conduct (CWGCODE)

Tammo Bult, Chair of CWGCODE presented the outcome of the working group as outlined in CM 2018 Del-5. CWGCODE was established after discussions in Council on the inclusion of “industry & NGO” experts in ICES work. A good overview of such experts is missing and opinions in Council differed if and under what conditions such experts can or cannot participate as experts in ICES meetings. CWGCODE had the objective to come up with a practical proposal/solution that has the greatest chance of being acceptable by all Council members. The Code includes a standard of conduct, outlining expectations of behaviour for persons participating in ICES work, and detailing how conflicts of interest should be handled. This document was presented as a compromise position that should be piloted for three years, after which time the Code of Conduct will be reviewed.

As outlined in the Introduction to the Code of Conduct, Council delegates are responsible for making all experts they nominate aware of the Code of Conduct. Chairs of expert groups are expected to facilitate a discussion on declaration of interests with meeting participants prior to the commencement of work.

The Code of Conduct will be included to the Guidelines for Expert Groups. Feedback will be solicited at the WGCHAIRS meeting (January 2019), about how they can be best supported to put the Code of Conduct into practice.

During the discussion, the following points were noted:

- Some member countries remain critical to allowing NGOs and industry experts to contribute to ICES work, but acknowledge that the risk of impartiality is not restricted to certain types of experts, and experience is needed to move forward.

- Chairs must be assured support from the Secretariat to address any potential conflicts of interest identified.
- The Canadian system struggles with the same issues, trying to balance transparency, inclusivity, and impartiality in the process. Canada provides specific training to the Chairs of meetings to help them. The Canadian delegate could provide specific contacts for learning more about the Canadian process and experience.

Action: The Council adopted the Code of Conduct for a three-year trial period. The Code of Conduct will be included to the Guidelines for ICES Expert Groups and dissemination to the community will be by presentation at the WGCHAIRS meeting in January 2019. Council will review the process annually.

6 Elections and Appointments

The terms of **ICES President**, **ICES 1st Vice-President** and one **Vice-President** conclude at this meeting. To fill these positions Council elected the following delegates, each for a three-year term:

Fritz Köster, Denmark as ICES President

William (Bill) Karp, United States as ICES 1st Vice-President

Gerd Kraus, Germany as ICES Vice-President

6.1 Appointments

The term of the Finance Committee Chair and most of the members has also concluded. Council delegates appointed a new Chair and members, each for a three-year term:

Ari Leskelä, Finland as Finance Committee Chair

Karin Victorin, Sweden as Member of Finance Committee

Markus Vetemaa, Estonia as Member of Finance Committee

Pablo Abaunza, Spain as Member of Finance Committee

7 Report from the SCICOM Chair

7.1.1 Annual Progress Report

The Chair of SCICOM, Simon Jennings, reported on the scope, scale, and impact of ICES science, the work of SCICOM and plans for future science delivery following identification of science priorities and proposed flagship science activities as detailed in CM 2018 Del 7.1 and Del 7.1.1.

The new Science Plan “Marine ecosystem and sustainability science for the 2020s and beyond” describes ICES scientific priorities and objectives and a pathway to achieve them. The purpose of the Plan is to generate ecosystem and sustainability science with a high and beneficial impact on society, fulfilling the ICES mission. The Science Plan was developed through an inclusive and consultative process. The intended audience for the science plan is the marine science community, in ICES countries and beyond.

A parallel aim is for the plan to resonate with managers, industry, funding agencies, government, inter-governmental and non-governmental organisations who are committed to advancing marine conservation and management and furthering understanding of the sea.

Remaining timelines for the Science Plan:

- Presentation to ICES Council on 17–18 Oct 2018
- Text of science plan finalised by 2 Nov 2018
- Implementation plan finalised on SCICOM forum by 30 Nov 2018
- Science plan in place from 1 Jan 2019
- Implementation by expert groups beginning 26-28 Mar 2019

During the discussion, the following points were noted:

- There are benefits to releasing the ICES strategic plan and the Science plan simultaneously.
- The expanding scope of science is important, however supporting the advisory system and traditional stock assessment should remain a strong priority.
- The aim of the Science Plan is to enhance core business. It is critical to feed science through to advice. The broader scientific scope adds to the capacity for rigorous stock assessment, etc. The greater knowledge there is about the systems, methods, and uncertainty, the more informed the analyses of the challenges.
- Working cultures in assessment working groups have a strong influence on the uptake of new science in to the assessments.
- The science themes of the ecosystem approach could be more prominently referenced in the Science Plan.
- The inclusion of stakeholders in the production of science and better understanding of stakeholder needs is an emerging science theme in Canada.

Action: Council supported the Science Plan, with a suggestion to review the text to ensure the ecosystem approach to fisheries was sufficiently prominent.

The General Secretary and the SCICOM Chair will coordinate to ensure the ICES Strategic Plan and Science Plan are released at the same time.

7.2 Arctic

The General Secretary reported on the latest developments of ICES work related to the Arctic, including ICES participation in meetings under the Arctic Council, and the Scientific Experts on Fish Stocks in the Central Arctic Ocean. Council delegates discussed how to develop ICES role, including increasing the potential for scientists from beyond the ICES member countries taking part in the work of ICES.

Action: Council tasked Bureau, with support from the Coordination group, to make a relevant proposal for an ICES role in the Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean (FISCAO) process once the ToRs for the FISCAO meeting are available. The aim will be to secure inter-sessional support from Council for a specific action to support the FISCAO process.

7.3 2018 and forthcoming Annual Science Conferences

The German Delegates were thanked for hosting the very successful 2018 Annual Science Conference (ASC) in Hamburg. The 2019 ASC will be hosted by Sweden, and the 2021 ASC by United Kingdom. The member country that had been working on a proposal for hosting the ASC in 2020 had to withdraw their interest. Belgium will investigate the possibility to host in 2020, but will also consider 2022.

Action: Belgium was requested to provide an indication by the end of 2018, if they can confirm their possibility to host the ASC in 2020.

8 ICES Advisory Services

8.1 Report from the ACOM Chair

8.1.1 Annual Progress Report

Eskild Kirkegaard, (outgoing) Chair of the Advisory Committee, reported on the activities of ACOM, with a specific focus on activities carried out to further the implementation of the ICES Strategic Plan as well as issues for which support is required to ensure continued progress as reported in CM 2018 Del-8.1.1.

The advisory plan for 2018 resulted in advice on fishing opportunities for 188 stocks, release of 2 Ecosystem and 1 Fisheries Overviews, responses to 3 recurring requests for advice on ecosystem impacts of fishing activities, 25 special requests, and 9 technical services.

The availability of experts with the required skills is an increasing limiting factor for ICES advisory services, specifically, but not only for environmental advice, and if not solved will be a major risk to ICES advisory services in the medium term.

ACOM is working on developing a procedure to better distribute expert participation among the Advice Drafting groups, to ensure sufficient capacity for all processes and to make best use of available funding.

The second workshop to scope the ICES framework for ecosystem advice took place in May 2018 to develop an ICES framework for ecosystem advice. The Workshop made good progress in defining the principles for a framework and recommended the next step to be a Dialogue Meeting in 2019/2020. The recommendation was supported by ACOM.

During the initial discussion, the following points were noted:

- Better annual planning was emphasised for all levels/actors.
- Need to work with clients to help avoid requests with short deadlines.
- Consider ways to anticipate or influence policy needs so the science is available.
- The interest of experts and financing to support participation is not always matched.

Action: Council supported the ACOM proposed ICES dialogue meeting in 2019/2020 on a Framework for ecosystem advice. Given the work planned within the CSI (see section 8.2), on mapping the objectives of the member countries, for which they will be willing/able to allocate resources, 2020 seems to be the most appropriate time. A host will be needed. Brussels could be a good venue, as it would facilitate the participation of stakeholders/clients.

8.2 Capacity and workload issues in the advisory services

Meeting participants reviewed and discussed strategies for reduction of workload, and capacity issues in the advisory system.

Fritz Köster provided an overview of some of the recent initiatives developed to help address the issues as well as some clarifications about the role of different funding streams from the European Union being of relevance for ICES science and the advisory system.

Several developments have been initiated to address these issues:

- ACOM expertise and coverage of fisheries and non-fisheries advice – job descriptions have been developed for national representatives
- ACOM/SCICOM structural changes (common steering group(s), allocation/re-allocation of expert groups),
- ACOM working procedures (e.g. ADGs populating/financing, formal benchmark process)
- Quality assurance (e.g. workshops with focus on bias in assessments, management strategy evaluation, data limited stocks, frameworks for ecosystem advice)
- Dialogue meeting on the framework for ecosystem advice in 2019/2020

ICES Expert – discussion in Council

Tammo Bult (NL) led a discussion to help identify the issues and potential solutions for improving the expert resources available for ICES work. Council delegates responded (via mmeet.net) to questions about how expert availability can be improved.

Some of the feedback is presented in the figures below:

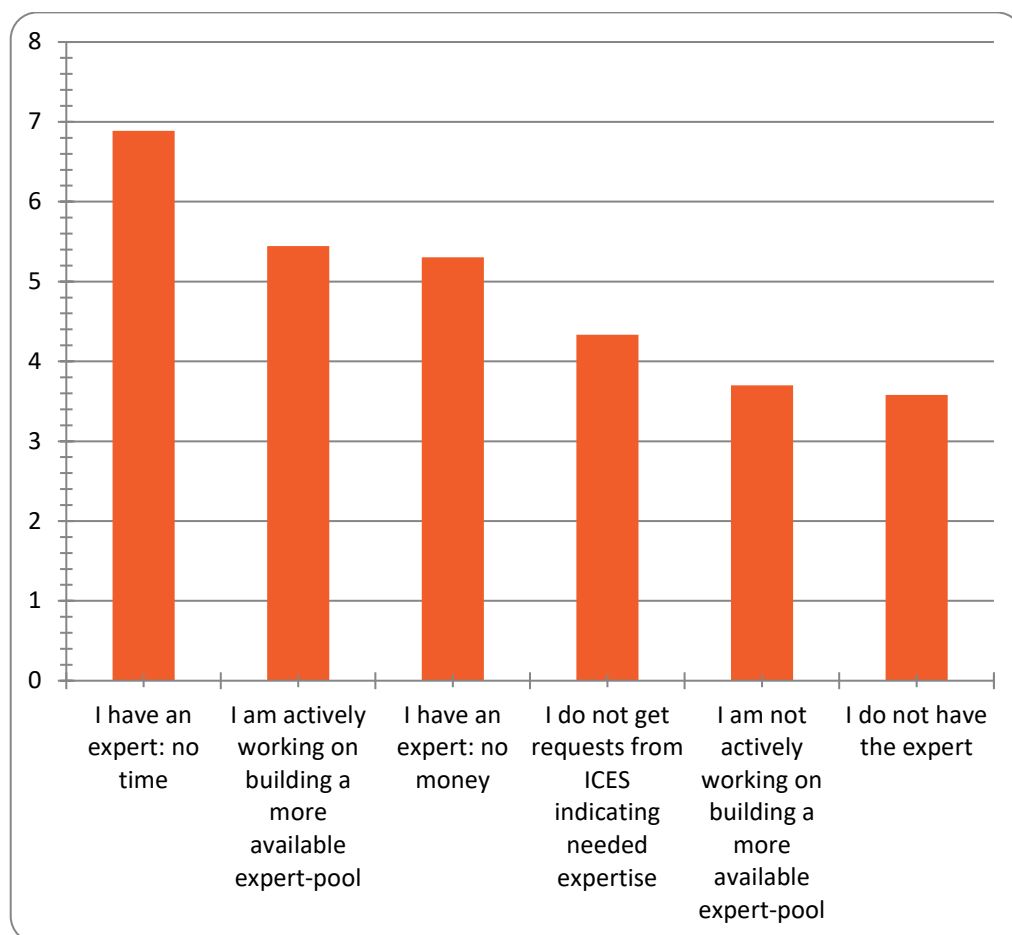


Figure 1. Reasons provided by ICES delegates for not nominating experts to ICES processes.

Council Delegates also provided ideas about how to make best use of the existing pool of experts. They were then able to assign “like” or “dislike” to each of the submitted ideas/ statements. The list of ideas and the number of likes and dislikes is provided in Table. 1.

Table. 1. ICES Delegates ideas about how the Optimal use of the currently available expert pool

Ideas about what needs be done to better utilise existing experts to ICES		Likes	Dislikes
1	Better planning at the beginning of the year	15	3
2	Make the request as specific as possible in terms of expertise needed and time to invest	14	2
3	Announcing and explaining need	11	5
4	Reduce number of expert groups which have to be staffed (would probably come with a reduction of tasks in the short term, until the expert pool is extended)	11	3
5	Consolidate working groups with subject overlap (minimize expert groups with elements of redundancy in their terms of reference).	11	1
6	Give evident/clear credit to contributions	10	1
7	Better financing of institutes	9	6
8	Annual list of potential expert needs to facilitate planning	9	1
9	Physical presence is not always needed. Use collaborative working tools	9	2
10	Producing of multi annual advises to reduce workload of existing experts	8	1
11	More e-meetings	8	2
12	Clear Terms of reference, time requirement and clarification on funding and other supports	7	3
13	Have a deadline for special requests and coordinate to reduce number of meetings	7	1
14	Improve communication of the needs with delegates	7	1
15	Give them credit for the work done	7	3
16	Time planning and time management; have an overlook of the existing expert network	6	2
17	Prioritize the participation of experts	6	1
18	Reduce travel, more homework	6	3
19	Efficient processes	5	3

20	Publish expertise requirements annually to encourage "bottom up" participation of experts rather than rely on national communication downwards	5	3
21	Raise profile of ICES work which increasingly conflicts with commercial contracts	5	4
22	Can some special requests be answered without full advice process?	5	6
23	Additional finances needed to hire additional scientists/experts in the institute, and to cover their working costs in ICES	4	3
24	We are already utilizing many of our experts in ICES	4	3
25	Set a limit or early deadline for special requests	4	2
26	More closely cooperate with fishery manager	4	3
27	Training in MSE	2	8
28	Indicate where experts are missing	2	4
29	Explain better work implications of commitment	0	3

A "world café" approach was used to solicit Council delegates' ideas on how to make experts available for ICES work (3 groups, 3 rounds, 10 minutes per round, Chairs of each of the topic groups reported in plenary). The groups rotated discussing: 1) What can YOU (personally as an ICES delegate) do? 2) Better use of existing experts 3) Building new experts.

Reporting from the world café breakout groups:

- 1) Potential solutions as delegates – Rapporteur Mark Dickey-Collas
 - Highlight participation at national level through an (annual?) ICES national workshop convened by the delegates, aiming to engage experts beyond government institutes.
 - Use the opportunity provided by the Annual Science Conference to organize a meeting of national experts.
 - Incentivise participation for experts, especially from academia incl. enhanced networking
 - Critical review of experts who no longer contribute.
- 2) Better use of existing experts – Rapporteur Gerd Kraus
 - Create a job description for expert group members
 - Consider incentives for participation in expert groups
 - Authorship for work in advisory groups.
 - Pay experts to attend especially for non-fisheries advice.
 - Establish a process for Chairs to do a review of the group after each meeting to improve the efficiency of each group.
 - Merge ACOM and SCICOM – one pool of experts

- Process management – how to say “no” to requests? Are we over extending ourselves?

3) Building new experts – Rapporteur Fritz Köster

- Hiring experts from e.g. Australia/New Zealand or hiring consulting companies not considered a viable alternative to teaching, education, and training in ICES and member countries; is at best a short-term fix (hiring experts) and at worst creates more work due to e.g. quality control (consulting companies).
- Training is important, and should be intensified through relevant measures, e.g. a fellowship programme for exchange, travel and subsistence, which allows PhD and Post-docs to gain experience in the ICES network. This strategy is especially promising in areas of core expertise in ICES, where learning on the job and mentoring already functions well. Such an effort should also include advising and helping in career planning and development.
- A contribution to education on MSc or advanced BSc could be a useful, especially in areas outside of ICES core expertise, i.e. areas with shortage of expertise or insufficient coverage by expert groups. This should include a dialogue with universities on which areas to focus and on requirements, also considering nationally identified needs. It should include as well offer help in developing relevant courses (in parts or total) or even curricula. This could also improve the branding of ICES in the academic environment and recruit into relevant PhD and Post-doc tracks.
- Viewed as unrealistic to shape ICES into a specialized university, similar to the concept of the World Maritime University in Malmö, Sweden.

Council endorsed the initiatives, decisions, and developments that have been taken by ACOM/SCICOM to help alleviate some of the workload issues and create efficiencies in the system. To further support these initiatives it was proposed to create a Council Strategic Initiative on resources to support member countries contributions to ICES advisory work, science and education/training.

Action: Establish a Council Strategic Initiative, chaired by Fritz W Köster: Resources to support member countries contributions to ICES advice and science, as well as education/training.

1. Mapping the science and advice priorities, Tammo Bult and Per Sandberg
2. Resourcing of the advisory process, Gerd Kraus and Carl O'Brien
3. Strengthen science and education/training, Bill Karp, Gerd Kraus, and Pierre Petitgas

Council agreed to conclude the work of the Council Strategic initiative on the Marine Strategy Framework Directive and Ecosystem Approach (CSIMSFDEA), with reference to the above ToRs.

While the co-chairs will further elaborate the ToRs, Council delegates are invited to:

- Nominate members for each of the sub-ToRs, noting that these can also be found outside Council, with reference to the issues discussed (i.e. national DCF correspondents)

9 Data and Information Services

The Head of Data and Information, Neil Holdsworth provided a 2018 status report on the activities and deliverables by Data and Information Group (DIG; SCICOM operational group) and the Data and Information Centre as outlined in CM 2018 Del-9. Including progress on the pilot project on The Transparent Assessment Framework, and improvements to DATRAS and RDBES (CM 2018 Del-9.1).

DIG has continued close collaboration with ICES Data Centre, both in terms of identifying strategic areas most likely to impact ICES work, and in concrete steps to apply governance principles and evaluations to different development projects to ensure considerations of all relevant data management principles are considered.

During the discussion, the following points were noted:

- Given the high-costs of data collection a review of data adequacy within the ICES system would be helpful.
- Data sharing through ICES is beneficial for transatlantic cooperation.
- The roles and responsibilities for data governance are distributed through the organization. Some member countries supported the idea of a Data Committee with national representation.
- A new structure should seek to strike the appropriate balance between an operational approach and national representation, aiming to avoid duplicative administrative layers.
- The current set-up is very agile and reflects that Data services are paid for 50% by ICES member countries, 35% by clients and 15% projects.
- Work has been initiated to ensure compatibility between DoIs assigned to datasets at national level with the internationally collated datasets.
- Data Technology and infrastructure is constantly evolving. The Data Centre and DIG have developed a risk and opportunities register as a framework for preparing and planning.

Action: Bureau will consider the need for strengthened data governance, including the potential for national representation and will report to Council at the 2019 meeting.

10 Secretariat

The General Secretary, Anne Christine Brusendorff provided a 2018 status report on the activities and deliverables by the Secretariat as reported in CM 2018 Del-10. During 2018, the Secretariat has prepared updated personal privacy statements in response to the European Data Protection Regulation and other international initiatives, piloted a new direct entry method for delegates to nominate expert to ICES work, run an active external communications programme, and supported the application for ICES UN observer status (sponsored by Norway).

Action: Council endorsed the updated data privacy policy/statements. Council also agreed the nominations of national experts for ICES work will be entered via the Resource Coordination Tool within the Delegates Dashboard as soon as it goes live in November/December 2018.

11 Any other Business

11.1 Rules of Procedure

Council delegates were invited to approve the proposed changes to the Rules of Procedure;

- following the establishment of full-time positions for the SCICOM and ACOM chairs, and their recruitment procedures;
- following requests to show the non-profit status of ICES
- editorial updates

Council members supported most of the changes. One member country took issue with the proposed text related to the new rule 18 iv and the use of the word “charitable” as being inappropriate in the ICES context.

Action: Council accepted the proposed changes to the Rules of Procedure, on the condition that Bureau review the language of the new Rule 18. iv.

11.2 Request from Russia on the benchmark of cod and haddock

Oleg Bulatov, Russian delegate presented a request to move-up the benchmark of cod and haddock currently planned for 2020, to take place as soon as possible in 2019.

ACOM responded that moving the benchmark process depends on expert availability. If the data and resources are available, the work could be done in 2019. Russia and Norway would need to allocate the resources.

Action: The ACOM Chair and Head of Advisory Support will enquire if the experts are available to conduct the work in 2019.

11.3 Belgium national event

Serge Scory, Belgian delegate provided an update on a Belgian national workshop planned for November, discussing “How to increase the engagement of Belgians in ICES work?” They will present the work of ICES. Around 40 participants are expected.

11.4 Date of the next meeting

The next statutory meeting will take place 9–10 October 2019.

Participants List

Member Name	Member Country/role
Cornelius Hammer	President
Hans Polet	Belgium
Serge Scory	Belgium
Alain Vezina	Canada
Fritz W. Köster	Denmark
Markus Vetemaa	Estonia
Katarina Viik	Estonia
Paula Kankaanpää	Finland
Ari Leskelä	Finland
Pierre Petitgas	France
Christopher Zimmermann	Germany
Gerd Kraus	Germany
Olafur S. Astthorsson	Iceland
Sigurdur Gudjonsson	Iceland
Jeffrey Fisher	Ireland
Michael Gillooly	Ireland
Didzis Ustups	Latvia
Jūrandā Savukynienė	Lithuania
Joost Backx	Netherlands
Tammo Bult	Netherlands
Per Sandberg	Norway
Piotr Margonski	Poland
Manuela Azevedo	Portugal
Nuno Lourenço	Portugal
Oleg Bulatov	Russia
Pablo Abaunza	Spain
Karin Victorin	Sweden
Jacob Hagberg	Sweden
Matthew J. Gubbins	United Kingdom
Carl O'Brien	United Kingdom
William Karp	United States
Jonathan A. Hare	United States
Eskild Kirkegaard	ACOM Chair (outgoing)
Mark Dickey-Collas	ACOM Chair (incoming)
Simon Jennings	SCICOM Chair
Anne Christine Brusendorff	ICES Secretariat
Lotte Worsøe Clausen	ICES Secretariat
Neil Holdsworth	ICES Secretariat
Wojciech Wawrzynski	ICES Secretariat
Inigo Martinez	ICES Secretariat
Ellen Johannesen	ICES Secretariat

Follow-up from the Council meeting

Meeting participants are invited to take note of the follow-up from the Actions decided at the October 2017 Council meeting.

Item # (from the Council 2017 minutes)	Description/Action	Follow-up (Agenda Item # (AI), refer to the Annotated Council Agenda)
2.1	Action: The strategic planning process will continue to be developed during 2018, with a final draft to be presented at the 2018 Council meeting. Further consideration of how to reflect national science priorities into the process will be done. Council will be updated by email correspondence, and will be requested to provide input to the development of the strategic plan and the process throughout 2018, following the Bureau meetings.	Council delegates were informed about the development of the strategic planning process by email (7 May, 13 August). Meeting participants will be invited to adopt the Strategic Plan under agenda item 2.
3.1	Action: The Secretariat will, with contribution from the Chair of the Finance Committee, prepare a letter to be sent to member countries requesting an increase in contributions for 2019 by 1.3%, derived from the Danish inflation rate.	Letters were sent to all Member Countries 22 November. An e-voting procedure on national contributions for 2019, requesting an increase of 1.3% resulted in 14 “yes” votes and 6 “no” votes, and thereby the required 2/3 majority needed for the increase. Invoices for 2019 were forwarded to member countries.
4	Action: Tammo Bult conditionally agreed to Chair the group (CSIMSFDEA) pending discussions with the Dutch Ministry, if the appropriate conditions are met, revised terms of reference will be circulated for Council approval early in 2018.	No new ToRs were developed. An update on developments will be provided under agenda item 8.2
5	Action: CSIMTC will continue to work on its Terms of Reference during 2018 and will support ICES engagement and response on appropriate CSA project calls, specifically referring to BG1 and BG 8A in the H2020, 2018-2020 programme. Member Countries, interested in participating in seabed mapping activities in the Northern part of the North Atlantic should contact the two co-chairs, Fritz Köster or Alain Vezina.	An update will be provided under agenda item 4
7.1.3	Action: Council endorsed the proposal to support Arctic research and/or monitoring programme with an offer of the ICES platform for presentation by Eskild Kirkegaard, ACOM Chair at the 5th FiSCAO meeting, 24-26 October 2017.	A short summary of the outcome of the FisCAO meeting where Eskild Kirkegaard, ACOM Chair, presented the proposal agreed during the Council meeting was circulated 22 November. A further update will be provided under agenda item 7.2

	The General Secretary will investigate the potential to organize a joint ICES–PICES Arctic meeting inviting representatives from Asian countries.	
7.2	Action: Council welcomed the invitation from United Kingdom to host the 2021 Annual Science Conference in Belfast, Northern Ireland. The indication by Portugal of its intention to host the ASC in 2020 in Lisbon. This initial indication will be confirmed in advance of the 2018 Council meeting.	Future Annual Science Conferences will be discussed under agenda item 7.3.
8.1.1	<p>Action: The ACOM Chair will work with ACOM, and engage Council Delegates as necessary to develop job descriptions for Advisory Committee members. Following the meeting the ACOM and SCICOM chairs agreed to provide these position descriptions for review by Bureau at the February 2018 meeting.</p> <p>Delegates are to help nominate and orient the necessary expertise to support the advisory process for fisheries and ecosystem requests.</p> <p>Delegates should discuss with national ACOM members about how to ensure ACOM is capable to address fisheries and non-fisheries requests.</p>	An update will be provided under Agenda item 8.2
8.1.3	<p>Action: ACOM will further discuss advice quality and ways to improve at their meeting in November. Bureau will consider the Council discussion and ACOM deliberations and outline specific actions at the June 2018 Bureau meeting.</p> <p>ACOM, and the Secretariat will issue a communication on improvements in the ICES system in order to ensure quality controlled advice, and the role of the member countries herein by 30 November.</p>	<p>This issue has been discussed in various settings throughout 2018 (MIRIA, MIACO, ACOM, Bureau).</p> <p>For further discussion under agenda item 8.2</p>
8.1.4	Action: Council established a Working Group on ICES Code of Conduct (CWGCODE) to engage primarily by correspondence during 2017/2018 to review and evaluate ICES procedures related to experts in the advisory process, code of conduct, and conflict of interest. The group will use the existing code of conduct as a starting point. CWGCODE will provide an update on progress to the February and June Bureau meetings, with the aim to present a proposal for Council decision at the 2018 meeting.	An update will be provided under agenda item 5. Council delegates will be invited to adopt the updated code of conduct and conflict of interest policy.

	Tammo Bult (NL) will Chair the group with participants: Per Sandberg, Olafur Astthorsson, Pierre Petitgas, Alain Vezina, Chris Zimmermann, Carl O'Brien and/or Matt Gubbins, Eskild Kirkegaard, Simon Jennings, Anne Christine Brusendorff.	
10	<p>Action:</p> <p>The Secretariat will present information to Council at the next meeting on the development of the staff at the Secretariat over the past 5-10 years to show the development of the departments and profiles over time.</p> <p>Delegates from Ireland, Poland, Portugal, UK, and US volunteered to provide feedback on reports from the Resource coordination tool, and the nominations portal, during 2018.</p>	An update will be provided under agenda item 10.
11.1	Action: Bureau will discuss this (proposed changes to the Rules of procedure) again at its February meeting, and report back to Council in 2018.	To be discussed under agenda item 11.1.



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Council Meeting

October 2018

CM 2018 Del Doc-02

Agenda item 2

ICES Strategic Plan

On 13 August the draft ICES Strategic Plan, top-level component was sent for comments to Member Countries. As explained in the letter, with reference to last year's Council meeting, the new strategic plan is based on a 3-component plan:

- a top-level plan aimed at communicating the ICES vision and mission externally,
- a second level of objectives and sub-objectives common to all pillars of the organization, aimed at progress reporting to Bureau and Council, and
- a third level that will link operational tasks to the upper level goals and objectives, for all parts of the organization, to ensure coordinated allocation of resources.

Based on the comments received Bureau revised the top-level part of the draft ICES Strategic Plan. The revised text is presented in the following pages.

The plan has been presented in meetings of ACOM and SCICOM, and accounts for the ICES science priorities identified by SCICOM.

The Advisory Committee, Science Committee, and Secretariat are working with implementation plans, which are reflected in an overall ICES joint work plan, ensuring that all parts of the organization are coordinating resources in their efforts to achieve joint objectives and sub-objectives. ACOM will consider at its November meeting if additional input will be provided to the Science Plan.

Below is a short description of how comments and feedback have been accounted for in the revision of the ICES Strategic Plan.

Seven countries submitted [comments](#), covering the following categories:

Editorial comments: a number of editorial comments were put forward, to ensure readability and outreach

Strategic messages: to ensure coverage of strategic importance, for member countries, cooperation partners and recipients of ICES advice, reference has been made to a number of issues and themes.

Core information about the organization: there were several remarks relating to the need to revise the core information presented in the plan. These were just examples, and not the final text, which will be illustrated with infographics and shorter text pieces

Reference to Science priorities: it was agreed to refer to the seven science priorities reflected in the Science Plan

*Council is invited to **adopt** the ICES Strategic Plan.*

ICES Strategic Plan – revised text

Vision

To be a world-leading marine science organization, meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

Mission

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.

Introduction:

Our seas and oceans are essential to the lives and livelihoods of billions of people. They regulate climate and provide many other services and resources, as well as economic benefits and opportunities. Societal expectations that the marine environment will meet future needs have never been so high; but neither has the range and intensity of human pressures affecting them been so great.

With this Strategic Plan, ICES renews its commitment to better understanding marine ecosystems and securing the benefits that people derive from them. The purpose of this plan is to define our direction and priorities relating to science, data, and advice, and to develop the capacity needed to fulfil this commitment.

Implementing this plan will directly address the challenge of protecting and restoring the structure and function of the seas and oceans, thus improving food security and otherwise benefitting people's lives and livelihoods.

In fulfilling this plan, we will work collaboratively, using our broad international network, to generate and share the data, knowledge, and advice needed to meet current and emerging conservation, management, and sustainability goals.

Main text:

Marine ecosystems are complex, interconnected, and influenced by many human and environmental pressures. Since 1902, ICES has recognized the significant challenges associated with studying, understanding, and managing these systems. We have responded to these challenges by fostering and facilitating scientific collaborations, exploration, and monitoring programmes that span national and political boundaries by sharing data and developing knowledge and evidence. The results of this work have provided decision-makers with impartial advice on human activities affecting and affected by marine ecosystems and informed society about their state and use.

Through our scientific work we will continue to advance understanding of marine ecosystems, their uses, and their connections with society. The resulting knowledge is essential to develop solutions to the sustainability challenges posed by natural variability and climate change as well as increasing human populations and their demands for food, energy, and other resources.

We will seek to increase the scope, impact, and efficiency of our science through innovation, integration, and increased interdisciplinary collaboration. We will facilitate the incorporation of a wider range of scientific knowledge into advice to

inform decision-makers and society about the state of the sea, the consequences of human use, and options for conservation and management.

Broad multidisciplinary collaboration provides us with the expertise to approach problems from many perspectives. For example, we can better understand local environmental impacts on coastal aquaculture and fisheries from insights into large-scale climatic, oceanographic and ecosystem processes; and we can better understand the collective ecosystem effects of diffuse pressures such as pollutants, plastics, and noise from knowledge of their local sources.

Monitoring is essential for assessing the state of our seas and oceans and human uses and impacts, as well as for providing feedback on the effects of conservation and management measures. We will continue to develop and co-ordinate integrated, quality assured, and cost-effective monitoring programmes and to explore the oceans to improve our understanding of the distribution and function of marine life and habitats. We will evaluate and optimize survey design and advance and implement innovative technologies to collect, process, and analyse data. This will be accomplished with a focus on supporting fisheries assessment, integrated ecosystem assessment and ecosystem-based management.

Since monitoring now provides more detailed and interlinked data, we will continue to develop services and tools to enable visualization and easy access to these data for a broad range of users. We will build on our demonstrated capacity and expertise in managing, analysing, and interpreting data to provide data services.

Impartial evidence is essential for responsible decision-making. We strive to continuously improve the quality and transparency of our advice and the processes through which it is developed. We use the data we collect and manage, and our scientific understanding of marine ecosystems to meet current and future demands for advice on the state and sustainable use of our seas and oceans. Future approaches for delivering advice will build on our longstanding experience as a leading provider of fisheries and environmental advice.

We will regularly publish, update and disseminate overviews on the state of fisheries, aquaculture and ecosystems in the ICES region, drawing as appropriate on analyses of human activities, pressures and impacts, and incorporating social, cultural, and economic information.

Our historic successes have been achieved by people from diverse national and disciplinary backgrounds working together to accomplish shared goals. Through our community of marine scientists and our wider network of experts, we will strengthen these collaborations, continuing to work with our member country institutions, partners, clients, and stakeholders to advance cooperation and introduce new disciplines and perspectives to our science and advice.

We provide resources and infrastructure to develop and share knowledge and expertise, in expert groups, at international conferences, and through communications and publications. We will ensure that skills needed to advance science, data gathering and processing to generate state-of-the-art advice are nurtured and retained in the ICES community. For the new and emerging generation of scientists we will continue to provide effective training and networking opportunities.

All these activities are facilitated by the ICES Secretariat, which provides a wide range of capabilities in support of our network. In addition, the Secretariat acts as a liaison between the member countries, stakeholders, clients, our network of experts, and international partner organizations.

We will strengthen the capacity of the Secretariat, foster employee development, and optimize recruitment, conscious of the essential role of each individual in the implementation of this plan. Across the entire ICES community we will also continue to cultivate a welcoming, resourceful, diverse, inclusive, and gender balanced, as well as a respectful working environment.

This Strategic Plan will guide us as we seek to become a more comprehensive and influential network, sharing information and expertise to help sustain healthy oceans and the lives and livelihoods of the people who depend on them.

Science priorities and descriptions

1. Understanding ecosystems

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

2. Impacts of human activities

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

3. Observation and exploration

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

4. Emerging techniques and technologies

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

5. Seafood production

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

6. Conservation and management science

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

7. Sea and society

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

**The following pages provide a preview of the design concept and layout
being developed for the plan.**



STRATEGIC PLAN



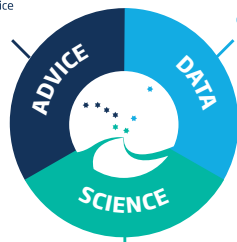
Mission

To be a world-leading marine science organization, meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

Vision

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.

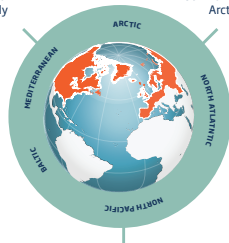
Independent, evidence-based scientific advice on environmental issues and fisheries management



Data hub for fisheries and environmental data and connection to data providers and end-users

Platform for cooperation in marine science

A network of 5,000 experts from nearly 60 countries



Our work also extends into the Arctic, the Mediterranean Sea, the Black Sea, and the North Pacific Ocean

20 member countries: Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Russian Federation, Spain, Sweden, United Kingdom, United States of America

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Science Priorities

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1

Understanding ecosystems

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

2

Impacts of human activities

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

3

Observation and exploration

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



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Council Meeting 2018

October 2018

CM 2018 Del-3.1

Agenda item 3.1

Finance Committee

Council is invited to:

- *take note of the information on the financial situation of the organization;*
- *to approve the final accounts 2017, including Audit Book,*
- *vote on the proposed budget for 2019, noting that the national contributions have already been decided (CM 2017 Del-3.1),*
- *vote on an inflation regulation of 1.5% for the 2020 national contributions]*
- *agree to the use of equity, pending income from clients and projects:*
 - *to strengthen the ICES Secretariat finance department with immediate effect (details in this compilation – Finance Committee Doc 6.2), and*
 - *to uphold, in the long-term, the contribution of the ICES Secretariat to quality assure data and assessment products*

(This equals a Line Manger position for Finance and Administration, and a professional position for data and assessment products)

The Finance Committee met on 6 June. Bureau reviewed, commented, and requested for updating parts of the report at its meeting 19-20 June 2018. Revised and updated information is presented in this compilation.

It is noted that in addition to the uncertainties about the income, specifically from projects and special requests, there are other factors making it difficult to anticipate total income. This relates to the negotiations with EC on the 2019 and forthcoming budgets for the provision of advisory services, as well as new cooperation agreement with new clients, reference is made to document CM 2018 Del-3.2. An increase in income is anticipated from the agreement between ICES and EC, bringing the accounts closer to the 100% cost recovery principle.

At the Finance Committee meeting, there were still four outstanding national contributions for 2018. At the given moment there is only one outstanding national contribution.

Presented compilation includes:

- Minutes of the Finance Committee meeting
- Final accounts 2017, including:
 - Letter of representation
 - Statement on the Final Accounts for 2017
 - Final Accounts 2017
 - Audit Book Comments on the Final Accounts 2017
- Status report 30 April 2018
- Proposed Budget 2019 and Forecast Budget 2020
- Programme Budgets
- Projects (a further updated document is included in document CM 2018 Del-3.3)
- Capital Reserve Fund
- Development of Equity
- Finance Department
- Five Year projection of ICES budget

Finance Committee

Minutes

Chair: Piotr Margonski

Participants: Piotr Margonski (Chair), Ari Leskelä, Alain Vezina (by web conference), Anne Christine Brusendorff, Helle Falck, Kirsten Gudmandsen, Ellen Johannesen.

Regrets: Tomas Zolubas, Fritz Köster.

1 Approval of Agenda

Meeting participants approved the agenda (FC_2018-06 Doc 1).

2 Final Accounts 2017, Audit book comments on the Final Accounts 2017, and report

The Final Accounts 2017 have been audited by Deloitte. The members of the Finance Committee approved and the members present signed the Final Accounts 2017 and the Audit book comments on the Final Accounts 2017 (FC_2018-06 Doc 02). The other signatures will be collected by correspondence.

3 Status Report as of 30 April 2018

Meeting participants discussed the status report as of 30 April 2018 (FC_2018-06 Doc 03), noting that being less than halfway through the year this provides an incomplete overview. However, there are positive developments, including a 1.5 million DKK increase in the value of the Administrative Agreement with EU, a considerable amount of costed special requests, and a positive operating result is expected by the end of the year.

For clarity, the document should be editorially revised to exactly match the introductory text to the text in the table.

4 Proposed Budget for 2019 and Forecast Budget for 2020

Meeting participants discussed and commented on the budgets as outlined below:

4.1 Proposed Budget 2019 and Forecast budget 2020

The proposed budget for 2019 was not voted on by Council in October 2017. The vote on national contributions for 2019 was conducted by e-voting procedure December to February 2018. All countries voted, and the result was a raise of the national contribution with the inflation rate, 1.3% (FC_2018-06 Doc 4.1).

For the 2020 Forecast Budget an inflation regulation, i.e. 1.5% of the national contributions is recommended and a fall-back option with no (0%) increase is to be prepared for Council, but again stressing the financial implications of a stable budget, and that ICES has already had a substantial decrease in income, due to stable national contributions in 2010, 2012– 2015, 2017, and 2018.

The Forecast budget takes a conservative approach with estimating income. The results of negotiations with clients including with the EU (AA), and on-going

negotiations with other clients (OSPAR, Iceland, UK, the Russian Federation), as well as the projects in the pipeline were still not included but once they are successful it will positively influence the budget predictions. It was suggested to consider if a more realistic figure could be included especially regarding the expected income from projects based on information from the past 5 years.

The projection of expenses and how that matches with new (more) Steering Groups was also discussed. Given more Steering Groups are there also greater expenses? New Steering Groups are an investment and on the longer-term further income could be expected from special requests e.g. on aquaculture. SCICOM is dependent on national contributions, therefore the growth of SCICOM costs impacts the Secretariat budget. The negotiations for the new AA will also include considerations of the role of science groups and how they contribute to the development of advice and can be “direct cost” to clients.

4.2 Programme/departmental budgets

Meeting participants reviewed the programme and departmental budgets (FC_2018-06 Doc 4.2).

Table 1. *Overview of estimated income and costs for recurrent advice, in million DKK – for 2016, 2017, & 2018*, emphasizes recurrent advice and shows that better accounting is needed to document and improve cost recovery. This is the reason for the ongoing negotiations with clients as the Secretariat works towards closing the gap between costs and income.

It was noted that for the budget line *ADG travel costs*, the 2017 cost is higher than the projection in future years. It should be considered how to control costs, as currently all national nominations to ADGs (for which travel and per diem costs are paid) have to be financed.

Action: The chair of Finance Committee will highlight this in his report to the June Bureau meeting and will request ACOM to reflect on the need to adjust procedures to ensure this spending stays on budget.

4.3 Overview of on-going external projects and external projects in the pipeline.

Meeting participants reviewed current and planned ICES project participation (FC_2018-06 Doc 4.3).

The ~1 million projected decrease between 2018 and 2019 will need some explanation during reporting to Bureau and Council. The potential to consider a bigger project strategy was discussed. In the near-term there could also be some uncertainty for 2020 given the change in the EU Framework programme, with the new programme starting 1 January 2021.

For projects the link between income and costs is not 1:1. Projects have been in past used to fill gaps in the budget to help finance work of benefit to the ICES community (i.e. AtlantOS – acoustics database), and as a means to ensure the involvement of additional experts and networks to the ICES community. Thus, projects should not only be seen as a mean to fill income gaps, which could also have associated risks. Further reflection is needed on the risk associated with depending on projects.

In addition to the financial importance of projects, it was noted that a *post-hoc* evaluation of the impact of projects on the capacity of ICES would be beneficial (i.e. did we achieve the stated goals of the project participation?) The project portfolio document submitted to SCICOM, reporting on the substantial contribution of the projects could be used as a basis.

5 Development of the Capital Reserve Fund (CRF)

Finance Committee noted the development of the Capital Reserve Fund (FC_2018-06 Doc 5).

6 Strategic Financial Issues

At the 2015 Council meeting it was decided that Finance Committee should take ownership of the ICES Business Model (IBM)¹, follow the issues, and update as necessary.

6.1 Development of Equity

Finance Committee reviewed the development of equity (FC_2018-06 Doc 6.1). The equity has remained relatively stable. Finance Committee acknowledged that further investment in quality of assurance in the financial administration of the organization, as well as in the advisory process may be required, and indicated that there would be funding available from equity, due to its stabilization, and even a relative increase the past couple of years, based on an appropriate proposal.

6.2 Information on development of new agreement with EC on the costs of advice

The Secretariat provided an update of the status of the new agreement with EC, to enter into force in 2019, including the need to further breakdown the costs associated with the advisory services delivered to EC, towards improved compliance with the ICES 100% cost recovery principle. The secretariat noted this will have further implications for other external financed activities, within advice and science, as an equitable and transparent basis for charging clients.

The Secretariat Finance department is very busy working on the basis for the budget and the accounting system and further help may be needed to develop and implement a modern and responsive system. This is important for the entire organization.

Action: Finance committee supported the suggestion that a further proposal be developed for submission to Bureau requesting equity funds be allocated to respond to the urgent need for further investment in the development of the finance department, and potentially for quality assurance in the advisory programme. The proposal should include some consideration of the implication for a long-term financing of the investment through other income streams.

6.3 Five year projection of ICES budget

The Secretariat provided a five-year outlook of the ICES budget, 2019-2023, including the draft budget for 2017 and the forecast budget for 2018 (FC_2018-06 Doc 6.3)

Finance Committee acknowledged that it is very difficult to project 5 years in the future, however, this exercise does provide a good indication of where further work is needed, and shows that there is a serious implication for the budget with only a 1% or 2% difference in the national contributions.

Within the scenarios, only salaries increase (other expenses kept stable and not inflation regulated). This may overestimate the impact of the level of the national contributions on the operating result (e.g. if the office expenses increase significantly).

Action: Finance committee agreed to present this table to Bureau. For the Council, a bit more information is needed. The document should include a disclaimer that this is just one projection showing the importance of national contribution and with other expenses remaining stable.

6.4 Close of the meeting

Piotr Margonski, Finance Committee Chair thanked the members of Finance Committee, as well as the Secretariat for the meeting preparations. A new Chair and new members of Finance Committee will be appointed at the Council meeting.

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

Letter of representation on the Final Accounts for 2017

We submit this letter of representation in connection with your audit of the Final Accounts 2017. The Final Accounts shows a profit of DKK -658k, total assets of DKK 50,323k, and equity of DKK 24,317k, and we confirm to the best of our knowledge:

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

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

Copenhagen, 29 May 2018

International Council for the Exploration of the Sea



Anne Christine Brusendorff, General Secretary



Kirsten Gudmandsen, Finance Officer

Deloitte Statsautoriseret Revisionspartnerselskab
Attn.: Peter Zacho Skanborg
Weidekampsgade 6
P.O. Box 1600
0900 Copenhagen C
Denmark

Statement on the Final Accounts for 2017

This statement is given in connection with the audit of the Final Accounts for 2017. On behalf of the Finance Committee, I confirm the following to the best of my knowledge:

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

Copenhagen, 29 May 2018

International Council for the Exploration of the Sea (ICES)



Piotr Margonski
Chairman of Finance Committee



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Exploration of the Sea**

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1553 København V
Central Business Registration No
12063814

Final Accounts 2017

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Organisation details

Organisation

International Council for the Exploration of the Sea

Central Business Registration No: 12063814

Registered in: H.C. Andersens Boulevard 44-46, 1553 Copenhagen V, DK

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Fax: 0045 3393 4215

Internet: www.ices.dk

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General Secretary

Anne Christine Brusendorff

Finance Committee

Chair: Piotr Margonski, Poland

Members: Alain Vezina, Canada; Fritz Köster, Denmark; Ari Leskelä, Finland; Tomas Zolubas, Lithuania.

Organisation auditors

Deloitte Statsautoriseret Revisionspartnerselskab

Weidekampsgade 6

Postboks 1600

0900 København C

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 (hereafter "the Council" or "ICES") for 2017.

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

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 2017 of the International Council for the Exploration of the Sea and of the result of its operations for the financial year 1 January to 31 December 2017.

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, 29 May 2018

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



Chair: Piotr Margonski, Poland

Members: Alain Vezina, Canada; Fritz Köster, Denmark; Ari Leskelä, Finland; Tomas Zolubas, Lithuania.

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 01.01.2017 - 31.12.2017, which comprise the income statement, balance sheet, including a summary of significant accounting policies. The financial statements are prepared in accordance with the Rules of Procedures, 22 October 2008.

In our opinion, the financial statements give a true and fair view of the Entity's financial position at 31.12.2017 and of the results of its operations for the financial year 01.01.2017 - 31.12.2017 in accordance with the Rules of Procedures, 22 October 2008.

Basis for opinion

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

General Secretary's responsibility 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 Procedures, 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 responsibility

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 Procedures adopted by the Council on 22 October 2008, ISAs and the additional requirements applicable in Denmark will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if,

Independent auditor's reports

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 Procedures adopted by the Council on 22 October 2008, ISAs and the additional requirements applicable in Denmark, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

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

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

Independent auditor's reports

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.

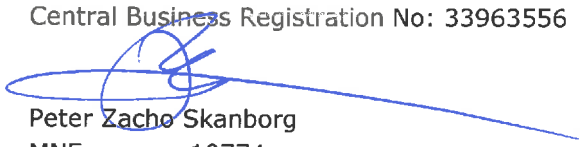
In connection with our audit of the financial statements, our responsibility is to read the General Secretary's review and, in doing so, consider whether the General Secretary's review is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears 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 Procedures adopted by the Council on 22 October 2008.

Copenhagen, 29 May 2018

Deloitte

Statsautoriseret Revisionspartnerselskab
Central Business Registration No: 33963556



Peter Zacho Skanborg
MNE-nr. mne10774
State Authorised Public Accountant

General Secretary's review

General Operating Principles

The operations of the International Council for the Explorations of the Sea (hereafter ICES) are governed by the 1964 Convention agreed among the 20 Contracting Parties¹ 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 main goal:

- (a) to promote and encourage research and investigations for the study of the sea particularly those related to the living resources thereof;
- (b) to draw up programmes required for this purpose and to organize, 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 organizations, 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.

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

Primary activities

The Final Accounts for the year 2017 show total revenue for ICES of 45,291,168 DKK, of which 22,363,000 DKK was from national contributions. Another major component was income received from recipients of scientific advice amounting to 15,892,913 DKK.

General Secretary's review

The difference between revenue and expenditures for 2017 resulted in a deficit of -1,338,377 DKK that could be compared to the budgeted deficit of -1,983,000 after income from interest of 200,000 DKK. The budgeted deficit was planned in accordance with Council decisions to invest in developing specific components of the ICES work programme:

- 1) to develop and start implementing the Transparent Assessment Framework, for auditability and reproduction of stock assessments (Council, 2015)
- 2) to further develop the RDB in providing quality assured and documented data for the stock assessment work (Council, 2016)
- 3) specific tasks to ensure more comprehensive availability of data and data products including biodiversity related issues (e.g., Large Fish Indicator) in the DATRAS data portal (Council, 2016).

Completion and inventory of terminated projects reduced the deficit by 680,000 DKK, resulting in a deficit of -658,378 DKK, which will be transferred from equity.

National contributions to ICES are due in advance, or by the end of January of the budget year. As of April 2018, four national contributions were not paid (reminders have been sent). There are no outstanding contributions from previous years.

Development in activities and finances

In a ten-year period (2009–2018), increases in national contributions were agreed in 2011 (2%), 2016 (1.9%), and 2019 (1.3%, with reference to the need for inflation regulation) in the other years national contributions remained stable. The relative share of national contributions in 2017 was 49%.

On the expenditure side, salaries increased with the cost of living (based on the Danish inflation rate) and with the step increases. The secretariat salary cost in 2017 was 30,815,930 DKK, more or less equivalent to 2016, and including honorarium for ACOM Chair, ACOM Vice-Chairs, and SCICOM Chair amounted to 34,093,091. This total amount has increased compared to 2016 due to the establishment of a full-time SCICOM Chair position. Following the Council's directions to achieve full cost recovery for the advisory services, an increasing share of the salary costs are covered by MoUs, inter alia through financing of special request outside the ICES–EU Administrative Arrangement (AA). This works continues, with the aim in 2019 to have a system that better reflects a full cost recovery agreement with advisory clients.

Events after the balance sheet date

The ICES–EU Administrative Arrangement (AA) for 2018 was signed 8 March 2018.

Income statement for 2017

	Notes	2017 DKK	2016 DKK'000
Contributions from member countries	1	22.363.000	22.363
Contribution from Faeroe Island and Greenland		418.000	418
Recipients of Scientific Advice	2	15.892.913	15.815
Income from Projects		3.275.138	3.413
Other income	3	3.993.632	4.327
Sales of publications		28.485	9
Total revenue		45.971.168	46.345
Salaries	4	-34.093.091	-33.393
Office expenses		-2.321.882	-1.926
IT expenses		-3.143.589	-2.776
Expenses for Council and ASC		-1.016.539	-1.024
Travelling and meeting expenses		-5.803.362	-4.635
Publications		-427.533	-596
Total expenditure		-46.805.996	-44.350
Result of revenue and expenditure		-834.828	1.995
Financial income	5	410.321	269
Financial expenses	6	-233.871	-150
Income over expenditure		-658.378	2.114

The years income over expenditure is distributed as follows

Capital Reserve Fund (equity)	0	676
Use of fund Strategic Investment Fund (equity)	0	-95
Accumulated income over expenditure (equity)	-658.378	1.534
Total	-658.378	2.114

Balance sheet at 31 December 2017

	Notes	2017 DKK	2016 DKK'000
Capital Reserve Fund – Investment & cash at bank	10	<u>9.042.877</u>	<u>8.578</u>
Non-current assets		<u>9.042.877</u>	<u>8.578</u>
Receivable member contribution	7	10.450.000	10.032
Other receivables	8	5.877.231	7.202
Prepayments and accrued income	9	<u>303.371</u>	<u>298</u>
Receivables		<u>16.630.602</u>	<u>17.532</u>
Investments	10	<u>24.595.211</u>	<u>22.180</u>
Cash at bank and in hand		<u>54.303</u>	<u>2.120</u>
Current assets		<u>41.280.116</u>	<u>41.832</u>
Assets		<u>50.322.993</u>	<u>50.410</u>

Balance sheet at 31 December 2017

	Notes	2017 DKK	2016 DKK'000
Capital Reserve Fund (CRF)		9.186.146	9.269
Accumulated income over expenditure		15.130.860	16.112
Equity	11	24.317.006	25.381
Bank debt		835.470	0
Prepaid/pre-invoiced contributions		22.363.000	22.363
Prepaid projects funded by third parties		1.137.206	819
Other payables	12	1.670.311	1.846.789
Total short-term liabilities		26.005.987	25.029
Equity and liabilities		50.322.993	50.410
Additional information			
Lease of IT equipment	13		

Notes

	2017 DKK	2016 DKK'000
1. Contributions from member countries (shares)		
Belgium (2)	836.000	836
Canada (3)	1.254.000	1.254
Denmark (3)	1.254.000	1.254
Estonia (1)	418.000	418
Finland (1,5)	627.000	627
France (4)	1.672.000	1.672
Germany (4)	1.672.000	1.672
Iceland (3)	1.254.000	1.254
Ireland (2)	836.000	836
Latvia (1)	418.000	418
Lithuania (1)	418.000	418
The Netherlands (3)	1.254.000	1.254
Norway (4)	1.672.000	1.672
Poland (3)	1.254.000	1.254
Portugal (2)	836.000	836
Russia (3)	1.254.000	1.254
Spain (3)	1.254.000	1.254
Sweden (3)	1.254.000	1.254
United Kingdom (4)	1.672.000	1.672
The USA (3)	1.254.000	1.254
	22.363.000	22.363
2. Recipients of Scientific Advice		
European Commission	10.446.660	10.447
NEAFC	2.373.937	2.352
OSPAR	1.169.315	1.169
HELCOM	518.602	478
NASCO	543.427	538
Norway	840.972	831
	15.892.913	15.815

Notes

	2017 DKK	2016 DKK'000
3. Other income		
Income from ICES Journal	1.658.720	1.492
Income from Training courses	713.422	664
ASC Fees	573.700	653
Miscellaneous	266.656	237
Special request	781.134	1.281
	3.993.632	4.327
4. Salaries		
Salaries are divided as follows:		
Salaries Secretariat	-29.885.566	-29.847
Other salaries relating costs	-930.364	-779
	30.815.930	-30.626
Honorarium to external Chairs	-3.277.161	-2.767
	34.093.091	-33.393
5. Financial income		
Interest	410.128	269
Exchange gains	193	0
	410.321	269
6. Financial expenses		
Exchange losses	-158.044	-45
Bank charges	-75.827	-104
	-233.871	-149

Notes

	2017 DKK	2016 DKK'000
7. Receivable member contributions		
Belgium	836.000	836
Denmark	1.254.000	1.254
France	0	0
Estonia	418.000	418
Germany	1.672.000	0
Ireland	836.000	836
Latvia	0	418
Portugal	0	836
Russia	1.254.000	1.254
Sweden	1.254.000	1.254
Spain	1.254.000	1.254
United Kingdom	1.672.000	1.672
Related to the following year	10.450.000	10.032
8. Other Receivables		
European Commission	4.042.670	4.583
VAT due from the Ministry of Foreign Affairs	1.036.552	646
Deposits due from parking spaces	4.806	6
Miscellaneous receivables	793.203	1.967
	5.877.231	7.202
9. Prepayments and accrued income		
Prepaid pensions	303.371	298
	303.371	298
10. Investments		

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

Notes

11. Equity

	Capital Reserve Fund DKK	Accumulated income over Expenditure etc. DKK	Total equity DKK
Equity at 1 January 2017	9.269.059	16.112.111	25.381.170
Unrealised fair value of bonds	-82.913	-322.873	-405.786
Profit/loss for the year	0	-658.378	-658.378
Equity at 31 December 2017	9.186.146	15.130.860	24.317.006

	2017 DKK	2016 DKK'000
12. Other Payables		
Accounts payable	1.618.339	1.749
Danish State Pension (ATP)	51.972	98
	1.670.311	1.847

13. Lease commitments

Lease obligations falling due within:

0-1 years	870.231	1.113
1-5 years	734.602	1.336
> 5 years	0	0
	1.604.833	2.449

14. Morgages and securities

Investments have been provided as security for bank debt.

Accounting policies

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

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

Recognition and measurement

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

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

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

Income statement

Contributions and Costs

Contributions are booked 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 on 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 associated 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 on equity.

Receivables

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

Unpaid contributions from projects funded by third parties (assets)

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

Unpaid contributions are measured at cost.

Prepayments from projects funded by third parties (liabilities)

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

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

International Council for the Exploration of the Sea

Audit book comments on the Final Accounts 2017

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Audit book comments on the Final Accounts for 2017

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 2017 presented by the General Secretary and the Finance Committee. The Final Accounts show the following:

	2017 TDKK	2016 TDKK
Income over expenditure (minus is deficit)	-658	2.114
Assets	50.323	50.410
Equity	24.317	25.381

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 for 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 misstatement of this nature are usually concealed or hidden.

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

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

We have made inquiries of the General Secretary and the Chairman of the Finance Committee about the Organisation's risk of fraud as well as the internal controls implemented by the Finance

e 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 organisations financial reporting systems, business processes and internal controls function properly in the areas covered by our audit. The purpose of the audit was to determine whether the internal controls are satisfactory, meaning

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

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

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

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

Our review included an assessment as to whether

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

We have reviewed the following financial reporting areas:

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

For the financial reporting area Revenue and Cash and payment systems, we have only tested if controls have been designed appropriately and if they have actually been implemented in the enterprise. We have not for 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 enterprise's transactions in the above areas that have been covered by our audit.

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

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 recognized in accordance with agreed amounts at ICES Council. A total of 22,363 TDKK have been recognized as income, according to agreement, and has not given rise to any comments.

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

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

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

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

3.2 Balance sheet

On 31 December 2017 the Capital Reserve Fund in the equity amounts to 9,186 TDKK, corresponding to app. 20% of total income.

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

We have made unannounced cash count on 21th of December 2017. The unannounced cash count did not give rise to any comments.

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

We have analyzed or reconciled receivables with supporting documentation for 16,631 TDKK recognized in the Final Accounts. The receivables consist primarily of member contribution (10.450 TDKK) and other receivables (5.877 TDKK)

The individual items of the income statement have been reviewed and analysed based on specifications and decisions from 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.

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

4. Other comments

4.1 Letter of representation and unadjusted misstatements in the Final Accounts

As part of our audit of complex areas, the General Secretary has issued a letter of representation to us on the Final Accounts for 2017.

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

4.2 Insurance

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

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

3.3 General IT controls

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

5. Conclusion

If the Finance Committee approves the Final Accounts 2017 in its present form, we will provide the Final Accounts with an unqualified auditor's report without emphasis of matter.

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

7. 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, 29 May 2018

Deloitte
Statautoriseret Revisionspartnerselskab



Peter Jacob Skanborg
State Authorised Public Accountant

Presented at the Finance Committee' meeting on 6 June 2018

Finance Committee



Piotr Margonski
Chair



Alain Vezina



Tomas Zolubas



Fritz Köster



Ari Leskelä

Status Report as of 30 April 2018 (FC 2017-06 Doc 3)

Council approved the final Budget for 2018 by e-voting in 2017. It is the working budget for the Secretariat in 2018. Important activities that result in income and expenditures such as the Annual Science Conference (ASC), Training Programme, travel and meetings, and project hours are still to come; therefore, full accounting is only possible at the end of the financial year.

Comments to the Status of Accounts:

- 1) Income from the European Union is expected to be 11,900,000 DKK in accordance with the signed AA. The invoice for the first semester will be issued in July.
- 2) Project income for the period January–April is approximately DKK 987,000 based on time recording for ongoing projects. The revised project budget income for the whole year 2,978,983 DKK is considered realistic. This figure includes overhead. Doc 4.3 Info on External Projects contains the same project income. Several of the projects payments to ICES are lump sums covering salary and other costs (e.g. travel). The status of the project income will be monitored throughout the year. The Project income, in the column “revised Budget 2018 with 0% increase”, has been adjusted with DKK 103,209 after the Finance Committee meeting from DKK 2,875,774 to DKK 2,978,983.
- 3) Income from Eurofish represents 10% of certain office expenses.
- 4) Use of equity is in accordance with decisions taken by Council in 2014-2016, and to support:
 - investments in the development of the Regional Fisheries Database;
 - SCICOM strategic initiatives
 - DATRAS
 - Assessments workload issue (Data and Advice)
 - And includes a proposed investment from equity in quality assurance of the financial administration of the organization

	Realised Jan - Apr 2018	Forecast Budget 2018 with 2% increase	Estimate 2018 with 0% increase	Revised Budget 2018 with 0% increase
National Contribution	22.363.000	23.272.500	22.363.000	22.363.000
Faroe Islands & Greenland	418.000	435.000	418.000	418.000
National Contribution	22.781.000	23.707.500	22.781.000	22.781.000
NEAFC Contribution (Advice)	2.403.611	2.424.000	2.403.611	2.400.525
OSPAR Contribution (Advice and Data)	208.594	1.200.000	869.435	800.000
HELCOM Contribution (Data)	240.646	470.000	480.000	480.000
NASCO Contribution (Advice)	550.220	555.000	550.220	549.514
Special requests 1)	212.370	250.000	1.652.442	2.200.000
EC Contribution (Advice) 2)		10.400.000	11.900.000	11.900.000
MoU Norway		844.500	844.500	844.500
Income from Commissions	3.615.441	16.143.500	18.700.208	19.174.539
Project income - hours incl. overhead	987.285	2.697.000	2.928.983	2.978.983
Project income - Projects in Pipeline	0	0	0	
ASC income	6.976	490.000	490.000	490.000
Income from ICES Journal	575.474	1.600.000	1.450.000	1.600.000
Sale of Publications	2.625	5.000	5.000	5.000
Income Eurofish	95.071	200.000	200.000	200.000
Income Training courses	87.049	700.000	700.000	700.000
Miscellaneous income	600	20.000	20.000	20.000
Other Income	1.755.080	5.712.000	5.793.983	5.993.983
TOTAL INCOME	28.151.521	45.563.000	47.275.191	47.949.522
Salaries - Management and Adm. 3)	1.549.745	5.211.877	4.358.095	5.212.529
Salaries - Communications 4)	420.050	582.986	1.260.180	555.806
Salaries - Advisory Programme 5)	2.961.342	7.850.319	8.365.752	7.634.423
Salaries - Science Programme	1.411.924	4.225.007	4.368.628	4.310.308
Salaries - Publications 4)	333.772	1.793.136	995.345	1.765.158
Salaries - IT	609.408	1.931.133	1.828.273	1.842.005
Salaries - Data Centre 5)	3.486.014	9.454.871	10.478.382	10.790.982
Salaries - Total	10.772.255	31.049.329	31.654.655	32.111.211
Fees for External Consultants	6.736	250.000	160.000	250.000
Overtime for Gen. Staff		15.000	15.000	15.000
Social activities Cond. /Cond.	16.393	65.000	65.000	65.000
Education, Training, Team building	66.805	200.000	200.000	200.000
Honorarium ACOM Chair and Vice Chairs	709.611	2.279.368	2.217.911	2.234.570
Honorarium SCICOM Chair	358.873	1.106.451	1.076.618	1.084.705
ATP Pensions ICES 2/3 share	44.875	115.000	130.000	130.000
Salaries	11.975.548	35.080.147	35.519.183	36.090.486
Electricity	31.017,69	165.000	150.000	200.000
Heating	4.808,77	236.000	236.000	236.000
Safety and Security	115.591,13	191.000	210.000	191.000
Cleaning	44.059,59	167.000	175.000	167.000
Stationery	5.188,32	31.000	31.000	31.000
Photocopy and Printer paper	5.670,45	5.000	10.000	5.000
Paper (Letterhead, envelopes etc.)		2.000	2.000	2.000
Postage	2.701	100.000	32.000	50.000
Telephone, Fax, Etc.	14.810,65	0	65.000	0
Office Equipment (Workplace furniture)	3.633,75	112.000	112.000	112.000

	Realised Jan - Apr 2018	Forecast Budget 2018 with 2% increase	Estimate 2018 with 0% increase	Revised Budget 2018 with 0% increase
Insurance incl. Social health care in Denmark	292.213,48	288.000	305.000	288.000
Miscellaneous Expenses	37.942,87	121.000	110.000	121.000
Office Maintenance	13.552,20	101.259	221.885	221.885
Facility improvements	8.990,00	10.400	223.000	223.000
Library: Books, Subscriptions	3.611,56	30.000	35.000	30.000
Public Relations (Including souvenir shop)	3.304,00	47.000	30.000	47.000
Agresso update			120.000	
Accounting and Auditing	50.000	91.000	91.000	91.000
Legal Assistance		20.000	20.000	20.000
Office Expenses	637.095	1.717.659	2.178.885	2.035.885
Leasing Contracts	525.102,90	1.095.000	1.139.041	1.139.041
Hardware Support Contracts	145.856,41	342.600	451.200	451.200
Software Support Contracts	234.745,62	333.000	280.000	280.000
Software License Contracts	12.353,24	412.000	352.000	352.000
Hardware non-contract	23.911,50	185.000	140.000	140.000
Software non-contract	1.719,76	52.000	45.000	45.000
Outsourcing		0		
Remote/cloud services	104.997,00	112.600	292.000	292.000
Communication	97.283,88	239.000	265.180	265.180
Domains/certificates	45,00	8.000	8.000	8.000
IT-investments		0		
Consultancies	112.994,03	50.000	40.000	40.000
Other costs	15.938,13	72.600	66.300	66.300
IT Expenses	1.274.947	2.901.800	3.078.721	3.078.721
General Expenses: Transport, Handbooks, Gifts	8.157,58	300.000	300.000	300.000
Travel: Secretariat Staff and Chairs	16.520,00	450.000	450.000	450.000
Host Country Share	0	160.000	260.000	160.000
Enhance Science/Keynote Speakers	0	60.000	60.000	60.000
Promotion for Young Scientists	0	110.000	110.000	110.000
Expenses for ASC	24.678	1.080.000	1.180.000	1.080.000
Statutory meeting	0	15.000	15.000	15.000
President, Bureau + sub Groups	80.840	320.000	320.000	320.000
Secretariat travel per Cost Center	129.182,61	685.000	690.000	685.000
External reviewing of assessments/benchmarking	303.506,00	500.000	700.000	500.000
Travel costs for RAC		60.000	60.000	60.000
ACOM travel and meeting costs	6.845,40	300.000	300.000	300.000
ACOM Chairs and vice chairs travel	93.662,00	480.000	550.000	480.000
Advice Drafting Groups travel	16.677,00	1.100.000	1.600.000	1.100.000
SCICOM travel and meeting costs	261.861	400.000	400.000	400.000
Strengthening the Science Leadership (travel)		550.000	550.000	550.000
ICES co-sponsored Symposia (per Symposia)	28.665	75.000	150.000	150.000
Young scientist conference		0		
SCICOM strategic activities	79.759	0	115.000	115.000
Recruitment Travel & Moving		0	200.000	
Training support for DG MAREs officials	0	100.000	100.000	100.000
Course income/expenses	10.423	620.000	620.000	620.000
Travel and meetings	1.011.421	5.205.000	6.370.000	5.395.000
ICES Marine science Symposia		160.000	160.000	160.000
Publications general		130.000	70.000	80.000

	Realised Jan - Apr 2018	Forecast Budget 2018 with 2% increase	Estimate 2018 with 0% increase	Revised Budget 2018 with 0% increase
ICES Annual Report	3.396	80.000	15.000	80.000
ICES Cooperative Research Reports		82.000	15.000	82.000
ICES Leaflets for Plankton and Diseases		11.000	11.000	21.000
ICES Times		12.000	10.000	12.000
ICES Newsletters		0	0	0
ICES Advice Publications			0	0
Editor in Chief ICES JMS reimbursement of expenses		0	50.000	50.000
ICES Communications	20.533	200.000	200.000	200.000
Publications	23.929	675.000	531.000	685.000
TOTAL EXPENSES	14.947.619	46.659.606	48.857.789	48.365.092
Operating Result	13.203.902	-1.096.606	-1.582.598	-415.570
Interest	-692.518	-200.000	-195.000	-200.000
Transfer from Equity	-1.736.030	-1.275.000	-2.151.030	-2.387.030
Result	13.513.450	378.394	763.432	2.171.460
Transferred from Equity:				
SCICOM strategic activities 6)			-115.000	-115.000
Regional database 7)	-461.030		-461.030	-461.030
Proposed Investment in quality assurance in the financial administration – suggested by Finance Committee and Bureau				-236.000
Datras 8)			-300.000	-300.000
Assessments workload issue - data and advice (1.275.000 - salary and relocation/two P2_I's in Secretariat) Allocated 5.100.622	-1.275.000	-1.275.000	-1.275.000	-1.275.000

- 1) Based on estimated budget for received requests from primarily DGMARE and DGENV. The main bulk of the work is to be carried out in Q4 2018
- 2) EC Contribution increased amount under the AA between ICES and EC
- 3) Payments for dependency and child allowances and health insurance, including reimbursement DKK 800,000 for sick leave and maternity leave
- 4) Corrected split of staff in Communication and Publication
- 5) Including 1 person covered by equity
- 6) 2016 Council meeting - Equity funding 2017-2019 total of DKK 350,000
- 7) 2016 Council meeting - Equity funding of DKK 1,000,000
- 8) 2016 Council meeting - Equity funding of DKK 300,000

Proposed Budget 2019 and Forecast Budget 2020

Proposed budget 2019

The proposed budget for 2019 has been prepared in accordance with the February 2018 e-voting which increased national contributions by 1.3% in 2019.

The following is worth noting:

INCOME:

- The income from special requests have been estimated at 1,200,000 DKK, the majority of which stems from DGMARE payment for special requests (outside the AA).

EXPENSES:

- The overall expenses have remained level, apart from a decrease in ASC and Publications expenses as well as a small increase in IT expenses.
- The increase in the salaries "Management and Administration" reflects the proposal to invest from equity, in a four year position, in quality assurance of the financial administration of the organization.

OPERATING RESULT:

- The two unknowns, the size of income from projects and special requests, create difficulty in ensuring a neutral operating result (balanced budget). The project income includes projects in the pipeline, considering our best knowledge on expected income.
- While it could be possible to revise the proposed budget to reflect a neutral operating result, the actual budget result will depend on how much of the estimated project and special requests income will be realized.

Draft forecast budget 2020

In the draft forecast budget for 2020, a 1.5% increase in the national contributions has been assumed.

Comments, similar to the proposed budget 2019, apply to the draft forecast budget 2020. Specifically, for the income, it is worth noting:

INCOME:

- The same preconditions apply for special requests and projects, although for projects we only have knowledge about income of around 1,596,220 DKK, including projects in the pipeline, considering our best knowledge on expected income.

- Leaving aside the uncertainties regarding project and special request income, it becomes harder to balance the budget, especially if a 1.5% increase in the national contributions is not secured.

	Proposed Budget 2019 incl. 1.3% (based on 2018 inflation rate)	Revised Proposed Budget 2019 incl. 1.3% (based on 2018 inflation rate)	Forecast Budget 2020 incl. 1.5% (based on 2019 inflation rate)	Forecast Budget 2020 incl. 0% (based on 2019 inflation rate)
National Contribution	22.657.250	22.657.250	23.005.000	22.657.250
Faroe Islands & Greenland	423.500	423.500	430.000	423.500
National Contribution	23.080.750	23.080.750	23.435.000	23.080.750
NEAFC Contribution (Advice)	2.400.525	2.400.525	2.400.525	2.400.525
OSPAR Contribution (Advice and Data) 3)	1.200.000	1.400.000	800.000	800.000
HELCOM Contribution (Data)	480.000	480.000	480.000	480.000
NASCO Contribution (Advice)	549.514	549.514	549.514	549.514
Special requests	1.200.000	1.200.000	1.267.000	1.267.000
EC Contribution (Advice)	10.400.000	11.900.000	11.900.000	11.900.000
Norway MoU	844.500	844.500	859.000	859.000
Income from Commissions 1)	17.074.539	18.774.539	18.256.039	18.256.039
Project income - hours incl. overhead 4)	2.800.000	2.631.915	1.596.220	1.596.220
ASC income	490.000	490.000	490.000	490.000
Income from ICES Journal	1.600.000	1.600.000	1.600.000	1.600.000
Sale of Publications	5.000	5.000	5.000	5.000
Income Eurofish	200.000	200.000	200.000	200.000
Income Training courses	700.000	700.000	550.000	550.000
Miscellaneous income	20.000	20.000	20.000	20.000
Other Income	5.815.000	5.646.915	4.461.220	4.461.220
TOTAL INCOME	45.970.289	47.502.204	46.152.259	45.798.009
Salaries - Management and Administration	5.117.497	5.957.877	6.192.318	6.192.318
Salaries - Communications	582.986	582.986	1.406.834	1.406.834
Salaries - Advisory Programme	7.993.000	7.850.319	7.595.350	7.595.350
Salaries - Science Programme	4.521.697	4.225.007	4.423.511	4.423.511
Salaries - Publications	1.839.343	1.839.343	1.076.124	1.076.124
Salaries - IT	1.931.133	1.931.133	2.006.806	2.006.806
Salaries - Data Centre	10.174.579	10.467.149	9.574.203	9.574.203
Salaries - Total	32.160.235	32.853.814	32.275.146	32.275.146
Fees for External Consultants	250.000	250.000	250.000	250.000
Overtime for Gen. Staff	15.000	15.000	15.000	15.000
Social activities Cond. /Cond.	65.000	65.000	65.000	65.000
Education, Training, Team building	200.000	200.000	200.000	200.000
Honorarium ACOM Chair and Vice Chairs 2)	2.279.368	2.425.902	2.493.609	2.493.609
Honorarium SCICOM Chair	1.106.451	1.106.451	1.207.772	1.207.772
ATP Pensions ICES 2/3 share	130.000	130.000	210.000	210.000
Salaries	36.206.053	37.046.167	36.716.526	36.716.526
Electricity	200.000	150.000	150.000	150.000
Heating	236.000	225.000	225.000	225.000
Safety and Security	191.000	191.000	191.000	191.000
Cleaning	167.000	167.000	167.000	167.000
Stationery	31.000	31.000	31.000	31.000

	Proposed Budget 2019 incl. 1.3% (based on 2018 inflation rate)	Revised Proposed Budget 2019 incl. 1.3% (based on 2018 inflation rate)	Forecast Budget 2020 incl. 1.5% (based on 2019 inflation rate)	Forecast Budget 2020 incl. 0% (based on 2019 inflation rate)
Photocopy and Printer paper	5.000	5.000	5.000	5.000
Paper (Letterhead, envelopes etc.)	2.000	2.000	2.000	2.000
Postage	50.000	35.000	35.000	35.000
Telephone, Fax, Etc.	0	65.000	65.000	65.000
Office Equipment (Workplace furniture)	112.000	112.000	112.000	112.000
Insurance	288.000	288.000	288.000	288.000
Miscellaneous Expenses	121.000	100.000	100.000	100.000
Office Maintenance	221.885	21.885	21.885	21.885
Facility improvements	223.000	23.000	23.000	23.000
Library: Books, Subscriptions	30.000	30.000	30.000	30.000
Public Relations (Including souvenir shop)	47.000	20.000	20.000	20.000
Accounting and Auditing	91.000	91.000	91.000	91.000
Legal Assistance	20.000	10.000	10.000	10.000
Office Expenses	2.035.885	1.566.885	1.566.885	1.566.885
Leasing Contracts	1.140.183	1.140.183	1.261.913	1.261.913
Hardware Support Contracts	451.200	451.200	407.000	407.000
Software Support Contracts	280.000	280.000	360.000	360.000
Software License Contracts	363.000	363.000	265.000	265.000
Hardware non-contract	140.000	140.000	140.000	140.000
Software non-contract	45.000	45.000	23.000	23.000
Outsourcing	0	0	0	0
Remote/cloud services	296.000	296.000	312.000	312.000
Communication	266.180	266.180	287.000	287.000
Domains/certificates	8.000	8.000	4.000	4.000
IT-investments	0	0	0	0
Consultancies	40.000	40.000	25.000	25.000
Other costs	67.700	67.700	61.300	61.300
IT Expenses	3.097.263	3.097.263	3.146.213	3.146.213
General Expenses: Transport, Handbooks, Gifts	300.000	250.000	250.000	250.000
Travel: Secretariat Staff and Chairs	450.000	350.000	350.000	350.000
Host Country Share	160.000	160.000	160.000	160.000
Enhance Science/Keynote Speakers	60.000	60.000	60.000	60.000
Promotion for Young Scientists	110.000	110.000	110.000	110.000
Expenses for ASC	1.080.000	930.000	930.000	930.000
Statutory meeting	15.000	15.000	15.000	15.000
President, Bureau + sub Groups	320.000	320.000	320.000	320.000
Secretariat travel per Cost Center	685.000	685.000	685.000	685.000
External reviewing of assessments/benchmarking	500.000	500.000	500.000	500.000
Travel costs for RAC	60.000	60.000	60.000	60.000
ACOM travel and meeting costs	311.000	311.000	311.000	311.000
ACOM Chairs and vice chairs travel	480.000	480.000	480.000	480.000
Advice Drafting Groups travel	1.200.000	1.200.000	1.200.000	1.200.000
SCICOM travel and meeting costs	400.000	400.000	400.000	400.000

	Proposed Budget 2019 incl. 1.3% (based on 2018 inflation rate)	Revised Proposed Budget 2019 incl. 1.3% (based on 2018 inflation rate)	Forecast Budget 2020 incl. 1.5% (based on 2019 inflation rate)	Forecast Budget 2020 incl. 0% (based on 2019 inflation rate)
ICES co-sponsored Symposia	150.000	150.000	75.000	75.000
Young scientist conference	0	0	0	0
SCICOM strategic activities	0	115.000	115.000	115.000
Leadership/structural changes of Science Travel	550.000	550.000	550.000	550.000
Training support for DG MAREs officials	100.000	100.000	100.000	100.000
Course income/expenses	620.000	620.000	400.000	400.000
Travel and meetings	5.391.000	5.506.000	5.211.000	5.211.000
ICES Marine science Symposia	150.000	150.000	150.000	150.000
Publications general	97.000	45.000	45.000	45.000
ICES Annual Report	90.000	45.000	45.000	45.000
ICES Cooperative Research Reports	97.000	97.000	97.000	97.000
ICES Leaflets for Plankton and Diseases	12.000	12.000	12.000	12.000
ICES Times	11.000	11.000	11.000	11.000
ICES Newsletters	0	0	0	0
ICES Advice Publications	0	0	10.000	10.000
Editor in Chief ICES JMS reimbursement of expenses	50.000	50.000	50.000	50.000
ICES Communications	200.000	100.000	100.000	100.000
Publications	707.000	510.000	520.000	520.000
TOTAL EXPENSES	48.517.201	48.656.315	48.090.624	48.090.624
Operating Result	-2.546.912	-408.111	-1.157.365	-1.511.615
Interest	-200.000	-200.000	-200.000	-200.000
Transfer from Equity	-1.275.000	-2.136.000	-1.215.372	-1.215.372
Result	-1.071.912	1.181.889	-522.993	-877.243
Transferred from Equity:				
RDB	0	0	0	0
SCICOM strategic initiatives	0	-115.000	-115.000	-115.000
Proposed Investment in quality assurance in the financial administration – supported by Finance Committee and Bureau		-746.000	-781.000	-781.000
ACOM assessments workload issue (1.275.000)	-1.275.000	-1.275.000	-319.372	-319.372

1) Negotiations with EC on the cost under the AA for 2019 and onwards, negotiations with Iceland on a MoU and discussions with UK on a MoU

2) Decided by Finance Committee to align working conditions for chairs with secretariat, will apply to incoming ACOM chair.

Expenses have been decreased pending on other income.

Income from special requests and projects is based on current knowledge

3) It seems likely that the contribution from OSPAR will be DKK 1,400,000. Final decision will be during June 2018

4) This revised version includes projects in the pipeline, considering our best knowledge on expected income



Programme/Departmental Budgets

Overall costs and realized income for the ICES Advisory system

The tables below shows the realized income and the actual cost for the delivery of recurrent advisory products (2016 and 2017 figures), including data services, as well as the estimated figures for 2018.

Table 1. Overview of estimated income and costs for recurrent advice, in million DKK – for 2016, 2017, & 2018

Client	EU			NEAFC, NASCO & Norway			Total		
Year	2016	2017	2018	2016	2017	2018	2016	2017	2018
Income	10,4	10,4	11,9	3,7	3,8	3,8	14,1	14,2	15,7
Direct Costs	12,3	11,0	12,4	2,9	2,9	3,6	15,2	13,9	16,0
Indirect Costs	2,2	2,4	2,2	0,7	0,7	0,7	2,9	3,1	2,9
Total Costs	14,5	13,4	14,6	3,6	3,6	4,3	18,1	17,0	18,9
Balance	-4,1	-3,0	-2,7	+0,1	+0,2	-0,5	-4,0	-2,8	-3,2

The overview below was updated following Bureau, showing project income including projects in the pipeline, considering our best knowledge, and making use of the project affiliation outlined in document 4.3.

	INCOME 2017	COST 2017	INCOME 2018	COST 2018	INCOME 2019	COST 2019	INCOME 2020	COST 2020
ADVISORY PROGRAMME								
Contribution from NEAFC	2.373.937		2.400.525		2.400.525		2.400.525	
*)Contribution from OSPAR	608.044		416.000		728.000		416.000	
Contribution from HELCOM			0		0		0	
Contribution from NASCO	543.427		549.514		549.514		549.514	
*)Contribution from EC	10.446.660		11.900.000		11.900.000		11.900.000	
Income from Projects	97.519		101.382		104.423			
Special requests	781.134		2.200.000		1.200.000		1.267.000	
Norway MoU	840.972		844.500		844.500		859.000	
Direct Advisory income	15.691.693		18.411.921		17.726.962		17.392.039	
Secretariat travel for advice		362.997		390.000		390.000		390.000
External reviewing of Assessment		528.126		500.000		500.000		500.000
Travel cost for RAC		0		60.000		60.000		60.000
ACOM TRAVEL		290.134		300.000		311.000		311.000
ACOM Chairs and vice chairs Travel		639.553		480.000		480.000		480.000
Advice drafting Groups Travel		1.631.162		1.100.000		1.200.000		1.200.000
ICES Advice Publications				0		0		10.000
Training support to DG MARE's officials		66.501		100.000		100.000		100.000
Budgeted salaries		8.217.352		7.634.423		7.850.319		7.595.350
ACOM Chair and vice-chairs honorarium		2.195.631		2.234.570		2.425.902		2.493.609
Demonstration advice								
External Contracts		33.933		250.000		250.000		250.000
Direct advisory cost		13.965.390		13.048.993		13.567.221		13.389.959
Staff		15		15		15		15
Transfer from Equity	329.189		637.500		637.500		159.686	

SCIENCE PROGRAMME								
Income from Projects	1.499.012		880.520		428.321		316.012	
Income Training courses	713.422		700.000		700.000		550.000	
ASC Income (Fees)	573.700		490.000		490.000		490.000	
Direct Science income	2.786.134		2.070.520		1.618.321		1.356.012	
ASC General expenses		234.668		300.000		250.000		250.000
Secretariat travel		95.366		100.000		100.000		100.000
Travel ASC		372.661		450.000		350.000		350.000
ASC Keynote Speakers		54.471		60.000		60.000		60.000
Host Country of ASC Fee		286.850		160.000		160.000		160.000
Young Scientists at ASC		67.889		110.000		110.000		110.000
Symposia		123.676		150.000		150.000		75.000
SCICOM travel and meeting		267.433		400.000		400.000		400.000
Strengthening Science Leadership travel				550.000		550.000		550.000
Training Programme		838.632		620.000		620.000		400.000
Science Fund								
SCICOM strategic initiatives		71.043		115.000		115.000		115.000
Young Scientist Conference		383.507						
Internal/External review of ICES Science travel								
Leadership/structural changes of Science Travel								
Budgeted Salaries		3.820.055		4.310.308		4.225.007		4.423.511

	INCOME 2017	COST 2017	INCOME 2018	COST 2018	INCOME 2019	COST 2019	INCOME 2020	COST 2020
Chair of SCICOM		1.081.530		1.084.705		1.106.451		1.207.772
Direct Science cost		7.697.780		8.410.013		8.196.458		8.201.283
Staff		8		8		8		8
Input from Equity			115.000		115.000		115.000	

PUBLICATIONS AND COMMUNICATIONS								
Income from <i>ICES Journal of Marine Science</i>	1.658.720		1.600.000		1.600.000		1.600.000	
Sale of Publications	28.485		5.000		5.000		5.000	
Direct publication and communication income	1.687.205		1.605.000		1.605.000		1.605.000	
Library		33.736		30.000		30.000		30.000
ICES Marine Science Symposia Publications				160.000		150.000		150.000
Publications general		1.674		80.000		45.000		45.000
ICES Annual Report		2.485		80.000		45.000		45.000
ICES Cooperative Research Reports		12.700		82.000		97.000		97.000
ICES Leaflets for Plankton and Diseases		5.000		21.000		12.000		12.000
ICES TIMES		10.000		12.000		11.000		11.000
ICES Newsletters INSIGHT								
ICES Communications		386.501		200.000		100.000		100.000
Secretariat travel		6.936		18.000		18.000		18.000
Editor in Chief ICES JMS		9.173		50.000		50.000		50.000
Budgeted Salaries		1.982.216		2.320.964		2.422.329		2.482.958
Total Publication and communication cost		2.450.421		3.053.964		2.980.329		3.040.958
Staff		5		5		5		5
Input from Equity								

DATA CENTRE								
Contribution from OSPAR	561.271		384.000		672.000		384.000	
Contribution from HELCOM	518.602		480.000		480.000		480.000	
Income from Projects	1.588.235		1.997.081		2.099.171		1.280.208	
Special request								
Direct Data Centre income	2.668.108		2.861.081		3.251.171		2.144.208	
Secretariat travel		111.230		63.000		63.000		63.000
Budgeted salaries		10.180.642		10.790.982		10.467.149		9.574.203
Total Data Centre cost		10.291.872		10.853.982		10.530.149		9.637.203
Staff		17		17		17		17
Input from Equity	329.189		1.398.530		637.500		159.686	

IT INFRASTRUCTURE								
Direct income IT	0		0		0		0	
Hardware Leasing		1.083.223		1.139.041		1.140.183		1.261.913
Software licenses, external support contracts		952.264		1.083.200		1.094.200		1.032.000
Purchase of soft and hardware		198.744		185.000		185.000		163.000
Consultancies		180.198		40.000		40.000		25.000
Various expense		729.160		631.480		637.880		664.300
IT-investment				0		0		0
Budgeted salaries		1.745.425		1.842.005		1.931.133		2.006.806
Total IT cost		4.889.013		4.920.726		5.028.396		5.153.019
Staff		3		3		3		3

	INCOME 2017	COST 2017	INCOME 2018	COST 2018	INCOME 2019	COST 2019	INCOME 2020	COST 2020
Input from Equity								
SECRETARIAT, COUNCIL, BUREAU								
National contributions ***)	22.363.000		22.363.000		22.657.250		23.005.000	
Faroe and Greenland	418.000		418.000		423.500		430.000	
Income Eurofish	198.703		200.000		200.000		200.000	
Miscellaneous income	67.953		20.000		20.000		20.000	
Income from projects	90.373							
Total general income	23.138.028		23.001.000		23.300.750		23.655.000	
Office expenses		2.288.144		2.005.885		1.536.885		1.536.885
Statutory meeting		9.697		15.000		15.000		15.000
Travel Bur., Pres.		302.255		320.000		320.000		320.000
Secretariat travel		141.615		114.000		114.000		114.000
General direct cost		2.741.711		2.454.885		1.985.885		1.985.885
Budgeted salaries		4.402.027		5.212.529		5.957.877		6.192.318
Overtime (all programs)				15.000		15.000		15.000
Education and training (all)		234.162		265.000		265.000		265.000
Danish state pension (all)		133.618		130.000		130.000		210.000
Total general cost		7.511.519		8.077.414		8.353.762		8.668.203
% of ICES income		50		48		49		51
% of ICES expenditure		16		17		17		18
Transfer from equity			236.000		746.000		781.000	

*) Part of this income is also financing activities in the Data Centre

**) These figures include the proposed investment in quality assurance in the financial administration – supported by Finance Committee and Bureau

***) National Contributions for 2020 are based on an inflationary increase of 1.5%.



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

Finance Committee is invited to take note of current and planned ICES project participation. This document was revised according to discussions in Bureau, displaying the project income including projects in the pipeline, considering our best knowledge.

ESTIMATED PROJECT INCOME 2018, 2019, 2020, 2021

	Project	Departmental affiliation	Est. Personnel & Overhead Costs 2018	Est. Personnel & Overhead Costs 2019	Est. Personnel & Overhead Costs 2020	Est. Personnel & Overhead Costs 2021
Hours Dependent	2016-ETC ICM	D	669.068	820.000	820000	820.000
	2033-AORA-CSA	S/D	648.659	647.797	284.975	
	2034-AtlantOS	D	209.572	108.358		
	2035-COLUMBUS	S	61.917			
	2036-BlueBridge	S	454.809			
	2039-ClimeFish	S/A	202.763	208.846		
	2045-PANDORA	S	229.525	117.300	173.525	121.938
	2046-JMP-EUNOSAT					
Fixed Income	2040-EMODIng	D	84.680	0		
	2042-SeaDataCloud	D	184.573	188.369		
	2043-EMODnet Biology III	D	69.839	71.204	71.204	71.204
	2044-EMODnet Chemistry III	D	113.577	120.041	120.041	120.041
	ØKOMAR	D	50.000	50.000		
	TOTAL		2.978.983	2.331.915	1.296.220	1.011.245
	Projected income					
	AtlantEA Interreg	D		150.000	150.000	150.000
	MEESO, UnderwaterNoise-Med, All Atlantic BG8B (no budget figures guesstimate)	D		150.000	150.000	150.000
	GRAND TOTAL		2.978.983	2.631.915	1.596.220	1.311.245

PROJECTS WITH NO ELIGIBLE COSTS				
Project Name	Project Period	ICES Stakeholders	Max Lifetime Grant	Est. Hours per year
COST Machine learning (<i>Machine learning and intelligent systems for the marine sciences</i>)	Late 2016 - 2020	SCICOM ('Big Data'/'Machine learning) EWGs Training courses	none	ICES would plan to contribute from its working time ca. 200 hours per year to this project
LME LEARN	October 2016 - March 2019		888,269	Only "Other Costs (training courses, travel, meeting rooms)" - no income

PROJECTS IN PIPELINE				
Project Name	Project Period	ICES Stakeholders	Max Lifetime Grant	Est. Hours per year
MEESO – no information available yet on the budget. Will be negotiated in the coming months with coordinator	2018 - 2020			
AtlantEA Interreg	1 January 2019 – 31 December 2021		Approx. 60,000 euros (Max. percentage of cost reimbursement 75% of eligible costs)	Approx. 30 hours per year
UnderwaterNoise-Med – Proposal deadline 20 June – We will know more about this proposal in the coming days I guess	January 2019 – December 2020		Funding conditions: 80% + 7% of indirect costs	
All Atlantic BG8B				No specific information yet

Capital Reserve Fund

The Capital Reserve Fund (CRF) was established in the early 1970s to balance short-term liquidity matters, to meet budgetary appropriations and unforeseen, or other authorised, purposes. According to a 2010 Council decision, reaffirmed in 2016, its size is targeted to be 20% of **total income**. The development of the CRF is presented in the table below.

By the end of 2017, the CRF was at 9,186,146 DKK and invested in Danish short-term bonds listed on the Copenhagen Stock Exchange.

Development of the CRF Fund:

Date	CRF	% of Salaries	% of Natl Contrib. and MoU	% of/Total Income
31-Dec-00	2,014,176	12%	9%	7%
31-Dec-01	2,049,523	12%	9%	7%
31-Dec-02	2,094,547	12%	9%	8%
31-Dec-03	2,544,466	13%	11%	9%
31-Dec-04	2,644,505	14%	10%	9%
31-Dec-05	3,128,999	17%	12%	10%
31-Dec-06	3,783,990	20%	14%	11%
31-Dec-07	3,891,756	19%	13%	11%
31-Dec-08	5,358,686	25%	17%	15%
31-Dec-09	5,815,970	26%	18%	16%
31-Dec-10	7,992,824	36%	25%	20%
31-Dec-11	8,181,711	32%	23%	20%
31-Dec-12	8,410,096	30%	23%	20%
31-Dec-13	5,392,023	17%	15%	13% ¹
31-Dec-14	8,400,909	26%	23%	20%
31-Dec-15	8,597,818	27%	23%	20%
31-Dec-16	9,269,060	28%	24%	20%
31-Dec-17	9,186,146	27%	24%	20%

¹ Due to late payment of national contributions, money was borrowed, with security in bonds in the Capital Reserve Fund (repo), in order to maintain normal operations. The money was repaid in March 2014.

Development of Equity

The table below shows the status of equity, following the auditing of the 2017 accounts, as of 1.1. 2018.

The table furthermore shows how Council has decided to allocate funds from equity in the coming years, and the resulting status of equity.

Due to a surplus in 2016 and a reduced budgeted deficit in 2017, not all money allocated through equity was used. It could be considered to prolong the work of the Transparent Assessment Framework.

The table shows the projections for the years 2016-2018.

	Equity 1/1- 2018 15.130.860	Equity 1/1- 2017 16.112.111	Equity 1/1 2016 14.890.989
Website development			-300.000
ACOM assessments workload issue (1.275.000)			-956.250
SCICOM strategic activities			-123.601
CARA/RCT Salary e-voting July/August 2015			-210.000
IT Specialist - e-voting July/August 2015 RCT/CARA			-105.000
ACOM assessments workload issue (1.275.000)		-1.275.000	
Transparent Assessment Framework (1.275.000) 2018	-1.275.000		
SCICOM strategic activities	-115.000	-115.000	
Regional database e-voting August/September 2014	-258.000	-258.000	-258.000
Training courses e-voting July/August 2015		-300.000	
Young Scientists Conference		-450.000	
Regional database Council 2016	-489.630	-489.630	
DATRAS Council 2016	-300.000	-300.000	
ACOM assessments workload issue (1.275.000) 2018	-1.275.000	-1.275.000	
ACOM assessments workload issue (1.275.000) 2019		-1.275.000	
ACOM assessments workload issue (1.275.000) 2020	-319.372	-319.372	
	11.098.858	10.055.109	12.938.138



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Finance Department

The administrative arrangements between ICES and clients of advisory services are becoming increasingly complex in order to document the full cost of products and services provided. There are several issues that require further consideration to ensure that the advisory services are reaching the principle of 100% cost recovery:

- the administrative agreement between EC and ICES, which is getting a new foundation, including a decrease of the indirect costs, and a possibility to charge for all tasks related to the advisory products
- negotiations with new clients, both due to political changes and due to some member countries receiving recurrent advice
- a re-evaluation of MoUs with other clients, including clients for whom independent MoUs have been drawn up with their Contracting Parties

What will be important in these new arrangements are:

- transparency and equal foundation;
- traceability and audit of work costed under the arrangements, and the possibility of creating reports directly from the accounting system to invoice and verify

This will require an investment in the Finance Department and the time used on the accounting system. Importantly, this requires cooperation with Department Heads to ensure that material created and extracts from the accounting system are useful for them in their talks with colleagues on how to report time, and in the steering of the allocation of work forces.



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Five-year Projection of ICES Budget

The table shows the projection for the years 2019 to 2023.

Different scenarios have been made with different assumptions for the National Contributions.

Salary figures includes proposed investment in quality assurance for the financial administration, as supported by the Finance Committee and the Bureau.

Revised Budget 2017 with 0% increase	Revised Budget 2018 with 0% increase	Forecast Budget 2019 with 1,3% increase	Forecast Budget 2020 with 0% increase	Forecast Budget 2021 with 0% increase
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Forecast Budget 2020 with 1.5% increase	Forecast Budget 2021 with 1.7% increase	Forecast Budget 2022 with 1.7% increase	Forecast Budget 2023 with 1.7% increase
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Forecast Budget 2020 with 1.5% increase	Forecast Budget 2021 with 0% increase	Forecast Budget 2022 with 0% increase	Forecast Budget 2023 with 0% increase
--	--	--	--

National Contribution	22.781.000	22.781.000	23.080.750	23.080.750	23.080.750
Income from Clients	16.106.235	19.174.539	18.774.539	18.256.039	18.256.039
Other Income	5.855.650	5.993.983	5.646.915	4.461.220	4.640.490
TOTAL INCOME	44.742.885	47.949.522	47.502.204	45.798.009	45.977.279

23.435.000	23.834.000	24.239.000	24.651.000
18.256.039	18.256.039	18.256.039	18.256.039
4.461.220	4.640.490	4.640.490	4.640.490
46.152.259	46.730.529	47.135.529	47.547.529

23.435.000	23.435.000	23.435.000	23.435.000
18.256.039	18.256.039	18.256.039	18.256.039
4.461.220	4.640.490	4.640.490	4.640.490
46.152.259	46.331.529	46.331.259	46.331.529

Salaries	34.440.000	36.090.486	37.046.167	36.716.526	36.837.356
Office Expenses	2.017.885	2.035.885	1.566.885	1.566.885	1.566.885
IT Expenses	2.893.000	3.078.721	3.097.263	3.146.213	3.146.213
Expenses for ASC	1.070.000	1.080.000	930.000	930.000	930.000
Travel and meetings	5.730.000	5.395.000	5.506.000	5.211.000	5.211.000
Publications	675.000	685.000	510.000	520.000	520.000
TOTAL EXPENSES	46.825.885	48.365.092	48.656.315	48.090.624	48.211.454

36.716.526	36.837.356	37.373.053	37.892.538
1.566.885	1.566.885	1.566.885	1.566.885
3.146.213	3.146.213	3.146.213	3.146.213
930.000	930.000	930.000	930.000
5.211.000	5.211.000	5.211.000	5.211.000
520.000	520.000	520.000	520.000
48.090.624	48.211.454	48.747.151	49.266.636

36.716.526	36.837.356	37.373.053	37.892.538
1.566.885	1.566.885	1.566.885	1.566.885
3.146.213	3.146.213	3.146.213	3.146.213
930.000	930.000	930.000	930.000
5.211.000	5.211.000	5.211.000	5.211.000
520.000	520.000	520.000	520.000
48.090.624	48.211.454	48.747.151	49.266.636

Operating result	-2.083.000	-415.570	-1.154.111	-2.292.615	-2.234.175
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-1.938.365	-1.480.925	-1.611.622	-1.719.107
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-1.938.365	-1.879.925	-2.415.622	-2.938.107
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Interest	-100.000	-200.000	-200.000	-200.000	-200.000
Transfer from Equity	-1.983.000	-2.387.030	-2.136.000	-1.215.372	-816.000
Result	0	2.171.460	1.181.889	-877.243	-1.218.175

-200.000	-200.000	-200.000	-200.000
-1.215.372	-816.000	-851.000	0
-522.993	-464.925	-560.622	-1.519.107

-200.000	-200.000	-200.000	-200.000
-1.215.372	-816.000	-851.000	0
-522.993	-863.925	-1.364.622	-2.735.107

Stable National Contributions after 2019 and onwards

Negotiations with EC on the cost under the AA for 2019 and onwards, negotiations with Iceland on a MoU and discussions with UK on a MoU

Other income reduced as we expect a reduction in project income (this revised version includes projects in the pipeline, considering our best knowledge on expected income) and training courses from 2020 with current knowledge on projects and training courses from 2019 and onwards

Expenses - Salaries includes expected index regulation and step increases, as well as a proposed investment from equity

National Contribution + 1.5% in 2020 and + 1.7% in 2021, 2022 and 2023

Negotiations with EC on the cost under the AA for 2019 and onwards, negotiations with Iceland on a MoU and discussions with UK on a MoU

Other income reduced as we expect a reduction in project income (this revised version includes projects in the pipeline, considering our best knowledge on expected income) and training courses from 2020 with current knowledge on projects and training courses from 2019 and onwards

National Contribution + 1.5% in 2020 and + 1.7% in 2021, 2022 and 2023

Negotiations with EC on the cost under the AA for 2019 and onwards, negotiations with Iceland on a MoU and discussions with UK on a MoU

Other income reduced as we expect a reduction in project income (this revised version includes projects in the pipeline, considering our best knowledge on expected income) and training courses from 2020 with current knowledge on projects and training courses from 2019 and onwards

in quality assurance of the financial administration of the organization

Salary + 1.39% in 2022 and 2023, and includes a proposed investment from equity in quality assurance of the financial administration of the organization

Salary + 1.39% in 2022 and 2023, and includes a proposed investment from equity in quality assurance of the financial administration of the organization

New Clients and MoUs

This document provides Council with information on negotiations with recipients of ICES advice

Representatives from ICES and the UK met in September to discuss the arrangements needed to ensure continued cooperation pending Brexit and given current uncertainty around the transitional period (March 2019 – 2020), as the UK prepares to withdraw from the European Union. Preparations and planning for future arrangements between the UK and ICES will consider both longer and shorter-term considerations. Another meeting is planned for late November to continue to develop a formalised cooperation agreement.

The Administrative Agreement (AA) between EC and ICES is up for revision, and with the aim to:

- Establish a new framework for the cooperation, to adhere to administrative rules in EC and to obtain a longer time perspective; going from a one year agreement to a four year Framework Partnership Agreement
- Establish more firm requirements for documentation and verification of costs associated with advisory services, including a reduction of indirect income from ~30 to 7%

The changes to the costing of the EC advisory requests, and the cooperation agreement with UK will require:

- A general opening of the ICES costing principles for providing advisory services, under the 100% cost recovery principle, and
- A sharing with all recipients of ICES advice, during the January MIRIA and bilateral meetings with clients.

While it is important for ICES to ensure a unification of the costing methodology (based on how many stocks and in which ecoregion a client is getting advice), it is beyond ICES remit to propose how costs should be shared among recipients of advice. A share key needs to be agreed among all recipients of ICES advice. Pending the changes to the cooperation agreement with the EC, and a new agreement with the UK, the negotiations with Iceland have been put on hold. No other negotiations for new cooperation agreements for advice have been initiated.

An overview of all cooperation agreements is available on the web:

<http://www.ices.dk/explore-us/how-we-work/Pages/Cooperation-agreements.aspx>

Update on external projects

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1. Projects concluding in 2018

Name of project	ICES Secretariat contact person	Main task	No of partners per ICES member country	ICES relevance	Ex-post evaluation of deliverables Did the project contribute to strengthening ICES advice? (optional)
H2020 BlueBRIDGE Building Research environments for fostering Innovation, Decision making, Governance and Education to support Blue growth (2015-2018)	Wojciech Wawrzynski, Anna Davies, Morten Holdt	Support for stock assessments and training. Knowledge bridging, education and capacity building for the management of marine living resources through virtual research environments (VREs).	DK: 1; FR: 4; NO: 1; UK: 1	IT support to training courses. Development of on-line training options. Integration of models and IT tools into stock assessment.	<ul style="list-style-type: none"> • DTU-AQUA/ICES/BlueBRIDGE oceanography MOOC online; (link available here) • Successful utility of the BlueBridge virtual research environments for the ICES training courses for the past two years. Including training in an online R environment, the Shiny app and use of various mapping tools. • Successful cooperation with other organisations in reaching communities and universities beyond the ICES community, including the FAO, University of Athens and the national research council of Italy (see the table below for the outreach numbers) • Completion of a BlueBRIDGE workshop on innovative technologies at the service of the aquaculture, fisheries, and research sectors. Held in Riga in September 2016, aimed at researchers and scientists requiring large computing capacities, tools to harmonize data sources, and facilities to share research results.
H2020 COLUMBUS Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue Growth (2015-2018)	Wojciech Wawrzynski, Julie Krogh Hallin, Vivian Piil, Terhi Minkinen, Simon Cooper	ICES works with partners to ensure uptake of useable knowledge within the ICES network.	BE: 4; DE: 2; DK: 3; ES: 3; FR: 2; IE: 3; NO: 1; PT: 1; UK: 5	Collection of research knowledge outputs from international research projects. Assessment and applicability of knowledge outputs: knowledge output tables with shortlisted results to be made available via the on-line EurOcean Knowledge Gate. Examples of applicability: knowledge output pathways with impact measurement, dissemination and exploitation plans.	European science & innovation projects made available; results may be uptaken by groups in the ICES community

2. Ongoing projects

Name of project	ICES Secretariat resources	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
EEA ETC-ICM The European Topic Centre on Inland, Coastal and Marine waters (2014-2018)	Jørgen Nørrevang Jensen Neil Holdsworth, Periklis Panagiotidis, Hans Mose Jensen	Data flows in support to the MSFD. Supporting the publication of marine indicators and assessment in the European Seas.	DE: 3; DK: 2; FI: 1; NL: 2; NO: 1; UK: 2	ICES quality control of data is recognised as the 'golden stamp' in the publication of marine indicators (Nutrients and chlorophyll in seawater, contaminants in biota, and changes in fish distribution) and assessment (Hazardous substances and eutrophication). Closer engagement with both high level processes in the EEA and DG ENV related to MSFD, Copernicus and other large scale European infrastructures.	ICES does not give advice on assessments of these indicators. However, the data flows directly benefit member countries that are members of ICES, OSPAR, HELCOM as it allows for streamlined reporting of data and greater harmonization of assessment tools. A standing special request from OSPAR is the management of data handled by ICES on their behalf, as well as hosting/developing Eutrophication and Contaminants tools for both OSPAR And HELCOM, which are also relevant to the EEA European assessments of the same state indicators.
H2020 AtlantOS Optimizing and Enhancing the Integrated Atlantic Ocean Observing System' (2015-2019)	Neil Holdsworth , Mehdi Abbasi, Hjalte Parner, Mark Dickey-Collas	Improving fish survey acoustic and biotic data availability through ICES Data Centre for three key pelagic fisheries surveys. Standards and harmonization to information aggregator portals for fisheries via ICES DATRAS and ICES ACOUSTIC.	BE: 3; CA: 2; DE: 8; DK: 3; ES: 3; FR: 12; IE: 3; NL: 2; NO: 3; PL: 1; PT: 3; UK: 10; USA: 1	Enabled ICES to build the acoustic data portal (WP2), and support the steering and expert groups behind acoustic data. This is a key input to the transparent assessment framework, and the portal has helped develop standards, protocols and increased access to these data. http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx . The networking and contribution to the Atlantic Observing system architecture under WP1 has put ICES together with other international networks to help define a blueprint (IOC, GOOS).	Yes, quality assurance and transparency of ICES advice (see previous column)
H2020 AORA- CSA Atlantic Ocean Research Alliance Coordination and Support Action' (2015-2020)	Anne Christine Brusendorff , Wojciech Wawrzynski, Ellen Johannesen, Mark Dickey-Collas, Karolina Reducha, Neil Holdsworth, Julie Krogh Hallin	Participation in the project's High Level Operational Board (WP1) as well as leading three work packages: Ecosystem Approach/Ocean Stressors (WP4), Aquaculture (WP7), Knowledge Sharing Platform (WP11).	CA: 1; DK: 1; ES: 1; FR: 2; IE: 1; IS: 1; NO: 1; PT: 1; UK: 1	Inventories of international collaborations / projects / applicable research results in the AORA thematic areas (ocean stressors, aquaculture, ocean literacy, seabed mapping); Online access to the findings via the online AORA Knowledge Sharing Platform. Trilateral WGs on AORA thematic areas; Action roadmaps with staff exchanges, project twinning, joint publications, resource sharing and coupling of research funding.	The project explored the mandates and objectives for EBM in the North Atlantic. These can be used directly by the development of the ECOFRAME initiative. The clarification of EBM goals proved useful in the production of the ICES statement on EBM.

Name of project	ICES Secretariat resources	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
H2020 ClimeFish Co-creating a decision support framework to ensure sustainable fish production in Europe under climate change’ (2016-2019)	Lotte Worsøe Clausen , Anne Cooper, Eirini Glyki, Mark Dickey-Collas, Scott Large, Wojciech Wawrzynski	ICES will contribute to debates and dissemination activities within its European arenas to ensure science for sustainable use of the sea, especially within the fishery sector.	CA: 1; DE: 1; DK: 1; ES: 2; FR: 1; IS: 1; NO: 3; SE: 1; UK: 2	Provision of input to the DGMARE request concerning fish distributions over time; EDF/ClimeFish workshop on governance and management of European fisheries in changing climate scenarios.	ICES involvement in the ClimeFish project facilitates the strengthening of the ICES advisory system in three key fields: <ul style="list-style-type: none"> • modelling the impacts of climate change on wild fish stocks in the Northeast Atlantic; • modelling the impacts of climate change on current and potential aquaculture activities in the Northeast Atlantic; • communicating key scientific findings to relevant policymakers in an efficient and effective manner. Aquaculture is a strategic initiative in the ICES Strategic Plan and via ICES participation we have access to <ul style="list-style-type: none"> • a network of experts studying the impacts of climate change on existing and planned aquaculture activities in the Northeast Atlantic; • the associated government officials and industry representatives.
EMFF EMODnet INGESTION European Marine Observation and Data Network (2016-2019)	Hjalte Parner , Neil Holdsworth, Anna Osypchuk, Else Juul Green	ICES serves as a point of contact for biological and environmental data.	BE: 2; DE: 1; DK: 3; ES: 2; FI: 2; FR: 2; IE: 1; NL: 2; NO: 1; PT: 1; SE: 1; UK: 1	Influence and staying in line with current metadata standard developments used for submitting data. Potential source of new data from providers not currently in established data collecting frameworks leading into EMODnet data portals as well as ICES.	If the project succeeds in leveraging data from new sources – primarily industry and other commercial sources, this will deepen the pool of data available to the Advice process.
GEF LME LEARN Strengthening Global Governance of Large Marine Ecosystems and Their Coasts through Enhanced Sharing and Application of LME/ICM/MPA Knowledge and Information Tools (2016-2019)	Wojciech Wawrzynski , Anna Davies, Ellen Johannesen	ICES leadership in the LME-LEARN Ocean Governance WG; organization of training courses for LME practitioners and managers within the ICES Training Programme.	USA: 1; Intergovernmental:7	LME-LEARN toolkits to be made available (on ocean governance; LMEs and stakeholder participation; maritime spatial planning; environmental economics); Thematic / geographical boost to the ICES Training Programme. ICES gateway to the partner agencies implementing the UN SDG14.	The project contributing (previously through links with the WGLMEBP, now through IEA SG) to ecosystem overviews.

Name of project	ICES Secretariat resources	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
H2020 SeaDataCloud Further developing the pan-European infrastructure for marine and ocean data management (2016-2020)	Neil Holdsworth , Anna Osypchuk, Hjalte Parner, Marilyn Sorensen, Signe Bagger	Project network coordination (WP2); Expansion and governance of metadata and data content (WP5); Governance of standards and development of common services (WP8); Developments of upstream services (WP9); Developments of downstream services (WP10); Development, update and publication of data products for European sea regions (WP11).	BE: 5; DE: 5; DK: 2; EE: 1; ES: 2; FI: 3; FR: 3; IE: 1; IS: 1; LV: 1; NL: 3; NO: 1; PL: 2; PT: 1; SE: 1; UK: 2	SeaDataCloud is the 3rd iteration of SeaDataNet, the ICES Data Centre is a key player in the steering of the development and ensures the development of standardisation and governance. The infrastructure service that ICES supply as part of the SeaDataCloud backbone is a core (and demanding) part of the ICES data work, and subsidised by this activity.	No obvious linkage.
EMFF EASME EMODnet Biology III Operation, development and maintenance of a European Marine Observation and Data Network (2017-2019)	Neil Holdsworth , Carlos Pinto	Major provider of biological observations (presence/absence). Collaborating on data products i.e. the ICES OOPS derived via this project. Also contributing to data standards and harmonization.	BE: 3; DK: 2; ES: 1; FI: 1; FR: 1; NL: 3; NO: 1; PT: 1; SE: 1; UK: 5	The OOPS Zooplankton product http://ices.dk/news-and-events/news-archive/news/Pages/Zoom-in-on-zooplankton-data.aspx was developed via this cooperation.	The project has the potential – as shown with OOPS – to deliver operational data products in addition to what the ICES Data Centre, and ICES community can offer and is prepared to do this in a way that would allow these products to be used in an advice process with assessment of their quality.
EMFF EASME EMODnet Chemistry III Operation, development and maintenance of a European Marine Observation and Data Network (2017-2019)	Neil Holdsworth , Hans Mose, Jensem, Mehdi Abassi	Work package lead on user feedback, especially linking MSFD into the data product development of EMODnet Chemistry. Also contributing to data standards and harmonization.	BE: 2; DE: 1; DK: 2; EE: 1; ES: 1; FI: 2; FR: 1; IE: 1; LV: 1; NL: 2; NO: 1; PT: 1; SE: 1	ICES is ensuring synergy between existing dataflows and the EMODnet portal to avoid duplication of data (and effort). ICES also acts as the main conduit from the OSPAR and HELCOM data product needs into EMODnet Chemistry.	ICES do not provide Advice on assessments of contaminants and eutrophication, however ICES are contracted to provide services to both HELCOM and OSPAR that are strengthened through this project.
H2020 PANDORA Paradigm for Novel Dynamic Oceanic Resource Assessments (2018-2021)	Lotte Worsøe Clausen , Mark Dickey-Collas, Anna Davies, Lise Cronne, Neil Holdsworth, Eirini Glyki, Periklis Panagiotidis.	Training, integration of new knowledge into operational advice, incorporation new data collection methods. Enabling conversations between research scientists and ICES advisory working groups.	DE: 3; DK: 3; EE: 1; ES: 3; FR: 1; NL: 3; NO: 2; UK: 6	This project addresses the incorporation of new data and knowledge into the management process. It helps address many of the objectives in the ICES strategic plan. ICES will facilitate in particular the interface between operational stock assessment developments and management needs.	This project aims to directly improve the stock assessment methods for management challenges in the ICES area. The regional case studies are mostly centred on major stocks of interest for ICES, and paths for incorporation of new methods into ICES advice have been written into the proposal.

Name of project	ICES Secretariat resources	Main task	No of partners per ICES member country	ICES relevance	Does the project contribute to strengthening ICES advice? (optional)
EEA ETC-ICM The European Topic Centre on Inland, Coastal and Marine waters (2019-2021)	Neil Holdsworth, Neil Holdsworth, Periklis Panagiotidis, Hans Mose Jensen, Seb Valanko, Colin Millar, Inigo Martinez	Data flows in support to the MSFD. Supporting the publication of marine indicators and assessment in the European Seas.	DE: 4; ES:1; FI: 1; NL: 1; NO: 1; UK: 1	Extended use of ICES data in the publication of marine indicators (Nutrients and chlorophyll in seawater, contaminants in biota, and changes in fish distribution) and assessment (Hazardous substances and eutrophication).	See 2014-2018 project of same name

3. Contracts and sub-contracts

Name of project	ICES Secretariat contact person	Main task	ICES relevance
JMP-EUNOSAT Joint Monitoring Programme of the Eutrophication of the North Sea with Satellite data (2017-2019)	Neil Holdsworth, Hjalte Parner	Contributing to OSPAR indicator development for eutrophication	Embed the assessment tool and process developed for HELCOM in the OSPAR assessment.
Impulsive Noise Register	Neil Holdsworth, Carlos Pinto	Development and Hosting of underwater noise register	ICES is developing the standards for data and technical development of the MSFD indicators in close collaboration with OSPAR, HELCOM and EU TG NOISE groups
Nansen Legacy Project (2018-2023)	Lotte Worsøe Clausen, David Miller	Contribute to user and stakeholder reference group. Increase ICES presence in Arctic networks and see where and how ICES can contribute to future endeavours in the Arctic.	Nansen Legacy will result in a scientific basis for long-term, holistic, and sustainable management of marine ecosystems and human presence in the emerging oceans of the high Arctic.
Baltic Bias (2019+)	Neil Holdsworth	Hosting HELCOM database on continuous noise	Making the data available in the ICES system; in-line with the impulsive noise register

4. Projects in pipeline (all proposals are submitted)

Call	Name of project	ICES Secretariat contact person	Main task
Towards a Baltic and North Sea research and innovation programme - LC-BG-01-2018	BG1	Simon Jennings	Provide link between proposed project and ICES given ICES role as strategic project partner.
Sustainable harvesting of marine biological resources - LC-BG03-2018	MEESO	Neil Holdsworth	Data management (Lead by Neil Holdsworth, ICES) will aim to make the data collected under this project available and accessible beyond the project partners, and to other users related to the CFP and MSFD in particular.
All Atlantic Ocean Research Alliance Flagship - LC-BG08-2018	BG8b Mission Atlantic	Wojciech Wawrzynski , Neil Holdsworth, Periklis Panagiotidis Terhi Minkkinen Carlos Pinto Anna Davies	Co-lead the Data Management Work package; Delivery of an online course; definition of learning objectives for the e-learning Contribution to engagement in the 'Atlantic Forum' (All-Atlantic CSA)
Interreg Atlantic Area	AtlantEA	Neil Holdsworth	ICES is to host an atlas of information, thus providing key resources for researchers, stakeholders and policy makers. The tool will highlight the various sectors, pressures and ecological characteristics in each of the study regions and case study areas, the risk scores associated with them, and the data that supports the linkages (both trends from data, links to data sources, and publications). ICES is to contribute to combining of findings of AQUACROSS and ODEMM projects and to delivering these via the interactive tool, providing a key resource for researchers, stakeholders and policy makers in an easily understood format. ICES will also work to embed the outputs into the ICES IEA programme and also provide input into training courses and developments.
MSFD - second cycle: implementation of the new GES decision and programmes of measures - DG ENV/MSFD 2018 call	QUIETMED2 - Joint programme for GES assessment on D11-noise in the Mediterranean Marine Region	Neil Holdsworth , Sebastian Valanko, Carlos Pinto	Knowledge share about the process of development of the OSPAR noise register, the implementation of the tool. Identification of barriers and difficulties of the contributors to the register for submitting data, reporting, etc. Contributions to a preparatory study with requirements specification of a tool to implement an impulsive noise impact indicator. Knowledge share about technical issues for the design, development and implementation of a tool to implement an impulsive noise impact indicator Review and assessment of the demo tool. Attendance to the kick-off and final meeting in Brussels and up to 4 workshops.

5. Upcoming calls

- **H2020 WP 2018-2020** (Planned opening 16 October 2018).
 - **BG-05-2019:** Multi-use of the marine space, offshore and near-shore: pilot demonstrators (IA, single-stage)
 - **BG-07-2019-2020:** The Future of Seas and Oceans Flagship Initiative (IA, single-stage)
 - **BG-08-2018-2019:** All Atlantic Ocean Research Alliance Flagship (RIA, two-stage) - BG8a/c
 - **CE-BG-06-2019:** Sustainable solutions for bio-based plastics on land and sea (IA, single-stage)
 - **DT-BG-04-2018-2019:** Sustainable European aquaculture 4.0: nutrition and breeding (IA, single stage)
 - **LC-CLA-06-2019:** Inter-relations between climate change, biodiversity and ecosystem services (RIA, two-stag

Report from the Council Strategic Initiative on Maritime Trans-Atlantic Cooperation (CSIMTC)

Council is invited to take note of the information on Trans-Atlantic Cooperation, and discuss how this could be linked to various funding initiatives.

Europe and North-America have various funding mechanisms for supporting research and innovation, such as H2020, upcoming Horizon Europe, and the National Science Foundations.

ICES integrated role as science, data & information, as well as advice provider offers a good opportunity to make suggestions for:

- Programming themes, identified in our Strategic Plan, and thus reflecting needs of Member Countries and Clients as well as linked to international initiatives
- Specific calls of relevance for ICES and the implementation of the ICES Strategic Plan

There are examples of macro-regional initiatives, including regional funding mechanisms, with participation, financial contribution and joint science calls covering all countries in a region (BONUS).

The Galway Statement on Atlantic Ocean Cooperation and Belém Statement on Atlantic Research and Innovation Cooperation could be a good starting point for establishing such macro-regional initiatives. Trilaterally developed vision documents and roadmaps, which identify research priorities have been or are in development by the various work packages – such as the Atlantic Ocean Research Alliance Coordination and Support Action project, where ICES is leading WP4 on Ecosystem Approach and Ocean Stressors, and WP7 on Aquaculture.

The Belém Statement further extends the geographic cooperation of the European Union in the Atlantic, building on the Galway Statement and referring to several of the science priorities included to the ICES Strategic Plan, such as food security (fisheries management, aquaculture and biodiversity), polar research, climate variability, and ocean technology.

ICES made contact with the consortium acting as the Coordinating and Support Action for the Belém Statement (H2020BG8- sub-topic A), to investigate the possibility of ICES taking part in the project in a manner similar to the Coordination and Support Action project for the Galway Statement. ICES was not included, and has instead been invited to take part in the Research and Innovation Action (RIA) project, BG8-B “Assessing the status of Atlantic marine ecosystems”. Beginning 2019 another large-scale RIA project on Aquaculture (BG8-C) will be of interest for ICES.

Involving ICES in the identification of programming themes and/or the specific calls of relevance, and its trans-Atlantic work would ensure:

- A linkage to policy implementation, current and future needs, thereby strengthening the link between science developments and the advisory process; as well as
- A linkage to the capacity and skills issues that must be solved for science to be ready to provide the science needed for policy implementation, and thus actively addressing this also in the programmes/projects.

In addition to these strategic activities, dialogue with the Ocean Frontier Institute (Canada) on future cooperation has continued and will be reported on during the Council meeting.

SCICOM PROGRESS REPORT 2018

ICES SCIENCE COMMITTEE

CM 2018 DEL-7.1.1

REF COUNCIL

SCICOM Progress Report 2018

An annual report to the ICES Council to describe
the scope, scale and impact of ICES science and
plans for future science delivery

FINAL DRAFT



ICES

International Council for
the Exploration of the Sea

CIEM

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l'Exploration de la Mer

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1 Summary

This annual report to the ICES Council summarises the scope, scale and impact of ICES science in 2018 and the plans of the Science Committee (SCICOM) for supporting future science delivery. The science committee is the main scientific body in ICES. SCICOM is ultimately responsible for the scope, scale and impact of ICES science and for implementing the science plan with the support of the ICES community and Secretariat. The general objectives of SCICOM are to keep the 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, workshops and conferences as well as the Annual Science Conference (ASC).

ICES science outputs and activities during 2018 included reports, books and papers from 104 expert groups; an ASC hosted by Germany and attended by 650 scientists from 34 countries; three co-sponsored symposia covering topics related to climate change, sustainable development goals and historical ecology; five training courses; publication of seven Co-operative Research Reports (CRR), one ICES Techniques in Marine Environmental Sciences (TIMES) and four Identification Leaflets. Many new scientists were welcomed into the ICES community during 2018 as they joined three additional expert groups focusing on aquaculture or the first meetings of expert groups addressing economics and social indicators respectively. Capacity to track and highlight science outputs facilitated by ICES was improved with the introduction of a new database of ICES-facilitated peer review publications and the finalisation of a plan to recognise authors on the covers of expert group reports.

Throughout the year, SCICOM focused on building closer working relationships with the Advisory Committee (ACOM) and more actively engaging with expert group chairs. Interaction with ACOM is being formalised by bringing all expert groups in ICES under the parentage of steering groups, and all steering groups will now report to ACOM and SCICOM. ACOM and SCICOM chairs have developed draft guidance on accelerating uptake of science into advice. For expert groups, ACOM and SCICOM have sought to emphasise more strongly their central role in the delivery of ICES science and to better understand and provide the support they need to work effectively. Additional support is being provided by a new forum, additions to the guidelines for ICES groups, and expanded annual chairs meeting (69 attendees in 2018) and other regular meetings and events to bring chairs together from across steering groups and committees.

A primary SCICOM task in 2018 was development of the science plan “Marine ecosystem and sustainability science for the 2020s and beyond”. The science plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The science plan will guide the conduct and delivery of science in support of the vision and mission of ICES. It will be a public document with an audience comprising the wider marine science community. The science plan identifies work-streams to advance understanding of marine ecosystems, improve assessments of the effects of human activities, improve observations of the seas and oceans and provide evidence and solutions to support conservation and management. Supporting tasks will increase the visibility and impact of the science, provide a rewarding and efficient working environment, engage new scientists, increase training and networking opportunities, and strengthen collaboration with regional and global partners.

SCICOM have also drafted an implementation plan to accompany the science plan. The specific actions in the implementation plan will be refined following discussions and decisions about resourcing. Implementation of the science plan is intended to lead to the following outcomes: marine science with a high and beneficial impact on society; engaged and productive scientists from the natural and social sciences; increased visibility of, and access to, ICES science, data and advice; stronger and more dynamic links between science and advice; and a secure position for ICES as a world-class marine science organisation.

2 Introduction

2.1 Purpose of the progress report

This annual report to the ICES Council summarises the scope, scale and impact of ICES science in 2018 and SCICOM plans for future science delivery. The primary purposes of the report are to update Council on the work of SCICOM and to provide context for the SCICOM request to Council to consider and provide feedback on strengthening linkages between the science plan and the developing strategic plan.

The report covers activity in the steering groups, expert groups, strategic initiatives and operational groups and outcomes of the Annual Science Conference (ASC) as well as progress by SCICOM in relation to the SCICOM work plan. It also summarises ICES contributions to co-sponsored conferences, training courses and publications. Plans for future science delivery are described in a draft science plan and an associated implementation plan. The report is relatively long because it also serves as a reference document for the use of SCICOM members, the Secretariat and the ICES network more widely.

2.2 Role of the Science Committee

The science committee is the main scientific body in ICES and is ultimately responsible for the scope, scale and impact of ICES science and implementing and monitoring the progress of the science plan with the support of the ICES network. Through effective planning of the work of ICES groups the science committee strives to ensure there are effective working relationships between all parties contributing to implementation of the 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 interrogatable formats and develop and publicise metrics of impact. Ensure expert group outputs acknowledge ICES contributions.
- (3) Develop and regularly update website text relating to science, SCICOM, steering groups and personnel to increase awareness, visibility and impact of our people and work
- (4) Develop and run an engaging training programme that achieves cost recovery and enables participants to develop their careers, broaden their knowledge base, widen their professional network and add value nationally
- (5) Promote and support frequent and effective communication between expert groups, steering groups and SCICOM to increase network engagement and efficiency in all activities relevant to SCICOM
- (6) Promote science activity and collaboration within and beyond the ICES network
- (7) Ensure effective communication and seamless links between science, data collection, storage and processing, and advice
- (8) Lead development of ICES viewpoints to highlight ICES capacity to advise on new and emerging issues and capitalize on the science done in ICES (large fish stocks, Arctic fish production, invasive species).

2.3 Summary review of 2018

SCICOM continues to strive to increase the scope, scale and impact of ICES science. In addition to meeting the general objectives and addressing the priorities listed in Section 2.2, our main practical task for 2018 was to complete consultation on the new science plan and to develop a draft of this plan, and the associated implementation plan, as described in Sections 3.1 and 3.2.

Outputs during 2018 included reports, books and papers from the 104 expert groups and more active and visible links between science, data and advice, as supported by joint planning activities and workshops and adoption of a proposal to bring all expert groups in ICES under the parentage of steering groups reporting both to ACOM and SCICOM.

The Aquaculture Steering Group was increasingly visible as it ended its first year, with three new expert groups established and engagement from many scientists new to the ICES community. In the social sciences, we have focused on attracting new experts with potential to contribute to future ICES products and advice. Expert groups focusing on economics and social indicators were formed and met for the first time in 2018.

The ICES/ PICES Strategic Initiative on Climate Change effects on the Marine Environment (SICCME) has led the organisation of conferences and international processes that yielded collaborations across the globe. The Strategic Initiative on the Human Dimension (SIHD) linked effectively with the expert groups on economics and social indicators as well as defining a more forward and outward facing role.

The Annual Science Conference (ASC) in Hamburg was attended by at least 650 attendees from 34 countries, and featured 18 theme sessions, 5 open sessions and three keynote presentations. Three ICES co-sponsored symposia were/ will be run in 2018 (Symposium on Climate Change and Impacts on the World's Oceans, Management tools and standards in support of Sustainable Development Goal 14, and Oceans Past VII). Five training courses have/ will be run (Statistically sound inference for commercial catch sampling programmes, Advanced stock assessment, Introduction to stock assessment, Geostatistics in R for fisheries and marine ecology applications)

ICES published seven Co-operative Research Reports (CRR), one ICES Techniques in Marine Environmental Sciences (TIMES) and four Identification Leaflets in 2018. The CRR are "Geostatistics in R for Fisheries and Marine Ecology", "ICES Report on Ocean Climate 2016", "Using underwater television surveys to assess and advise on Nephrops stocks", "The SONAR-netCDF4 convention for sonar data", "Bowtie analysis of marine legislation: A case study of the Marine Strategy Framework Directive", "Marine recoveries of tags from Atlantic salmon" and "Acoustic target classification"

A new database of ICES-facilitated peer review publications has been developed and plans are advancing to recognise authors on the covers of expert group reports and to publish these in a series with an ISSN. These and related actions are intended to increase the visibility of ICES science.

Looking to 2019, the primary focus for SCICOM will be promoting and implementing the science plan. This requires that the science priorities identified in the plan are used to guide the formation and dissolution of expert groups, the terms of reference for expert groups, the content of future ASC, and ICES role in co-sponsored conferences.

2.4 Science Committee operational structures

Seven types of groups contribute to the work of SCICOM and will contribute to the implementation of the science plan from 2019. Other temporary groups are also formed to develop content for conferences and symposia and to address other transient actions. In 2018, SCICOM provided short definitions of the roles of these groups, and these are included in this report for information. We intend to add these descriptions to the next edition of the 'Guidelines for ICES groups' to help increase understanding of the ways in which different groups can, and do, contribute to delivery of ICES science.

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 and advisory committees. Reports on their work are published annually.

Steering groups. Steering groups addresses 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 co-ordinated, conducted and reported.

There are currently five SCICOM steering groups each of which addresses a broad and enduring area of science and advice and currently 'parent' 104 EG.

The Aquaculture Steering Group is responsible for guiding and supporting five (update to seven if finalised in November) expert groups that are working on science and advisory topics contributing to the sustainable development of aquaculture.

The Human Activities, Pressures and Impacts Steering Group is responsible for guiding and supporting 23 expert groups that seek to describe the diversity of pressures affecting marine ecosystems and the impacts that follow.

The Ecosystem Processes and Dynamics Steering Group is responsible for guiding and supporting 22 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.

The Integrated Ecosystem Assessments Steering Group is responsible for guiding and supporting 18 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.

The Ecosystem Observation Steering Group is responsible for guiding and supporting 36 expert groups that are meeting immediate data demands and contributing to the running and further development of effectively co-ordinated, integrated, quality assured and cost-effective monitoring in the ICES region and beyond.

Data and Information Group. The data and information group 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 the data that is essential to their work.

Science Impact and Publication Group. The science impact and publication group 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 develops the structure and content of the ICES training programme and then guides and supports the provision of training.

Strategic Initiatives. Strategic initiatives develop and co-ordinate cross-cutting science activities that impact and interact with the science of many expert groups. They also focus on building science collaborations outside ICES member countries. Currently, there are two strategic initiatives: the ICES/PICES Strategic Initiative on Climate Change effects on Marine Ecosystems (SICCME) and the Strategic Initiative on the Human Dimension (SIHD).

[illegible]

3 Science priorities, planning and delivery

3.1 Science Plan

A significant focus of SCICOM work in 2018 was defining and signing-off the science priorities and tasks in the science plan. The science plan describes the scientific priorities and goals of ICES, and the science and other tasks to be undertaken to meet them. The science plan will be a public document with an audience comprising the marine science community in ICES countries and beyond.

As described in our 2017 report to Council the science plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The science priorities and associated topics in the science plan received final review and sign-off by the Science Committee on 5 October 2018. The text of the draft plan (Annex 2) is subject to ongoing review, with sign-off expected on the Science Committee forum after feedback from the Council meeting and finalisation of the ICES strategic plan. Subject to finalisation of the strategic plan SCICOM intend to implement the science plan from 1 January 2019.

The science plan is intended to lead to the following outcomes: marine science with a high and beneficial impact on society; engaged and productive scientists from the natural and social sciences; increased visibility of, and access to, ICES science, data and advice; stronger and more dynamic links between science and advice; and a secure position for ICES as a world-class marine science organisation.

The science plan commits the ICES community to work in seven areas of marine science, each with related objectives and purpose.

1. Understanding ecosystems

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

2. Impacts of human activities

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

3. Observation and exploration

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

4. Emerging techniques and technologies

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

5. Seafood production

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

6. Conservation and management science

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

7. Sea and society

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

SCICOM would also seek to add some flagship activities or action areas to the Science Plan once priorities for these have been further discussed in the ICES network. The previous SCICOM work on these topics as well as proposals from all other parts of the ICES network can provide inputs to the discussions.

SCICOM consider that such flagship activities or action areas will be essential to bring colour and focus to our science plan over and above the general swathe of science we will address. Any activity selected should have the desirable characteristics identified in the science prioritisation process e.g. a collective activity that creates a shared sense of purpose, benefits all member countries, achieves a step change in the profile of ICES, strengthens links and opportunities to build partnerships, provides valuable outcomes and legacy, mobilises people and resources, and leads to outcomes more impactful than the sum of the parts.

3.2 Science Plan implementation and science delivery

SCICOM have drafted an implementation plan that describes how the new science plan will be implemented and how progress with implementation will be monitored and reported. The implementation plan will be finalised via the SCICOM forum. The implementation plan is intended as an internal ICES working document and would not be published in the same format as the public-facing science plan. The intended audience for this implementation plan are the people and groups in ICES who are involved in implementing, monitoring and reporting on implementation of the science plan, principally members of SCICOM and associated groups and the ICES Secretariat. The implementation plan defines objectives and actions to:

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

Specific actions supporting these objectives are tabulated in the plan (Annex 3) and responsibility for these actions will be widely distributed throughout the ICES community. For actions involving the ICES Secretariat, the actions in this table will be transposed to the joint work plan, subject to the availability of resources needed to support them. Progress reports to SCICOM and ICES Council will summarise progress with implementation using metrics described in the implementation plan

3.3 Linking science and advice

3.3.1 Steering group structure

SCICOM and ACOM have continued to forge closer working relationships between science and advice in 2018. These committees have now signed-off a proposal to place those expert groups previously reporting to ACOM within new steering group(s). They have also run a workshop to define ways to

increase the uptake of science into advice and brought together expert group chairs focused on science and advice at the same meetings.

In relation to the decision to establish a new steering group(s), all expert groups will now operate under the same structure, by allocating the existing ACOM-affiliated expert groups to the new steering group(s) and bringing all current and new steering groups under joint SCICOM and ACOM affiliation. The ACOM-SCICOM subgroup that put forward this plan and provided justification for the new steering group(s) is now working on a proposal for the allocation of specific expert groups to the new and existing steering groups. Approval for their proposal will be sought from SCICOM and ACOM. The allocation of groups to the Ecosystem Observation Steering Group, which currently oversees 36 expert groups, will be considered as part of this review.

The ACOM-SCICOM subgroup also proposed revision of the generic terms of reference (ToR) for steering groups, to ensure that they reflected the requirement for all steering groups to report to both ACOM and SCICOM and the potential for all expert groups to contribute to advice. These general ToR describe: the role of the steering group in supporting and nurturing the associated expert groups; facilitating communication to and from the expert groups and with other groups in ICES and externally; identifying and communicating science priorities; encouraging quality control and reviewing; and evaluating, handling and documenting expert group contributions to ICES science objectives and advisory needs (as primarily articulated in the strategic plan and science plan).

Generic Terms of Reference for all steering groups (SG) from 2019:

- a) Engage with and work with Chairs of expert groups (EG), SCICOM and ACOM to enable and support EG contributions to both the science objectives and advisory needs of ICES.
- 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)
- c) Provide feedback to SCICOM and ACOM on research priorities (including Strategic Initiatives) and implementation of ICES strategy.
- 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.
- 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
- 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
- g) Help EG Chairs to adopt working practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms
- 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.
- i) Encourage EGs to come forward with proposals and initiatives for longer-term science development in support of ICES advice.
- j) Help EG Chairs to formulate and prepare their draft ToR and Resolutions for research-oriented work.
- 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.

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) Represent the SG in SCICOM and ACOM meetings, SCICOM/ACOM leadership meetings, WGCHAIRS and at the ASC.

Justifications for revised ToR:

ToR a, b and c reflect the need to ensure the work of EG meets the science objectives and advisory needs of ICES and that EG receive adequate support and guidance when developing work plans.

ToR d, e and f reflect the need to support the expert groups in accessing the expertise they need to conduct their work and ensuring that the EG system operates as rationally and efficiently as possible to meet ICES objectives.

ToR g recognises that EG should operate as scientific groups, which pursue and apply knowledge and understanding of the natural and social world following a systematic methodology based on evidence and with appropriate control of the conduct of members and quality of process, including data, methods and interpretations.

ToR h and i reflect the need develop, track and report on the science conducted in EG, to describe progress in relation to ICES science objectives and advisory needs, to highlight impactful and influential outputs and to ensure science priorities identified and generated in the network are captured and shared.

ToR j recognises the importance of helping EG chairs to develop scientific ToR that follow the approach outlined in the guidance for ICES groups and meet the requirements of the ICES Science Plan.

ToR k, l and m reflect the importance that all SG and EG should attach to the handling of advisory ToR and special requests.

ToR n recognises that active communication between SG Chairs, EG Chairs and other parts of the ICES network is essential to ensure positive experiences for people in the ICES network, successful operation of the EG and a responsive and timely science programme. The ToRs also recognise the importance of SG visibility and engagement to the success of the SG and ICES.

3.3.2 Translation of science into advice

The ACOM and SCICOM chairs arranged and ran a workshop (1) to identify factors that influence the rate and extent of uptake of science conducted in projects and expert groups into ICES advice and to evaluate their relative influence, and (2) to produce a short guidance document for expert groups and our wider network of scientists and advisers on the working practices and other considerations that accelerate uptake.

Twenty-seven factors that had potential to influence uptake and were applicable to projects and/ or expert groups were identified and were loosely clustered into groups relating to (1) the behaviours, diversity and working practices of people involved in the project or expert group, (2) the analytical approaches applied by scientists, and their accessibility, repeatability, quality assurance and consistency with expectations in the advisory systems, (3) the fitness for purpose of science in relation to advisory needs or priorities, as influenced by the methods used for commissioning projects or the development of terms of reference and (4) the legitimacy of the science, as influenced by the extent of engagement between scientists and advisers, the strength of scientific consensus and trust in the impartiality and credibility of the scientists working in projects and expert groups.

The uptake of science into advice from 27 projects and expert groups was evaluated in relation to these factors.

Results from the evaluation demonstrated that there were substantial differences in science uptake into the advisory system among projects and expert groups. Consequently, for those projects and expert groups seeking to see the science they are developing used in the ICES advisory system there are many actions they can take to advance uptake. This is especially true for expert groups where there were very strong differences in the behaviours, working practices and networks of those expert groups that conducted science that was ultimately used to support advice and those that were not. The assessment of the relative impact of different factors on uptake was used to inform the drafting of two guidance documents (one for projects and one for expert groups), because the factors having the greatest influence on uptake differed between expert groups and projects. For projects, the most important factors influencing uptake were the effectiveness of stakeholder engagement, the extent to which the diversity of people engaged in translation of science to advice span science, advice, advice recipients and knowledge brokers, and the salience of the science in relation to advisory needs and priorities. For expert groups the most important factors were the extent to which advisory community is willing to accept and assimilate science subjects and evidence base; the effectiveness, resourcing and relevance of stakeholder engagement in relation to product or advisory needs; and the clarity of, support for and durability of follow-up processes after terms of reference are completed.

The workshop also considered it likely, although it could not be tested directly, that the full involvement of people who understand advisory needs and priorities is essential during call development and review of project proposals if project science is expected to lead to advice. One guidance document is intended for project leaders and participants who would want to see the science they are developing used in the ICES advisory system. This will be made available to project commissioners or project leaders who contact ICES to ask how they can contribute to the provision of advice. The other guidance document is intended for expert group chairs and members who would like to see the science they are developing used in the ICES advisory system, or consider that the science they have developed is sufficiently mature to be used to support advice. After review by ACOM and SCICOM, it is intended that these guidance documents will be added to the “Guidelines for ICES groups”.

It was also recommended by the workshop that the role descriptions for ACOM and SCICOM members in the “Guidelines for ICES groups” should be modified to include the role: “To identify science relevant for ICES advisory services and to contribute to the uptake of the science into advice by planning, supporting and participating in processes to facilitate uptake”. ACOM and SCICOM members’ approval for adding this role will be sought at the 2019 meetings.

3.4 Guidelines for ICES groups

The original “Guidelines for ICES Expert Group Chairs” have been substantially revised in 2018 and retitled as “Guidelines for ICES Groups”. The latest iteration of this document, to be published towards the end of 2018, now describes the working practices and membership of all groups contributing to the ICES community: expert groups, steering groups, operational groups (data and information group, science impact and publication group, training group), strategic initiatives, advisory committee, science committee and ICES secretariat, as well as the roles of Bureau and Council. The intention is for this document to contain all the essential information needed by those chairing and participating in these groups. We have increasingly solicited feedback from the community on content, through steering groups, meetings of expert group chairs and ACOM and SCICOM. Recent additions to the guidelines include job descriptions for ACOM and SCICOM members. We will usually release two updates of the guidelines every year. Following from decisions taken at the 2018 Council meeting we also intend to update the code of conduct and conflict of interest policy for participants in ICES work, which will clarify occasional but important issues raised by expert group chairs about the suitability of potential

attendees or the behaviour of people who already attend expert groups. In 2018, the Secretariat also worked with ACOM and SCICOM to produce an introductory presentation, based on the guidelines, that expert group and other chairs can use to induct new members and explain ICES work. This presentation was introduced and promoted, along with changes to the guidelines, at the 2018 ASC.

3.5 Emerging work areas

The main emerging areas in 2018 are aquaculture and social science. The Aquaculture steering group is increasingly well established and now parents six expert groups with diverse leadership and membership, including many scientists new to the ICES community (note that five of these expert groups are currently visible on ICES systems and a seventh is in the late planning stages: offshore aquaculture). In the social sciences, we have focused on attracting new experts with potential to contribute to future ICES products and advice. Expert groups focusing on economics and social indicators were formed and met for the first time in 2018.

4 Steering Groups

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

4.1.1 Introduction

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

Topics covered include:

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

4.1.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	Engaged in person, by phone and/or over email with all existing and prospective chairs. Two new EG starting (WGEIA and WGSPA), a third being considered by a prospective chair (WGECCA) and a fourth (Offshore) being developed as a resolution. Exploring work products as prototypes for advice.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	Worked with new and existing EG Chairs to ensure ToR are feasible and their work is supported. The major focus has been on the new groups.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	Developing opportunities for groups to work together and to articulate a vision for ASG. We are exploring an ecosystem approach to marine aquaculture to provide a common vision. This topic was the focus of a session at ASC 2018.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	Ongoing as EG meetings occur.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	Working to fill out EG to implement ICES strategy.
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	Working on cross EG ToR and workshops. Added two new groups this fall with two more coming to provide science needs and develop capacity.
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	Mostly expanding at this time. No overlaps. However, there are some opportunities for shared ToR between groups. For example, work on the use of eDNA to model disease transmission could lead to a shared ToR for WGAGFA and WGPDMO.

Terms of Reference	Progress
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	Ongoing.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	We have had some joint EG chair calls and meetings. EG chairs were co-conveners of the ASC 2018 session on Ecosystem Approach to Aquaculture and have proposed a session at ASC 2019, and at least one joint workshop. Members from WGSEDA are also actively interacting with the new WGSOCIAL and WGECON to help ensure aquaculture is a part of these group's discussions. Considering an ASG webinar series to improve communication among EG.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	Attended meeting at ASC 2017 and in Spring 2018. Unexpectedly had to miss meeting at ASC 2018.
ToR k) Establish a core group of ASG Expert Group Chairs who, together with the ASG Chair, will share responsibility for implementing the work of ASG	Working with existing and new chairs to develop a coordinated SG with a common vision.
ToR l) Generate a position paper on the contribution of ASG to ICES science, data and advice	Formulating outline. Structure and text will follow once a common vision is achieved.

4.1.3 List of EGs

A full list of expert groups under this Steering Group is provided in Annex 1.

4.1.4 Science highlights

- At its first meeting in Oban, Scotland WGSEDA tested a new method to capture social dimensions of aquaculture with multi-level social indicators on a case study basis, drawing on expert knowledge. The method was evaluated to determine if it helps operationalize the social dimension of aquaculture, while acknowledging that the social interactions with marine resource users in each region are influenced by the local context. The latter includes local knowledge of traditional use of marine resources and oceans that needs to be transferred if sustainable aquaculture development under various Blue Growth strategies is to be fostered. These various aspects of operationalization of social indicators require further investigation and will be one central point of discussion during the next annual meeting of WGSEDA in 2019. WGSEDA has two joint papers in draft addressing 1) the availability and usefulness of economic data on effects of aquaculture on public policy, and 2) methods to capture the multi-level social effects of aquaculture.
- At its first meeting in Brest, France WGAGFA discussed issues related to 1) the genetic risks posed by escaped farmed organisms and the potential benefits of genomic selection, 2) use of genetic approaches to evaluate discards (full landings), and 3) the potential use of eDNA for understanding and managing marine issues. Synthesis papers and non-technical reviews are being prepared to assist managers wanting to explore these topics. A workshop on the value of genetic and genomic tools for identifying species in mixed landings, fish products and by-products (SWSGenoTools) has been proposed. WGAGFA is also in discussions with WGPDMO on a workshop or joint ToR addressing the use of eDNA as a pathogen tracer in disease transfer models.
- At its third meeting in Riga, Latvia the WGPDMO continued its annual surveillance and report of disease trends in wild and cultured fish and shellfish in the ICES region. This is the only ongoing report of its kind. The group produced a report on new disease trends in the ICES area based on national reports from 15 member countries. The considerable number of new and

emerging disease trends in wild and farmed marine organisms, all relevant to important capture and/or culture industries, highlight the urgent need to continue disease monitoring of wild fish populations in the ICES region, and to review the current approaches to ensure biosecurity. WGPDMO has finished its three-year term and has submitted a resolution to continue for a new term. In addition to the joint effort with WGAGFA on eDNA, they propose a workshop on Emerging Mollusc Pathogens (WKEMP), using the OsHV-1 microvariant herpesvirus as a model for improving international management of aquatic disease in general.

4.1.5 Communication with EG

While the entire SG with new chairs is yet to meet face to face, portions of the SG have met at the ASM 2017, World Aquaculture 2018, and ASM 2018. In addition, we have had several phone calls, and email chains. As the new groups come on line, I intend to start a bimonthly webinar for EG chairs so all ICES aquaculture scientists can get to know the workings of the various groups.

4.1.6 Summary of new EG proposals and EG closing

The Working Group on Environmental Interactions of Aquaculture (WGEIA) will meet in December 2018 and seeks to prioritize areas where aquaculture management can lead to better environmental performance of the industry. Better understanding of the interactions between aquaculture and the environment, as well as the resulting effects, is needed to develop the science-based tools for sustainable development and management of this industry. The working group will develop risk/benefit assessment methods and models to support informed sustainable industry management. Since aquaculture has many interactions with the environment, improved understanding, management and mitigation of risk, and optimization of ecosystem benefits is essential both for the industry and society.

The Working Group on Scenario Planning on Aquaculture (WGSPA) will meet in November 2018 to develop and apply methods of analysis to understand potential environmental, economic, and social trade-offs that can be used to aid planning for aquaculture. The work of WGSPA will help managers, industry, and society understand the implications of different possible pathways of aquaculture development in specific locations of the ICES region. It will also enable descriptions of production potential to be provided. To meet its goals, the group will bring together experts in marine spatial analysis, economics, environmental carrying capacity and growth models, social systems, and food security.

A Working Group on Ecological Carrying Capacity in Aquaculture (WGECCA) is being established under Jeff Fisher and will work on ecological carrying capacity including lower trophic aquaculture, use of aquaculture to enhance ecosystem services and integrated multi-tropic aquaculture.

A Workgroup on Offshore Aquaculture is being formulated by Dr. Bela Buck and the ASG. We have circulated a draft resolution for this group.

WGPDMO has finished its three-year term and has submitted a resolution to continue for a new term.

4.1.7 Forward look (including actions for SG and SCICOM/ ACOM)

We will continue to structure the ASG to support an Ecosystem Approach to Aquaculture Management. This requires interaction among EG. This process was supported at ASC 2018 and will be continued with the development of an ASG webinar series to foster cross-group understanding and to develop a common vision.

With two EG starting, one EG renewing and one EG forming, this year has been active for the ASG. In addition, there were sessions at ASC 2018, three possible workshops in the pipeline and a proposed session for ASC 2019. As the science expertise builds within ICES it will be increasingly important to make a clear linkage to ACOM and be able to develop, demonstrate and transfer useful tools and advice products to ICES member countries and others.

There has also been recent interest by PICES in developing an aquaculture focused working group. The ASG chair will continue the dialogue with PICES.

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

4.2.1 Introduction

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

Topics covered include:

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

4.2.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	On track- with regular correspondence with EG chairs to discuss and support production of deliverables (e.g. deadlines and production of annual reports, Self-evaluations documents, setting new ToRs, several theme sessions proposals developed) and agreeing work priorities.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	On track- with regular e-mail discussions with EG chairs on ToR and deliverables associated with ICES priorities. Regular feedback and help with formulation of resolutions.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	Ongoing- regular correspondence with EG chairs to alert and inform on recent products and highlights. Communication with EG chairs to inform and encourage the use of ICES Communication department, Tweeter and press releases opportunities for wider publicity of scientific outputs. Several EG chairs have been proactive in sending highlights and promoting their scientific outputs.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	Ongoing- regular feedback provided on annual reports, ToR and self-evaluation documents to improve visibility, influence, realistic delivery and products.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	Attended the Chairs meeting in January, SCICOM meeting in March. Several comments to ICES documents and WebEx participation on several ICES initiatives as requested.
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	Ongoing- there are clearly more opportunities for integration between EG through ongoing initiatives (e.g. ecosystems overviews, advisory requests), joint open sessions, viewpoints and dedicated, helping to generate new viewpoints publications (across common topics of interest)

Terms of Reference	Progress
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	Ongoing- new ideas to integrate with Aquaculture SG, still a discussion needs to be organised. New ideas for joint sessions with new HAPISG chair.
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	As requested by EG- several queries have been dealt with (e.g. contribution to external meetings, proposal participation and development). These activities are often done by requests and during formulation of documents.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	Several activities planned for 2018 and included in the budget of the EPD SG chair to support EG and represent ICES across several activities. Mostly these activities occur during dedicated requests.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	Completed with representation at WGCHAIRS meeting in January, SCICOM meetings in March and September. Also representing ICES at the PICES Annual meeting in Japan.
ToR k) Establish a core group of EPDSG Expert Group Chairs who, together with the EPDSG Chair, will share responsibility for implementing the work of EPDSG	On track- there is a core of 4-5 EG chairs that are always supportive, active and engage on dedicated requests, correspondence and feedback.
ToR l) Generate a position paper on the contribution of EPD to ICES science, data and advice	Task not started. Need to discuss with HAPISG and see if several points from the joint open session at the 2018 ASC could be used as a starting point.

4.2.3 List of EGs

A full list of expert groups under this Steering Group is provided in Annex 1.

4.2.4 Science highlights

Some examples of highlights are summarised (e.g. mostly peer reviewed publications and reports and seeking collaborations for scientific networking). A summary of key outputs is provided below:

WGEVO:

- Baulier, L., Morgan, M. J., Lilly, G. R., Dieckmann, U., and Heino, M. 2017. Reproductive investment in Atlantic cod off Newfoundland: contrasting trends between males and females. *FACETS*, 2: 660-681.
- Díaz Pauli, B., Kolding, J., Jeyakanth, G., and Heino, M. 2017. Effects of ambient oxygen and size-selective mortality on maturation and growth in guppies. *Conservation Physiology*, 5: cox010.

WGBIODIV:

- Rambo, H., Stelzenmueller, V., Greenstreet, S.P.R., Moellmann, C. 2017. Mapping fish community biodiversity for European marine policy requirements. *ICES Journal of Marine Sciences*, 74: 2223–2238.

WGPME:

- Developed a joint funding proposal to the BIODIVERSA call on scenarios for Arctic ecosystem services. This proposal aims to bring together players in the Arctic working with or holding plankton data combining different technologies e.g. molecular to provide pan-arctic inventory of Arctic plankton diversity.
- A Marie Curie ITN proposal for testing different methodologies in the context of their possible deployment in routine marine monitoring activities. This proposal brought together

several WGPME partners and external collaborators. The proposal included a course at ICES headquarters.

- Stern *et al.* (under revision) Molecular analyses in protist long-term observation programs-current status and future perspectives. Submitted to Journal of Plankton Research.
- Kraberg *et al.* (under revision) First records of a potentially new autotrophic species in the North Sea: The importance of image-referenced data, Submitted to Marine Biodiversity record

WGDAM:

- Completed their ToRs and producing a CRR (currently in progress).

WGOH:

- Currently working on IROC report and expected to be ready for ICES ASC.

4.2.5 Communication with EG

The EG under EPD have been actively working towards meeting their ToR. There are no major issues relating to the work identified and delivered by the EG. Some aspects to consider are associated with the numbers of attendees, although this concern was only flagged by some EG. There have been some delays with EG submitting their annual reports and self-evaluations. Some EG have been lacking active communication with their members, so the EPDSG chair been active in sending reminders to ensure the information is cascaded in a timely way.

Two EGs chairs developed and submitted theme sessions to collaborate across EGs for the 2019 ASC. These are:

- **Harmful algal blooms and jellyfish: Impacts on ecosystems and ecosystem services-** Eileen Bresnan- WGHABD, Sophie Pitois - WGZE, Mike Rust – Aquaculture theme lead, Bengt Karlson – WGHABD
- **Drivers of sustainability in fisheries for non-quota and data-poor species: environmental change, market forces and fishery management**” Graham Pierce (WGCEPH- Spain), Jean-Paul Robin (WGCEPH- France), Anne Marie Power (WGCEPH- Ireland).

4.2.6 Forward look (including actions for SG and SCICOM/ ACOM)

There are several activities planned to support EG under EPD and for the SG Chair to represent ICES. These activities were submitted for approval for 2018. These are:

- Joint Open Session for the 2018 ASC was submitted with EPD and HAPISG chair entitled: “*Methodological advances to evaluate ecosystem impacts of human activities*”. This was completed successfully.
- Further collaborative discussion to explore potential integration opportunities with Aquaculture SG Chair and EPD EG (still to be organised with Mike Rust).
- WGPME is revising a Marie Curie ITN proposal. One of the activities is to organize a course at ICES Headquarters in Copenhagen. This will provide the opportunity to disseminate science across ICES EG.
- The EPDSG chair will be supporting an International Symposium on Ocean Acidification on 28 October 2018 in Tokyo.
- The EDP Chair will also co-chair the topic session: Ocean acidification and deoxygenation and their impact on ocean ecosystems: Synthesis and next steps (25-4th November, Yokohama, Japan) at the PICES Annual Meeting.
- A request from NASCO to consider an ICES / NASCO Data Workshop to explore how best to integrate Atlantic salmon marine survival and population data with relevant ICES

marine databases. The relevant EG will be WGDIAD. The EPD chair will help to scope the resolution.

- A request to the BEWG to peer review of the OSPAR Case Report for the addition of *Haploops* communities to the OSPAR List of Threatened and/or Declining Species and Habitats. The EPD chair will help compiling and checking the advice.

4.3 Human Activities, Pressures and Impacts SG (Henn Ojaveer, term started in January 2015)

4.3.1 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

4.3.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	Work carried out on routine basis mostly by electronic means. Physical attending WGCHAIRS, WGITMO and WGHIST meetings.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	The activity includes helping to prepare draft resolutions of the following working groups ending their MA period in 2018 (WGSFD, WGBMBRED, WGBOSV, WGVHES, WGBEC and MCWG) and modifying the already approved ToR for WGITMO.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	An e-mail was distributed among all EG chairs to submit candidate science highlights. Unfortunately, the response rate was very low. On cumulative effects, there are recent publications by ICES scientists. A draft resolution for a Workshop on Spatial and Temporal Distribution of Pressures (WKSTDP), which incorporates elements of cumulative effects analysis was prepared and submitted.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	This ToR is achieved through communication with EG chairs during finalisation of EG resolutions with an aim to secure manuscripts submitted to peer-reviewed scientific journals as an output of as many ToR as possible.

Terms of Reference	Progress
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	Discussions on research priorities were held at the SCICOM mid-term meeting; and linked to providing feedback to the new ICES Science Plan.
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	<p>Cumulative effects of human activities has recently received increasing attention, essentially in the ICES community. The proposed workshop (WKSTDP) is hopefully a strong move towards motivating further efforts in ICES.</p> <p>The workshop on Integrating historical data into modern stock assessment (WKIHSD) was postponed for one year (2019) due to a lack of nominations. Making better use of historical data to define historical baselines has been identified as a priority by WGHIST, but also by SCICOM. Further coordination and proactive efforts are required to get WKIHSD organised next year.</p>
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	<p>A Workshop on Spatial and Temporal Distribution of Pressures (WKSTDP), chaired by Vanessa Stelzenmuller, Germany, and Roland Cormier, Canada.</p> <p>Dissolving of WGMABS has resulted in a situation that there is no expert group in ICES dealing with impacts and risks of shipping. A core group of interested scientists was formed and initial ideas for the objectives and tasks collected. The draft resolution will be hopefully ready in 2019.</p> <p>Discussions on how to solve the situation of the (slight) overlap of ToR of the recently created WGML with MCWG were started with respective EG leads to try to identify an appropriate solution.</p>
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	The mechanism still needs to be developed, perhaps as a co-ordinated effort of all SG.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	<p>The variety of collaborations include, for instance: WGMRED-WGMBRED, MCWG-WGMS-WGBEC-WGML, WGITMO-WGHAB, WGBOSV-WGITMO, SIMWG-NWWG), WGMHM-BEWG and WGDEC, WGMRE-WGMPCZM, WGSFD-WGDEC, WGECON-SIHD, WGBEC-WGEEL, and WGSAM with multiple assessment and modelling EGs.</p> <p>Under consideration cooperation between WGHIST-WGFTFB.</p>
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	SG representation in all SCICOM and SCICOM/ACOM leadership meetings.

4.3.3 List of EGs

A full list of expert groups under this Steering Group is provided in Annex 1.

4.3.4 Science highlights

- Archambault *et al.* 2018. Using a spatially structured life cycle model to assess the influence of multiple stressors on an exploited coastal-nursery-dependent population. *Estuarine, Coastal and Shelf Science*, 201: 95–104 (WGVHES).
- Bennema, F. 2018. Long-term occurrence of Atlantic bluefin tuna *Thunnus thynnus* in the North Sea: contributions of non-fishery data to population studies. *Fisheries Research*, 199: 177–185 (WGHIST).
- Cormier *et al.* 2018. The science-policy interface of risk-based freshwater and marine management systems: From concepts to practical tools. *Journal of Environmental Management*, 226: 340–346 (WGMPCZM).
- Cormier *et al.* 2019. Putting on a bow-tie to sort out who does what and why in the complex arena of marine policy and management. *Science of the Total Environment*, 648: 293–305 (WGMPCZM).
- Gee, K. *et al.* 2017. Identifying culturally significant areas for marine spatial planning. *Ocean & Coastal Management*, 136: 139–147 (WGMPCZM).
- Klein, E. *et al.* 2016. A complex past: historical and contemporary fisheries demonstrate nonlinear dynamics and a loss of determinism. *Marine Ecology Progress Series*, 557: 237–246 (WGHIST).
- Krone R. *et al.* 2017. Mobile demersal megafauna at common offshore wind turbine foundations in the German Bight (North Sea) two years after deployment - increased production rate of *Cancer pagurus*. *Marine Environmental Research*, 123: 53-61 (WGMBRED).
- Ojaveer *et al.* 2018. Historical baselines in marine bioinvasions: Implications for policy and management. *PLoS ONE* 13(8): e0202383 (WGITMO).
- Puckett, B.J. and Eggleston, D.B. 2016. Metapopulation dynamics guide marine reserve design: importance of connectivity, demographics, and stock enhancement. *Ecosphere* 7(6):e01322 (WGVHES).
- Willstead *et al.* 2017. Assessing the cumulative environmental effects of marine renewable energy developments: Establishing common ground. *Science of the Total Environment* 577: 19–32 (WGMBRED).

4.3.5 Communication with EG

Communication with EG chairs over e-mail, phone and Skype proven fully sufficient and efficient. As most EG chairs are extremely time-limited, the content of most e-mail communications initiated by the HAPISG chair has been either i) encouragement-type for timely submission of reports/draft resolutions or ii) provide input for HAPISG reporting in terms of science highlights and future planning.

4.3.6 Forward look (including actions for SG and SCICOM/ ACOM)

1. There seems to be sufficiently wide interest and willingness to start coordinated work on cumulative impacts of human activities. The momentum should be utilised and the field strongly incorporated into ICES science (please see report of the ICES ASC Open Session on 'Methodological advances to evaluate ecosystem effects of human activities')
2. Contribution to the following advice requests from OSPAR: Peer review of the OSPAR Case Report for the addition of Haploids communities to the OSPAR List of Threatened and/or Declining Species and Habitats
3. Advice on the current state and knowledge of studies into the deployment and environmental impacts of wet renewable technologies and marine energy storage systems.

4. Revising the viewpoint on 'Evaluating and mitigating introduction of marine non-native species via vessel fouling' according to reviewer's comments and facilitating drafting the advice.
5. Continue planning WKIHSD with taking proactive measures to identify interested stock assessment experts to participate.
6. Continue planning to establish the shipping impacts EG and draft ToR for the group.
7. Proposing topics for new candidate viewpoints.
8. Identifying opportunities to further contribute for ICES Ecosystem and fisheries overviews (essentially considering historical perspective).

4.4 Integrated Ecosystem Assessments SG (Mette Skern-Mauritzen, term started January 2017)

4.4.1 Introduction

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, northwest Atlantic and Norwegian seas
- Comparative analyses of marine ecosystems
- Ecosystem modelling
- Methods and application of ecosystem-based management and risk assessment
- Linking ecological, economic and social models and analyses to understand interactions and trade-offs between management objectives
- Defining data needs to support integrated ecosystem assessment
- Development of integrated advice to support ecosystem-based management

4.4.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	The IEASG chair has engaged in defining EG ToR, participated in EG meetings, discussed EG output and reports with EG chairs and ICES Secretariat. Also, the chair has organized 2 IEASG meetings (during WGCHAIRS and ASC), and participated in EG meetings (WKEAMA, WGSOCIAL, WGIBAR, WKECO-FRAME).
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	The IEASG chair has engaged in the drafting of ToR for several EG to be approved in 2018
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	The IEASG chair has communicated with EG chairs regarding science highlights, and discussed these with both EG chairs, ICES Secretariat, and presented and discussed some of these on international meetings, including the PAME/AMAP/CAFF/SDWG/ICES WKEAMA on Ecosystem Approach Guidelines and Integrated Ecosystem Assessment, and The 4th international symposium on the effects of climate change on world oceans (ECCWO).

Terms of Reference	Progress
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	The IEASG meetings foster discussions across EG on how the work in one EG can support challenges in others. The interest in collaboration between EG is high.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	The IEASG chair has participated in WKECOFRAME on development of ecosystem advice in ICES, and lead two group discussions during WGCHAIRS on next generation Ecosystem Overviews. Future priorities are outlined below.
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	Within the IEASG, and with the support from SIHD and the newly established WGSOCIAL and WGECON, there is no major gaps in skills to address the IEASG objectives. However, it takes time to bridge disciplines and establish the required collaboration among EG. Stronger collaboration with EOSG and HAPISG is discussed below.
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	There is limited overlap between the EG. WKs are organized for topics of interest across groups; e.g. IEA methods, ecosystem modelling for supporting IEAs. We are also planning a WK bringing together chairs of IEA EG, WGSOCIAL and WGECON to help bridge disciplines.
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	The IEASG chair engaged in the planning of WKINTRA on IEA methods, to ensure consistent and proper use of these methods across the IEAs, and also to support the proposed EG on ecosystem modelling for IEAs and ecosystem reference points (see details below).
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	This ToR is addressed more or less continuously in discussions with EG chairs, and specifically during IEASG meetings. EG have also had back-to-back meetings to focus on shared interests and challenges. Several IEA EG and the IEASG chair are involved in an EU proposal on a whole-Atlantic IEA.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	Unfortunately, the IEASG chair could not participate in the 2018 SCICOM and leadership meeting in spring, but will join these meetings during the 2018 ASC
ToR k) Map the EGs and their ToR against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritized	IEASG EG are targeting major Action areas, such as Arctic research, Ecosystem overviews (EO), IEAs and MSFD, and collaborate with SIHD to bring in the human dimension. These activities also include progressing on the Baltic EO, and on a Viewpoint on future Arctic fisheries. There is less focus on data needs and feedback to ecosystem monitoring, and further collaboration with ecosystem modelling EGs is required for inclusion of forward projections with testing of management strategies into the IEA framework.
ToR l) Promote the development of the Regional Ecosystem Descriptions in standardized formats along the lines proposed by WKECOVER, and WKDECOVER. Propose additions and improvements to those guidelines in collaboration with constituent EG	The IEASG chair lead two group discussions during WGCHAIRS on next generation Ecosystem Overviews. Also, the IEASG chair has been involved in identifying and motivating relevant persons in the IEA network to assist in the development of the Ecosystem Overviews.

Terms of Reference	Progress
ToR m) Promote the development of outline Integrated Ecosystem Assessments with the IEA EG. It is recognized that a variety of approaches to IEA exist, and different approaches will be appropriate to the different IEA EG based on skill sets and local conditions. IEASG will promote innovative approaches including using partial component based analyses, and use of combination quantitative and expert judgement approaches	<p>A workshop following the ASC 2018 on IEA methods, WKINTRA, will present and discuss approaches relevant for the IEA groups, and assist the IEA groups in both selecting the appropriate methods as well as securing the quality of IEA analyses and conclusions.</p> <p>More IEASG groups are focusing on scoping and identifying management objectives, trade-offs among sectors and cumulative impacts, as well as indicators reflecting system vulnerability and resilience. Qualitative and quantitative approaches are being developed and implemented. A workshop combining WGSOCIAL, WGECON and IEASG EG will be proposed for early 2019 to further support the inclusion of Human Dimension. Finally, several IEASG groups are in the process of including multispecies and ecosystem modelling in the IEAs, to e.g. test indicators, address climate change scenarios and impact on ecosystem vulnerability and resilience. The IEASG chair strongly support these developments.</p>
ToR n) Maintain a watching brief over initiatives in IEA in the wider community beyond ICES. This should include new approaches or methods for IEA, and broadening of the IEA concept to potentially include economic and social drivers and impacts	<p>The IEASG chair participated in the above-mentioned ICES/PICES/PAME WKEAMA workshop on developing guidelines for EA and IEA of the Arctic, based on experiences on IEAs from ICES regions and other regions. Also, ICES IEA work was presented and discussed at the ECCWO. We recruited Marcos Llope from the ICES IEA network to join the World Ocean Assessment, to bring ICES perspectives into this assessment. The IEASG chair is a lead author on the coming IPCC assessment, on a chapter on Ecosystem services, and will bring ICES perspectives into this process, as well as IPCC perspectives back to the ICES IEA EGs.</p>
ToR o) Promote the development within EGs of standards and guidelines for good practice and Quality Assurance in the collation and use of data. This should extend to the maintenance of archived data used in the IEAs, and documentation of all the steps taken to arrive at a conclusion for a given IEA, and the possible involvement of the ICES Data centre	<p>There is variable use of data from the ICES Data centre among the IEA groups, and this is a topic needs to be followed up. It is a challenge for several IEA groups that data are stored nationally and not in the ICES data base.</p>

4.4.1 List of EGs

A full list of expert groups under this Steering Group is provided in Annex 1.

4.4.2 Science highlights

- Bossier *et al.* (2018): A new modelling framework for the Baltic is implemented, with a spatially-explicit end-to-end Atlantis ecosystem model linked with the HBM-ERGOM high-resolution physical-chemical-biological-and hydrodynamic model and the FISHRENT model of fisheries economics. By simulating scenarios of nutrient load reductions, oxygen levels and testing sensitivity to different fishing pressures, the authors demonstrated that the model framework is useful for evaluating the impacts of these pressures on different trophic levels, fish stocks, and fisheries. The Baltic Atlantis model framework thus forms an initial basis for

- strategic management evaluation suited for conducting medium to long term ecosystem assessments in relation to anthropogenic pressures such as eutrophication, climate change and fishing pressure, as well as changed biological interactions between functional groups.
- Bossier, S. *et al.* (2018). The Baltic Sea Atlantis: An integrated End-To-End Modeling Framework for Testing Ecosystem-Wide Effects of Human-Induced pressures. *PLOS ONE* 13(7):1-39.
 - Maar *et al.* (2018): The responses of summer phytoplankton biomass to changes in top-down forcing (expressed as zooplankton mortality) in three ecosystems (the North Sea, the Baltic Sea and the Nordic Seas) across seven different 3D ecosystem models, was assessed. Model results showed overall dampened responses of phytoplankton relative to zooplankton biomass. Phytoplankton responses varied depending on the food web structure and trophic coupling represented in the models. Hence, a priori model assumptions were found to influence cascades and pathways in model estimates and, therefore, become highly relevant when examining ecosystem pressures such as fishing and climate change.
 - Maar, M., Butenschön, M., Daewel, U., Eggert, A., Fan, W., Hjøllø, S.S., Hufnagl, M., Huret, M., Ji, R., Lacroix, G., Peck, M., Radtke, H., Salliey, S., Sinerchia, M., Skogen, M., Travers-Trolet, M., Troost, T., van de Wolfshaar, K. (2018) Responses of summer phytoplankton biomass to changes in top-down forcing: Insights from comparative modelling. *Ecol Model.* 376:54-67.
 - Peck *et al.* (2018) review and compare four broad categories of spatially-explicit modelling approaches currently used to understand and project changes in the distribution and productivity of living marine resources. Statistical (correlative) approaches can be used to detect historical patterns which may not be relevant in the future. Advancing predictive capacity requires explicit modelling of biological and physical mechanisms. New formulations are needed which (depending on the question) will need to strive for more realism in ecophysiology and behaviour of individuals, life history strategies, as well as trophodynamic interactions occurring at different spatial scales. Fundamental advancements are needed to address key issues such as the adaptive capacity of species/groups and ecosystems. The continued development of end-to-end models (e.g., physics to fish to human sectors) will be critical to assess how multiple pressures may interact and trade-offs of different spatial management strategies. Given the strengths and weaknesses of the various types of models reviewed, confidence in projections will be increased by assessing model structural uncertainty through biological ensemble modelling.
 - Peck *et al.* (2018). Projecting changes in the distribution and productivity of living marine resources: A critical review of the suite of modelling approaches used in the large European project VECTORS. *Estuarine Coastal and Shelf Science* 201, 40-55.
 - Pedreschi *et al.* (In press). The ODEMM (Options for Delivering Ecosystem-based Marine Management) approach provides an integrated ecosystem assessment that traces the sectors affecting the marine environment, the pressures they create, and the ecological characteristics affected. This research presents the first application of the ODEMM framework outside of the ODEMM project, completed for Ireland's marine waters. The assessment places fishing in the context of other anthropogenic pressures and highlights areas of threat to Marine Strategy Framework Directive (MSFD) descriptors. From 1,879 impact chains, just 60 (45 of which were attributed to the fishing sector) account for 64% of the Total Risk score, highlighting areas for management action with a high risk-reduction return. The analysis showed Waste Water to have the highest average risk of all sectors, followed by Land-based Industry, Fishing and then Shipping. In terms of total risk, Fishing was the most important sector, due to its high connectance to many ecosystem components and widespread influence, even though many of the impacts are relatively low and the components impacted show a high degree of recoverability. Litter was found to be the highest risk pressure due to its persistence, and widespread reach.

- Pedreschi, D., Bouch, P., Moriarty, M., Nixon, E., Knights, A., Reid, D. Integrated Ecosystem Analysis in Irish waters; Providing the context for ecosystem-based fisheries management. Fisheries Research, In Press.

4.4.3 Communication with EG

The IEASG chair has communicated with EG chairs on diverse matters, including;

- following up EG reporting
- developing ToR (WKINTRA Workshop on integrated trend analyses in support to integrated ecosystem assessment, WKEWIEA Workshop on operational EwE models to inform IEAs, WKSABI Workshop on methods to develop a swept-area based effort index)
- joined EG meetings (WGIBAR, WGSOCIAL, WKECOFRAME, WKEAMA)
- lead group discussions during WGCHAIRS; topic Next generation Ecosystem Overviews
- organized two IEASG meetings in 2018

4.4.4 Forward look

The processes of developing next generation Ecosystem Overviews needs to be followed up, by both ACOM/ICES secretariat and by the IEASG chair.

There is much cross fertilization among EGs within the IEASG, and further development of IEAs along two axes, in particular, it is anticipated; i) including socioeconomic aspects through collaboration between IEA EG, WGSOCIAL, WGECON, and SIHD, and ii) including ecosystem modelling and scenario testing, through bringing in modelling skills into the IEA EG and through collaboration between IEA EGs and WGIPEM. Targeted WK could facilitate this development.

Several IEA EG are focusing on cumulative impacts of human activities across sectors in ecosystem risk assessment frameworks (e.g., WGEAWESS, WGIAB, WGIBAR). Targeted WK in collaboration with HAPISG EG could support this development.

There is still a lack of communication across IEASG EG and EOSG EG on data needs to support IEA, and options for EOSG EG to provide the required data. This is a complex matter, as the IEA EG are covering many different ecoregions with varying monitoring effort, data availability and subjects of interest. One possibility is to focus on one specific region to start advancing on these challenges. The IEASG chair will discuss this matter and possible approaches with IEASG EG chairs and the EOSG chair.

4.5 Ecosystem Observation SG (Sven Kupschus, UK, term started January 2017)

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 co-ordinated, integrated, quality assured and cost-effective monitoring in the ICES region and beyond.

Topics covered include:

- Evaluating and optimising survey design to meet the needs of member countries and support advisory requests
- Design, planning and co-ordination of egg and larval, acoustic and trawl surveys
- Identifying and evaluating new technologies for observation and monitoring
- Advising on the design, deployment and efficiency of sampling methods and gears and the use of resulting data for assessment and advice

- Aging and estimating life history parameters of sampled fauna
- Developing monitoring to meet emerging data, science and advisory needs, with a focus on integrated ecosystem assessment and ecosystem-based management

4.5.2 Summary of progress in relation to Terms of Reference

Terms of Reference	Progress
ToR a) Engage with and work with Chairs of EG to ensure that EG work supports and meets the science objectives and advisory needs of ICES	This is still difficult for the SG, due to the large and increasing number of EG with comparatively low attendance at the ASC and WGCHAIRS. The SG chair has made efforts at both meetings to make the most of the available opportunities to develop the SG further.
ToR b) Help EG formulate and prepare their draft terms of reference and resolutions	The SG chair has worked with 19 expert groups, (8WG, 11WK) to prepare ToR since January. He has used this opportunity to communicate with the chairs and to develop a common vision around the SG and its place in ICES, as well as ensuring the ToR are coherent and complementary between EG.
ToR c) Review and report on the science being undertaken within EG to SCICOM, with a focus on identifying science highlights and priorities and demonstrating the impact of their science	WGFAST and WGRTEFB are the primary science focused groups in the SG they once again held their symposium style meeting in 2018. WGRTEFB with over a 100 participants this year, an ICES record and more of a conference than an EG. WGELECTRA provided a sound basis for advice on electro fishing, WGISUR met in Canada to cooperate in the development of a new survey with a greater ecosystem focus. WGISDAA continues to provide its analytical support to survey WGs and had active participation from two stock assessment groups wishing to better understand the impact of surveys on their assessments.
ToR d) Review scientific products/deliverables of the EG and provide feedback on ways to improve the impact and influence of their work	Two SISP manuals have been reviewed and published, and the third one was sent back to the WG for improvements prior to sending out for external review.
ToR e) Provide feedback to SCICOM on research priorities and implementation of ICES strategy	<p>The SG chair participated in all SCICOM meetings and fed back to SCICOM on ways to ensure EGs focus on the ICES needs (science and advisory) in their work.</p> <p>The SG chair provided feedback and suggested action areas in the development of the ICES science plan. He worked with EGs to develop their roles in this.</p>
ToR f) Identify shortfalls in skills and knowledge needed to achieve ICES objectives within the SGs area and work within the SG and through SCICOM and operational groups to develop capability	<p>EOSG expert groups are generally adequately resourced to perform the current ToR. Limits become apparent when trying to develop new and scientifically more challenging tasks often resulting in avoidance of setting such ToR. There is room for more cooperative workshops to solve the issue. These have been actively supported but with mixed success.</p> <p>There have been several requests for external experts to be invited to WK financed by ICES. When challenged it seems more about the applicability of the work and less about a skills shortage (reputation)</p>

Terms of Reference	Progress
ToR g) Identify gaps and overlaps in the work of EG, and propose consolidation, rationalization or forming of new EG to SCICOM as appropriate	Data collection EG have worked in comparative isolation in the past, for operational reasons. Despite this, few overlaps have developed because the focus is usually very specific and the data reporting work-load is substantial. However, the continuity of understanding and the synthesis of science across this large pool of evidence has suffered. The SG chair has focused on developing a plan to restructure EG to emphasise the value of information across different data sources, while ensuring continued data quality, timely advice delivery and ensuring resource availability.
ToR h) Help EG Chairs to adopt practices which ensure scientific information generated by EG is receiving adequate quality control consistent with scientific norms	Most of EOSG EG scientific work is around reporting of data collection for which there is an extensive QA QC procedure including careful documentation in place. Other more science oriented groups seem to be operating at a higher scientifically rigorous level with significant peer to peer review within the group. The SG chair has tried to ensure that this expectation is inherent in the ToR as the discussions around ToR are the most frequent form of communication with EG chairs given the size of EOSG.
ToR i) Facilitate active horizontal and vertical communication, collaboration and co-ordination between EG and all other relevant ICES groups and identify, in cooperation with EG Chairs, opportunities for internal and external collaboration	The chair has used his knowledge of the ICES structure to aid communication by highlighting similarities and synergies between EG. In particular, he has focused on the ACOM groups which have been comparatively isolated from the science elements. There are now EOSG EG that are connecting with benchmark groups (WGISDAA, WGCATCH) and assessment groups (WGBEAM, IBTSWG). Success so far has been achieved at the level of the individual rather than the group but it is hoped that this will develop more broadly. Further WK are planned for next term, including one across SG to co-operate on appropriate methods for use of IBTS data to calculate biodiversity metrics for MSFD.
ToR j) Represent the SG at SCICOM meetings and SCICOM/ACOM leadership meetings in spring and at the ASC	Attended both meeting and represented SG interests.
ToR k) Map the EGs and their ToR against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritised.	ToR are mapped against the science plan headings at time of inception. This process is also done for the ACOM ToR (direct advisory requests, indirect products used by ACOM EGs). The large number of largely indirect "high priority" ACOM ToR received by the group make it necessary to appropriately prioritise the SCICOM ToR.
ToR l) Promote continued improvements and innovation in the design and technology of surveys and other data collection schemes implemented in support of stock assessments and ecosystem studies, leading to gains in survey efficiency, increased diversity and resolution of data collected, and improvements in the interpretation, quality, utility and impact of the data in ICES advice.	<p>The survey groups continue to evaluate new technologies to perform existing tasks and are generally best placed to evaluate these appropriately. The SG supports these efforts through WK where requested (e.g. future IBTS survey gear) and by encouraging participation of relevant EGs or individuals. WGFASST examines the acoustic technology as did WKMESO / 2.</p> <p>WGISDAA continues to develop methods to better evaluate current survey methodologies and WGISUR has looked at methods to collect new ecosystem data.</p>

Terms of Reference	Progress
ToR m) Determine how at-sea surveys can be adapted in the most cost-effective way to collect key information on ecosystem states and processes in support of the EAM, whilst maintaining the integrity of existing time-series of abundance estimates or indices used for stock assessments and advice."	WGISUR in cooperation with WGISDAA have been active in this area. This year a joint meeting with Canada and the US has looked into helping the develop a greater ecosystem focus in the merger of two national surveys to a joint international effort. The WGISUR CRR is in review.
ToR n) Evaluate methods to mitigate the impacts of fishing on marine ecosystems through innovative gear design and technology, with a particular focus on by-catch reduction and development of fishing and survey gears which minimise fuel consumption and habitat damage;	WGFTFB and WGELECTRA are the main EGs dealing with this TOR. The former is one of the most scientifically prolific EGs with a diverse set of expertise and back grounds. ICES provided advice this year on the basis of the WGELECTRA work, and the ways in which WGFTFB science is making its way into the advice is being checked. Possibly, there are opportunities to improve this element of the EGs work.
ToR o) Encourage cooperation and collaboration with the fishing industry and other stakeholders in addressing ToR l), m), and n) and develop specific ToR as appropriate	WGFTFB is the group that most frequently and regularly cooperates and interacts with the industry and they are driving this ToR forward. Also this year we had a workshop on Methods for Stakeholder Involvement in Gear Development (WKMSIGD). The Working group on Recreational Fisheries Surveys (WGRFS) works with the recreational fishermen and a couple of WK are in development in this area for the upcoming year.
ToR p) Promote the development within EGs of standards and guidelines for good practice in data collection covering the design and implementation of surveys, fishery and other related data collection programmes, the archiving and interpretation of data and samples, the analysis of data, provision of data quality indicators, and the documentation of procedures."	The work on SISPs is continuing with new versions and entirely new manuals published this semester. A major omission (WGBEAM SISP) has been reinvigorated with a final version approaching completion. Most EGs are now routinely updating the information annually and full reviews are usually done at the end of an EG term unless there are major changes. PGDATA (as part of their new ToR) has adopted some responsibility for documenting and reviewing methodologies, acting as a repository of past information and assisting EGs with advising on statistical approaches.
ToR q) Organize SG meetings which will take place during the ASC and WebEx's, as appropriate, to discuss EG accomplishments and plans, with a focus on the overarching ToR specified above.	The EOSG chair attended WGCHAIRS and the ASC and used associated events / opportunities to communicate with the EG chairs. WebEx has proven to be an inefficient means of communicating across EOSG, the group is too large to get a significant number of chairs to engage and there is currently insufficient overlap / cooperation between groups to make this effective. EOSG chairs still see their role primarily in organising the EG meeting and writing the report.

4.5.3 List of EGs

A full list of expert groups under this Steering Group is provided in Annex 1.

4.5.4 Science highlights

As usual the EOSG EG have done an excellent job in providing the advisory groups with the necessary scientific evidence to provide their advice. Data quality checks have been performed giving greater confidence in the advice. Work continues on updating survey manuals and one new manual has been added this term, with another undergoing update revisions. Significantly, work on manuals has become

a routine part of working groups when discussing or changing methods. This suggests the QAQC process has bedded in well.

WGFTFB had its largest meeting to date with over a 100 participants, which incidentally is an ICES record for an expert group. Lots of cutting edge science on fishing gears is presented evaluating conservation credentials, possible impacts on management and fish stocks. This science is frequently published (see publications), and although usually linked to the ICES WG formally possibly more could be done to use this information more directly in advice.

WKMLEARN has examined the potential benefits to ICES and its member of machine learning techniques. The workshop represented a balanced approach between the potential uses and the likelihood of implementation. The SG hopes that ICES will help support and further develop this initiative, particularly since currently they are not aware of a recommendation to develop a more permanent presence in this area. There is a lot of relatively quickly realisable potential in this methodology for sample analysis and interpretation, which is why EOSG will continue to provide a home for such work if required.

WGELECTRA provided a comprehensive review on the effects of electrofishing. This formed the basis of advice in response to a direct request from the EU customer.

WGISUR met with in Canada and spent two days of their four-day meeting joining up with a planning group developing a new coordinated (US and Canada) aiming to provide consistent evidence with previous survey series, but also new information on other ecosystem components in support of more holistic ecosystem advice.

Both WGCATCH and WGISDAA have taken the initiative to develop better data availability / use for benchmark assessments. To date most often benchmark groups are presented with only one final version of data, where different methods of deriving these estimates will significantly interact with the assessment methodologies a better understanding and the availability of different options of combining the data / indices will be a great asset to the benchmark process. The work done by the groups will culminate in two meetings ahead of the Celtic Sea gadoid benchmark.

4.5.5 Communication with EG

In an attempt to create more fluent communication between the WG the SG has encouraged the use of joint workshops and the increasing number of such workshops, not only between EOSG groups but also working with ACOM groups and stakeholders, reflects this initiative. Communication among survey EG could still be improved considerably within EOSG with significant benefits for the development of science and improvements in ecosystem and fisheries management advice.

Heavy reporting workloads, behavioural patterns and resource needs appear to be at least some of the barriers to communication in the EG and the survey EG in particular. The main downside of this is that the full potential of the regional perspective across our most costly data sources is not realised or at least not quickly. While the potential is obvious in the ecosystem context, it is also significant in the current fisheries advice process, but the solution is not simple because of the variety of causes.

A more regionally based grouping of surveys (as opposed to the currently more technical / gear based structure within the SG) would significantly improve the productivity of the EOSG EG but it is an oversimplification of the complexity of the task. There are a large number of things to consider beyond communication, including scheduling for advisory needs, the DCF reporting needs of member states, roles of existing EG chairs, workloads and expertise needed. Tackling these issues will require the support and input of the current EG chairs, so the next step is to discuss these issues more widely. The size and diversity of the SG in conjunction with the complexity of the task makes this difficult (impossible by WebEx), but without genuine consultation and inclusion of the EG chairs this is likely to cause more problems than solutions.

4.5.6 Forward look (including actions for SG and SCICOM/ ACOM)

Solving the communication issues within the SG are the most important challenges looking forward. Important progress has been made in starting a dialogue between demersal assessment EG and data EG. This has operated very much on the individual level and we plan to find ways to make this more general / normal amongst EG. Mechanisms for communication exist, what we need are the right incentives and conditions to get up-take and support:

The size of EOSG needs to be addressed, as does its operation at the ICES Secretariat level.

The potential for more regional data groups has to be explored, while considering the data quality aspect and ACOM deliverables needed for advice.

5 Operational Groups

5.1 Data and Information Group (DIG; Jens Rasmussen, UK)

The data and information group 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 EG have access to the data that is essential to their work.

DIG has continued close collaboration with ICES Data Centre, both in terms of identifying strategic areas most likely to impact ICES work, and in concrete steps to apply governance principles and evaluations to different development projects to ensure considerations of all relevant data management principles.

Future Challenges and Opportunities Progress

In March, DIG and ICES Data Centre presented the initial Future Challenges and opportunities paper to SCICOM, that identified Machine learning, Cloud technology, and Open data and code sharing as the three biggest areas of challenge and opportunity. Initially, this was a document for discussion, but DIG and the Data Centre worked further on the approach during and after the May DIG meeting. This has now translated to four main headings (Machine learning, Cloud, open data and code and transparency of process) which will be used by DIG to list and track more specific challenges and opportunities in a risk management style approach. This has been built into the ICES SharePoint facility, and will allow more continued tracking and reporting on the most important challenges and opportunities moving forward.

Data Management and governance principles

DIG has previously presented a list of governance principles or areas of awareness. These are specifically designed to touch on all relevant areas of managing data within an organisation, and can be used to evaluate the readiness and any gaps in applications and management thereof. The DATRAS governance group was proposed to start evaluating trawl survey data against these principles, and have met twice informally (via WebEx) since January 2018. A resolution has now been proposed to establish the governance group. The initial aim was to introduce the principles and ensure dialogue in the survey working groups, before work progresses this year to provide more concrete suggestions to ICES Data Centre.

DIG also recognised that there was an opportunity to incorporate the governance principles at an earlier stage in newer projects to catch any potential issues earlier. Thus, DIG will this year establish a dialogue and quick review of the Transparent Assessment Framework (TAF) and European Seabird at Sea ESAS data platforms. In addition, a governance group for the development of the SmartDots product has also proposed as a resolution, which will help guide management of data and the SmartDots age reading platform in general.

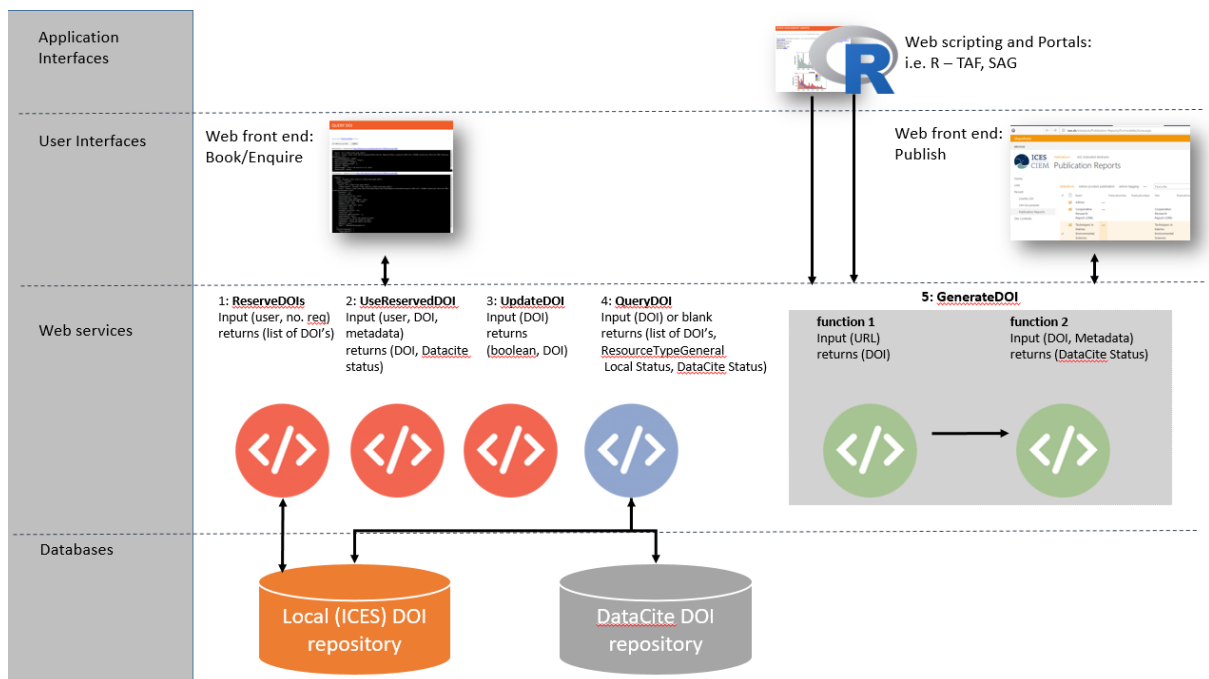
Data Guidelines process review

DIG inherited ownership of the ICES data guidelines from its former expert group format, but have struggled to progress the review. While the current Data Guidelines remain relevant, there is a need to expand the scope of these guidelines to capture the more dynamic documentation and coding that is happening in parallel (or instead of). WGFAST has had some experience in this area, and is looking to DIG for guidance on this. Thus there is a recognised need to review the process to ensure the community can work iteratively and responsively on developing guidance, while there is also a desire to retain a recognised ICES publication. A smaller group of DIG members is developing a process that will enable both mechanisms to exist, while ensuring quality and citation of recognised ICES Data Guidelines. The draft proposal will be ready for the SCICOM March 2019 meeting. While this work is ongoing, there will be no attempt to revise or update existing guidelines.

Progress with Digital Object Identifiers

The importance of persistent identifiers for both scientific publications and data that are used in assessment is now well accepted in the ICES community. ICES have adopted the DataCite DOI standard and the roll-out, which has focussed on publications so far, will soon include data products. Currently, ICES has the ability to mint unlimited DOIs and the technical framework has now been developed in-house to support this for all types of publications (documents, datasets, URL's of data queries etc.)

The approach builds on a number of web services, which means the DOIs can be created/updated/populated with meta-data from trusted programmes and scripts. All publications in Sharepoint can in practice have DOs assigned relatively easily, and likewise for other systems such as the Transparent Assessment Framework (TAF), Acoustic and DATRAS portals etc. The implementation at each node is to be specified within the governance mechanisms for the different systems.



First Hackathon in ICES

In May 2018, ICES hosted its first hackathon – WKINVITED. A hackathon is a semi-structured event that focusses on rapid development of an idea into a product. Teams work together, bringing different skills in terms of domain knowledge, technology or design, and aim to produce a prototype or more developed idea of how to approach and solve a problem.

WKINVITED mixed physical and remote participation, with a total of 16 participants, and a total of 5 ideas were developed during the one-and-a-half-day event. Overall, there was positive feedback from the participants, and the general consensus was that the event was a success, although lessons were also learned about the time and resources needed for preparation.

DIG discussed if a follow up event should be proposed, but at the same time, an opportunity arose for ICES to participate in the 2019 EMODNET hackathon instead. This is a well-resourced event on a much larger scale, and it was recommended that ICES should try a broader event with a scope for wider integration of data, to learn which format suits best. Neil Holdsworth has progressed discussions with EmodNet, and ICES participation in the event in (most likely) May 2019 will go ahead.

ICES Linked Data becoming a Reality

With the redevelopment and revision of the ICES Vocabulary services, the underlying model for how keywords and vocabularies are stored and served has changed to enable better linkage between terms,

both from inside and outside of ICES. This enables data to be connected to terms, which in turn are also connected to other keywords and concepts. At the outset, this may seem like a modest change, but it has the potential to enable ways of integrating and analysing data that would previously have required huge efforts. Concretely, there are already ideas emerging, and a dedicated subgroup in DIG is developing 2–3 potential use cases that will help demonstrate the versatility and potential use of these capabilities.

One key aspect of enabling linked open data, apart from the work on vocabularies, is the ability to establish persistent identifiers or locations for data – otherwise, you cannot link together the terms and the data. ICES is already working towards enabling digital object identifiers for reports and IDG has recommended that new or revised data submission formats incorporate the ability for national data submitters to include persistent identifiers.

Upcoming Policy reviews

DIG is responsible for managing the process of evaluation and review of the ICES policy of management and dissemination of data. The group looked at initial challenges of the EU regulation on personal data protection (GDPR) and its impact on the existing data policies. The GDPR is most likely to affect data where natural persons can be identified; so Vessel Monitoring System (VMS) and AIS data are the data types most likely to be under scrutiny. While the initial analysis would indicate that ICES has well documented policies and procedures in place, this will be considered when the VMS data policy is updated as part of a scheduled review in the 2019 work cycle.

As noted by DIG, the data policy for the Regional Database (RDB) was revised by the SC-RDB in December 2017, it is currently being tabled to the Regional Coordination Groups (RCG's) for acceptance by the participating countries. In brief the changes are:

- Reference to both RDB and RDBES
- Reference to the new DCF regulation (EU) 2017/1004, and specifically as this now refers directly to a regional database
- Stronger reference from the DCF on quality directed towards member states
- New Annex 1 developed to summarise all main articles from regulation that are relevant
- New Annex 2 developed that specifies more precisely what is meant by use of data and public outputs of aggregated data

5.2 ICES Training Group (TG, Daniel Duplisea, Canada)

The training group develops the structure and content of the ICES training programme and then guides and supports the provision of training. The ICES training programme was initiated in 2009 to help build capacity in ICES and to support the scientists involved in the advisory process. ICES offers training courses by high-profile scientists and instructors to ensure that those involved in advisory process, have the skills necessary to complete such work. The objective of ICES involvement in training is quality assurance in the advisory process.

Over 30 courses have been offered on a range of topics, including stock assessment (introductory and advanced), ecosystem modelling, model building, management strategy evaluation, Bayesian inference, fisheries advice, trawl survey design and evaluation, integrated ecosystem assessment, analysis and visualization of Vessel Monitoring Systems, communication of science and advice, and how to lead an effective technical meeting. Each course was taught within the context of the ICES science and advisory system to demonstrate best practices as well as state-of-the-art technical skills. More than 700 students have attended ICES courses from over 30 countries. Most students have been from ICES member countries, representing all member countries but one. Many students and several instructors are from other countries and cooperating organizations.

Progress Report

In 2018, the ICES Training Programme planned seven open training courses

ICES training courses 2018

- [Statistically sound inference for commercial catch sampling programmes](#)
18–22 June, Copenhagen, Denmark
- [Genomics in support of fisheries and aquaculture management](#)
26–28 June, Ispra, Italy (postponed, due to too few applicants)
- Introduction to the R environment
29 October–2 November, Copenhagen, Denmark (cancelled, due to too few applicants)
- [Advanced stock assessment](#)
5–9 November, Copenhagen, Denmark
- [Introduction to agent-based modelling for fisheries science and management](#)
13–15 November, Copenhagen Denmark (cancelled, due to too few applicants)
- [Introduction to stock assessment](#)
22–26 October, Copenhagen Denmark
- [Geostatistics in R for fisheries and marine ecology applications](#)
3–7 December, Fontainebleau, France

Courses planned for 2019

- Advanced stock assessment with Template Model Builder (TMB)
28 January – 1 February 2019, Halifax, Canada
- Marine Spatial Planning processes
18–22 February 2019, Copenhagen Denmark
- Bio-Economic Management Strategy Evaluation using FLBEIA
25 February - 1 March 2019, Copenhagen, Denmark

Promotion of training courses

E-mails are sent to specific WGs and EGs in the ICES community, who might benefit from the courses. In addition, one course is featured in each of the ICES newsletters. Course offerings are always available on the ICES website training pages. National representatives to SCICOM and ACOM are encouraged to disseminate information about ICES training courses in their own organisations. The ICES training program was present to expert group chairs during the chairs meeting at the Hamburg ASC.

ICES training and ICES projects

Through participation in H2020 projects, ICES training is contributing to training opportunities, in co-operation with other project partners

[PANDORA project](#): Paradigm for Novel Dynamic Oceanic Resource Assessments. ICES is lead partner in implementation of courses across all the projects work packages. Topics are to be defined by stakeholders at regional workshops (to be held in the autumn 2018). Broadly, courses will include survey sampling techniques, data required for assessments, training on state-of-the-art tools and stock assessment challenges.

[ClimeFish](#): Co-creating a decision support framework to ensure sustainable fish production in Europe under climate change. ICES is a contributing partner in provision of hands on training, to provide new ClimeFish tools.

All projects are offered the option to submit [training course proposals online](#), which are out through the training course selection process by the committee. If the project is able to provide funding for a specific training and only for project participants, ICES training can support the training activity, with

handling applications, administration, SharePoint etc. This is to ensure that training activities, be it through projects or standard ICES training, adhere to the aim of cost neutrality.

[LME Learn training courses](#): seeking to improve global ecosystem-based governance of Large Marine Ecosystems

ICES, NOAA and UNDP Cap-Net are joint organising three training courses on Ocean Governance:

- For the West African Region 5-6 September in Dakar, Senegal
- For the Latin America and Caribbean Region 3-4 October Panama
- For the Asian Region 23-24 January 2019, China

These courses are being funded by the project and, therefore, have not been subject to the training group selection process.

New Chair of ICES Training Group and Training Group Membership

Daniel Duplisea's three-year term on the Training Group will finish at the end of 2018. Jan-Jaap Poos (Netherlands) was nominated to fill the role which was unanimously supported by the training group and approved by SCICOM in September 2018. Eskild Kirkegaard will be replaced by Mark Dickie-Colas as Chair of ACOM in 2019 and will take over Eskild's place on the Training Group to ensure the strong link with ACOM. Daniel Duplisea will remain as a regular member of the Training Group.

Training Group Actions from September 2017

The following actions from 2017 were addressed in 2018: (1) the Training Group to review options for developing links with other training providers and (2) the Training Group will review opportunities and demand for supporting capacity building in developing countries. Discussions within the training group have identified two possibilities for joint training that may be possible: (a) to use the massive open online course (MOOC) model by partnering with organisations such as the Kiel Ocean MOOC (b) to partner with established marine science organisations, which is of interest to the Intergovernmental Oceanographic Commission (IOC). In relation to capacity building, the ICES training program is currently available to anyone although there is a registration cost difference for ICES member and non-member countries. A possibility is to offer member country registration fees for developing countries. Currently, no such decision has been made. The TG does not see a strong direct role for capacity building in developing countries. Organisations like IOC and FAO provide much of this already. That said, partnering with organisation like IOC could provide an increased role for ICES in this respect and bring the top-class ICES expertise to training outside the ICES member countries. The TG also feels that it would be essential partner with other large intergovernmental organisations if it were to further capacity building for developing countries. That would ensure sensitivity to the needs of these countries and to avoid duplication of effort.

5.3 Science Impact and Publication Group (SIPG, SCICOM Chair/Secretariat)

The Science Impact and Publication Group 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 the SCICOM Chair and has five external members and two members from the ICES Secretariat (ICES editor and Technical editor).

5.3.1 Update on status of Science Impact and Publication Group

SIPG work to date has primarily focused on addressing issues related to the authorship of ICES expert group reports, as raised at the 2018 WGCHAIRS meeting, and increased tracking and recording of peer-review publications linked to expert groups, as requested by SCICOM. Work is being progressed in the following areas:

1. Authorship of expert group reports: priority to work with ICES Secretariat to define series name, assign ISSN, define citation format, complete testing of template to include author names and information on 'how to cite' and to implement for 2019 expert groups reports. It will also be necessary to determine how to process interim reports for expert groups with multi-year terms of reference, as it has already been agreed that these will not form part of the report series.

2. Development of ICES bibliography: priority to work with the ICES Secretariat to make this bibliography available to users [via a portal on the ICES website](#) with a search function and to add summary graphics. Data for 2016 and 2017 are near complete. Future needs are to extend this bibliography back in time, 2010 might be an appropriate target, as well as searching for and then adding the remaining peer review publications for 2018 and 2019.

Other priorities identified in the terms of reference and which SIPG will aim to begin in 2019 are:

3. Develop and apply methods to assess the impact of all types of publications generated by the ICES network (term of reference 1b).

4. Develop descriptions of the societal impact of ICES science for reporting and outreach (term of reference 1c)

5. Work on identifying target audiences for communicating science, advice, data and training products (term of reference 1d)

6. Review and provide guidance on the evolution of Science publication and communication and the opportunities and risks it presents for ICES (term of reference 4).

5.3.2 Review of ICES publications

ICES published seven CRRs in the past 12 months:

- 2014/1/SSGEPI07: No. 338 Report on Handbook of Geostatistics in R for Fisheries and Marine Ecology, edited by Pierre Petitgas, Jacques Rivoirard, Mathieu Woillez, Nicolas Bez, and Didier Renard. December 2017. 177 pp.
- 2013/1/SSGEF05: No. 339 ICES Report on Ocean Climate 2016, edited by Karin M. H. Larsen, Cesar Gonzalez-Pola, Paula Fratantoni, Agnieszka Beszczynska-Möller, and Sarah L. Hughes. February 2018. 110 pp.
- 2016/1/SSGIEOM05: No. 340 Using underwater television surveys to assess and advise on Nephrops stocks, edited by Ana Leocádio, Adrian Weetman, and Kai Wieland. May 2018. 49 pp.
- 2017/1/EOSG03: No. 341 The SONAR-netCDF4 convention for sonar data, Version 1.0, edited by Gavin Macaulay and Héctor Peña. May 2018. 33 pp.
- 2013/SSGHIE03: No. 342 IEC/ISO Bowtie analysis of marine legislation: A case study of the Marine Strategy Framework Directive, edited by Roland Cormier, Michael Elliott, and Andreas Kannen. July 2018. 56 pp.
- 2014/1/SSGEPI04: No. 343 Marine recoveries of tags from Atlantic salmon, edited by Niall Ó Maoiléidigh, Jonathan White, Lars Peter Hansen, Jan Arge Jacobsen, Ted Potter, Ian Russell, Dave Reddin, and Tim Sheehan. September 2018. 121 pp.
- 2015/1/SSGIEOM04: No. 344 Acoustic target classification, edited by Rolf J. Korneliussen. October 2018. 104 pp.

ICES published one TIMES in the past 12 months:

- 2014/1/SSGEPI01: TIMES 61 Guidelines for determining polymer-water and polymer-polymer partition coefficients of organic compounds by Kees Booij, Foppe Smedes, and Ian J. Allan. October 2017. 32 pp.

ICES published four new ID leaflets in the past 12 months:

- No. 65: Brown ring disease: a vibriosis affecting clams *Ruditapes philippinarum* and *R. decussatus*
- No. 66: Bonamiosis of oysters caused by *Bonamia exitiosa*
- No. 67: Disseminated neoplasms in bivalves
- No. 68. X-cell disease in common dab (*Limanda limanda*) caused by *Xcellia lamelliphila* (Perkinsea). Feist, S.W. & Bass, D.

ICES revised one leaflet:

- No. 18: *Bonamiosis* in the flat oyster (R. Carnegie & L. Madsen)

A full report from each of the series editors is on SharePoint in the [Background documents](#) folder for the September 2018 SCICOM meeting.

5.3.3 Review of Category 1 resolutions for publications

Category 1 resolutions are now submitted to ICES Editor, reviewed by the relevant series editor and then submitted along with the series editors comments to SCICOM for their consideration (either on the SCICOM Forum or at the SCICOM meeting held in Hamburg in September.

In the past 12 months, two Category 1 resolutions were submitted to SCICOM:

2017/1/EPDSG07

A report on the status and distribution of poorly understood diadromous fish species will be published in the ICES Cooperative Research Report series, edited by the Chairs and members of WGDAM and other colleagues (60 contributors by correspondence and workshops), comprising species descriptions and their distribution, identification, life history, ecology, threats, pressures and conservation status.

Status: Approved by SCICOM on SCICOM Forum.

2018/1/EOSG01

A Handbook on maturity staging of fish in the ICES areas, edited by Cindy van Damme (The Netherlands), Maria Cristina Follesa (Italy) and Francesca Vitale (Sweden) and reviewed and approved by members of WGBIOP, comprising of a collation of maturity staging protocols (based on ICES maturity staging work-shops), will be published in the ICES Cooperative Research Report series.

Status: Approval pending the submission of previous workshop reports by the authors.

5.3.4 Update on Series Editors contracts

A recruitment process in 2017 appointed Emory Anderson, US, to the position of CRR Series Editor and Neil Ruane, Ireland, to the position of Disease ID leaflets Series Editor. A lack of applications for the role of TIMES Series Editor mean this position is currently empty but due to a lack of manuscripts due in 2018, a decision was made to hold another recruitment at the end of 2018 to recruit for 2019 onwards. Claudia Castelli decided to end her role as co-editor of the Plankton ID Leaflet Series. Her Antonina dos Santos recruited Lidia Yibra to replace Castelli and they have now resumed work on the plankton leaflets. A plan for this series can be found in the [Background documents](#) folder for the September 2018 SCICOM meeting.

6 Strategic Initiatives

Strategic initiatives develop and co-ordinate cross-cutting science activities that impact and interact with the science of many expert groups. They also focus on building science collaborations outside ICES member countries.

6.1 ICES/PICES Strategic Initiative on Climate Change effects on Marine Ecosystems (SICCME; Myron Peck, Germany, John Pinnegar, UK, Jacquelynne R. King (Canada, PICES), Shin-ichi Ito (Japan, PICES))

SICCME is a joint ICES - PICES strategic initiative that was established in 2011 to examine and evaluate consequences of long-term climate change and short-term climate variability on marine ecosystems across the northern hemisphere. Specifically, the objectives of the initiative are:

- (1) To advance the scientific capacity by engaging the wider PICES and ICES scientific community in focused workshops, theme/topic sessions and symposia that target key uncertainties, and to advance the predictive skill of ocean models, used to project the impacts of climate change into the future.
- (2) To effectively communicate this capability to clients, Member Countries, stakeholders and the broader scientific community.
- (3) To facilitate international efforts to design data collection networks at the spatial and temporal scales needed to monitor, assess and understand climate change impacts on marine ecosystems.
- (4) To facilitate international collaboration to design and implement comparative analysis of marine ecosystem responses to climate change through modelling and coordinated process studies.

SICCME activities are contributing to both the ICES and PICES Science Plans. This strategic initiative is co-chaired by Drs. Jackie King (Canada, PICES), Shin-ichi Ito (Japan, PICES), Myron Peck (DE, ICES) and John Pinnegar (UK, ICES).

6.1.1 SICCME activities 2018

A detailed, 3-year (Phase 3 – 2018-2020) plan was submitted to PICES and ICES at the end of March 2018. The plan included slight modifications and additions to the SICCME mission and activities in light of the success of Phase 2 (2015-2017), including identifying and aligning climate change research activities in regional nodes across the northern hemisphere and elsewhere.

SICCME experts have contributed to several assessments of the Intergovernmental Panel on Climate Change (IPCC), including the forthcoming report on the *"Ocean and Cryosphere in a Changing Climate"*. This activity will continue in 2019-2020 in preparation for the 6th Assessment Report (AR6) due to be published by the IPCC in 2021. SICCME members have so far contributed significantly to four major conferences on *"The effects of climate change on the world's oceans"* (in Gijón, Spain 2008; Yeosu, Korea 2012; Santos, Brazil 2015; Washington D.C., USA, 2018).

12–16 March 2018, Olhão, Portugal. SICCME members met at the CERES Annual Meeting to review progress on future scenarios for EU fisheries as well as vulnerability assessments. CERES is coordinated by Myron Peck (Univ. Hamburg) with many SICCME participants (including John Pinnegar (Cefas); Mark Payne, (DTU). Anne Hollowed, (NOAA) attended as a member of the Research Advisory Board (RAB).

16–20 April 2018. WGIPEM Annual Meeting. The Working Group on Integrative Physical-biological and Ecosystem Modelling was held at ICES Headquarters in Copenhagen, DK. In total, 29 participants from 10 countries discussed advances in spatially-explicit biophysical modeling activities conducted in ICES areas. Myron Peck provided a presented information on the coordination of regional modelling activities by SICCME and obtained updates from regional modelling groups exploring climate impacts on marine species and communities. The meeting was chaired by Morgane Travers-Trolet (FR) and Marie Maar (DK).

4–8 June 2018. The “Fourth International Symposium on the Effects of Climate Change on the World’s Oceans” took place in Washington D.C. (USA) with the support of IOC, FAO, PICES and ICES. Jason Link, USA (ICES), Shin-Ichi Ito, Japan (PICES - SICCME), Manuel Barange (FAO), and Veronique Garcon (CNRS) were the lead conveners. SICCME was represented on the scientific steering committee including Anne Hollowed (USA), Myron Peck (DE), John Pinnegar (UK), Angelica Pena (USA), and Kirstin Holsman (USA).

9 June 2018. ICES-PICES Workshop on Political, Economic, Social, Technological, Legal and Environmental scenarios used in climate projection modelling (WKPESTLE), chaired by John Pinnegar, UK; Jörn Schmidt, DE; Alan Haynie, USA; and Tyler Eddy, CA, convened in Washington D.C., USA (immediately after the 4th International Symposium on the Effects of Climate Change on the World’s Oceans). Prior to and during this workshop, invited participants: (a) Compiled and compared future scenarios currently used by different research groups projecting the socio-ecological consequences of climate change on fisheries and aquaculture; (2) Discussed the rationale and data sources employed to establish elements of “PESTLE” scenarios for bio-economic projection; (3) debated the virtues of having a common set of scenarios and outputs to facilitate region-region and region-global comparison of social-ecological impacts of climate change on fisheries and/or aquaculture. Submitted a session proposal on “Scenarios for the Future Ocean” at the Scenarios Forum 2019 in Denver Colorado (<https://www.scenariosforum2019.com/>).

July 2018. SICCME members published two expert chapters within the FAO Fisheries and Aquaculture Technical Paper 627: “Climate change implications for fisheries and aquaculture: Synthesis of Current Knowledge, Adaptation and Mitigation Options. This 628-page book was published in early July 2018. Myron Peck (Univ. Hamburg) and John Pinnegar (Cefas) contributed Chapter 5 on ‘North Atlantic and Atlantic-Arctic Marine Fisheries’ (pages 87-111) while Kirstin Holsman (NOAA), Anne Hollowed (NOAA), Jackie King (DFO) and Shin-ichi Ito (Tokyo U) contributed Chapter 6: ‘North Pacific and Pacific-Arctic Marine Fisheries’ (pages 112 to 138).

July 2018. Third Lead Author meeting for the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, Lanzhou, China. Two SICCME members were selected to participate. Anne Hollowed was selected as a lead author Chap. 3 Polar Regions (50 pages), and Manuel Barange was selected as a Review Editor for Chap. 5 Changing ocean, marine ecosystems, and dependent communities (65 pages).

August 2018. Via the ICES press office, the industry magazine *Industrias Pesquera* contacted SICCME and requested an article on climate change for the Nor-Fishing exhibition (August Norway). Myron Peck contributed a short review of scientific efforts made by SICCME and other groups to understand historical and project future changes in fisheries in northern Europe.

27–30 August 2018. The 2nd meeting of the ICES Working Group on Seasonal-to-Decadal Prediction of Marine Ecosystems (WGS2D) took place at ICES Headquarters in Copenhagen, Denmark. The group is chaired by Mark Payne (DK) and considers ocean predictions on timescales from seasons to decades in order to support marine resource management. The group contains 26 members from 10 countries. Capacity building in this ICES group meshes well with ongoing activities in a PICES/CLIVAR Study Group on Climate and Ecosystem Predictability (SG-CEP), and the IMBER/CLIOTOP Task Team.

24–27 September 2018. ICES Annual Science Conference (ASC), Hamburg, Germany- SICCME supported two theme sessions: Theme session D – “The Nordic seas and the Arctic – climatic variability and its impact on marine ecosystems, fisheries and policymaking”, conveners: Harald Gjøsæter (Norway), Agnes Gundersen (Norway), Heino Fock (Germany) and theme session H – “Preparing for change; challenges for fisheries governance”, conveners: Alida Bundy (Canada), Chris Cvitanovic (Australia), Annette Breckwoldt (Germany), and Prateep Nayak (Canada).

25 September 2018. ICES Annual Science Conference (ASC) - Open session, Hamburg, Germany. “Do participants at the ICES ASC know more about marine climate change issues compared with the wider

European populace?” chaired by John Pinnegar, UK; Myron Peck, DE. This explored whether ICES scientists expressed higher levels of awareness and concern about climate change than the public.

6.1.2 Planned SICCME activities from Oct 2018

28 October 2018. “Workshop W4 - Synthesizing projected climate change impacts in the north Pacific” chaired by Anne Hollowed (USA), Shin-ichi Ito (Japan), Jackie King (Canada) and Myron Peck (Germany). The workshop will provide a forum for discussions of: a) Projection outcomes under different modeling approaches; b) Opportunities for comparative studies looking at projected impacts on selected species or fisheries in different LMEs; c) How modeling teams addressed the uncertainty landscape including issues of scenario, parameter and model uncertainty; and d) The range of potential harvest strategies selected and their performance.

28 October 2018. SICCME business meeting. During this event, the vision of the group through 2020 will be reviewed and updated including contributions to AR6 and preliminary, longer-term planning for contributions to AR7.

26–29 November 2018. SICCME co-chairs John Pinnegar (Cefas) and Myron Peck (Univ. Hamburg) will take part in a week-long, international workshop on Global synthesis of climate impacts on fish distribution and growth held at the University of Aberdeen and co-chaired by Tara Marshall (Univ. Aberdeen) and Paul Spencer (NOAA).

21–25 January 2019. IPCC WG II - AR6 First Lead Author Meeting. (Durban, South Africa). Will be attended by John Pinnegar (lead author – Small Islands chapter); Kirstin Holsman (lead author – North America chapter); Shin-ichi Ito and Mette Skern-Mauritzen (lead author – ‘Ocean and coastal ecosystems and their services’ chapter).

11–13 March 2019. Scenarios Forum 2019 (<https://www.scenariosforum2019.com/>). Session on “Scenarios for the Future Ocean”, co-conveners: Tyler Eddy (University of South Carolina), Jörn Schmidt (University of Kiel), Alan Haynie (NOAA), John Pinnegar (CEFAS). The Scenarios Forum is open to the diverse set of communities using and developing scenarios to carry out research and policy analysis related to climate change and sustainability.

11–15 March 2019. CERES project meeting will take place in Bordum, Turkey to discuss bio-economic projections of climate impacts on European marine fisheries. CERES is coordinated by Myron Peck (Univ. Hamburg) with many SICCME participants (including John Pinnegar (Cefas); Mark Payne, (DTU). Anne Hollowed, (NOAA) and William Cheung (Univ. British Columbia) are members of the Research Advisory Board (RAB).

14–19 July. IPCC WG II - AR6 2nd Lead Author Meeting. (Kathmandu, Nepal). Will be attended by John Pinnegar (lead author – Small Islands chapter); Kirstin Holsman (lead author – North America chapter); Shin-ichi Ito and Mette Skern-Mauritzen (lead author – ‘Ocean and coastal ecosystems and their services’ chapter).

September 2019. SICCME was consulted by proposed conveners of several theme sessions to be submitted for consideration for the 2019 ICES Annual Science Conference. These include i) Friedland, Smoliński and Frelat: “Advances in habitat models to inform ecosystem-based management: From theory to practice”, ii) Elliott, Dankel *et al.* “Stakeholder involvement and social aspects of climate change adaptation in fisheries and aquaculture”, and iii) Kerr, Tommasi, Howell, “Management Strategies for Fisheries in a Changing Ocean”.

6.2 Strategic Initiative on the Human Dimension (SIHD; Jörn Schmidt, Germany, Eva-Lotta Sundblad, Sweden, Alan Haynie, USA)

6.2.1 SIHD activity

A recognition of the need to encourage the participation of economists, other social scientists and researchers from the humanities led to the establishment of the Strategic Initiative on the Human Dimension (SIHD) in 2015. The development and extension of the SIHD scientific network continues to occur through many pathways. The network encompasses an increasing number of researchers, with now over 60 members, including a number who are engaged in several ICES expert groups.

Since the ASC 2017, the SIHD has engaged in a number of diverse activities, including:

WKSIED-BESIO. Balancing Economic, Social, and Institutional Objectives in Integrated Assessments. With the cooperation of WGMARS, a workshop was held November 2017 to clarify what economic, social, and institutional objectives of marine management are contained in our core management documents. This is an essential first step for Ecosystem Based Management. The workshop was successful, providing summary documents that can be further developed for the various sea-basins and nations in the IEA groups and directly fed into a stakeholder workshop to refine the objectives identified during WKSIED-BESIO, which were then, for example, given to WGINOSE as input for further analysis. At the WKSIED-BESIO, 3-4 national experts from both Sweden and the Netherlands analyzed country-specific objectives and compared them across the two countries. One important lesson for ICES to draw regarding social disciplines is that nations and cultures vary about the core focus of their management systems. Hence, it is important that working groups have the resources to explore these differences. As there is clearly a need to continuously develop the objective framework, a new working group that can focus on this subject has been suggested by SIHD (WGBESIO), although we have also discussed first having another regional workshop as a next step.

WGECON. Working Group on Economics: a new expert group reporting to HAPISG, will address economic issues, focusing on the development of economic metrics and the development of core economic analyses for fisheries advice and contributing economic indicators for ICES ecosystem overviews. WGECON held its first meeting in June.

WGSOCIAL. Working Group on Social Indicators: a new expert group reporting to IEASG, will focus on development of social indicators in IEA. WGSOCIAL held its first meeting in June.

Co-chairs sent an update letter to SIHD network members, in December. It has become clear that in its role as a Strategic Initiative in ICES, the SIHD together with chairs of SG, need to define how SIHD can interact most effectively with scientists, chairs, and steering groups – in a rapidly changing landscape for social science in ICES.

6.2.2 SIHD Roadmap

To promote an ongoing discussion about how ICES can become a more active and influential contributor to social and economic science, SIHD-co-chairs produced a document “the SIHD Roadmap” and opened a SIHD forum in ICES website. The roadmap contains information on planned activities for both the next two years and ideas about SIHD activities over the coming decade. The roadmap has been reviewed by SCICOM and SCICOM supported the intentions of this plan.

SIHD co-chairs have encouraged SIHD-members and SCICOM members to contribute to further discussion on how to facilitate the integration of more social and economic analyses and information into ecosystem based management.

6.2.3 SIHD sessions at Conferences

To promote the development and integration of social sciences with other marine sciences, SIHD set up several platforms for scientists to meet and present SIHD-themed research:

- (1) Jörn Schmidt and Olivier Thébaud, organized and chaired the session 'Transdisciplinary research to assess marine socio-ecological systems' at the ASLO/AGU/TOS Ocean Sciences Meeting 2018 in Portland. The session contained a useful set of diverse presentations including case studies of socio-ecological systems research, including examples of stakeholder participation and training of early career scientists on transdisciplinary research approaches.
- (2) At the ICES/PICES conference on the Effects of Climate Change on the World's Oceans in June in Washington DC, the ICES/PICES workshop on Political, Economic, Social, Technological, Legal and Environmental scenarios used in climate projection modelling (WK-PESTLE) was held, organized by SICCME and SIHD co-chairs. The workshop discussed how to develop frameworks to guide scenario development as input for fisheries and ecosystem models, to feed into integrated assessments of management strategies. The SIHD and other co-convenors of the workshop also developed a session for the Scenario Forum 2019 (<https://www.scenariosforum2019.com>).
- (3) Jörn Schmidt co-chaired a session with Catarina Frazao Santos from Portugal and Kathy Mills from the USA on 'Vulnerability and adaptation of marine socio-ecological systems to climate change'.
- (4) The International Institute of Fisheries Economics and Trade (IIFET) Biennial meeting was held Seattle and co-organized by Alan Haynie. The meeting had diverse participation and session leadership from SIHD Members.
- (5) Work is underway with SIHD leadership to plan the MSEAS Symposium which will be held in 2020 in Yokohama, Japan.

7 Expert Groups

7.1 Interaction with expert groups

Both SCICOM and ACOM have continued to focus on providing stronger, more visible and more regular support for the expert groups, by providing more opportunities for expert group chairs to meet, establishing a WGCHAIRS forum, and emphasising and recognising the central role of expert groups in generating science and advice. The annual meeting of the Chairs of ICES Working Groups (WGCHAIRS) was expanded to include items of relevance to all expert group chairs in ICES and 69 people attended the January 2018 meeting. Topics covered included the development of guidelines for ICES groups, viewpoints, science highlights, roles of chairs, communications with expert groups, mentoring, development of fisheries and ecosystem overviews, science, data and advice. Several actions to better support expert group chairs were identified during discussions of these topics and have now been taken. In addition to the WGCHAIRS meeting, we hosted a lunch gathering and an introductory meeting for expert group chairs during the 2018 ASC in Hamburg. The renewed emphasis on the role of chairs in ICES has also increased day-to-day engagement, with chairs more openly identifying the support they need to fulfil their roles and more timely efforts by the steering groups, committees and ICES Secretariat to provide this support.

For 2019, a WGCHAIRS meeting is scheduled for 21-25 January. Following the suggestions from last year, the meeting will be arranged to focus on the priorities of expert groups addressing advisory terms of reference on the Monday and Tuesday and those addressing science terms of reference on the Thursday and Friday. This will allow us to address cross-cutting issues on the Wednesday and not require every chair to attend a full five-day meeting. Topics to be addressed include implementation of the strategic plan and science plan, inputs from all parts of ICES to the development of fisheries and ecosystem overviews, updates and review of the guidelines for ICES groups, best practice in data handling by expert groups, development of theme and network sessions for the ASC, authorship of expert group reports, mentoring chairs and ICES viewpoints.

7.2 Authorship of Expert Group reports

The Bureau meeting on 21 February 2018 requested that SCICOM should examine options for identifying chairs and members of Expert Groups as authors of Expert Group reports and propose a favoured option. This request was a response to an action agreed at the WGCHAIRS meeting of 23–25 January 2018.

Following a review of the options the Bureau asked SCICOM and the Secretariat to progress option D “Chairs identified as editors and all attendees as authors on cover of report, but not leading on citation, all EG reports allocated to a new ICES series with ISSN”. It was considered that this provided an effective balance between more visibly recognising the contributions of scientists to the expert group reports while retaining a clear link to ICES.

Following this decision, Celine Byrne, ICES editor, has been leading and taking the practical steps necessary to make this change, as well as developing a process that would lead to all expert group “final” reports being published in a series with an ISSN. The provisional target date for introducing this change is Jan 2019.

The justifications for identifying authors are to respond to a request from the ICES network, to provide greater motivation to attend and chair expert groups by providing added visibility for contributors, and to increase the visibility of ICES science and the network in web searches and on science networking sites.

7.3 Peer-reviewed publications linked to Expert groups 2017–2018

In 2017, SCICOM made the decision to develop an ICES bibliography and to make the references listed in this bibliography available to users via the ICES website.

The purpose of the bibliography is to develop a record of all peer-reviewed publications that have been facilitated by ICES expert groups and other ICES groups. The record also supports and informs the work of the Science Impact and Publication Group (SIPG) who have a term of reference to “Monitor publication output and provide advice to SCICOM, ACOM, the ICES Secretariat and network on increasing the reach and impact of ICES publications and science, including grey literature (EG reports)”. The terms of reference for SIPG include specific actions to (a) catalogue and report on the types and quantity of published outputs facilitated by the ICES network, (b) develop and apply methods to assess the impact of all types of publications generated by the ICES network, (c) develop descriptions of the societal impact of ICES science for reporting and outreach and (d) propose approaches for increasing the impact of ICES publications and identify target audiences for communicating science, advice, data and training products. All these actions will be supported by timely and complete information on peer-reviewed publications generated.

To ensure publications linked to ICES can be captured and added to the database, SCICOM and SIPG are emphasising the importance of acknowledging ICES’ role in peer-review publications. Following SCICOM approval in 2018, guidance is now given to expert groups on acknowledging ICES facilitation of peer-review publications. The guidance is provided in Annex 8 of the “Guidelines for ICES groups”.

This guidance has successfully raised awareness of the benefits of acknowledging ICES role as a facilitator through SCICOM, the steering groups, WGCHAIRS and the WGCHAIRS Forum. The guidance is now being followed by some expert groups. SCICOM have been encouraged to maintain efforts to raise awareness of the guidance.

The guidance states:

“To allow the Science Publication and Impact Group, SCICOM, and the Secretariat to track ICES outputs and impacts it is helpful if an ICES acknowledgement is added to the acknowledgements section in papers, reports and books.

The following generic acknowledgement should be used when ICES facilitates or supports the scientific work and/ or resulting publication. The most important requirement is to name the “International Council for the Exploration of the Sea” in full as well as referring to “ICES”.

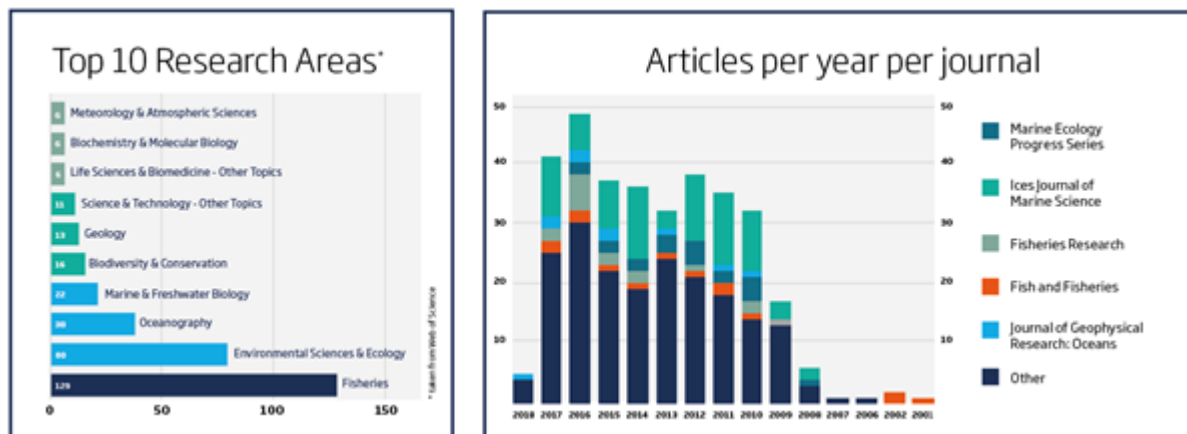
The authors thank the [XXX Group] of the International Council for the Exploration of the Sea (ICES) for facilitating this research

This generic acknowledgement should be treated as a minimum requirement when part or all of a published work is developed in an ICES Expert Group, but authors may wish to add to this acknowledgement to recognise the work of specific individuals or other services, support and data provided by ICES.

When published analyses draw extensively on the work of Expert groups that have generated and processed data it is important that their contributions to the work are also recognised. Specific citations for ICES datasets are already linked to data and data products available through the ICES data portal: <http://www.ices.dk/marine-data/dataportals/Pages/default.aspx>. These should always be used in publications, in addition to the generic acknowledgement above if the work uses ICES data and is also facilitated by an ICES Expert Group.”

The ICES Secretariat has developed an initial version of a webpage to make references to peer review papers facilitated by ICES groups available online. A screen grab of the landing page is provided below. This system is undergoing testing and review and will be further developed to add a search function and other summary graphics.

Peer-review publications facilitated by ICES in 2017 and 2018 (to date) are listed in Annex 5. Data for 2016 and 2017 are near complete. Future needs are to extend this bibliography back in time, 2010 might be an appropriate target, as well as searching for and then adding the remaining peer review publications for 2018 and 2019.



In 2017, the database identifies 41 articles that mention ICES in acknowledgements. Within these articles, more than 50% (21) mention ICES expert groups, 12% mention ICES symposia, the remaining articles mention ICES Data Centre, ICES Science Fund, projects, and ICES Advice.

In 2016, the database identifies 48 articles that mention ICES in acknowledgements. Within these articles, again more than 50% (26) mention ICES expert groups, 12% mention ICES symposia, the remaining mention ICES Data Centre, ICES Science Fund, projects, and ICES Advice.

7.4 Science highlights

Science highlights are used to draw attention to the most impactful and societally relevant science from our ICES network. Highlights serve to raise awareness of the breadth and impact of our scientific activity and expertise and to demonstrate the importance of our science for understanding marine ecosystems and securing their sustainable use. Ideally, the highlights are newsworthy because they are based on a very recent or forthcoming finding and supported with accessible images and a short biography of the scientist(s) conducting the work. Highlights are used to promote ICES science on the web and in printed and spoken communication targeted to the network and beyond.

Steering Group and Strategic Initiative Chairs have been asked to encourage their networks to provide highlights as well as actively asking for highlights if they are aware of important science being conducted in the Expert Groups they 'parent'. It is important highlights are captured in a timely way so current and forthcoming findings are still newsworthy.

A number of news stories have been published based on material provided by expert groups, especially in emerging areas like aquaculture, but the volume is small in relation to the scale of output, and the communications team are currently reviewing a submission template proposed by SCICOM as a means of capturing more material from expert groups. Such a submission template could be made available on a web link and linked from the section of the guidelines for ICES groups that describes the submission of science highlights.

Examples of highlights from the EG in each steering group are presented in the steering group reports in Section 4.

8 ICES viewpoints

Viewpoints are examples of advice that ICES could give on topics where paid advice has not previously been requested. Viewpoints are developed through the normal ICES advisory process to ensure quality control (based on a response to agreed ToR drafted by scientists and then developed into advice by an Advice Drafting Group) are relevant to a known or potential management issue of potentially high importance to managers and society.

An ideal topic for an “ICES viewpoint” is (1) relevant to a known or potential management issue of potentially high importance to managers and society, (2) not replicative of a topic for which we already give advice, (3) based on maturing science and data (ie. science not narrow, speculative or lacking peer and expert group review), (4) be linked to a point of contact in the ICES network who would be keen to engage in the process of developing advice, (5) linked to an ICES action area, such as the Arctic or ecosystem overviews, (6) based on a topic of likely interest to potential clients, and (7) based on a topic sufficiently focused that it can be succinctly and unambiguously described

Viewpoints also help scientists in the ICES network to identify opportunities to translate their work into advice and to test the preparedness of their science for application in this context. Following a call for proposals via the Steering Group Chairs, and a selection process involving the SCICOM and ACOM Chairs, Steering Group Chairs and the ICES Secretariat, three viewpoints are under development.

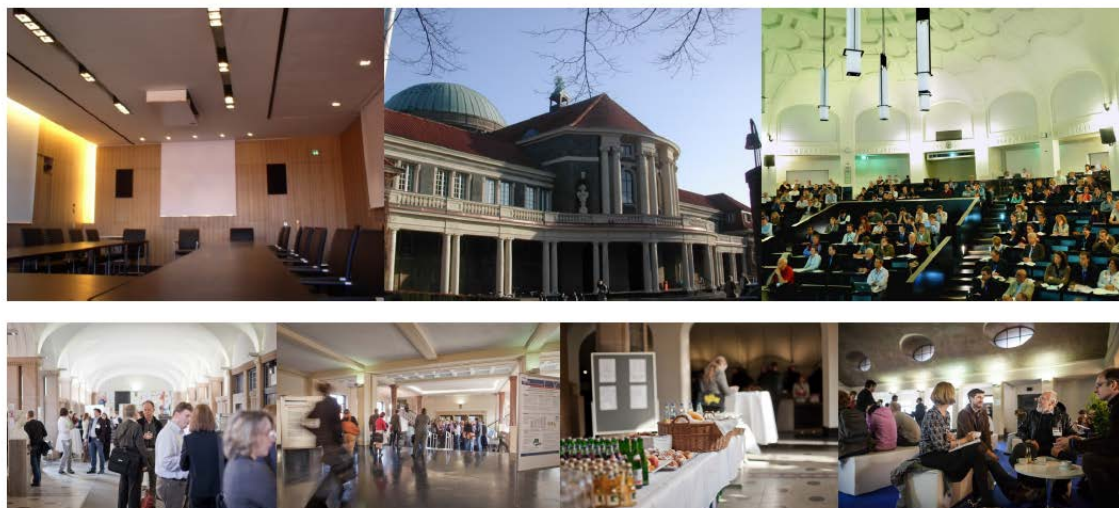
These are:

- 1) Future fish production in the Arctic. Lead: Hein Rune Skjoldal
- 2) Consequences of large fish stocks. Lead: Anna Rindorf
- 3) Vectors and management of invasive species. Lead: Bella Galil, Cynthia McKenzie with PICES and CIESM

Progress developing these viewpoints has been slower than intended but (3) is now with an Advice Drafting Group and (1) and (2) are at the early draft stage. SCICOM and ACOM intend to make another call for viewpoints in 2019. The main challenge with developing viewpoints is the pressure already on ICES experts and the advisory system, with the consequence that non-requested advice is less likely to be prioritised.

9 Annual Science Conference 2018

9.1 ASC 2018 overview



Dates and venue

The 2018 Annual Science Conference was held in Hamburg, Germany from Monday 24 September to Thursday 27 September (four days). The venue was the University of Hamburg, located in the centre of the city of Hamburg.

The conference was spread between the historical, main building of the university, and the new, modern west wing of the university building.

The theme sessions, opening ceremony, open sessions and presentations took place in the historical building, in the university lecture theatres, where the capacity of the rooms varied from 80–620 persons capacity. The largest lecture theatre, Hall A, (620 capacity), was only used for the opening ceremony.

There were four lecture theatres to facilitate the 18 theme sessions, and two plenaries each with a capacity of 80–360 persons.

The poster exhibit and poster session took place in the marquee, located behind the university.

Opening and Keynote speakers:

The opening of the conference was held on Monday morning, facilitated by ICES General Secretary Anne Christine Brusendorff and President, Cornelius Hammer. ICES were welcomed to Hamburg by the Federal Minister of Food and Agriculture, Mrs Julia Klöckner.

The Outstanding Achievement Award was awarded to Mike Armstrong, by Carl O'Brien, based on his strong and sustained contribution to ICES science and advice. This has included 24 years' involvement in the stock assessment process as chair, reviewer, and participant in multiple working groups.

The opening session was followed immediately by a keynote talk on regime shifts by Christian Möllmann and Martin Quaas from the universities of Hamburg and Kiel. Approaching the topic from both ecological and economic perspectives, they described how regime shifts (large, abrupt and persistent changes in a system) affected marine ecosystems and the fisheries that depend on them.

The second keynote was held on the Tuesday morning, on unexpected outcomes and unpredictable managers, fishers, and scientists by Ingrid van Putten, CSIRO Oceans and Atmosphere. She provided

examples of the ways in which poor understanding of human behaviour can lead to management actions with unintended and unwanted consequences – often driven by counterproductive incentives. She went on to identify solutions that improve our capacity to anticipate and pre-empt these consequences, providing policy-makers with tools to develop more effective management systems.

The third keynote was held on Thursday afternoon, on understanding deep-sea Atlantic ecosystems at ocean basin scale, by J Murray Roberts, University of Edinburgh. He highlighted advances in our understanding of deep-sea Atlantic ecosystems and the importance of transatlantic alliances in understanding ecosystem processes and connectivity at the basin-wide scales needed to support conservation of biodiversity in areas beyond national jurisdiction.

Poster session

The poster session was held on Tuesday evening 25 September, in the marquee. It was very well attended, and the space was very suitable and fitting for the large event.

Travel funds

10,000 DKK travel funds were allocated to 16 early career scientists. First-time participation at the ASC was especially encouraged.

Early Career Scientists (ECS)

As well as the travel funds, we also offered a range of activities aimed at ECS participants, including a fully subscribed breakfast workshop about how to get involved in the ICES community, pop-up scientist sessions, every lunchtime, with Q&A with invited speakers, as well as the popular mentor programme. In total 177 early career scientists attended the conference.

Conference programme and folder

The conference programme was made available online in May. The printed version of the conference programme was available as a pocket sized folder. There was no designated mobile phone app, due to budget constraints.

Registration

The registration system opened in March. The conference fees were at the increased rate, as per the SCICOM decision of 2015. Fees did not include lunch, but they did include a HVV transport pass, for public transport throughout the city. In total there were 654 registrations for the conference.

Abstracts

Following the SCICOM decision of 2015, the submission of extended abstracts was not requested. However, authors, if required by their institute, could submit an extended abstract or full paper.

The abstracts were made available online as PDF files, and could be viewed by attendees when they clicked on the titles in the timetables. The abstracts will all go online as part of the CM document collection.

Poster authors were asked to submit their posters electronically in August, for inclusion in the abstract collection and the subsequent CM document collection.

There were five open sessions (one planned session was cancelled due to lack of submissions) and eighteen theme sessions.

9.2 Theme Session reports

Theme Session reports are linked to the titles listed below:

- 9.2.1 Theme session A: Mesopelagic ecosystems: fish and invertebrate population biomass and bio-diversity, and role in carbon flux
- 9.2.2 Theme session B: Modernizing fisheries stock assessment and monitoring with genetic methods
- 9.2.3 Theme session C: Assessing and analysing marine spatial planning - knowledge - indicators - visions
- 9.2.4 [Theme session D: The Nordic seas and the Arctic – climatic variability and its impact on marine ecosystems, fisheries and policymaking](#)
- 9.2.5 [Theme session E: Cumulative effects assessment in the marine realm: approaches, examples and future needs](#)
- 9.2.6 Theme session F: Bottom-up approaches: the contribution of marine benthos to management, conservation and monitoring, taking stock and setting research direction
- 9.2.7 [Theme session G: Ocean basin-scale research and management: challenges and opportunities](#)
- 9.2.8 Theme session H: Preparing for change; challenges for fisheries governance
- 9.2.9 Theme session I: Tipping points complex nature and implications to marine socio-ecological systems management (co-sponsored by PICES)
- 9.2.10 [Theme session J: Survey data products for stock and ecosystem assessments: Challenges and future directions](#)
- 9.2.11 Theme session K: How are we managing? Developing new management tools for commercially exploited sharks and rays
- 9.2.12 [Theme session L: Future-oriented seafood markets: economic dimensions, ecological compatibility and social aspects of fisheries and aquacultures](#)
- 9.2.13 [Theme session M: Molecules and morphology: integrative taxonomic analysis of marine planktonic assemblages](#)
- 9.2.14 [Theme session N: Technical approaches to reduce the environmental impact of fishing](#)
- 9.2.15 [Theme session O: Working toward an ecosystem approach to north atlantic marine aquaculture](#)
- 9.2.16 Theme session P: Electronic monitoring and movement analysis in fisheries: applications of emerging science
- 9.2.17 Theme session Q: Sustainability thresholds and ecosystem functioning: the selection, calculation, and use of reference points in fishery management (co-sponsored by PICES)
- 9.2.18 Theme session R: Towards a better understanding of human behaviour for improved fisheries science and management

9.3 Open Sessions reports

Open Session reports are linked to the titles listed below:

- 9.3.1 [Methodological advances to evaluate ecosystem impacts of human activities](#)
- 9.3.2 [Data's Den: Show us your best tools to process and present data](#)
- 9.3.3 [Do you know more about climate change issues than the wider European public?](#)
- 9.3.4 [How do we best incorporate social and economic analyses in management advice?](#)
- 9.3.5 [Public-private partnerships for the exploration of the sea](#)

9.4 ASC 2019

The 2019 Annual Science Conference will be held at Svenska Mässan, in Gothenburg, Sweden, Monday 9 to Thursday 12 September 2019.

A site visit took place in July 2018, with participation of Anna Davies from ICES secretariat, and representatives from the Swedish Institute Hav och Vatten, Emma Sernland and Pernilla Johansson. A contract for the venue is currently being finalised, with the final details of room occupancy being discussed at the moment.

The conference centre is located just outside Gothenburg city centre. It is a very large conference venue, where we will have use of one floor, of one tower, out of three.

Transport to Gothenburg is easy, with a small international airport, and excellent train and bus connections from larger international airports, Copenhagen and Stockholm. The conference venue is a 15–20 minute walk from Gothenburg central train station. There are many hotels in the vicinity of the conference venue, and in the city centre, at a range of budgets.

The opening ceremony will take place in the large auditorium (capacity + 1000), which can be adapted to suit our purpose. There is a large hall for the poster exhibit, with flexibility for side events, projection onto screens/white walls, and four theme session rooms (capacity 90–120) opposite one another.

Decisions on the social events, and locations for these are still pending. ICES and the hosts are considering to include lunches in the registration fee for the conference. This will allow 60 minute lunches, thereby prioritising time for theme and network sessions.

10 Symposia

The following symposia were co-sponsored by ICES in 2018 or are in planning for future years.

ICES co-sponsored symposia held in 2018:

- '4th ICES/PICES/IOC Symposium on Climate Change and Impacts on the World's Oceans', 4–8 June, Washington D.C. (symposium report made available – September 2018 SCICOM doc 44)

ICES co-sponsored symposia to be held in 2018:

- 'Conference on "Oceans Past VII", 22–26 October, Bremerhaven, Germany
- ICES/UNECE 'Management tools and standards in support of Sustainable Development Goal 14', to be held in a working meeting format, October 2018, Reykjavik, Iceland

ICES co-sponsored symposia to be held in 2019

- 'The International Year of the Salmon Symposium' (running title, Tromso, June 2019), hosted by NASCO
- 'Challenging the scientific legacy of Johan Hjort: Is it time for a new paradigm shift in marine research? symposium', June 2019, Bergen, Norway
- 'Shellfish - Resources and Invaders of the North' symposium, November 2019, Tromso, Norway

ICES co-sponsored symposia to be held in 2020

- Symposium on 'Marine Socio-Ecological Systems - MSEAS 2020: Navigating global change in the marine environment with socioecological knowledge', Yokohama, Japan
- An international symposium on 'The threat of plastic to Arctic and SubArctic marine ecosystems', April 2020, Reykjavik, Iceland

Pending symposia requests

- The World Fisheries Congress, October 2020, Adelaide, Australia
- 7th Zooplankton Symposium, 2021 (PICES venue)
- 5th ICES/PICES/IOC Symposium on Climate Change and Impacts on the World's Oceans', Bergen, Norway, 2021
- 4th PICES/ICES Early Career Scientist Conference, 2022 (looking for an ICES venue)

Annex 1: Full list of SCICOM Expert Groups

Expert Groups under Aquaculture Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
1	Working Group on Pathology and Diseases of Marine Organisms	WGPDMO	Ryan Carnegie, USA	2016	2018	12	9
2	Working Group on Social and Economic Dimensions of Aquaculture	WGSEDA	Gesche Krause, Germany	2018	2020	9	7
3	Working Group on Application of Genetics in Fisheries and Aquaculture	WGAGFA	Jann Martinsohn, Italy	2018	2020	23	10
4	Working Group on Scenario Planning on Aquaculture	WGSPA	Ben Halpern, USA	2018	2021		
5	Working Group on Environmental Interactions of Aquaculture	WGEIA	Terje Svåsand, Norway	2018	2020		

Expert Groups under Ecosystem Processes and Dynamics Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
1	Working Group on Biodiversity Science	WGBIODIV	W. Nikolaus Probst, Germany and Oscar Bos, the Netherlands	2016	2018	15	7
2	Working Group on Integrated Morphological and Molecular Taxonomy	WGIMT	Naiara Rodriguez-Ezpeleta, Spain, and Elaine Fileman, UK	2017	2019	19	11
3	Benthos Ecology Working Group	BEWG	Silvana Birchenough, UK	2018	2020	25	10

	EG name	EG Acronym	EG Chair	Year start	Year end	Number at- tending (2018)	Number of countries (2018)
4	Working Group on Small Pelagic Fishes, their Ecosystems and Climate Impact	WGSPEC	Priscilla Licandro, UK, and Athanassios Tsikliras, Greece	2016	2018		
5	Working Group on Phytoplankton and Microbial Ecology	WGPME	Alexandra Kraberg, Germany, and Marie Johansen, Sweden	2016	2018	15	9
6	Working Group on Crangon fisheries and life history	WGCRAN	Josien Steenbergen, the Netherlands	2016	2018		
7	Working Group on Zooplankton Ecology	WGZE	Sophie Pitois, UK, and Lidia Yebra, Spain	2018	2020	31	15
8	Working Group on Oceanic Hydrography	WGOH	Paula Fratantoni, USA, and César González-Pola, Spain	2018	2020	14	10
9	Working Group on the Biology and Life History of Crabs	WGCRAb	Martial Laurent, France	2017	2019		
10	Working Group on Resilience and Marine Ecosystem Services	WGRMES	Sebastian Villasante, Spain, and Gonzalo Macho Rivero, Spain	2018	2020		
11	ICES IOC Working Group on Harmful Algal Bloom Dynamics	WGHABD	Eileen Bresnan, UK	2018	2020	17	10
12	Working Group on Cephalopod Biology and Life History	WGCEPH	Graham Pierce, Spain, and Jean-Paul Robin, France	2017	2019		
13	ICES/PICES Working Group on Climate Change and Biologically-driven Ocean Carbon Sequestration	WGCCBOCS	Nianzhi Jiao, China, Louis Legendre, France, and Richard Rivkin, Canada	2016	2018		
14	Working Group on Fisheries-Induced Evolution	WGEVO	Bruno Ernande, France	2016	2018	9	7

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
15	Working Group on Operational Oceanographic Products for Fisheries and the Environment	WGOOFE	Dominique Obaton, France, and Rodney Forster, UK	2016	2018		
16	Working Group on the Science to Support Conservation, Restoration and Management of Diadromous Species	WGDIAD	Johan Dannewitz, Sweden and Dennis Ensing, UK	2018	2020		
17	ICES-PICES Workshop on Political, Economic, Social, Technological, Legal and Environmental scenarios used in climate projection modelling	WKPESTLE	John Pinnegar, UK; Jörn Schmidt, Germany; Alan Haynie, USA; and Tyler Eddy, Canada	2018	2018		
18	A workshop entitled “Towards an European observatory of the invasive calanoid copepod <i>Pseudodiaptomus marinus</i>”	WKEUROBUS	Marco Uttieri, Italy	2018	2018	29	9
19	Working Group on data poor diadromous fish	WGDAM	Lari Veneranta, Finland, and Karen Wilson, USA	2016	2018		
20	Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (<i>Anadromous Salmo trutta</i>) Populations	WGTRUTTA	Johan Höjesjö, Sweden, and Alan Walker, UK	2017	2019		
21	Working Group on Seasonal-to-Decadal Prediction of Marine Ecosystems	WGS2D	Mark Payne, Denmark	2017	2019		
22	Scallop Assessment Working Group	WGScallop	Kevin Stokesbury, USA	2016	2018		

Expert Groups under Human Activities, Pressures and Impacts Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
1	Working Group on Marine Benthos and Renewable Energy Developments	WGMBRED	Jennifer Dannheim, Germany, and Andrew B. Gill, UK	2016	2018	15	7
2	Working Group on Marine Renewable Energy	WGMRE	Finlay Bennet, UK	2017	2019	6	5
3	Working Group for Marine Planning and Coastal Zone Management	WGMP CZM	Matthew Gubbins, UK, and Andrea Morf, Sweden	2017	2019		
4	Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem	WGEXT	Ad Stolk, The Netherlands	2017	2019	17	13
5	Working Group on Biological Effect of Contaminants	WGBEC	Bjørn Einar Grøsvik, Norway, and Ketil Hylland, Norway	2016	2018	12	7
6	Marine Chemistry Working Group	MCWG	Koen Parmentier, Belgium	2016	2018		
7	Working Group on Marine Sediments in Relation to Pollution	WGMS	Craig Robinson, UK, and Maria Belzunce, Spain	2018	2020	16	8
8	Working Group on Economics	WGECON	Hazel Curtis	2018	2020	18	11
9	Working Group on Marine Litter	WGML	Thomas Maes, UK; Francois Galigni, France; and Andy Booth, Norway	2018	2020	17	9
10	ICES Working Group on Introduction and Transfers of Marine Organisms	WGITMO	Cynthia McKenzie, Canada	2017	2019	48	22

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
11	ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors	WGBOSV	Sarah Bailey, Canada	2016	2018	46	22
12	Stock Identification Methods Working Group	SIMWG	Lisa Kerr, USA	2017	2019	9	4
13	Working Group on the value of Coastal Habitats for Exploited Species	WGVHES	Josianne Støttrup, Denmark, Rochelle Seitz, USA, and Karen van de Wolfshaar, the Netherlands	2016	2018	20	9
14	Working Group on Spatial Fisheries Data	WGSFD	Niels Hintzen, the Netherlands, and Christian von Dorrien, Germany	2016	2018	22	14
15	Working Group on Marine Habitat Mapping	WGMHM	James Strong, UK	2018	2020	8	5
16	Methods Working Group	MGWG	Arni Magnusson, ICES	2017	2019		
17	Working Group on the History of Fish and Fisheries	WGHIST	Ruth Thurstan, Australia and Emily Klein, USA	2018	2020		
18	Working Group on Multispecies Assessment Methods	WGSAM	Sarah Gaichas, USA, and Alexander Kempf, Germany	2016	2018		
19	Working Group on Methods for Estimating Discard Survival	WGMEDS	Tom Catchpole, UK, and Sebastian Uhlmann, Belgium	2017	2019	22	12
20	Working Group on Fisheries Benthic Impact and Trade-offs	WGFBIT	Tobias van Kooten, Netherlands; Ole Ritzau Eigaard, Denmark; and Gert van Hoey, Belgium	2018	2020		
21	Workshop on Vulnerabilities and Risks to Culturally Significant Areas	WKVCSA	Andreas Kannen, Germany and Kira Gee, Germany	2018	2018	10	5

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
22	Workshop on Co-existence and Synergies in Marine Spatial Planning	WKCSMP	Kira Gee, Germany, and Eirik Mikkelsen, Norway	2018	2018	32	11
23	Workshop on Integrating Historical Data into modern stock assessment	WKIHSD	Massimiliano Cardinale, Sweden, and Giuseppe Scarcella, Italy	2019	2019		

Expert Groups under Integrated Ecosystem Assessments Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
1	Working Group on Comparative Analyses between European Atlantic and Mediterranean marine ecosystems to move towards an Ecosystem-based Approach to Fisheries	WGCOMEDA	Marta Coll, Spain, Manuel Hidalgo, Spain, Hilmar Hinz, Spain and Christian Möllmann, Germany	2017	2019	12	6
2	Working Group on Ecosystem Assessment of Western European Shelf Seas	WGEAWESS	Steven Beggs, UK and Eider Andon-egi, Spain	2017	2019	20	5
3	ICES/HELCOM Working Group on Integrated Assessments of the Baltic Sea	WGIAB	Matilda Valman (HELCOM), Sweden, Laurene Pécuchet, Denmark, Saskia Otto, Germany and Martin Lindegren, Denmark	2016	2018	25	6
4	Working Group on the Integrated Assessments of the Barents Sea	WGIBAR	Elena Eriksen, Norway and Anatoly Filin, Russia	2017	2019	21	2

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
5	ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean	WGICA	John Bengtson (ICES), USA, Sei-Ichi Saitoh (PICES), Japan, and Hein Rune Skjoldal (PAME), Norway	2016	2018	17	6
6	Working Group on Integrating Ecological and Economic Models	WGIMM	Jörn Schmidt, Germany, J. Rasmus Nielsen, Denmark, and Eric Thunberg, USA	2015	?	NA	NA
7	Working Group on the Integrated Assessments of the Norwegian Sea	WGINOR	J. Óskarsson, Iceland, and Per Arneberg, Norway	2016	2018		
8	Working Group on Integrated Assessments of the North Sea	WGINOSE	Andy Kenny, UK and Erik Olsen, Norway	2017	2020	7	4
9	Working Group on Integrative, Physical-biological, and Ecosystem Modelling	WGIPEM	Morgane Travers-Trolet, France and Marie Maar, Denmark	2016	2018	29	11
10	Working Group on Large Marine Ecosystem Programme Best Practices	WGLMEBP	Hein Rune Skjoldal, Norway, and Rudolf Hermes, Thailand	2014	?	NA	NA
11	Working Group on Maritime Systems	WGMARS	Christine Röckmann, the Netherlands, Patricia M. Clay, USA	2016	2018	11	6
12	Working Group on Northwest Atlantic Regional Sea	WGNARS	Geret DePiper, USA and Robert Gregory, Canada	2017	2019	24	2
13	Working Group on SOCIAL indicators	WGSOCIAL	Lisa L. Colburn, USA, Amber Himes-Cornell, FAO, Marloes Kraan, the Netherlands	2018	2020	20	8

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
14	WKEAMA - PAME (Joint EA-EG) / ICES Workshop on the development of guidelines for Ecosystem Approach to management (EAM) in the Arctic	WKEAMA	Hein Rune Skjoldal, Norway, Libby Logerwell, USA	2018	2018	58	7
15	Workshop on operational EwE models to inform IEAs	WKEWIEA	Maria Angeles Torres, Spain, Maciej Tomczak, Sweden, Eider Andonegi, Spain	2018	2018		
16	Workshop on integrated trend analyses in support to integrated ecosystem assessment	WKINTRA	Saskia Otto, Germany, Benjamin Planque, Norway	2018	2018		
17	Workshop on methods to develop a swept-area based effort index	WKSABI	Kai Wieland, Denmark	2018	2018		
18	Workshop on translating science into advice	WKSCIENCE2ADVICE	Simon Jennings, ICES, and Eskild Kirkegaard, ICES	2018	2018		

Expert Groups under Ecosystem Observation Steering Group

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
1	International Bottom Trawl Survey Working Group	IBTSWG	Kai Wieland, Denmark & Corina Chaves, Portugal	2016	2018	18	10
2	Planning Group on Data Needs for Assessments and Advice	PGDATA	Joël Vigneau	2018	2020	14	10

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
3	Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VII, VIII and IX	WGACEGG	Maria Santos, Spain and Mathieu Doray, France	2017	2019		
4	Working Group on Atlantic Fish Larvae and Eggs Surveys	WGALES	Richard D.M. Nash, Norway and Maria Manuel Angelico, Portugal	2018	2020		
5	Working Group on Beam Trawl Surveys	WGBEAM	Holger Haslob, Germany	2017	2019		
6	Baltic International Fish Survey Working Group	WGBIFS	Olavi Kaljuste, Sweden	2018	2020	24	9
7	The Working Group on Biological Parameters	WGBIOP	Pierluigi Carbonara*, Italy, Cindy van Damme*, Netherlands and Julie Davies*, Denmark	2018	2020		
8	Working Group on Commercial Catches	WGCATCH	Nuno Prista, Sweden, and Ana Ribeiro Santos, United Kingdom	2017	2019		
9	Working Group 2 on North Sea Co and Plaice Egg Surveys in the North Sea	WGEGBS2	Matthias Kloppmann, Germany	2016	2018		
10	Working Group on Electrical Trawling	WGELECTRA	Adriaan Rijnsdorp, NL, Maarten Soetaert*, Belgium	2018	2020	18	6
11	Working Group on Fisheries Acoustics, Science and Technology	WGFAST	Richard O'Driscoll, NZ	2017	2019	92	16

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
12	ICES-FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB)	WGFTFB	Haraldur A. Einarsson, Iceland, and Pingguo He*, FAO	2017	2019	102	22
13	Working Group on International Deep Pelagic Ecosystem Surveys	WGIDEEPS	Kristjan Kristinsson, Iceland and Benjamin Planque, Norway	2017	2019		3
14	Working Group of International Pelagic Surveys	WGIPS	Matthias Schaber, Germany and Bram Couperus, Netherlands	2016	2018	28	9
15	Working Group on Improving use of Survey Data for Assessment and Advice	WGISDAA	Sven Kupschus, UK	2018	2020		
16	Working Group on Integrating Surveys for the Ecosystem Approach	WGISUR	Ralf van Hal, Netherlands	2018	2020		
17	Working Group on Mackerel and Horse Mackerel Egg Surveys	WGMEGS	Matthias Kloppmann, Germany and Gersom Costas, Spain	2018	2020	18	8
18	Working Group on Nephrops Surveys	WGNEPS	Kai Wieland, Denmark, Adrian Weetman, Scotland	2016	2018		
19	Working Group on Recreational Fisheries Surveys	WGRFS	Kieran Hyder, UK and Keno Ferter, Norway	2018	2020		
20	Workshop on Age Estimation Methods of Deep Water Species	WKAMDEEP2	Albert Ole Thomas, Norway, Kélig Mahé, France and Juan Gil Herrera, Spain	2018	2020		
21	Workshop on Age reading of Horse Mackerel, Mediterranean	WKARHOM3	Alba Jurado, Spain and Kélig Mahé, France	2018	2020		

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
	Horse Mackerel and Blue Jack Mackerel						
22	Workshop on Age estimation of Mackerel (Scomber scombrus)	WKARMAC2	Jens Ulleweit*, Germany and Maria Rosario Navarro*, Spain	2018	2020		
23	Workshop for Advancing Sexual Maturity Staging in Fish	WKASMSF	Maria Cristina Follesa, Italy, and Cindy van Damme, The Netherlands	2018	2018	13	7
24	The second Workshop on Optimization of Biological Sampling	WKBIOPTIM2	Ana Cláudia Fernandes*, Portugal and Maria Teresa Facchini*, Italy	2018	2018		
25	Workshop on DATRAS surveys- Bay of Biscay and Iberian Coast	WKDATR-BoB	Corina Chaves, Portugal and Vaishav Soni, ICES	2018	2018	5	3
26	Workshop on DATRAS surveys- Greater North Sea Celtic Sea	WKDATR-NSCS	David Stokes, Ireland and Vaishav Soni, ICES	2018	2018	8	
27	Workshop on evaluating survey information Celtic Sea gadoids	WKESIG	David Stokes*, Ireland	2018	2018		
28	Workshop on Egg staging, Fecundity and Atresia in Horse mackerel and Mackerel	WKFATHOM	Maria Korta, Spain, and Matthias Kloppmann, Germany	2018	2018		
29	Workshop on Mackerel biological parameter Quality Indicators	WKMACQI	Cindy van Damme, the Netherlands	2018	2017/2018	7	4
30	Workshop on Uses of Machine Learning in Marine Science	WKMLEARN	Ketil Malde*, Norway and Shaheen Syed*, Netherlands/UK	2018	2018	29	11
31	Workshop on Methods for Stakeholder Involvement in Gear Development	WKMSIGD	Jordan Feekings*, Denmark, and Daniel Valentinsson*, Sweden	2018	2018		10

	EG name	EG Acronym	EG Chair	Year start	Year end	Number attending (2018)	Number of countries (2018)
32	Workshop on Nephrops burrow counting	WKNEPS	Adrian Weetman, UK and Jennifer Doyle, Ireland	2018	2018		
33	Joint WGBYC/WGCATCH Workshop on sampling of by-catch and PET species	WKPETSAMP	Bram Couperus*, the Netherlands, and Katja Ringdahl*, Sweden	2018	2018		
34	Workshop on Technical Development to Support Fisheries Data Collection 2	WKSEATEC2	David Stokes, Ireland; Marcellus Rödiger, Germany	2018	2018		
35	Workshop on Elasmobranchs maturity	WKSEL3	Maria Cristina Follesa, Italy and Pierluigi Cabonara, Italy	2018	2018		
36	Workshop on age validation studies of small pelagic species	WKVALPEL	Javier Rey*, Spain, Kelig Mahé*, France and Pierluigi Carbonara*, Italy	2018	2018		

Annex 2: Draft science plan

The Science Plan will guide the conduct and delivery of science in support of the vision and mission of ICES, as described in the draft Strategic Plan. The Science Plan describes the scientific priorities and goals of ICES, their rationale, how they contribute to ICES vision and mission, and the science and other tasks to be undertaken to meet them. The Science Plan will be a public document with an audience comprising the marine science community in ICES countries and beyond.

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

Progress with implementation of the science plan will be reviewed and reported annually to our governing body, the ICES Council. As well as guiding future implementation of the science plan, information gleaned from annual reviews will be used to shape our future marine science priorities and to ensure we are effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

As described in our 2017 report to Council the science plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The science priorities and associated topics in the science plan received final review and sign-off by the Science Committee on 5 October 2018. The texts of the draft plan, but not the scientific priorities, are subject to ongoing review, with sign-off expected on the Science Committee forum after feedback from the Council meeting and finalisation of the strategic plan.

Draft Science Plan (7 Oct 2018)

Marine ecosystem and sustainability science for the 2020s and beyond

Science Plan of the International Council for the Exploration of the Sea

Who we are:

The International Council for the Exploration of the Sea (ICES) is an intergovernmental organization dedicated to advancing and shaping marine science to support sustainable use of our seas and oceans. The ICES international network comprises more than 5,000 scientists from over 690 marine institutes in 20 member countries and beyond.

ICES Vision:

To be a world-leading marine science organization, effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

ICES Mission:

To advance and share scientific understanding of marine ecosystems and the services they provide, and to employ this knowledge to generate state-of-the-art advice on meeting conservation, management and sustainability goals.

[opening text]

Our science plan “Marine ecosystem and sustainability science for the 2020s and beyond” describes ICES scientific priorities and objectives and a pathway to achieve them. By successfully implementing our science plan we will generate ecosystem and sustainability science with a high and beneficial impact on society. Our science will advance understanding of marine ecosystems, improve assessments of the effects of human activities, improve observations of the seas and oceans and provide evidence and solutions to support conservation and management. Supporting tasks will increase the visibility and impact of this science, provide a rewarding and efficient working environment, engage new scientists, increase training and networking opportunities, and strengthen collaboration with regional and global partners. By achieving our scientific objectives and completing the supporting tasks the ICES community will create a world-leading marine science organization, effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

This plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The audience for this plan is the marine science community, in ICES countries and beyond. Many people in the audience have also helped to create this plan! We hope the plan will both resonate with and support managers, industry, funding agencies, governments, and inter-governmental and non-governmental organisations committed to advancing marine science, conservation and management.

To deliver “Marine ecosystem and sustainability science for the 2020s and beyond”, the ICES community will work in seven priority areas of marine science, each with related objectives and purpose.

1. Understanding ecosystems

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

2. Impacts of human activities

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

3. Observation and exploration

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

4. Emerging techniques and technologies

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

5. Seafood production

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

6. Conservation and management science

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

7. Sea and society

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

Supporting tasks will add to the scope, scale and impact of our scientific output in each of the seven priority areas. Across all areas of our science we will increase the visibility of, and access to, our science, data and advice and recognise, promote and use the science outputs. ICES values the disciplines, perspectives and expertise brought to our network by member country institutions, partners, clients and stakeholders. We will regularly and actively solicit their inputs to the development of our science at the Annual Science Conference, through other sponsored conferences and discipline and topic-specific workshops and meetings.

For all people engaging with ICES science we will seek to provide an efficient, collaborative, respectful and rewarding working environment, as well as the resources and infrastructure needed by ICES groups to develop and share knowledge and expertise. We will ensure expert groups have flexibility to innovate and explore new topics and encourage and support cross-cutting science activity. To secure our future as a world-class marine science organisation we will provide more and better networking and training opportunities and encourage engagement of a new and emerging generation of scientists with expert groups.

We will work closely with regional and global partners. Relationships with partners extend the reach of our science into the Mediterranean, Black Sea, Arctic, North Pacific Ocean and globally. Partnerships bring mutual benefits, by strengthening the contribution of regional expertise to larger-scale and global processes and contributing to shaping and delivering marine science and advice beyond the ICES region. We will exchange knowledge and expertise with regional and global partners through collaborative projects, networks and

training: to shape and advance marine science and advice. We will also engage with partners to meet joint scientific goals; 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.

[Box]

Science Plan outcomes

- Marine science with a high and beneficial impact on society
- Engaged and productive scientists from the natural and social sciences
- Increased visibility of, and access to, our science, data and advice
- Stronger and more dynamic links between science and advice
- A secure position as a world-class marine science organisation

Implementation

The scientific objectives and tasks in this science plan are to be accomplished in the period 2019-2024. But these accomplishments will also prepare us to address emerging scientific challenges in the late 2020s and beyond. Implementation of the plan will be assessed by measuring and reviewing outcomes. These include the impacts of our science and advice on conservation, management and sustainability goals, the extent of engagement with ICES and the uses of our science, data and advice. Progress with implementation will be reported to and reviewed by our governing body, the ICES Council. Information gleaned from their reviews will be used to shape our future marine science objectives and tasks and to ensure we are contributing effectively to the ICES mission. Responsibilities for implementation of the science plan are described in an implementation plan. The intended audience for the implementation plan is narrower than for the science plan and includes the people and groups in ICES who are involved in implementing, monitoring and reporting on delivery of the science plan.

1. Understanding ecosystems

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

Marine sustainability science is predicated on an underlying understanding of the structure, function and dynamics of marine ecosystems and their interactions with the physical and chemical environment. As this understanding evolves and increases, so does our capacity to report on the status of the marine environment and measure, describe and manage human interactions with the sea.

Tasks:

Assess and report on trends in ocean climate
Improve understanding of the oceanography of semi-enclosed and shelf seas and the wider north Atlantic ocean
Describe links between the physical and biological environment and their influence on production, biogeochemical cycles and other ecosystem functions, and their consequences for the stability and resilience of ecosystems and the services they provide
Describe connectivity within and among ecosystems, of many species and life stages at a range of spatial scales, and assess the ecological consequences
Develop methods to map and predict the distribution of seabed and pelagic habitats and biodiversity and their sensitivity to disturbance
Develop and apply molecular, taxonomic and other methods to describe and identify species
Describe life histories and their links to the environment and responses to environmental change, including phenotypic and genetic adaptation
Build on and challenge existing assumptions about population and community structures and interactions by searching for new insights using molecular methods, physiology and behavioural science
Conduct comparative analyses of the structure, function and dynamics of ecosystems in ICES regions and beyond

2. Impacts of human activities

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

The seas provide many benefits for people but human activities pose risks as well as providing opportunities. Pressures from contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture, fishing, climate change, acidification and habitat loss affect ecosystems and the environment. Understanding these pressures and their impacts will provide evidence to advise on the trade-offs between benefits and risks.

Tasks:

Describe the distribution and intensity of pressures that result from contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture, fishing, climate change, acidification and habitat loss.
Explore how pressures on the marine environment act, independently and collectively, to modify the variety, quantity and distribution of marine life and structure, function and dynamics of food webs and marine ecosystems (including cumulative pressures and their cumulative impacts)
Develop methods to better characterise and map the sensitivity and role of seabed and pelagic habitats, from close to the coasts to the deep sea.
Describe the exposure of habitats to pressures, their vulnerability and resilience, and develop and test indicators of pressure, state and function
Develop methods and models for assessing and projecting ecological impacts of diffuse pressures (climate change, pollution, litter and acidification) spanning different levels of biological organisation and at a range of time and space scales
Model the transport of pollutants, including litter, to link sources to areas of impact, especially when these span long distances (e.g. Arctic and deep sea) or many trophic levels (e.g. impacts on predatory fishes, birds and mammals)
Assess and project implications of human activities for management systems and marine industries and advise on options for mitigation and adaption

3. Observation and exploration

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

Both science and advice rely on observations of physical, chemical and biological properties of the environment and ecosystems. Monitoring provides essential inputs to status assessments, including fisheries and ecosystem overviews, as well as feedback on the effects of conservation and management measures. Since large areas of the marine environment have not been observed, exploration provides essential information on the distribution of biological resources for sustainable use and protection.

Tasks:

Develop and co-ordinate, integrated, quality assured and cost-effective monitoring programmes
Evaluate and optimise survey design, connectivity of observation systems, and survey data handling, access and analysis to meet existing demands for data and to meet emerging data, science and advisory needs; with a focus on supporting fisheries assessment, integrated ecosystem assessment and ecosystem-based management
Conduct analyses and testing of techniques, sensors and the logistical and statistical aspects of survey design to increase the efficiency, scope and accuracy of monitoring and the relevance of monitoring programmes to our science and advisory needs
Conduct an ambitious co-ordinated programme to further explore and report the ecological characteristics of the ICES region, with a focus on the distribution of seabed habitats
Develop more effective mechanisms to ensure that monitoring and surveillance data (e.g. VMS, AIS) can be reused or reprocessed to support ICES needs
Identify, design and use opportunities for public participation in observation and exploration through citizen-science and opportunities for marine industries and other stakeholders to contribute to research design, data gathering and interpretation

4. Emerging techniques and technologies

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

New techniques and technologies continue to transform our capacity to understand and monitor biota, marine ecosystems, human activities and pressures, to analyse data and to conduct assessments. Some emerging technologies may be so disruptive that they fundamentally challenge the accuracy and cost-effectiveness of existing approaches. It is essential to develop, identify and review emerging techniques and technologies and to support up-take when they advance capacity to improve the rigour, scope and impact of science and advice.

Tasks:

Horizon scan, test, develop and where appropriate harness new and emerging techniques and technologies that have potential to progress the ICES vision and mission: with an emphasis on data gathering, processing and interpretation
Develop more efficient ways of analysing, sharing and presenting big data from observation and monitoring; especially using data from remote sensing of the seas and monitoring of human activities
Develop and apply a wide range of analytical and statistical tools, such as machine learning, to describe the state and dynamics of the marine environment and the distribution and dynamics of human activities, and to assess their strengths and weaknesses
Investigate the benefits and costs of techniques that may supplement or replace existing approaches to biological 'sampling', including the applications of acoustics, image analysis, molecular methods (e.g. eDNA, genetic barcoding and genetic close-kin mark-recapture methods) as well as sensors for chemical and physical sampling
Track the emergence of new technologies in marine industries and assess how these technologies affect the interactions between those industries and the marine environment

5. Seafood production

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

Production of seafood and associated by-products supports livelihoods and businesses and makes an important contribution to human nutrition and health. Securing a sufficient and sustainable supply of safe seafood from wild-capture fisheries and aquaculture is an ongoing challenge for society and effective development and management of these industries relies on scientific evidence.

Tasks:

Improve methods of single-species and multi-species stock assessment, including data-limited methods. Develop and conduct management strategy evaluations, address uncertainty, and improve the transparency, robustness, efficiency and repeatability of stock assessment
Increase understanding of stock structures, migrations, life histories, natural mortality, climate and food web impacts on marine and diadromous species as well as multi-species interactions and the consequences of stock recovery to strengthen the inputs and evidence base for assessment and advice
Further understanding and operationalisation of ecosystem-based fishery management and MSY concepts and their application in mixed, multispecies and emerging (e.g. mesopelagic) fisheries
Examine fisheries spatial dynamics, performance and impact of gear, links between catch and effort, mixed fishery interactions, role and impacts of recreational and small-scale fisheries and the consequences of responses to management measures
Assess aquaculture production potential and carrying capacity, development scenarios, and methods of risk and benefits assessment; for rearing or full production systems including low trophic level and seaweed aquaculture, integrated multi-trophic aquaculture and offshore production facilities
Assess interactions between aquaculture and the environment including the risks posed by diseases and pathogens and their mitigation, harmful algal blooms and the effects of escapees and nutrient and organic loads
Develop aquaculture overviews to describe the distribution, ecosystem interactions, benefits and impacts of aquaculture production
Assess the wider role of seafood production in society, including resilience of the food system, interactions between food systems in the sea and on land, the effects of the changing expectations of seafood consumers on practices in aquaculture and fishing

6. Conservation and management science

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

Conservation and management measures are taken to meet the objectives of management bodies that are tasked to balance demands for use and protection of the sea. To guide and support effective conservation and management these bodies require evidence and advice based on current policies and management regimes, but also seek inputs on the performance of management, the status of the managed environment and information to develop future approaches and policies.

Tasks:

Develop an evidence base and assessment tools to support existing and potential demands for advice on conservation and management. To cover activities and pressures including fisheries and aquaculture, contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, construction, renewable energy, climate change, acidification and habitat loss.

Develop methods to support implementation and evaluation of the suitability and effectiveness of national and international commitments and governance relating to marine spatial planning; coastal zone management; protection of species, habitats and marine ecosystems; mitigation; restoration; and the delineation, management and monitoring of marine protected areas

Develop methods to support implementation of marine policies and commitments applying to ICES member countries, including the UN Sustainable Development Goals, the Common Fisheries Policy and the Marine Strategy Framework Directive

Provide evidence to inform policy developers as they seek to set objectives and to address and reconcile use and conservation of the sea

Develop and publish integrated ecosystem assessments and ecosystem overviews to describe and report on regional status and use of the sea.

Further develop ICES capacity to provide ecosystem-based advice by adding quantitative analyses of more activities, pressures and impacts, as well as social, cultural and economic information, to fisheries and ecosystem overviews, and by developing and integrating aquaculture overviews

7. Sea and society

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

People and their communities, societies and cultures benefit directly from seas and oceans because people engage in aquaculture, fishing, shipping and other marine industries, or use the sea for recreation. All other humans benefit indirectly from services provided by the seas and oceans, given their role in global biogeochemical cycles and the climate system. We seek to achieve a step change in understanding and reporting of human interactions with the sea, to inform policy development, conservation and management.

Tasks:

Develop, test and apply methods and indicators to assess the social and economic status and dependence of coastal communities on aquaculture, commercial and recreational fishing, tourism and other marine industries
Trial and improve social and economic indicators for use in fisheries and ecosystem overviews and the emerging aquaculture overviews
Investigate the social and economic risks and opportunities provided by alternate uses of the sea.
Investigate the social and economic consequences of human responses to management actions and the role of spatial planning in resolving conflicts and supporting co-existence of human activities and livelihoods
Assess the effects of alternate models of engagement on the success of participatory processes and the perceived salience, credibility and legitimacy of outcomes that result, as well as the practicality and performance of resulting conservation and management options
Describe alternate futures and management options for marine socio-ecological systems and assess the vulnerability and resilience of marine industries and society to climate change
Develop understanding of how traditional and historical knowledge can inform conservation and management and how this understanding influences the effectiveness of contemporary conservation and management

Annex 3: Implementation of the ICES science plan (draft)

Implementation plan for “Marine ecosystem and sustainability science for the 2020s and beyond”: the science plan of the International Council for the Exploration of the Sea

Introduction

This implementation plan describes how the ICES science plan “Marine ecosystem and sustainability science for the 2020s and beyond” will be implemented and how progress with implementation will be measured and reported. It also defines how people and groups within ICES will contribute to implementation and the tasks they will undertake. Collectively, the science plan and implementation plan guide the conduct and delivery of science in support of the vision and mission of ICES.

The intended audience for this implementation plan are the people and groups in ICES who are involved in implementing, monitoring and reporting on implementation of the science plan, principally the members of the Science Committee, other ICES groups referred to in this plan, and the ICES Secretariat.

Progress with implementation of the science plan will be reviewed and reported annually to our governing body, the ICES Council. As well as guiding future implementation of the science plan, information gleaned from annual reviews will be used to shape our future marine science priorities and to ensure we are effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

Links between implementation plan and science plan

The science plan describes seven areas of marine science which will be the focus of ICES work from 2019-2024, each with related objectives and purpose. It also describes supporting tasks to add to the scope, scale and impact of our scientific output in each of the seven areas. The science elements of the plan will advance understanding of marine ecosystems, improve assessments of the effects of human activities, improve observations of the seas and oceans and provide evidence and solutions to support conservation and management. Supporting tasks will increase the visibility and impact of this science, provide a rewarding and efficient working environment, engage new scientists, increase training and networking opportunities, and strengthen collaboration with regional and global partners. By achieving our scientific objectives and completing the supporting tasks the ICES community will help to realise its vision and mission.

To meet the scientific objectives and to accomplish the tasks in this science plan, as well as to manage, monitor and report on progress with implementing the plan, this implementation plan guides the work needed to meet seven objectives.

- 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
- B. To ensure expert groups have flexibility to innovate and explore new topics and encourage and support cross-cutting science activity
- C. To increase the visibility of, and access to, our science, data and advice and recognise, promote and use the science outputs from expert groups
- D. To provide an efficient, collaborative, respectful and rewarding working environment for all scientists, as well as the resources and infrastructure needed by ICES groups to develop and share knowledge and expertise
- E. To provide more and better networking and training opportunities and encourage engagement of a new and emerging generation of scientists with ICES and expert groups

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

G. To monitor and report on progress towards meeting the goals of the science plan

Actions in support of these seven objectives are widely distributed throughout the ICES community. Box 1 indicates the contributing roles of different groups in the ICES system and Table 1 indicates responsibilities for specific actions. For actions to be taken by the ICES Secretariat, the actions in this table are also transposed to their joint work plan.

Assessing progress

Progress with implementation will be assessed by our governing body, the ICES Council. They will make their assessment of progress with implementation based on annual reviews of progress provided by the Science Committee. Information gleaned from these annual reviews and from innovation within the ICES network more widely will be also be used to develop our future work and marine science priorities and to ensure we are effectively advancing and shaping marine science and meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

Progress reports to ICES Council will summarise progress using metrics and reports described in this implementation plan (Table 1), provide reports from the steering groups and operational groups contributing to implementation and summarise activity and output from the expert group network and at the Annual Science Conference and symposia. We will also develop some impact studies, to illustrate progress with uptake of science into advice and its impacts.

The Science Committee will also continue to conduct internal reviews of marine science topics on an annual basis, to identify and shape emerging areas of science and to ensure it remains fully prepared for future science planning exercises.

[Box 1]

Groups contributing to implementation

Seven types of group, the Science Committee, the Advisory Committee and the ICES Secretariat will contribute to implementation of the science plan. Other temporary groups are also formed to develop content for conferences and symposia and to address other transient actions. Further information on these groups and their operations are provided in the “Guidelines for ICES groups” [add link]

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 and advisory committees. Reports on their work are published annually.

Steering groups. Steering groups addresses 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 co-ordinated, conducted and reported.

Data and Information Group. The data and information group 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 the data that is essential to their work.

Science Impact and Publication Group. The science impact and publication group 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 develops the structure and content of the ICES training programme and then guides and supports the provision of training.

Strategic Initiatives. Strategic initiatives 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.

Science Committee. The science committee is the main scientific body in ICES and is ultimately responsible for implementing and monitoring the progress of the science plan with the support of the ICES network. Through effective planning of the work of ICES groups the science committee strives to ensure there are effective working relationships between all parties contributing to implementation of the science plan.

Advisory Committee. The advisory committee is responsible for providing scientific advice to competent authorities in support of the sustainable management of marine resources and ecosystems throughout the North Atlantic Ocean and for guiding the development of science in support of advice. The advisory committee must access and evaluate the best available science to meet client needs for impartial evidence on the state and sustainable use of our seas and oceans.

ICES Secretariat. The ICES Secretariat provides secretarial, administrative, logistical, scientific, and data handling support to the preceding groups and the ICES community in general. This facilitates effective planning of meetings, reporting and external communication. Sections covering science support, data and information, publications and communications, and advisory support will all contribute to implementation of the science plan.

[end of text box]

Table 1. Fulfilling the commitments in the ICES science plan: tasks, responsibilities, metrics of progress and targets. Metrics are shown for tasks undertaken by the Science Committee and related groups, tasks shown in red are already underway within the ICES joint work plan [but note some edits suggested for specificity/compatibility].

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
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.	A1. Work with the expert group chairs to ensure their ToR, individually and collectively, address the priorities identified in the science plan	SCICOM (lead) Steering group chairs Expert group chairs Secretariat	Proportion of science priorities mapped to ToR (100%) Successful completion of ToR from evaluation of expert group reports (100%)
		A2. Identify needs for new expert groups and rationalisation of existing groups	SCICOM (lead) Steering group chairs Expert group chairs Secretariat	Proportion science priorities mapped to ToR (100%) Expert groups with overlapping remit (0%)
		A3. 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) Expert group chairs SCICOM	Interaction of expert and steering group chairs during preparation of resolutions (100% of resolutions) Overlapping and uncoordinated ToR (0%)

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
	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	A4. Effective review of expert group descriptions, ToR and expert group outputs for science content and clarity of presentation	Steering group chairs (lead) SCICOM Expert group chairs Secretariat	Review of ToR, group descriptions and reports before publication (100% reviewed)
		A5. Publish the ICES science plan in an attractive and accessible format for physical circulation at ICES events and for web viewing	Secretariat (lead) SCICOM	Plan published, circulated and on website (complete)
		A6. Opening link to science content on front page of ICES website	Secretariat (lead)	Presence of working link (complete)
		A7. Identify and promote science priorities, nationally and internationally (ICES work plan 1.1.x)	SCICOM	Number of talks and size and diversity of audiences Downloads and views of science plan Narratives defining influence of ICES science on international science agenda Uptake of science described in the science plan into ICES advice

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
		A8. Encourage [suggest now changing this to “support”] diversification of ICES research topics by co-organizing science symposia with strategic partners (ICES work plan 1.1.x)	Secretariat (lead) SCICOM	Number and scope of symposia on topics linked to science priorities
		A9. 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) (ICES work plan 1.1.x)	Secretariat	TBD
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	B1. Annual review of all expert group outputs and recommendations	SCICOM (co-lead) Steering group chairs (co-lead) Secretariat	Expert group outputs reviewed annually (100%) Expert group recommendations reviewed and innovation identified and acted upon through changes and additions to terms of reference or supportive actions: annually for all expert groups (100%)

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
		B2. Regular review of science priorities to meet current and emerging advisory needs, with distribution of highest priority work to expert group network	ACOM (lead) SCICOM	Annual review and allocation of tasks (complete)
C. To increase the visibility of, and access to, our science, data and advice and recognise, 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 visualisation and easy access to data to meet the needs of users in our groups	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	Expert group reports published with author and citation information (100%)
		C2. Increase ICES impact through communication and publication (ICES work plan 3.7.x) [edit to the specific 'of science highlights']	Secretariat (lead) SCICOM	Number of highlights published by science priority area [can anything like downloads, altimetric etc be done on these- really have no idea of uptake]
		C3. Project ICES work in new engaging/branded/relevant formats (infographics that communicate ICES products effectively) (ICES work plan 3.7.x)	Secretariat	[can anything like downloads, altimetric, etc. be done on these- really have no idea of uptake]
		C4. Continue editing/formatting/checking, cataloguing and digitalizing of in-house publications (ICES work plan 3.8.x)	Secretariat	[need to establish specifics here, timeframes, what has priority]

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
		C5. Roll out Digital Object Identifiers (DOI's) for data outputs and ICES publications for better citation and traceability (ICES work plan 2.4)	Secretariat	Proportion of expert groups published with DOI (100%)
		C6. Bibliographic analysis of ICES publication output and impact (ICES work plan 2.4.x)	Science impact and publication group (lead) Secretariat	ICES-linked peer review papers data-based since 2010 (100%) Annual citation analysis (completed) Searchable web interface for presentation of peer-review outputs and ICES links (completed)
		C7. Annual analyses of ICES science impact for reporting to SCICOM ASC meeting and Council October meeting (ICES work plan 2.4.x)	Science impact and publication group (lead) Secretariat	Case studies
		C8. Develop data management frameworks supporting client and network needs (ICES work plan 2.7.x) [edit to 'and implement?'] [need to get some more specificity]	Data and Information group (lead) Secretariat	TBD

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
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.	D1. Sign-off and implement ICES code of conduct, conflict of interest policy and standard of conduct policy	ICES Council (lead) SCICOM	Code of conduct and related documents signed off, included in guidelines for ICES groups and introduced at WGCHAIRS meeting
	Institute and raise awareness of ICES codes regarding work practices and expected behaviours in expert groups.	D2. Update and make available revised "Guidance for EG Chairs" [change to "Guidelines for ICES groups"] (ICES work plan 1.2.x)	SCICOM (lead) Secretariat	SCICOM consultation, review, publication and promotion of guidelines at WGCHAIRS and on WGCHAIRS Forum (2 updates per year)
	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.	D3. Secretariat to support and facilitate work of Council/Bureau/Finance Committee/ACOM/SCICOM/Steering groups and the Expert and Operational Working groups throughout the year, the arrangements of the Annual Science Conference, Symposia, and Early Career Scientist Conference, as well as the communication and dissemination about these activities.(ICES work plan 1.2.x) [This is broad and vague to track- replace?]	Secretariat	TBD
E. To provide more and better networking opportunities and encourage engagement of	Ensure that the scientific programme at the ASC and symposia provides opportunities for everyone, from students and early career scientists through	E1. Develop topical and engaging ASC programme (ICES work plan 3.1)	SCICOM (lead) Secretariat	ASC attendance and feedback

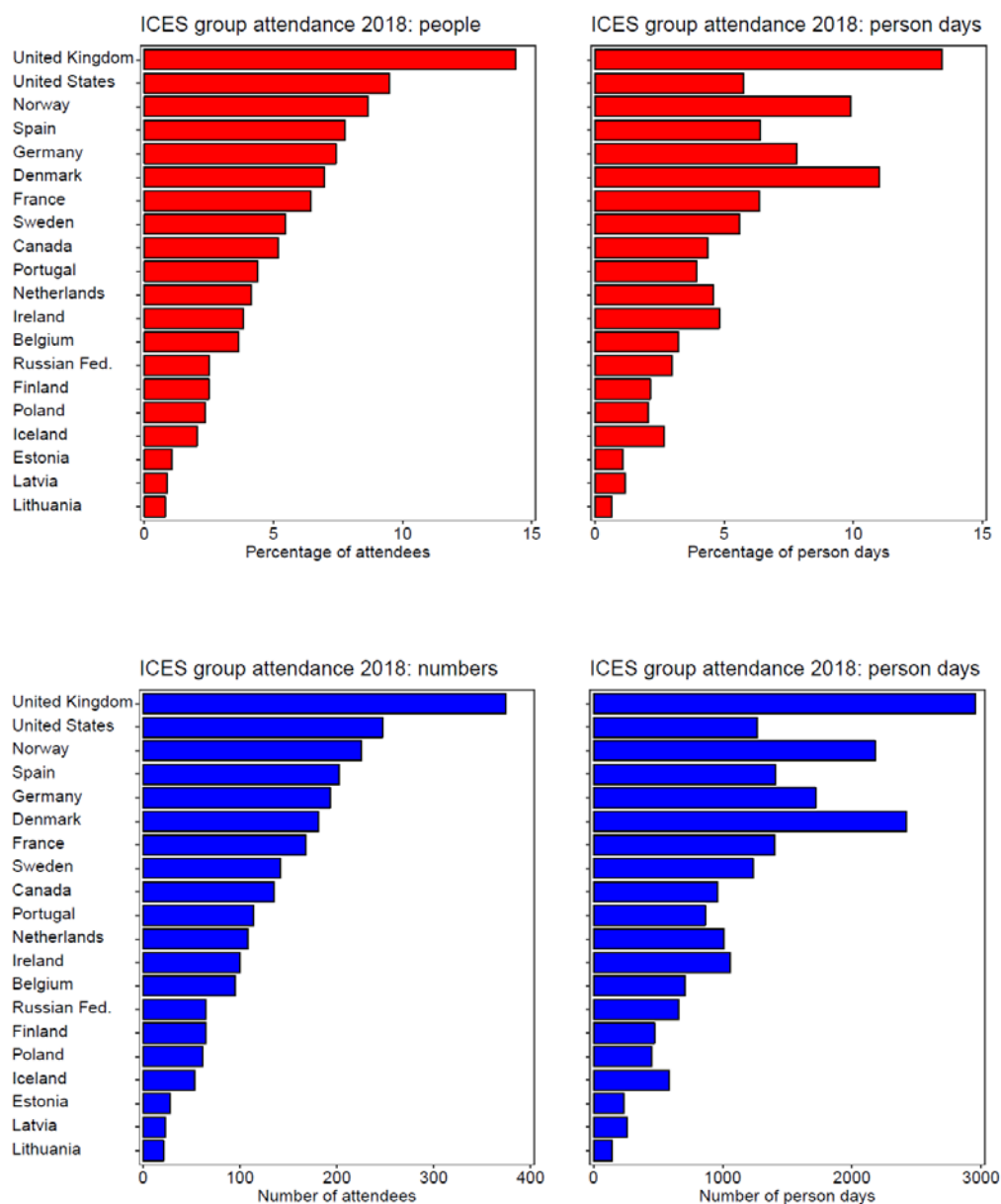
Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
a new and emerging generation of scientists with ICES and expert groups	established leaders of large research institutes, to engage and contribute.	E2. Support the Science Committee to deliver a relevant, inclusive and modern annual conference programme (ICES work plan 3.1.x)	Secretariat (lead) SCICOM	Conference attendance and feedback
	Develop and implement a training strategy	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 Ph.D/Post.doc), and exploring options for accreditation of the training course (ICES work plan 1.3.x)	Training group (lead) Secretariat SCICOM	Completion
		E4. Implement strategy for ICES Training Programme	Secretariat (lead) Training group SCICOM	Attendee feedback [any metric of engagement of trainees in expert groups etc]
		E5. Secretariat to support and facilitate work of Council/Bureau/Finance Committee/ACOM/SCICOM/Steering groups and the Expert and Operational Working groups throughout the year, the arrangements of the Annual Science Conference, Symposia, and Early Career Scientist Conference, as well as the communication and dissemination about these activities (ICES work plan 1.2.x) [This is broad and vague to track- replace?]	Secretariat	ASC and conference attendance and feedback

Objective	How	Tasks (and code)	Responsible	Metrics (targets, if quantitative)
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. Developing new partnerships to increase reach and impact of science and support capacity building (training issues addressed under 'training')	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) Strategic initiatives Steering group chairs Secretariat	Joint expert groups with key partners established and operational and addressing science priorities (at least one with each partner)
		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) (ICES work plan 1.1.x)	Secretariat (lead) SCICOM	New partners identified and engaged with ICES
	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	F3. Develop and co-sponsor conferences with partners and ensure partners have a visible role at the annual science conference	Secretariat (co-lead) SCICOM (co-lead) Strategic initiatives	Number of sessions and conferences with partners (at least one with each partner during this science plan implementation period)
		F4. Develop integrated ecosystem assessments and ecosystem overviews for new regions with partners	Integrated ecosystem assessment SG (lead) Secretariat	Can we define specific regions in this target

What	How	Tasks	Responsible	Metrics (targets, if quantitative)
	Develop and co-ordinate cross cutting science activities related to climate change and the sea and society	F5. Strategic initiatives to establish and implement cross-cutting plans	Strategic initiatives (lead) Steering group chairs SCICOM	Proportion of relevant expert groups actively engaged in cross-cutting activities (100% by topic)
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	G1. Regularly and actively solicit inputs from member country institutions, partners, clients and stakeholders on the development of our science	SCICOM (lead) Secretariat	Annual review of science priorities (completed and reported)
		G2. Annually report to ICES Council on implementation of the science plan and summarise activity and output from the expert group network and at the Annual Science Conference and symposia	SCICOM (lead) Secretariat	Annual report and presentation to Council (completed)
		G3. Identify and shape emerging areas of science and maintain preparedness for future science planning	SCICOM	Annual review of science priorities (completed and reported)

Annex 4: Attendance at ICES groups

The numbers and percentages of scientists attending ICES groups by nationality and the number and percentages of person days of attendance by nationality are summarised in the following figures. In total, for the year to 11 October 2018, there were 2600 scientists joining ICES groups (all types of group) accounting for just over 22000 person days of activity.



Annex 5: Peer-reviewed publications 2017–2018

These are peer reviewed papers identified before 20 September 2018 and acknowledging inputs from parts of the ICES community. Please inform the ICES Editor if you are familiar with peer review publications that you know to be facilitated by ICES groups but have not yet been included.

2018

Aps, R., Herkul, K., Kotta, J., Cormier, R., Kostamo, K., Laamanen, L., Lappalainen, J., *et al.* Marine environmental vulnerability and cumulative risk profiles to support ecosystem-based adaptive maritime spatial planning. *ICES Journal of Marine Science*, <https://doi.org/10.1093/icesjms/fsy1>. Link: ICES Working Group for Marine Planning and Coastal Zone Management (WGMPCZM)

Ciavatta S., Brewin R. J. W., Skákala J., Polimene L., de Mora L., Artioli Y., and Allen J. I. 2018. Assimilation of Ocean-Color Plankton Functional Types to Improve Marine Ecosystem Simulations. *Journal of Geophysical Research: Oceans*, 123: 834-854. <https://doi.org/10.1002/2017JC013490>. Link: ICES Data Centre (the in situ data for validation were downloaded from the ICES database <http://ices.dk/marine-data>)

Lee, S., Hofmeister, R., and Hense, I. 2018. The role of life cycle processes on phytoplankton spring bloom composition: a modelling study applied to the Gulf of Finland. *Journal of Marine Systems*, 178: 75-85. <https://doi.org/10.1016/j.jmarsys.2017.10.010>. Link: ICES Data Centre

Maar, M., Butenschön, M., Daewel, U., Eggert, A., Fan, W., Hjøllø, S. S., Hufnagl, M. *et al.* 2018. Responses of summer phytoplankton biomass to changes in top-down forcing: Insights from comparative modelling. *Ecological Modelling*, 376: 54-67. <https://doi.org/10.1016/j.ecolmodel.2018.03.003>. Link: ICES Working Group on Integrative, Physical-biological, and Ecosystem Modelling (WGIPEM)

Ojaveer H, Galil BS, Carlton JT, Alleway H, Gouletquer P, Lehtiniemi M, *et al.* (2018) Historical baselines in marine bioinvasions: Implications for policy and management. *PLoS ONE* 13(8): e0202383. <https://doi.org/10.1371/journal.pone.0202383>. Link: ICES Working Group on Introductions and Transfers of Marine Organisms (WGITMO)

Peck, M. A., Arvanitidis, C. Butenschön, M., Canu, D. M., Chatzinikolaou, E., Cucco, A., Domenici, P., *et al.* 2018. Projecting changes in the distribution and productivity of living marine resources: A critical review of the suite of modelling approaches used in the large European project VECTORS. *Estuarine, Coastal and Shelf Science*, 201: 40-55. <https://doi.org/10.1016/j.ecss.2016.05.019>. Link: ICES Working Group on Integrated Physical-biological and Ecosystem Modelling (WGIPEM) and ICES PICES Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCMIE)

Rey, A., Basurko, O. C., and Rodríguez-Ezpeleta, N. 2018. The challenges and promises of genetic approaches for ballast water management. *Journal of Sea Research*, 133: 134-145. <https://doi.org/10.1016/j.seares.2017.06.001>. Link: ICES Working Group on Ballast and Other Ship Vectors (WGBOSV) and ICES Working Group on Introduction and Transfers of Marine Organisms (WGITMO)

2017

Ahmed, N., Bunting, S. W., Glaser, M., Flaherty, M. S. and Diana, J. S. 2017. Can greening of aquaculture sequester blue carbon? *Ambio*, 46: 468-477. <https://doi.org/10.1007/s13280-016-0849-7>. Link: ICES PICES IOC 3rd International

Symposium on the Effects of Climate Change on the World's Oceans, Santos, Brazil during 23–27 March 2015

Alonso-Fernandez, A. Otero, J., Banon, R., Campelos, J. M., Santos, J. and Mucientes, G. 2017. Sex ratio variation in an exploited population of common octopus: ontogenic shifts and spatio-temporal dynamics. *Hydrobiologia*, 794: 1-16. <https://doi.org/10.1007/s10750-016-3065-3>. Link: ICES Science Fund 2014

Ansong, J., Gissi, E., and Calado, H. 2017. An approach to ecosystem-based management in maritime spatial planning process. *Ocean & Coastal Management*, 141: 65-81. <https://doi.org/10.1016/j.ocecoaman.2017.03.005>. Link: Working Group for Marine Planning and Coastal Zone Management (WGMPCZM)

Ballesteros, M., Chapela, R., Ramírez-Monsalve, P., Raakjaer, J., Hegland, T. J., Nielsen, K. N., *et al.* 2017. Do not shoot the messenger: ICES advice for an ecosystem approach to fisheries management in the European Union. *ICES Journal of Marine Science*, fsx181-fsx181. <https://doi.org/10.1093/icesjms/fsx181>

Berdalet, E., Kudela, R., Urban, E., Enevoldsen, H., Banas, N. S., Bresnan, E., Burford, M., *et al.* 2017. GlobalHAB A New Program to Promote International Research, Observations, and Modeling of Harmful Algal Blooms in Aquatic Systems. *Oceanography*, 30: 70-81. <https://doi.org/10.5670/oceanog.2017.111> Link: ICES-IOC Working Group on Harmful Algal Bloom Dynamics (WGHABD)

Da-Rocha, J. M., and Sempere, J. 2017. ITQs, Firm Dynamics and Wealth Distribution: Does Full Tradability Increase Inequality? *Environmental and Resource Economics*, 68: 249-273. <https://doi.org/10.1007/s10640-016-0017-3> Link: 2013 ICES Annual Science Conference

Deruytter D., Baert J. M., Nevejan N., De Schamphelaere K. A.C.; and Janssen, C. R. 2017. Mixture toxicity in the marine environment: Model development and evidence for synergism at environmental concentrations. *Environmental Toxicology and Chemistry*, 36: 3471-3479. <https://doi.org/10.1002/etc.3913>. Link: ICES Data Centre

Di Capua, I., Maffucci, F., Pannone, R., Mazzocchi, M. G., Biffali, E., and Amato, A. 2017. Molecular phylogeny of Oncaeidae (Copepoda) using nuclear ribosomal internal transcribed spacer (ITS rDNA). *Plos One*, 12: <https://doi.org/10.1371/journal.pone.0175662>. Link: ICES Working Group on Integrated Morphological and Molecular Taxonomy (WGIMT)

Dukhovskoy, D. S., Bourassa, M. A., Petersen, G. N., and Steffen, J. 2017. Comparison of the ocean surface vector winds from atmospheric reanalysis and scatterometer-based wind products over the Nordic Seas and the northern North Atlantic and their application for ocean modeling. *Journal of Geophysical Research-Oceans*, 122: 1943-1973. <https://doi.org/10.1002/2016JC012453>. Link: ICES dataset on Ocean Hydrography (www.ocean.ices.dk)

Fortibuoni, T., Libralato, S., Arneri, E., Giovanardi, O., Solidoro, C., and Raicevich, S. 2017. Fish and fishery historical data since the 19th century in the Adriatic Sea, Mediterranean. *Scientific Data*, 4: 170104. <https://doi.org/10.1038/sdata.2017.104>. Link: ICES Working Group on the History of Fish and Fisheries (WGHIST)

Froese, R., Demirel, N., Coro, G., Kleisner, K. M., and Winker, H. 2017. Estimating fisheries reference points from catch and resilience. *Fish and Fisheries*, 18: 506-526. <https://doi.org/10.1111/faf.12190>. Link ICES Workshop on the Development of Quanti-

tative Assessment Methodologies based on LIFE-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks (WKLIFE IV and WKLIFE V)

Gaichas, S. K., Fogarty, M., Fay, G., Gamble, R., Lucey, S., and Smith, L. 2017. Combining stock, multispecies, and ecosystem level fishery objectives within an operational management procedure: simulations to start the conversation. *ICES Journal of Marine Science*, 74: 552-565. <https://doi.org/10.1093/icesjms/fsw119>. Link: ICES MYFISH Symposium "Targets and Limits for Long-Term Fisheries Management."

Gastauer, S., Scoulding, B., and Parsons, M. 2017. Estimates of variability of goldband snapper target strength and biomass in three fishing regions within the Northern Demersal Scalefish Fishery (Western Australia). *Fisheries Research*, 193: 250-262. 10.1016/j.fishres.2017.05.001. Link: ICES Working Group on Fisheries Acoustics, Science and Technology (WGFAST)

González-Irusta, J. M. and Wright, P. J. 2017. Spawning grounds of whiting (*Merlangius merlangus*). *Fisheries Research*, 195: 141-151. <https://doi.org/10.1016/j.fishres.2017.07.005>. Link: ICES 1st quarter NS IBTS

Hiddink, J. G., Jennings, S., Sciberras, M., Szostek, C. L., Hughes, K. M., Ellis, N., Rijnsdorp, A. D., *et al.* 2017. Global analysis of depletion and recovery of seabed biota after bottom trawling disturbance. *Proceedings of the National Academy of Sciences of the United States of America*, 114: 8301-8306. <https://doi.org/10.1073/pnas.1618858114> Link: ICES Workshop on guidance on how pressure maps of fishing intensity contribute to an assessment of the state of seabed habitats (WKFBI, 2016) and ICES Workshop to evaluate regional benthic pressure and impact indicator(s) from bottom fishing (WKBENTH, 2017) and ICES Workshop to evaluate tradeoffs between the impact on seafloor habitats and provisions of catch/value (WKTRADE, 2017),

Hylland, K., Burgeot, T., Martinez-Gomez, C., Lang, T., Robinson, C. D., Svavarsson, J., Thain, J. E., *et al.* J. 2017. How can we quantify impacts of contaminants in marine ecosystems? The ICON project. *Marine Environmental Research*, 124: 2-10. <https://doi.org/10.1016/j.marenvres.2015.11.006>. Link: Working Group on the Biological Effects of Contaminants (WGBEC) and ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open sea Areas (WKIMON) and ICES/OSPAR Study Group on Integrated Monitoring of Contaminants and Biological Effects (SGIMC)

Hylland, K., Skei, B. B., Brunborg, G., Lang, T., Gubbins, M. J., le Goff, J., Burgeot, T. 2017. DNA damage in dab (*Limanda limanda*) and haddock (*Melanogrammus aeglefinus*) from European seas. *Marine Environmental Research*, 124: 54-60. <https://doi.org/10.1016/j.marenvres.2016.01.001>. Link: Working Group on the Biological Effects of Contaminants (WGBEC) and ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open sea Areas (WKIMON) and ICES/OSPAR Study Group on Integrated Monitoring of Contaminants and Biological Effects (SGIMC)

Hylland, K., Robinson, C. D., Burgeot, T., Martinez-Gomez, C., Lang, T., Svavarsson, J., Thain, J. E., *et al.* 2017. Integrated chemical and biological assessment of contaminant impacts in selected European coastal and offshore marine areas. *Marine Environmental Research*, 124: 130-138. <https://doi.org/10.1016/j.marenvres.2016.05.014> Link: Working Group on the Biological Effects of Contaminants (WGBEC) and ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open

sea Areas (WKIMON) and ICES/OSPAR Study Group on Integrated Monitoring of Contaminants and Biological Effects (SGIMC)

Jayasinghe, R., Amarasinghe, U. S., and Newton, A. 2017. Evaluation of status of commercial fish stocks in European marine subareas using mean trophic levels of fish landings and spawning stock biomass. *Ocean & Coastal Management*, 143: 154-163. <https://doi.org/10.1016/j.ocecoaman.2016.07.002>. Link: ICES advisory sheets 2014

Kerr, L. A., Hintzen, N. T., Cadrin, S. X., Clausen, L. W., Dickey-Collas, M., Goethel, D. R., Hatfield, E. M. C., *et al.* 2017. Lessons learned from practical approaches to reconcile mismatches between biological population structure and stock units of marine fish. *ICES Journal of Marine Science*, 74: 1708-1722. <https://doi.org/10.1093/icesjms/fsw188>. Link: ICES Workshop on Implications of Stock Structure (WKISS)

Lillebo, A. I., Pita, C., Rodrigues, J. G., Ramos, S., and Villasante, S. 2017. How can marine ecosystem services support the Blue Growth agenda? *Marine Policy*, 81: 132-142. <https://doi.org/10.1016/j.marpol.2017.03.008>. Link: ICES Working Group on Resilience and Marine Ecosystem Services (WGRMES)

Lowerre-Barbieri, S., DeCelles, G., Pepin, P., Catalan, I. A., Muhling, B., Erisman, B., Cadrin, S., *et al.* 2017. Reproductive resilience: a paradigm shift in understanding spawner-recruit systems in exploited marine fish. *Fish and Fisheries*, 18: 285-312. <https://doi.org/10.1111/faf.12180>. Link: ICES Workshop on the Development of Quantitative Assessment Methodologies based on Life-history traits, exploitation characteristics and other relevant parameters for the ICES Data-limited Stocks 5 (WKLIFE 2015)

Marshak, A. R., Link, J. S., Shuford, R., Monaco, M. E., Johannesen, E., Bianchi, G., Anderson, M. R., *et al.* 2017. International perceptions of an integrated, multi-sectoral, ecosystem approach to management. *ICES Journal of Marine Science*, 74: 414-420. <https://doi.org/10.1093/icesjms/fsw214>. Link: Atlantic Ocean Research Alliance AORA-CSA workshop: Making the ecosystem approach operational, ICES Workshop on Regional Seas Commissions and Integrated Ecosystem Assessment Scoping (WKRISCO),

Matteo, F., and Wood, S. N. 2017. A generalized Fellner-Schall method for smoothing parameter optimization with application to Tweedie location, scale and shape models. *Biometrics*, 73: 1071-1081. <https://doi.org/10.1111/biom.12666>. Link: ICES Data Centre (mackerel data from ICES Atlantic *Anguilla* surveys, <http://eggsandlarva.ices.dk>.)

Methling, C., Skov, P. V., and Madsen, N. 2017. Reflex impairment, physiological stress, and discard mortality of European plaice *Pleuronectes platessa* in an otter trawl fishery. *Ices Journal of Marine Science*, 74: 1660-1671. <https://doi.org/10.1093/icesjms/fsx004>. Link: ICES Workshop on methods for estimating discard survival (WKMEDS)

Ojaveer, H., Lankov, A., Teder, M., Simm, M., and Klais, R. 2017. Feeding patterns of dominating small pelagic fish in the Gulf of Riga, Baltic Sea. *Hydrobiologia*, 792: 331-344. <https://doi.org/10.1007/s10750-016-3071-5>. Link: ICES Workshop on Spatial Analyses for the Baltic Sea (WKSPATIAL)

Ojaveer, H., Olenin, S., Narscius, A., Florin, A. B., Ezhova, E., Gollasch, S., Jensen, K. R., *et al.* 2017. Dynamics of biological invasions and pathways over time: a case study of a temperate coastal sea. *Biological Invasions*, 19: 799-813. <https://doi.org/10.1007/s10530-016-1316-x> Link: ICES Working Group on Introductions and Transfers of Marine Organisms (WGITMO)

Oziel, L., Neukermans, G., Ardyna, M., Lancelot, C., Tison, J. L., Wassmann, P., Sirven, J., *et al.* 2017. Role for Atlantic inflows and sea ice loss on shifting phytoplankton

blooms in the Barents Sea. *Journal of Geophysical Research-Oceans*, 122: 5121-5139. <https://doi.org/10.1002/2016JC012582>. Link: ICES Working Group on Oceanic Hydrography (WGOH)

Ramos, J., Caetano, M., Himes-Cornell, A., dos Santos, M. N. 2017. Stakeholders' conceptualization of offshore aquaculture and small-scale fisheries interactions using a Bayesian approach. *Ocean & Coastal Management*, 138: 70-82. <https://doi.org/10.1016/j.ocecoaman.2017.01.008>. Link: ICES ASC 2014

Rindorf, A. Dichmont, C. M., Levin, P. S., Mace, P., Pascoe, S., Prellezo, R., Punt, A. E., *et al.* 2017. Food for thought: pretty good multispecies yield. *ICES Journal of Marine Science*, 74: 475-486. <https://doi.org/10.1093/icesjms/fsw071> Link: ICES/MYFISH symposium Targets and Limits for Long-term Fisheries Management 2015

Rindorf, A., Cardinale, M., Shephard, S., De Oliveira, J. A. A., Hjørleifsson, E., Kempf, A., Luzencyk, A., *et al.* 2017. Fishing for MSY: using "pretty good yield" ranges without impairing recruitment. *ICES Journal of Marine Science*, 74: 525-534. <https://doi.org/10.1093/icesjms/fsw111> Link: Joint ICES-MYFISH Workshop to consider the basis for FMSY ranges for all stocks (WKMSYREF3)

Rindorf, A., Mumford, J., Baranowski, P., Clausen, L. W., García, D., Hintzen, N. T., Kempf, A., *et al.* 2017. Moving beyond the MSY concept to reflect multidimensional fisheries management objectives. *Marine Policy*, 85: 33-41. <https://doi.org/10.1016/j.marpol.2017.08.012> Link: The authors thank ICES for providing invaluable assistance in the process

Samhuri, J. F., Andrews, K. S., Fay, G., Harvey, C. J., Hazen, E. L., Hennessey, S. M., Holsman, K., *et al.* 2017. Defining ecosystem thresholds for human activities and environmental pressures in the California Current. *Ecosphere*, 8: e01860-n/a. <https://doi.org/10.1002/ecs2.1860> Link: ICES Advisory Programme Professional Officer Scott Large

Sánchez-Leal, R. F., Bellanco, M. J., Fernández-Salas, L. M., García-Lafuente, J., Gasser-Rubinat, M., González-Pola, C., Hernández-Molina, F. J., *et al.* 2017. The Mediterranean Overflow in the Gulf of Cadiz: A rugged journey. *Science Advances*, 3: eaao0609. <https://doi.org/10.1126/sciadv.aao0609> Link: ICES Data Centre

Trifonova, N., Maxwell, D., Pinnegar, J., Kenny, A., and Tucker, A. 2017. Predicting ecosystem responses to changes in fisheries catch, temperature, and primary productivity with a dynamic Bayesian network model. *ICES Journal of Marine Science*, 74: 1334-1343. <https://doi.org/10.1093/icesjms/fsw231> Link: ICES North Sea Integrated Assessment Working Group (WGINOSE)

Ulrich, C., Vermard, Y., Dolder, P. J., Brunel, T., Jardim, E., Holmes, S. J., Kempf, A., *et al.* 2017. Achieving maximum sustainable yield in mixed fisheries: a management approach for the North Sea demersal fisheries. *ICES Journal of Marine Science*, 74: 566-575. <https://doi.org/10.1093/icesjms/fsw126> Link: ICES Working Group on Mixed Fisheries Advice (WGMIXFISH)

Uusi-Heikkilä, S., Savilampi, T., Leder, E., Arlinghaus, R., and Primmer, C. R. 2017. Rapid, broad-scale gene expression evolution in experimentally harvested fish populations. *Molecular Ecology*, 26: 3954-3967. <https://doi.org/10.1111/mec.14179> Link: ICES Science Fund

van der Reijden, K. J., Molenaar, P., Chen, C., Uhlmann, S. S., Goudswaard, P. C., and van Marlen, B. 2017. Survival of undersized plaice (*Pleuronectes platessa*), sole (*Solea*

solea), and dab (*Limanda limanda*) in North Sea pulse-trawl fisheries. *Ices Journal of Marine Science*, 74: 1672-1680. <https://doi.org/10.1093/icesjms/fsx019> Link: ICES Workshop on Methods for Estimating Discard Survival (WKMEDS)

Vieira, N., and Brito, C. 2017. Brazilian manatees (re)discovered: Early modern accounts reflecting the overexploitation of aquatic resources and the emergence of conservation concerns. *International Journal of Maritime History*, 29: 513-528. <https://doi.org/10.1177/0843871417713683> Link: Oceans Past V 2015

Wilding, T. A., Gill, A. B., Boon, A., Sheehan, E., Dauvin, J. C., Pezy, J. P., O'Beirn, F., *et al.* 2017. Turning off the DRIP ('Data-rich, information-poor') - rationalising monitoring with a focus on marine renewable energy developments and the benthos. *Renewable & Sustainable Energy Reviews*, 74: 848-859. <https://doi.org/10.1016/j.rser.2017.03.013> Link: ICES Working Group on Marine Benthos and Renewable Energy Developments (WGMRED)

Science Committee Summary Report

Background

This paper is a summary report based on the full report from the Science Committee (SCICOM) to the ICES Council. The paper addresses the scope, scale and impact of ICES science and plans for future science delivery.

Request for Council

Council delegates are requested to note the ongoing work of SCICOM and especially the contents of the science plan. Council delegates are requested to consider and provide feedback on strengthening linkages between the science plan and the developing strategic plan. Council delegates are also invited to provide comments on the text of the science plan.

1 Introduction

SCICOM continues to strive to increase the scope, scale and impact of ICES science. Our general objectives are to keep the ICES science programme dynamic, internationally relevant, and impactful; to ensure seamless links between science, data and advice and to engage with scientists in ICES member countries and beyond by planning an annual cycle of meetings and workshops as well as the Annual Science Conference. The focus of SCICOM activity in 2018 has been the development and sign-off of the science plan, in addition to recurrent delivery of science and the annual programme of work.

In 2019, SCICOM will focus on implementing the science plan, launching the new publication series for expert group reports, and finalising and embedding a system within which all expert groups will be parented by steering groups.

2 Science plan

A significant focus of SCICOM work in 2018 was defining and signing-off the science priorities and tasks in the science plan. The science plan describes the scientific priorities and goals of ICES, and the science and other tasks to be undertaken to meet them. The science plan will be a public document with an audience comprising the marine science community in ICES countries and beyond.

As described in our 2017 report to Council the science plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The science priorities and associated topics in the science plan received final review and sign-off by the Science Committee on 5 October 2018. The text of the draft plan (Annex 1) is

subject to ongoing review, with sign-off expected on the Science Committee forum after feedback from the Council meeting and finalisation of the ICES strategic plan. Subject to finalisation of the strategic plan SCICOM intend to implement the science plan from 1 January 2019.

To science plan commits the ICES community to work in seven areas of marine science, each with related objectives and purpose.

1. Understanding ecosystems

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

2. Impacts of human activities

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

3. Observation and exploration

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

4. Emerging techniques and technologies

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

5. Seafood production

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

6. Conservation and management science

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

7. Sea and society

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

3 Implementation of the science plan

SCICOM have drafted an implementation plan that describes how the new science plan will be implemented and how progress with implementation will be monitored and reported. The implementation plan will be finalised via the SCICOM forum. The implementation plan is intended as an internal ICES working document and would not be published in the same format as the public-facing science plan. The intended audience for this implementation plan are the people and groups in ICES who are involved in implementing, monitoring and reporting on implementation of the science plan, principally members of SCICOM and associated groups and the ICES Secretariat. The implementation plan defines objectives and actions in seven areas.

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

Specific actions supporting these objectives are tabulated in the plan and responsibility for these actions will be widely distributed throughout the ICES community. For actions involving the ICES Secretariat, the actions in this table will be transposed to the joint work plan, subject to the availability of resources needed to support them. Progress reports to SCICOM and ICES Council will summarise progress with implementation using metrics described in the implementation plan

4 Linking science and advice

SCICOM and ACOM have continued to forge closer working relationships between science and advice in 2018: by signing-off a proposal to place those expert groups previously reporting to ACOM within a new steering group(s), by running a workshop to define ways to increase the uptake of science into advice and by bringing together expert group chairs focused on science and advice at the same meetings.

In relation to the decision to establish a new steering group(s), all expert groups will now operate under the same structure, by allocating the existing ACOM-affiliated expert groups to the new steering group(s) and bringing all current and new steering groups under joint SCICOM and ACOM affiliation. The ACOM-SCICOM subgroup that put forward this plan and provided justification for the new steering group(s) is now working on a proposal for the allocation of specific expert groups to the new and existing steering groups. Approval for their proposal will be sought from SCICOM and ACOM.

5 Science impact and publication

ICES bibliography: In 2017, the science impact and publication group began developing an ICES bibliography. The purpose of the bibliography is to develop a record of all peer-reviewed publications facilitated by ICES expert groups; to improve awareness of ICES science and underpin impact assessment of ICES science. References listed in this bibliography are now available to users via the ICES website. Data for 2016 and 2017 are near complete. Future needs are to extend this bibliography back in time, at least to 2010, as well as searching for and then adding the remaining peer review publications for 2018 and 2019. The web interface will also be further developed to provide search facilities.

Authorship of expert group reports: Following a call from expert groups to identify authors on expert group reports and review of options by SCICOM and Bureau, the science impact and publication group has preceded with the option to identify chairs as editors and all attendees as authors on the cover of expert group reports, but without these people leading on the recommended citation. The justifications for identifying authors are to provide greater motivation to attend and chair expert groups by providing added visibility for contributors, and to increase the visibility of ICES science and the network in web searches and on science networking sites. The authorship option adopted was considered to provide an effective balance between visibly recognising the contributions of scientists to expert group reports and retaining a clear link between all published reports and ICES. Templates are being prepared for the new style of report and these reports will also be published in a series with ISSN and a new citation format from 2019, with the changes intended to increase use and recognition of expert group work.

6 Interaction with expert groups

Both SCICOM and ACOM have continued to focus on providing stronger, more visible and more regular support for the expert groups, by providing more opportunities for expert group chairs to meet, establishing a WGCHAIRS forum, and emphasising and recognising the central role of expert groups in generating science and advice. The annual meeting of the Chairs of ICES Working Groups (WGCHAIRS) was expanded to include items of relevance to all expert group chairs in ICES and 69 people attended the January 2018 meeting. Topics covered included the development of guidelines for ICES groups, viewpoints, science highlights, roles of chairs, communications with expert groups, mentoring, development of fisheries and ecosystem overviews, science, data and advice. Several actions to better support expert group chairs were identified during discussions of these topics and have now been taken. In addition to the WGCHAIRS meeting, we hosted a lunch gathering and an introductory meeting for expert group chairs during the 2018 Annual Science Conference in Hamburg. This renewed emphasis on the role of chairs has also increased day-to-day engagement, with chairs more openly identifying the support they need to fulfil their roles and more timely efforts by the steering groups, committees and ICES Secretariat to provide this support.

7 Guidelines for ICES groups

The original “Guidelines for ICES Expert Group Chairs” have been substantially revised in 2018 and retitled as the “Guidelines for ICES Groups”. The latest iteration of this document, to be published towards the end of 2018, now describes the working practices and membership of all groups contributing to the ICES community: expert groups, steering groups, operational groups (data and information group, science impact and publication group, training group), strategic initiatives, advisory committee, science committee and ICES secretariat, as well as the roles of Bureau and Council. The intention is for this document to contain all the essential information needed by those chairing and participating in these groups. We have increasingly solicited feedback from the community on content, through steering groups, meetings of expert group chairs and ACOM and SCICOM, and recent additions to the guidelines include job descriptions for ACOM and SCICOM members. We will release two updates of the guidelines every year. Following from decisions taken at the 2018 Council meeting we also intend to update the code of conduct and conflict of interest policy for participants in ICES work, which will clarify a number of issues raised by expert group chairs. In 2018, the Secretariat also worked with ACOM and SCICOM to produce an introductory presentation, based on the guidelines, that expert group and other chairs can use to induct new members and explain ICES work.

8 Emerging work areas

The full SCICOM report to Council provides a summary of all changes in expert groups during the last year. Two areas of marked change are aquaculture and social science. The Aquaculture steering group is increasingly well established and now parents six expert groups (an increase from three when the steering group was founded in 2017) with diverse leadership and membership, including many scientists new to the ICES community. In the social sciences, we have focused on attracting new experts with potential to contribute to future ICES products and advice. Expert groups focusing on economics and social indicators were formed and met for the first time in 2018.

9 Conferences and training

The 2018 Annual Science Conference was held in Hamburg from Monday 24 September to Thursday 27 September. The venue was the University of Hamburg. The ASC was attended by at least 650 attendees from 34 countries, and featured 18 theme sessions, 5 open sessions and three keynote presentations.

Three ICES co-sponsored symposia were/ will be run in 2018 (Symposium on Climate Change and Impacts on the World’s Oceans, Management tools and standards in support of Sustainable Development Goal 14 and Oceans Past VII).

Eight ICES training courses were planned in 2018 (Statistically sound inference for commercial catch sampling programmes, Genomics in support of fisheries and aquaculture management, Introduction to the R environment, Advanced stock assessment, Introduction to agent-based modelling for fisheries science and management, Introduction to stock assessment, Geostatistics in R for fisheries and marine ecology applications). The courses given to date were well received but, unfortunately, owing to a low number of sign-ups, three of the proposed training courses were postponed (Introduction to agent-based modelling for fisheries science and management, Introduction to the R environment, Genomics in support of fisheries and aquaculture management).

Annex 1. Draft science plan

The Science Plan will guide the conduct and delivery of science in support of the vision and mission of ICES, as described in the draft Strategic Plan. The Science Plan describes the scientific priorities and goals of ICES, their rationale, how they contribute to ICES vision and mission, and the science and other tasks to be undertaken to meet them. The Science Plan will be a public document with an audience comprising the marine science community in ICES countries and beyond.

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

Progress with implementation of the science plan will be reviewed and reported annually to our governing body, the ICES Council. As well as guiding future implementation of the science plan, information gleaned from annual reviews will be used to shape our future marine science priorities and to ensure we are effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

As described in our 2017 report to Council the science plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The science priorities and associated topics in the science plan received final review and sign-off by the Science Committee on 5 October 2018. The texts of the draft plan, but not the scientific priorities, are subject to ongoing review, with sign-off expected on the Science Committee forum after feedback from the Council meeting and finalisation of the strategic plan.

Draft Science Plan (7 Oct 2018)

Marine ecosystem and sustainability science for the 2020s and beyond

Science Plan of the International Council for the Exploration of the Sea

Who we are:

The International Council for the Exploration of the Sea (ICES) is an intergovernmental organization dedicated to advancing and shaping marine science to support sustainable use of our seas and oceans. The ICES international network comprises more than 5,000 scientists from over 690 marine institutes in 20 member countries and beyond.

ICES Vision:

To be a world-leading marine science organization, effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

ICES Mission:

To advance and share scientific understanding of marine ecosystems and the services they provide, and to employ this knowledge to generate state-of-the-art advice on meeting conservation, management and sustainability goals.

[opening text]

Our science plan “Marine ecosystem and sustainability science for the 2020s and beyond” describes ICES scientific priorities and objectives and a pathway to achieve them. By successfully implementing our science plan we will generate ecosystem and sustainability science with a high and beneficial impact on society. Our science will advance understanding of marine ecosystems, improve assessments of the effects of human activities, improve observations of the seas and oceans and provide evidence and solutions to support conservation and management. Supporting tasks will increase the visibility and impact of this science, provide a rewarding and efficient working environment, engage new scientists, increase training and networking opportunities, and strengthen collaboration with regional and global partners. By achieving our scientific objectives and completing the supporting tasks the ICES community will create a world-leading marine science organization, effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

This plan was developed through an inclusive and consultative process that drew on expertise throughout the ICES network and constituent bodies, science priorities identified by member countries and a review of national and international policy drivers and science opportunities for ICES. The audience for this plan is the marine science community, in ICES countries and beyond. Many people in the audience have also helped to create this plan! We hope the plan will both resonate with and support managers, industry, funding agencies, governments, and inter-governmental and non-governmental

organisations committed to advancing marine science, conservation and management.

To deliver “Marine ecosystem and sustainability science for the 2020s and beyond”, the ICES community will work in seven priority areas of marine science, each with related objectives and purpose.

1. Understanding ecosystems

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

2. Impacts of human activities

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

3. Observation and exploration

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

4. Emerging techniques and technologies

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

5. Seafood production

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

6. Conservation and management science

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

7. Sea and society

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

Supporting tasks will add to the scope, scale and impact of our scientific output in each of the seven priority areas. Across all areas of our science we will increase the visibility of, and access to, our science, data and advice and recognise, promote and use the science outputs. ICES values the disciplines, perspectives and expertise brought to our network by member country institutions, partners, clients and stakeholders. We will regularly and actively solicit their inputs to the development of our science at the Annual Science Conference, through other sponsored conferences and discipline and topic-specific workshops and meetings.

For all people engaging with ICES science we will seek to provide an efficient, collaborative, respectful and rewarding working environment, as well as the resources and infrastructure needed by ICES groups to develop and share knowledge and expertise. We will ensure expert groups have flexibility to innovate and explore new topics and encourage and support cross-cutting science activity. To secure our future as a world-class marine science

organisation we will provide more and better networking and training opportunities and encourage engagement of a new and emerging generation of scientists with expert groups.

We will work closely with regional and global partners. Relationships with partners extend the reach of our science into the Mediterranean, Black Sea, Arctic, North Pacific Ocean and globally. Partnerships bring mutual benefits, by strengthening the contribution of regional expertise to larger-scale and global processes and contributing to shaping and delivering marine science and advice beyond the ICES region. We will exchange knowledge and expertise with regional and global partners through collaborative projects, networks and training; to shape and advance marine science and advice. We will also engage with partners to meet joint scientific goals; 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.

[Box]

Science Plan outcomes

- Marine science with a high and beneficial impact on society
- Engaged and productive scientists from the natural and social sciences
- Increased visibility of, and access to, our science, data and advice
- Stronger and more dynamic links between science and advice
- A secure position as a world-class marine science organisation

Implementation

The scientific objectives and tasks in this science plan are to be accomplished in the period 2019-2024. But these accomplishments will also prepare us to address emerging scientific challenges in the late 2020s and beyond. Implementation of the plan will be assessed by measuring and reviewing outcomes. These include the impacts of our science and advice on conservation, management and sustainability goals, the extent of engagement with ICES and the uses of our science, data and advice. Progress with implementation will be reported to and reviewed by our governing body, the ICES Council. Information gleaned from their reviews will be used to shape our future marine science objectives and tasks and to ensure we are contributing effectively to the ICES mission. Responsibilities for implementation of the science plan are described in an implementation plan. The intended audience for the implementation plan is narrower than for the science plan and includes the people and groups in ICES who are involved in implementing, monitoring and reporting on delivery of the science plan.

1. Understanding ecosystems

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

Marine sustainability science is predicated on an underlying understanding of the structure, function and dynamics of marine ecosystems and their interactions with the physical and chemical environment. As this understanding evolves and increases, so does our capacity to report on the status of the marine environment and measure, describe and manage human interactions with the sea.

Tasks:

Assess and report on trends in ocean climate
Improve understanding of the oceanography of semi-enclosed and shelf seas and the wider north Atlantic ocean
Describe links between the physical and biological environment and their influence on production, biogeochemical cycles and other ecosystem functions, and their consequences for the stability and resilience of ecosystems and the services they provide
Describe connectivity within and among ecosystems, of many species and life stages at a range of spatial scales, and assess the ecological consequences
Develop methods to map and predict the distribution of seabed and pelagic habitats and biodiversity and their sensitivity to disturbance
Develop and apply molecular, taxonomic and other methods to describe and identify species
Describe life histories and their links to the environment and responses to environmental change, including phenotypic and genetic adaptation
Build on and challenge existing assumptions about population and community structures and interactions by searching for new insights using molecular methods, physiology and behavioural science
Conduct comparative analyses of the structure, function and dynamics of ecosystems in ICES regions and beyond

2. Impacts of human activities

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

The seas provide many benefits for people but human activities pose risks as well as providing opportunities. Pressures from contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture, fishing, climate change, acidification and habitat loss affect ecosystems and the environment. Understanding these pressures and their impacts will provide evidence to advise on the trade-offs between benefits and risks.

Tasks:

Describe the distribution and intensity of pressures that result from contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, mining, construction, renewable energy, aquaculture, fishing, climate change, acidification and habitat loss.

Explore how pressures on the marine environment act, independently and collectively, to modify the variety, quantity and distribution of marine life and structure, function and dynamics of food webs and marine ecosystems (including cumulative pressures and their cumulative impacts)

Develop methods to better characterise and map the sensitivity and role of seabed and pelagic habitats, from close to the coasts to the deep sea.

Describe the exposure of habitats to pressures, their vulnerability and resilience, and develop and test indicators of pressure, state and function

Develop methods and models for assessing and projecting ecological impacts of diffuse pressures (climate change, pollution, litter and acidification) spanning different levels of biological organisation and at a range of time and space scales

Model the transport of pollutants, including litter, to link sources to areas of impact, especially when these span long distances (e.g. Arctic and deep sea) or many trophic levels (e.g. impacts on predatory fishes, birds and mammals)

Assess and project implications of human activities for management systems and marine industries and advise on options for mitigation and adaption

3. Observation and exploration

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

Both science and advice rely on observations of physical, chemical and biological properties of the environment and ecosystems. Monitoring provides essential inputs to status assessments, including fisheries and ecosystem overviews, as well as feedback on the effects of conservation and management measures. Since large areas of the marine environment have not been observed, exploration provides essential information on the distribution of biological resources for sustainable use and protection.

Tasks:

Develop and co-ordinate, integrated, quality assured and cost-effective monitoring programmes
Evaluate and optimise survey design and connectivity of observation systems to meet existing demands for data and to meet emerging data, science and advisory needs; with a focus on supporting fisheries assessment, integrated ecosystem assessment and ecosystem-based management
Conduct analyses and testing of techniques, sensors and the logistical and statistical aspects of survey design to increase the efficiency, scope and accuracy of monitoring and the relevance of monitoring programmes to our science and advisory needs
Conduct an ambitious co-ordinated programme to further explore and report the ecological characteristics of the ICES region, with a focus on the distribution of seabed habitats
Develop more effective mechanisms to ensure that monitoring and surveillance data (e.g. VMS, AIS) can be reused or reprocessed to support ICES needs
Identify, design and use opportunities for public participation in observation and exploration through citizen-science and opportunities for marine industries and other stakeholders to contribute to research design, data gathering and interpretation

4. Emerging techniques and technologies

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

New techniques and technologies continue to transform our capacity to understand and monitor biota, marine ecosystems, human activities and pressures, to analyse data and to conduct assessments. Some emerging technologies may be so disruptive that they fundamentally challenge the accuracy and cost-effectiveness of existing approaches. It is essential to develop, identify and review emerging techniques and technologies and to support uptake when they advance capacity to improve the rigour, scope and impact of science and advice.

Tasks:

Horizon scan, test, develop and where appropriate harness new and emerging techniques and technologies that have potential to progress the ICES vision and mission: with an emphasis on data gathering, processing and interpretation
Develop more efficient ways of analysing, sharing and presenting big data from observation and monitoring; especially using data from remote sensing of the seas and monitoring of human activities
Develop and apply a wide range of analytical and statistical tools, such as machine learning, to describe the state and dynamics of the marine environment and the distribution and dynamics of human activities, and to assess their strengths and weaknesses
Investigate the benefits and costs of techniques that may supplement or replace existing approaches to biological 'sampling', including the applications of acoustics, image analysis, molecular methods (e.g. eDNA, genetic barcoding and genetic close-kin mark-recapture methods) as well as sensors for chemical and physical sampling
Track the emergence of new technologies in marine industries and assess how these technologies affect the interactions between those industries and the marine environment

5. Seafood production

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

Production of seafood and associated by-products supports livelihoods and businesses and makes an important contribution to human nutrition and health. Securing a sufficient and sustainable supply of safe seafood from wild-capture fisheries and aquaculture is an ongoing challenge for society and effective development and management of these industries relies on scientific evidence.

Tasks:

Improve methods of single-species and multi-species stock assessment, including data-limited methods. Develop and conduct management strategy evaluations, address uncertainty, and improve the transparency, robustness, efficiency and repeatability of stock assessment

Increase understanding of stock structures, migrations, life histories, natural mortality, climate and food web impacts on marine and diadromous species as well as multi-species interactions and the consequences of stock recovery to strengthen the inputs and evidence base for assessment and advice

Further understanding and operationalisation of ecosystem-based fishery management and MSY concepts and their application in mixed, multispecies and emerging (e.g. mesopelagic) fisheries

Examine fisheries spatial dynamics, performance and impact of gear, links between catch and effort, mixed fishery interactions, role and impacts of recreational and small-scale fisheries and the consequences of responses to management measures

Assess aquaculture production potential and carrying capacity, development scenarios, and methods of risk and benefits assessment; for rearing or full production systems including low trophic level and seaweed aquaculture, integrated multi-trophic aquaculture and offshore production facilities

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

Develop aquaculture overviews to describe the distribution, ecosystem interactions, benefits and impacts of aquaculture production

Assess the wider role of seafood production in society, including resilience of the food system, interactions between food systems in the sea and on land, the effects of the changing expectations of seafood consumers on practices in aquaculture and fishing

6. Conservation and management science

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

Conservation and management measures are taken to meet the objectives of management bodies that are tasked to balance demands for use and protection of the sea. To guide and support effective conservation and management these bodies require evidence and advice based on current policies and management regimes, but also seek inputs on the performance of management, the status of the managed environment and information to develop future approaches and policies.

Tasks:

Develop an evidence base and assessment tools to support existing and potential demands for advice on conservation and management. To cover activities and pressures including fisheries and aquaculture, contaminants and pollutants, eutrophication, invasive species, litter, shipping, noise, oil and gas extraction, construction, renewable energy, climate change, acidification and habitat loss.

Develop methods to support implementation and evaluation of the suitability and effectiveness of national and international commitments and governance relating to marine spatial planning; coastal zone management; protection of species, habitats and marine ecosystems; mitigation; restoration; and the delineation, management and monitoring of marine protected areas

Develop methods to support implementation of marine policies and commitments applying to ICES member countries, including the UN Sustainable Development Goals, the Common Fisheries Policy and the Marine Strategy Framework Directive

Provide evidence to inform policy developers as they seek to set objectives and to address and reconcile use and conservation of the sea

Develop and publish integrated ecosystem assessments and ecosystem overviews to describe and report on regional status and use of the sea.

Further develop ICES capacity to provide ecosystem-based advice by adding quantitative analyses of more activities, pressures and impacts, as well as social, cultural and economic information, to fisheries and ecosystem overviews, and by developing and integrating aquaculture overviews

7. Sea and society

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

People and their communities, societies and cultures benefit directly from seas and oceans because people engage in aquaculture, fishing, shipping and other marine industries, or use the sea for recreation. All other humans benefit indirectly from services provided by the seas and oceans, given their role in global biogeochemical cycles and the climate system. We seek to achieve a step change in understanding and reporting of human interactions with the sea, to inform policy development, conservation and management.

Tasks:

Develop, test and apply methods and indicators to assess the social and economic status and dependence of coastal communities on aquaculture, commercial and recreational fishing, tourism and other marine industries
Trial and improve social and economic indicators for use in fisheries and ecosystem overviews and the emerging aquaculture overviews
Investigate the social and economic risks and opportunities provided by alternate uses of the sea.
Investigate the social and economic consequences of human responses to management actions and the role of spatial planning in resolving conflicts and supporting co-existence of human activities and livelihoods
Assess the effects of alternate models of engagement on the success of participatory processes and the perceived salience, credibility and legitimacy of outcomes that result, as well as the practicality and performance of resulting conservation and management options
Describe alternate futures and management options for marine socio-ecological systems and assess the vulnerability and resilience of marine industries and society to climate change
Develop understanding of how traditional and historical knowledge can inform conservation and management and how this understanding influences the effectiveness of contemporary conservation and management

Progress on Arctic science cooperation

This document gives an update on Arctic Science cooperation, for information for Council

Fifth Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean (FiSCAO), October 24–26, 2017, in Ottawa, Canada, and

Agreement to prevent unregulated high seas fisheries in the central Arctic Ocean, concluded 4 December 2017

ICES was represented by Eskild Kirkegaard, ACOM Chair at the 5th meeting of FiSCAO, which focused on potential fisheries resources in the Central Arctic Ocean and the work initiated at the 4th meeting;

- on designing a 1-3 year long mapping program for fisheries resources and a potential monitoring program,
- to identify human, financial, vessel/equipment resources needed for mapping and monitoring, and
- to develop data collection, sharing, and hosting protocols.

Good progress were made on both the mapping and the monitoring programs. With respect to resources needed, the meeting concluded that a coordinating body will be required and that further work on the mapping and the monitoring programs are required before the resource needs can be identified. Regarding the developments of protocols the meeting agreed on a draft data sharing policy, concluded that the development of a data sharing protocol will require negotiation and legal review among the parties, and recommended that a data management/sharing pilot study be undertaken. In accordance with the proposal agreed by 2017 ICES Council, USA, ICES and PICES in cooperation offered to undertake the pilot study.

During ASC ICES representatives met with PICES representatives Chul Park, and Hiroaki Saito, amongst others to discuss the follow-up on the FisCAO action to be led by PICES, ICES, and NOAA (database of fish observations in the central Arctic Ocean). The US delegates have identified the NOAA leads; Chris Lunsford - chris.lunsford@noaa.gov, Candace Nachman - Candace.nachman@noaa.gov.

Neil Holdsworth, Head of Data and Information will initiate the work within the Secretariat, and report to SCICOM/Council.

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

The Ministerial meeting will be preceded by an [Arctic Science Forum](#), on 25 October. ICES has on 7 February 2018 received an invitation to participate in the

science event on the 25 October, and to report on the organization as well as our contribution to the three overall themes.

A similar invitation has been received for participation in the Arctic Environment Ministers' meeting taking place in Rovaniemi, FI on 11-12 October 2018, and a statement has been submitted providing information on ICES Arctic Science cooperation.

ACOM Chair's – 2018 Annual Progress Report

1 Summary

1. The advisory plan for 2018 involves advice on fishing opportunities for 188 stocks, release of 2 Ecosystem and 1 Fisheries Overviews, responses to 3 recurring requests for advice on ecosystem impacts of fishing activities and 25 special requests, and 9 technical services.
2. The number of annual advice on fishing opportunities has declined by 20% since 2014, reflecting an increase in stocks for which biennial or longer advice is provided.
3. The complexity of the advice on fishing opportunities is increasing as a result of the adoption of stock specific management strategies. The implementation of Multiannual Plans within EU has added to the complexity with the introduction of F ranges and separation between target and non-target stocks.
4. While the number of special requests has been at the same level in recent years, the diversity and complexity of the requests are increasing.
5. ICES receives an increasing number of invitations from Clients and observers to present the advice at meetings. ICES has in 2018 accepted 29 invitations. The preparation and participation in these meetings take a significant proportion of the ACOM Leaderships time.
6. When presenting ICES advice to stakeholders a number of issues/criticism were raised:
 - Changes in advice caused by changes to assessments and not to changes in the stocks,
 - Justification for ICES advice rule for stocks that are below B_{lim} ,
 - Justification for ICES advice rule for category 3 stocks,
 - Advice often difficult to read for non-experts,
 - Justification for mackerel advice.
7. In general data has been delivered within the deadlines in 2018 and no major failures has been observed with the exception of VMS data and one case where changes to internal national procedures resulted in delayed delivery of data.
8. The pool of experts capable of addressing technically complicated assessments and analyses is limited and the demand on these experts is high. Consequently, it is increasingly difficult to find experts willing and able to perform advisory work in ICES beyond what is required to update stock assessments. This may threaten ICES ability to provide advice in the future.

9. The Secretariat has used substantial resources in implementing the review system. It has in recent years been difficult to find experts willing to act as reviewer.
10. ACOM's involvement in drafting and approving advice has improved in 2018 compared to previous years. However, the participation is still skew in favor of fisheries advice with limited involvement of a large part of ACOM in ecosystem advice requests.
11. ACOM has decided to move the annual ACOM meeting from November to March/April.
12. ACOM adopted a job description for ACOM Members and Alternates. The job description addresses the role of ACOM Members collectively and individually in ICES advisory services and in their home country.
13. ACOM agreed to implement the steering group structure, where all Expert Groups are referring to a Steering Group, previously adopted by SCICOM.
14. ACOM agreed, following a recommendation from the Workshop on ICES Framework for Ecosystem Advice, to recommend to Council to organize a Dialogue meeting in 2019/2020 to discuss with Stakeholders what ICES can offer on ecosystem advice.
15. The relatively few resources made available from ICES Member Countries to the development and finalization of Fisheries and Ecosystem Overviews remain a limiting factor for the publication of the overviews.

2 Overview of the advisory process and advice provided in 2018 until September

2.1 Advice provided by ICES

The advice provided by ICES in period 2014 to 2018 is shown in table 1. The figures for 2018 are preliminary based on the plan for 2018.

The decline during the period in number of advice on fishing opportunities is due to an increase in the number of stocks for which ICES provided biennial or longer advice.

The low number of special requests in 2015 was partly due to a delay in the signing of the MoU with the EU which meant that all EU special requests were delayed by more than half a year.

Advice type\year	2014	2015	2016	2017	2018
Fishing opportunity	252	225	222	207	192
Special requests and other advice	19	14	29	25	32
Technical services	9	8	6	3	10

Table 1. Number of advice by type issued by ICES in the period 2014 to 2018.

2.2 Recurring requests for advice

ICES advisory plan for 2018 involves advice on fishing opportunities for 188 stocks.

Area	Number of stocks for which advice has been or will provided in 2018
Iceland and East Greenland	12
Barents Sea	8
Faroe Plateau	3
Celtic Sea and West of Scotland	56

North Sea, Eastern Channel, Skagerrak and Kattegat	35
Bay of Biscay and Atlantic Iberian Waters	42
Baltic Sea	11
Widely distributed and migratory stocks	21

Table 2. Number of recurring advice on fishing opportunities planned for 2018 by area.

The complexity of the single stock advice on fishing opportunities has increased. Especially the introduction of Multiannual Plans in the EU has added to the complexity by introducing F ranges, requesting MSY based advice only for target stocks and precautionary approach based advice for other stocks. ICES is now operating with five type of advice categories.

In addition to the recurring advice on fishing opportunities ICES has updated the Fisheries Overview for the Baltic Sea and plan to update the North Sea overview and publish a new Fisheries Overviews for the Celtic Seas in December 2018.

ICES plan to publish two new Ecosystem Overviews in December, one for the Baltic Sea and one for the Azorean ecoregion. Updated versions of already published Ecosystem Overviews (Barents Sea, Bay of Biscay and the Iberian Coast, Celtic Seas, Greater North Sea and Icelandic Waters) will be released in December.

ICES has also providing advice in response to recurring requests on ecosystem impacts of fisheries to:

EU Commission:

- Bycatch of small cetaceans and other marine animals;
- Impact of fisheries on other components of the ecosystem;

NEAFC:

- Vulnerable deep-water habitats in the NEAFC Regulatory Area.

2.3 Special requests

ICES expects to publish advice in response to 25 special requests in 2018. The number of requests is at the same level as in recent years. However, the complexity and diversity of the requests is increasing. Examples are the requests to evaluated management strategies, where both the technical complexity of the analyses and the number of management scenarios to be reviewed are increasing.

Special requested in 2018:

EU:

- Evaluation of the long-term management plan for Celtic Sea herring.

- Guidance on an appropriate method to integrate criteria, species, species group to higher groups of birds, mammals, reptiles, fish and cephalopods for a Good Environmental Status assessment.
- Locations and likely locations of VMEs in EU waters of the NE Atlantic, and the fishing footprint of 2009–2011.
- Long-term management strategy for southern horse mackerel (*Trachurus trachurus*) in ICES Division 9.a.
- Management areas for sandeel in the North Sea.
- Plausible and updated F_{MSY} ranges for the stocks of species inhabiting western EU waters.
- Review of the list of Baltic Sea wild salmon rivers in Annex I of the EC Multiannual plan on Baltic Sea salmon.
- Revision of the contribution of TACs to fisheries management and stock conservation for selected deep-water stocks.
- Revision of the contribution of TACs to fisheries management and stock conservation for selected stocks.
- Sentinel fishery for Norway lobster (*Nephrops*) in functional unit 25, Division 8.c.
- Independent review of MS progress reports and, when relevant, update or new estimation of stock indicators regarding eel.
- Analysis of the IUCN process for the assessment of the conservation status of marine species in comparison to the process used by fisheries management bodies.
- Further development of ICES mixed fisheries considerations.
- Horse mackerel in areas 8.c and 9.a- inter-area flexibility.

EU, Faroe Islands, Iceland and Russia

- Re-evaluation of the reference points for Norwegian Spring-spawning herring.

EU and Norway

- Evaluation of long-term management strategies for Norway pout in ICES Subarea 4 (North Sea) and Division 3.a (Skagerrak–Kattegat).
- Management strategies for North Sea stocks.

France

- Updated advice for undulate ray (*Raja undulata*) in divisions 7.d–e and 8.a–b.

NEAFC

- Long-term management strategy for herring in the Northeast Atlantic (Norwegian spring-spawning herring).

The Netherlands

- Comparison of the ecological and environmental effects of pulse trawls and traditional beam trawls when exploiting the North Sea sole TAC.

Norway and Russia

- Evaluation of harvest control rule (HCR) options for redfish (*Sebastes mentella*) in ICES subareas 1 and 2.

OSPAR

- Scientific peer review of the 'North Atlantic Current and Evlanov Seamount High Seas MPA' (NACES HS MPA) proposal.
- Peer review of the Haploops communities Case Report.

Poland

- Review of the effectiveness of current conservation areas and periods in place for the recovery of the cod stock in the Baltic Sea.

In addition to the special requests listed above ICES has under the AA with EU agreed to participate and active contribute in internal EU co-ordination process, Working Group on Good Environmental Status (WGGES) and Marine Strategy Coordination Group (MSCG) in the framework of the MSFD Common Implementation Strategy process.

2.4 Technical services

A Technical Service is the provision of scientific information, or a process that produces scientific information, for the use of managers and policy-makers. It is not an advice in the sense that it does not include a recommendation on behalf of ICES but it share some of the same characteristics as an advice:

- Scientific objectivity and integrity;
- Quality assurance, including peer review as appropriate;
- Transparency.

In 2018 ICES will deliver the following 10 technical services:

EU

- Training course on Introduction to Statistically Sound Sampling schemes
- Training course on Introduction to Stock Assessment
- Deliver an online international platform for age reading workshops and calibration.
- Support the development of a full specification of the RDBES, including a regional data model for commercial catch design based sampling and agreed estimations methods.
- Inclusion of DCF surveys and missing variables into DATRAS.
- Dissemination of ICES advice beyond pdf files.
- Mixed fisheries- likely catch of stocks for which ICES has advised zero catch.

EU and Norway

- Norway pout additional elements to advice on management strategy

OSPAR

- CEMP assessment tool for contaminants.
- Production of 2017 spatial data layers of fishing intensity/pressure.

3 Review of advisory process in 2018

3.1 Data

In general data has been delivered within the deadlines in 2018 and no major failures have been observed with the exception of VMS data where a couple of countries did not deliver or delivered too late for the data to be used in the 2018 advisory work and one case where changes to internal national procedures resulted in delayed delivery of data.

3.2 Expert Groups

The attendance of stock assessment Expert Groups seems in general to have been satisfactory to update assessment as planned.

The pool of experts capable of addressing technically complicated assessments and analyses is limited and the demand on these experts is high. Consequently, it is increasingly difficult to find experts willing and able to perform advisory work in ICES beyond what is required to update stock assessments. The availability of experts with the required skills is an increasing limiting factor for ICES advisory services and if not solved will be a major risk to ICES advisory services in the medium term.

3.3 Reviews

The advisory process involves peer review of responses to special requests, benchmark results and substantial changes to methods and data used in an advice. The difficulties observed in recent years to find experts willing to act as reviewer and ICES have continued in 2018.

3.4 Corrections

24 corrections to advice sheets have been issued in 2018 until primo October. All minor corrections with no impact on the advice.

3.5 Advice Drafting Groups.

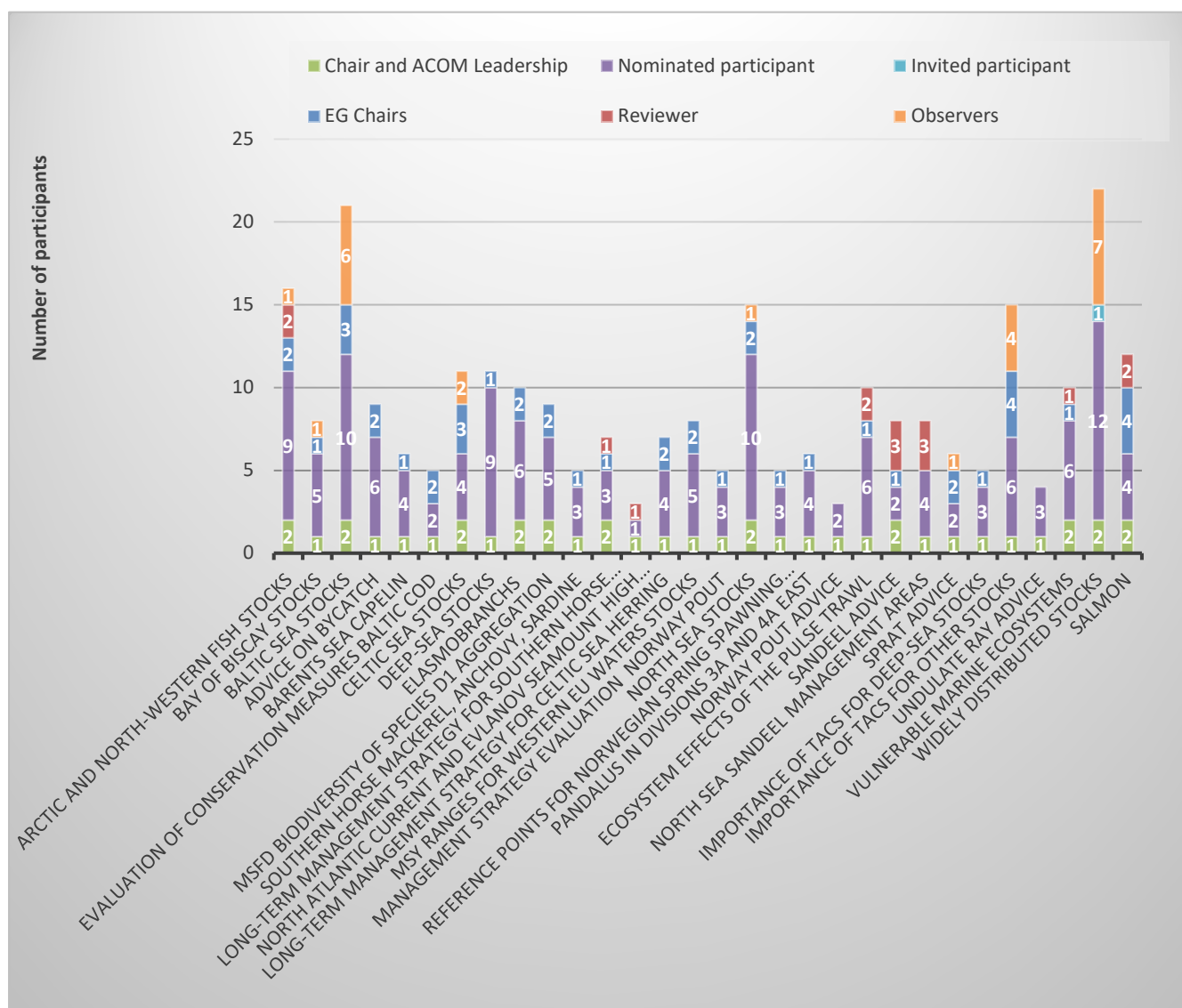


Figure 1. ADG Participation 2018 (Jan-Sep).

30 Advice Drafting Groups met in 2018 from January to September. The number of participants in the ADGs varied between 3 and 22. Attendance by participants nominated by ACOM national members varied from 1 to 12. The attendance by national nominated members was less than three in 4 of the 30 ADGs.

The participation in Advice Drafting Groups has improved and in general been satisfactory in 2018. ICES Member Countries engagement in Advice Drafting Groups is dependent on the items addressed in the Groups. The Advice Drafting Groups dealing with advice on fishing opportunities are with the exception of the groups dealing with one or very few stocks well attended and normally with an attendance beyond what is required to do the job. The interest in participating in non-fisheries Advice Drafting Groups seems much more limited and the Secretariat and the ACOM Leadership had in many cases actively to approach the ACOM Members to ensure a minimum attendance.

3.6 ACOM Advice Web-Conferences.

The participation in advice Web-Conferences in 2018 until October is shown in Figure 2. A total of 27 Web-Conferences were planned for the period. 14 (11 in 2017 and 7 in 2016) out of them were canceled because no substantial comments on the draft advice were received and the advices were adopted without a Web-Conference being held.

On average 48% (2017: 37%) of ICES Member Countries were represented at a Web-Conference, 23% (2017: 16%) did not attend but approved the advice beforehand and 29% (2017: 47%) did not respond to the Web-Conferences invitation.

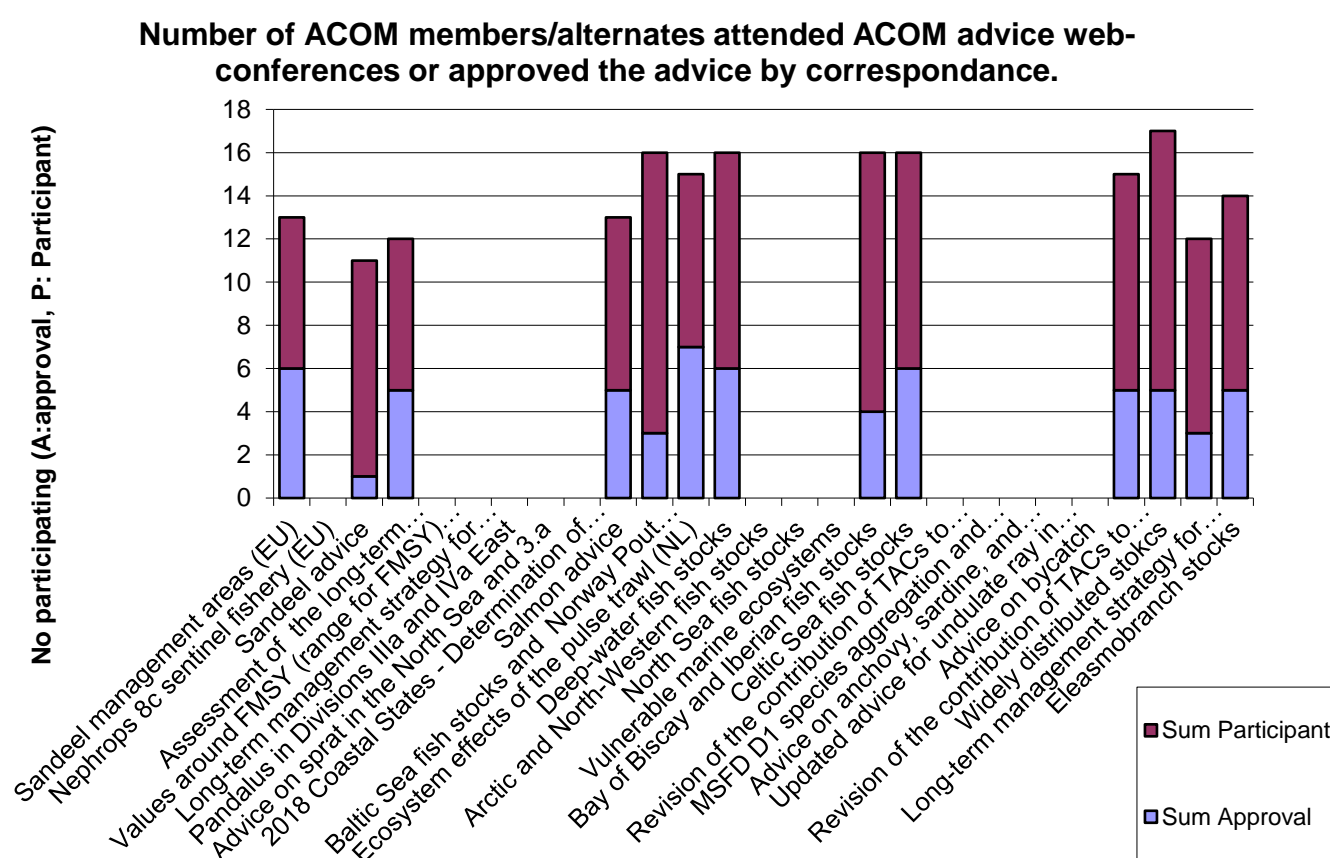


Figure 2 Number of ACOM members participating in advice Web-Conferences or approved the advice before the Web-Conference in 2018 until primo October. In cases where no participation is reported the Web-Conference was canceled because no substantial comments to the advice were received

3.7 Presentation of advice

The Administrative Agreement (AA) with EU, and the MoUs with Norway, NEAFC and NASCO include commitments for ICES to present, if requested, the advice at meetings organized by the clients. In addition the leadership has been invited to give presentations at Coastal State meetings, regional meetings and conferences. Table 3 provides an overview of presentations provided or planned in 2018.

The number of invitations is increasing and the preparation and participation in the meetings take a significant proportion of the ACOM Leaderships time. However, these meetings offer good opportunities for discussing the advice and approaches with stakeholders and to get feedback. The general feedback on ICES advice has in 2018 been very positive. However, some criticism were raised including:

- Changes in advice from year to year caused by changes in the assessments or reference points and not in stock development question the credibility of ICES advice.
- ICES advice rule for stocks below B_{lim} . The rationale for the rule to bring the stock above B_{lim} in one year is unclear and it has been questioned if this rule is necessary for the entire advice rule to be precautionary.
- ICES advice rule for category 3 stocks was questioned based on cases where stock seems to increase but advice is a reduction in catches.
- Unclear Precautionary Approach advice rule for category 1 and 2 stocks.
- Complexity of advice – often difficult to read for non-technical experts.
- Advice was questioned with reference to national scientist who are active involved in ICES advisory work not supporting ICES advice.
- Advice on mackerel for 2019 is very low and not acceptable to industry and many national administrations. ICES in on pressure to revise the assessment and advice with reference to tagging data having to large an impact on the assessment.

Table 3. Presentations by ICES of advice or advisory approach in 2018.

Organisation/meeting	Venue	Date	Presenter
European Parliament, Public Hearing, "Encounters" Between Science And Management In Fisheries	Brussels	21 March	Eskild Kirkegaard
Pelagic AC. ICES Advisory Approach	Den Haag	12 April	Eskild Kirkegaard
Pelagic Fish Forum. Status of pelagic stocks	Brussels	23 April	Eskild Kirkegaard
EU - Norway. Advice on Management Strategy for Pandalus	Skagen	24 April	Eskild Kirkegaard
Coastal States meeting on NSSH. Advice on management strategy for NSSH	London	14 May	Eskild Kirkegaard
OSPAR – NEAFC Collective Arrangement	Berlin	16 – 17 May	Eskild Kirkegaard
ICSP 13 United Nations Fish Stocks Agreement. ICES contribution to strengthening of the science-policy interface for sustainable fisheries	New York	22 – 23 May	Eskild Kirkegaard

PELAC-MAFMC workshop	Hirtshals	5 June	Eskild Kirkegaard
NASCO, Annual meeting	Portland, Main	6 - 8 June	Martha Robertson
BalticAC. Advice on Baltic stocks	Tallin	11 – 12 June	Colm Lordan
Conference on status of the fish stocks in the Baltic Sea, particular cod.	Szczecin	15 June	Eskild Kirkegaard
International Dialogue Meeting on Pulse Fishing. Advice on pulse trawl	Amsterdam	18 June	Eskild Kirkegaard
European Parliament, Committee on Fisheries. Advice on pulse trawl	Brussels	21 June	Eskild Kirkegaard
BaltFish. Advice on Baltic stocks	Copenhagen	29 June	Eskild Kirkegaard
NWWAC. Advice on North Western Waters stocks.	Ghent	3 July	Ghislain Chouinard
PelAC. Advice on herring stocks.	Copenhagen	5 July	Eskild Kirkegaard
DG MARE. Informal meeting on ICES advice for 2019.	Brussels	10 July	Eskild Kirkegaard
NSAC. Advice on North Sea stocks.	Edinburg	11 July	Colm Lordan
Seminar on ICES advisory approach and advice on Baltic stocks	Vilnius	17 August	Eskild Kirkegaard
Norway pout MSE special request EU-Norway Consultations	Gothenburg	5 September	Colm Lordan
EU Council WG on Fisheries. ICES advice for 2019	Brussels	13 September	Eskild Kirkegaard
EU Seminar on Fisheries Science	Brussels	14 September	Eskild Kirkegaard
Advice on other pelagic stocks	Den Haag	3 October	Colm Lordan
NEAFC, PECMAS	London	2 – 3 October	Eskild Kirkegaard, David Miller and Mark Tasker
Costal State meetings on mackerel	London	8 – 9 October	Lotte Worsø Clausen

Costal State meetings on blue whiting	London	9 - 10 October	Lotte Worsø Clausen
Costal State meetings on Norwegian spring spawning herring	London	10 - 11 October	Lotte Worsø Clausen
2 nd Costal State meetings on Norwegian spring spawning herring	London	5 November	David Miller
NEAFC Annual Meeting	London	13 – 16 November	Mark Dickey-Collas

4 ACOM

ACOM identified at its November 2017 meeting the priority areas for the Committees strategic work in 2018. Below is a short progress report for each of the areas.

4.1 Timing for the annual meeting

ACOM has two annual physical meetings. The Consultations, a one-day meeting held the day before the ASC, and the Annual Meeting in November/December lasting 3.5 days.

The meeting prior to the ASC is on national expenses while ICES is paying travel and per diem to ACOM members attending the Annual Meeting.

The Consultations were originally used to discuss the advisory plan for the following year including approval of resolutions. The planning and approval are now done by correspondence and the Consultations are mainly used to discuss strategic issues including further developments of the advisory frameworks.

The short time period between the Consultations combined with October and November being very busy months with many ADGs, NEAFC meetings, ICES Council meeting and coastal states meetings, makes it difficult to follow up on Consultations discussions in preparation for the November meeting.

ACOM therefore decided to move the annual ACOM meeting to March/April.

4.2 ACOM working procedure/job description.

The low involvement in non-fisheries advice has triggered a discussion in ACOM on needs for changes to the current structure of the Advisory Services. ACOM has concluded to maintain the current structure of ACOM with one member per country but with a changed set of skills and background requirements for national ACOM members, and with a change in internal ACOM working procedures to support this change.

In accordance with the decision, ACOM has in 2018 focused on the job description for ACOM members and on possible changes to ACOM's working procedures.

A job description prepared by an ACOM Subgroup was presented to ACOM at the Consultations in Hamburg. ACOM adopted the description (annex 1 to this report).

ACOM furthermore discussed its working procedures and mainly the membership and tasks of Advice Drafting Groups. A subgroup was established and tasked to propose a system for ACOM participation and overseeing of ADGs, including ADG membership and roles.

4.3 Quality assurance.

ACOM at its meeting in November 2017 did not identify new initiatives on quality assurance to be taken in 2018 but agreed that the follow up on existing initiatives should be given high priority. This includes ACOM initiatives on:

- ACOM working procedures and job description for ACOM Members. See above.
- Bias in stock assessments. Workshop planned for 2018 has been postponed to 2019 after requests from the Workshop Chairs,
- Management strategy evaluation. Workshop to revise current guidelines on management strategy evaluations is scheduled for February 2019.
- Frameworks for ecosystem advice. See below.
- Technical guidelines. See below.

In addition to ACOMs initiatives a number of data related initiatives on quality assurance have been taken by the Secretariat (see report to Council from Data and Information Services).

4.4 Frameworks for Ecosystem advice.

The second Workshop to scope the ICES framework for ecosystem advice took place in May 2018 to further develop an ICES framework for ecosystem advice. The Workshop made good progress in defining the principles for a framework and recommended the next step to be a Dialogue Meeting in 2019/2020. The recommendation was supported by ACOM.

The Dialogue Meeting should aim to achieve an understanding of what ICES has to offer in the arena of ecosystem advice, the utility of explicit management objectives and the benefits (and how) of having a dialogue on determining these objectives, including (re-) evaluation, per request. The Dialogue Meeting should also discuss how to move towards longer term/iterative ways of working with clients, also involving ICES data, science and communication expertise. Government administrators at the national and international level, scientists involved in the process of developing scientific advice in relation to an ecosystem approach, and a range of stakeholders should be invited to the meeting.

4.5 Fisheries Overviews and Ecosystem Overviews.

The Fisheries and Ecosystem Overviews are now key products for ICES in delivering advice on ecosystem based management. The aim of the overviews is to provide information and advice of relevance for fisheries and ecosystem management. The Overviews were in 2018 included as requested advisory deliverables in the Administrative Agreement between the EU and ICES.

ICES will in 2018 publish three new overviews (Fisheries Overview for Celtic Seas and Ecosystem Overviews for Baltic Sea and the Azorean ecoregion) and update the already published overviews.

Although there has been progress in developing and publishing the Fisheries and Ecosystem Overviews, the relatively few resources allocated by ICES Member Countries to the work remain a limiting factor. As the Overviews are becoming central parts of ICES advisory deliverables it is crucial that ACOM engage in the work and ICES Member Countries give priority to it and allocated the resources required.

4.6 SG structure.

A proposal from the ACOM and SCICOM Chairs to develop a steering group structure covering all Expert Groups in ICES was discussed by ACOM and SCICOM at the Annual Science Conference in Fort Lauderdale. While SCICOM could support the proposal, ACOM requested more information before deciding. A Subgroup was established to work by correspondence to address the questions raised by ACOM and to draft a job description for a new steering group. The report of the Subgroup was discussed by ACOM at a WebEx meeting in February 2018. It was concluded that further discussion was needed and the Subgroup was requested to further develop the proposal. It was also agreed to turn the subgroup into a joint ACOM-SCICOM subgroup by involving the Steering Group Chairs.

The report of the joint ACOM – SCICOM Subgroup was discussed at the ACOM Consultations in Hamburg. ACOM supported the proposal of establishing a Steering Group structure with all ICES Expert Groups being affiliated to a Steering Group. ACOM was unsure if it would be sufficient to establish one new Steering Group to accomplish the Expert Groups currently under ACOM and requested the Chairs of ACOM and SCICOM to consider whether to establish one or two new steering groups and to draft a proposal for allocation of ACOM Expert Groups to Steering Groups. The aim is to implement the new steering group structure in 2019.

4.7 Frequency of assessments and reopening.

ACOM Leadership has since 2015 discussed with Clients the possibilities for reducing the annual number of advice on fishing opportunities. Clients are still requesting annual advice for most target stocks but have accepted less frequent advice for many non-target stocks and stocks with no analytical assessments. This has resulted in a reduction in the annual number of advice on fishing opportunities by approximately 20% since 2014.

ACOM Leadership will continue the dialogue with Clients with the aim of further reduce the annual number of advice on fishing opportunities.

ACOM has currently an agreement with EU and Norway to provide advice for demersal North Sea stocks by July and to revise the advice in the autumn if survey results from third quarter significantly change the assessment of recruiting year classes. ACOM has suggested to Clients to only provide the advice in the autumn to reduce workload. While Norway has indicated it could accept the suggestion EU has informed that changes to the current process is not acceptable.

4.8 Technical Guidelines

ACOM agreed in 2014 to publish 25 technical guidelines for ICES advice. It has proven very difficult to get the support from ICES Member Countries to finalise the guidelines. To speed up the work a plan for finalizing the guidelines was adopted by ACOM in November 2017. Despite ACOM agreed to the plan and to support the work it is still very difficult to find the resources to work on the guidelines and until now only 14 of the agreed 25 guidelines have been published.

4.9 Introduction to the advice.

The introduction to advice has been updated and is available on ICES Website.

4.10 Benchmarks.

ACOM agreed in 2016 a new benchmark system to be implemented gradually. The system will be used for North Sea demersal stocks in 2019.

5 MIRIA (Meeting between ICES and Recipients of ICES Advice)

The MIRIA meeting (16 -17 January 2018) was attended by representatives from Denmark, EC-DGMARE, Faroe Islands, France, HELCOM, Iceland, NEAFC, Norway, OSPAR, ACOM Leadership and ICES Secretariat.

Review of ICES advisory services in 2017

Clients and other Recipients of ICES advice acknowledged the hard work of ICES Expert Groups and Advisory Committee to produce the advice and were very satisfied with ICES advice in 2017. The quality of the advice was in general considered to have been high although the errors in the advice for mackerel and Norwegian spring spawning herring had questioned ICES quality assurance of advisory products.

While acknowledging an improved communication between ICES and Clients, ICES was encouraged to continue to improve communication including the accessibility and readability of the advice.

Quality assurance

MIRIA acknowledged the initiatives taken by ICES to strengthen the quality assurance of ICES advice in all parts of the process from data collection to presentation of the advice and encouraged ICES to give quality assurance of advice high priority.

Recognising that limitation in availability of experts to ICES advisory work may constitute a risk to the quality of the advice MIRIA encouraged ICES to consider how to attract new experts.

ICES approach for advice on fishing opportunities

MIRIA discussed ICES MSY approach for category 1 and 2 stocks (stocks with analytical assessments) and confirmed that ICES should use its MSY approach as basis for the advice for stocks for which no agreed management plan exists. However, EC informed that they were revising their request for recurrent advice on fishing opportunities and that this may influence

the type of advice requested especially for non-target stocks (see report on bilateral meetings with the EC below).

Regarding category 3 and 4 stocks MIRIA supported ICES work on defining target and by-catch stocks and requested ICES to report on progress at the 2019 MIRIA meeting.

MIRIA was concerned that given the limited knowledge/information available for many stocks, there would be a significant challenge in trying to produce MSY advice for Category 3 and 4 stocks.

Fisheries and Ecosystem Overviews

The Clients welcomed the overviews and encouraged ICES to develop overviews for the remaining ecoregions. ICES was requested to keep the Clients informed on progress in developing the overviews.

6 MIACO (Meeting between ICES, Advisory Councils and other Observers)

The annual meeting with observers took place 18 -19 January 2018 and was attended by 28 observers representing 18 observer organisations: the Pelagic, Baltic Sea, North Sea, North Western Waters, South Western Waters and Long Distance Advisory Councils, the Dutch Pelagic Freezer-Trawler Association, Seas at Risk, DGMARE, Coalition Clean Baltic, Norwegian Fishermen's Association, OCEANA, European Fisheries Control Agency, EUFishmeal, Danish Pelagic Producer Organisation, FishSec, MSC, Norwegian Fishermen's Association.

On request from the Advisory Councils a separate 3 hours pre-MIACO meeting between ICES and the Advisory Councils were held prior the MIACO.

Review of ICES advisory services in 2017

The observers expressed a high degree of satisfaction with ICES and the advisory work in 2017.

Regarding communication of the advice the Advisory Councils all expressed appreciation of ICES attending their meetings to present the advice. However, ICES was encouraged to improve the accessibility of the advice.

Concerns were expressed on the large changes in advice from year to year for some stocks caused by changes in the assessments and not in stock development.

The possibilities for participating in benchmark workshops was seen as very positive.

ICES advisory process and basis for advice were generally found to be transparent. However, Baltic salmon assessment and advice was mentioned as an example of non-transparency, where it seems that only very few experts understand the assessment and the basis for the advice.

Quality assurance

ICES was appreciated for recognizing current flaws in the advisory system and the initiatives taken to address them. The meeting supported ICES policy to have all data used in the advisory work available at a detail level allowing quality check and estimation of uncertainties. Concerns were expressed on the degree of complexity inherent in assessment models, and lack of transparency and reproducibility, and the Transparent Assessment

Framework was welcomed. Lack of experience, knowledgeable assessment scientists/modelers was mentioned and ICES encouraged to further develop its training program.

Stakeholder involvement in advisory work

Meeting participants were in general very happy with the current system and especially the possibilities of participation in benchmark processed were commended.

Communication was raised as very central to ensure an active involvement. ICES was requested to use a consistent terminology for the different types of groups and to make sure the rules for participation are clear, and to make information on work-plans including information on changes to plans easier accessible.

ICES approach for advice on fishing opportunities

MIACO discussed ICES MSY approach. The general response was that the approach for category 1 and 2 stocks is considered transparent and appropriate. Some concern was expressed that managers too easily have accepted the 5% rule in ICES advice rule (the risk of the stock is below the limit precautionary biomass reference point Blim should be 5% or less)

ICES was commended for its work on stocks for which analytical assessment is not possible and observers supported the initiatives to develop and MSY based advice rule for these stocks.

ICES approach to landing obligation/discard ban

Main issues discussed in relation to landing obligation/discard ban were data quality, incorporation of survival rates of discards and inclusion of discards in advice.

Observers took note of ICES approach not to try to predict changes in discards and landings as result of the landing obligation and to base discards estimates in assessments and forecast on empiric data. It was noted that there are large differences in the discard estimates provided by ICES and by STECF although they were based on the same observer data. ICES was requested to solve the differences to ensure consistency in the data.

7 WGCHAIRS

The WGCHAIRS meeting (23 – 25 January) was attended by 54 Chairs representing more than 60 Working Groups.

The agenda contained a session on the role of Expert Group Chairs and two sessions addressing the next generation of Fisheries and Ecosystem Overviews, science and advisory opportunities for ICES, fisheries advice, integrating ocean data, and how can data collection keep up with developing data needs.

The meeting was very successful. In addition to allow the Chairs to exchange experiences and views on being a Chair it also provided very useful information on how the Secretariat, ACOM and SCICOM better can support and help the Chairs in their work. A number of actions points related to the role of Chairs, communication, Expert Groups outputs and mentoring Chairs were agreed.

8 ICES-EC meetings

The administrative agreement (AA) for 2018 between ICES and EC involves important changes to the recurrent advice deliverables. EC distinguish between target stocks and for non-target stocks. For target stocks the basis for advices will be unchanged (management plan if agreed by all relevant parties and consistent with the precautionary approach, otherwise ICES MSY or PA approach pending on stock category). For non-target stocks EC is requesting precautionary approach and not MSY advice if the stock is subject to TAC management. If no TAC is set EC is not requesting advice on fishing opportunities but only on stock status.

This change in request has been implemented and the advice provided in 2018 to the EC is based on the new stock request categories. The change has made the advisory approach more complex and difficult to explain.

The Secretariat and DG Mare is negotiating a change in the administrative set up of the AA to be implemented in 2019. This is not expected to impact the substance and advice requests.

9 ICES – NEAFC

The bilateral meeting between ICES and NEAFC took place on the 17th January after the MIRIA meeting. NEAFC confirmed its satisfaction with the cooperation with ICES expressed at the MIRIA meeting.

Key issues discussed at the meeting were: data quality and availability, ICES participation in NEAFC meeting and presentation of advice, requests for advice in 2018 and long term developments in advice.

NEAFC and ICES secretariats have during 2017 discussed the use of VMS data provided by NEAFC and issues related to the format of the data have been solved.

NEAFC was very happy with ICES involvement in NEAFC meetings and ICES presentation of advice at these meetings. The Parties agreed to plan for a similar participation in NEAFC meetings in 2018. NEAFC welcomed the Fisheries and Ecosystem Overviews and would like to see fisheries and ecosystem considerations be further developed.

10 ICES – Norway

The annual meeting between ICES and Norway to discuss the cooperation under the MoU between the two parties took place 16 January. Both parties agreed that the cooperation had been very good. Norway mentioned the cooperation on the mackerel advice as positive process. The open communication and informal clarifications around the advice were appreciated.

Norwegian Spring Spawning Herring (NSSH) was, with the correction of the advice at a late stage, a difficult issue in 2017. The advice report on the correction, including the quality of the assessment description, was difficult for non-technical readers to understand. The desire for quality descriptions to be written more clearly and understandably was expressed.

Norway informed that they were still assessing their needs for aquaculture advice.

Whereas Norway sees the value of stimulating bio-economic assessments of fishery management, Norway did not find it correct for ICES to base advice on fishing opportunities on bio-economic assessments.

Norway furthermore informed that mixed fisheries advice is of less interest to Norway and mixed fishery assessments should not be the basis for advice on fishing opportunities.

Norway acknowledged the need for ICES to have access to data at a level allowing a proper quality check and informed that they would follow-up on the availability of Norwegian acoustic and biologic survey data.

11 ICES – OSPAR

A short meeting between ICES (Secretariat and ACOM Leadership) and OSPAR (Secretariat) was arranged on 17 January back to back with MIRIA. The main item discussed at the meeting was potential requests for advice from OSPAR. OSPAR foresee no major changes in number of requests.

ANNEX 1

The following description of the role of an ACOM Member was agreed by ACOM at the ACOM Consultations in Hamburg 23rd September 2018. ACOM will formal adoption the description at its annual meeting in November 2018.

The role of an ACOM Member

The membership of ACOM is one representative appointed by each Contracting Party, and the Chair and Vice-Chairs of ACOM. Contracting Parties may alternate the persons representing them as a member of ACOM. If they intend to alternate, a primary member and alternate members should be appointed.

Members and alternates of ACOM are expected to use their expertise in ensuring that ICES advice is based on best-available science, ensuring that the advice is relevant, timely, unbiased, independent, peer-reviewed and transparent

1. Being a Member of ACOM to collectively:
 - a) ensure that ICES Advisory Service responds to current needs of ICES clients;
 - b) ensure that ICES Advisory Service develops to meet strategic needs of both ICES and its clients;
 - c) support the development and implementation of mutually agreed frameworks for advice between ICES and its clients;
 - d) agree on an annual plan for ICES advisory activities;
 - e) help to develop Terms of Reference and scientific ideas of relevance for ICES Advisory Service for ICES Expert Groups;
 - f) ensure procedures / best practices / guidelines of relevance for ICES Advisory Services are developed.
In addition, ACOM collectively will
 - g) help SCICOM to define and to develop a science programme to underpin current and emerging needs for advice;
 - h) identify shortfalls in skills and knowledge needed in support of ICES Advisory Service and to work with ICES community to develop the required skills and knowledge.
2. ACOM members individually to:
 - a) participate in all aspects of ACOM activities;
 - b) chair Advice Drafting Groups as agreed by ACOM;
 - c) take a strategic view of direction of ICES advice, provide an oversight of the ICES advisory process, agree /modify guidelines, provide input to strategic and immediate planning of advisory process;
 - d) communicate frequently and actively with national Delegates and SCICOM members on advisory matters relevant to their work with ICES;

- e) maintain and further strengthen links between ICES Secretariat, science, data and advice;
- f) encourage experts to take part in ICES activities, particularly advisory work by highlighting the benefits and importance;
- g) ensure adherence to procedures, best practices and guidelines.

In addition, ACOM members may

- h) review outputs from the Expert Groups and other structures in the network, identify gaps in scope and impact of work, or shortfalls in skills and knowledge, and advise on ways to fill these gaps and to improve our advice;
 - i) provide feedback to ACOM on science work needed for advice and the development of methods.
3. ACOM members also play a role individually in their home countries through
- a) co-ordination of Member Country advisory role;
 - b) promote and support effective communication between ACOM and the ICES Clients and national administrations/ bodies, including representing ICES advisory service nationally;
 - c) inform relevant national science communities about ICES advisory work;
 - d) managing national involvement in ACOM work, ensuring range of science/knowledge covered;
 - e) ensuring relevant expertise supplied to Advice Drafting Groups allocated to the country in addition to those of national interest;
 - f) ensuring that nominated Advice Drafting Group members understand their role;
 - g) work together with national SCICOM Member to support national participants in Expert Groups supporting ICES Advisory Services.

Progress on pilot project on update assessments, and improvements to RDB and DATRAS

Transparent Assessment Framework (TAF)

“Transparency and participation of an extended peer community are important aspects of Responsible Research and Innovation” – Dorothy Dankel, University of Bergen. Speaking in response to the [Data's Den](#) pitch of TAF at the ASC 2018.

In December 2018, the TAF system goes live and will be presented at the FAO FishForum conference in Rome. This will signal the culmination of three years of design, development, and collaboration within the ICES secretariat and the ICES scientific community. The functionality of the first release of the TAF web application will offer:

- Users can view input data, code, results and plots online
- Each input file and plot will have a unique web address (url) for traceability
- All ICES stock assessments (available in TAF) will have been run on a trusted server
- Changes to input data or code by the stock assessor, will automatically update the assessment result and be version controlled
- Stock assessments can be repeated with new data
- Single sign in using ICES SharePoint username and password, access to specific assessments will be linked to SharePoint group membership

The remaining year and a half of the TAF project will focus on user testing and training, and continued development as the focus moves to full documentation of input data and the development of automated quality control procedures.

The system will make all ICES stock assessment input data, analyses, and results available online. TAF will pipeline the data flow, starting from the ICES fisheries and survey databases and ending by submitting the results to the ICES stock assessment graphs database. By making the analysis open and reproducible, TAF will also make it easier to prepare and run update assessments with a new year of data.

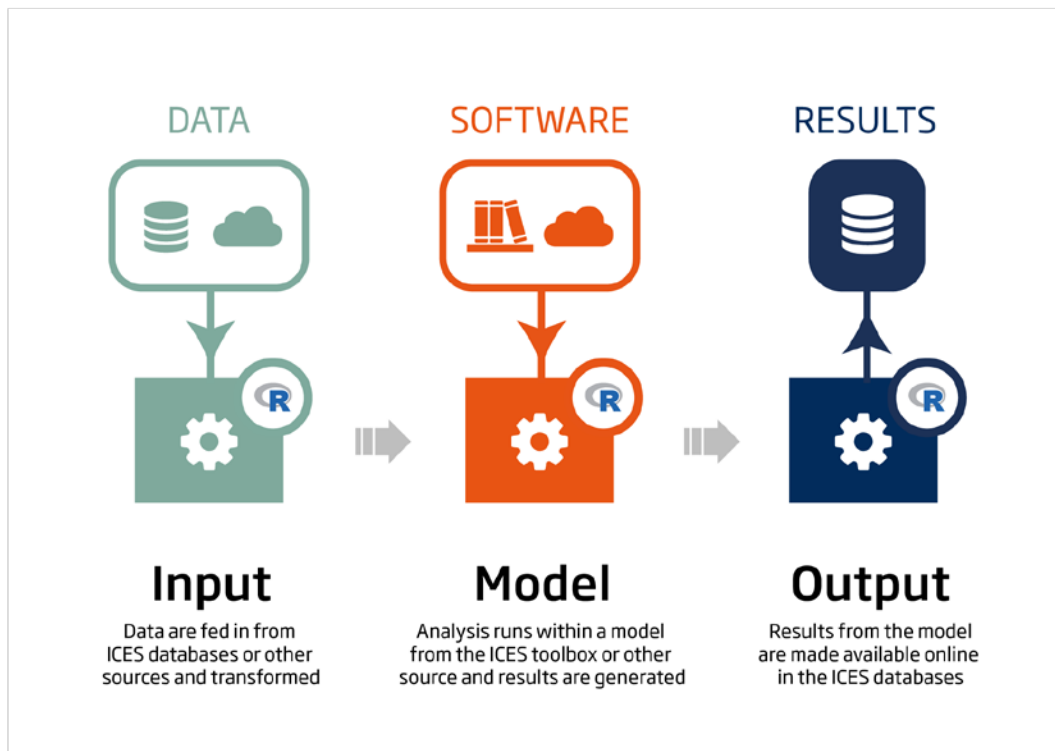


Figure 1. The TAF information graphic.

The project reached an important milestone in early 2018 as the first working groups began using TAF to organize selected stock assessments. There are 20 assessments on TAF today, of which 12 are complete (Figure 2). They include a wide range of assessments in terms of geographical area, the nature of the analysis, starting point of data, and assessment model type. To facilitate the adoption of TAF by stock assessors, the first user documentation has been published, including a tutorial video on YouTube. Furthermore, the TAF developers have attended selected working group meetings to assist stock assessors in person.

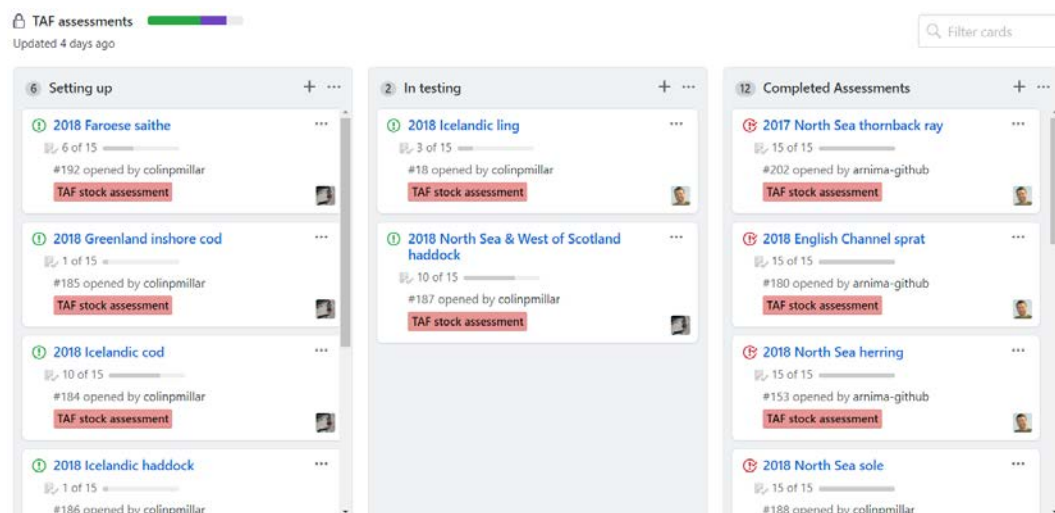


Figure 2. The TAF assessment progress board, publicly available at <https://github.com/ices-taf/doc/projects/2>.

The TAF project has established formal collaboration with developers of two other stock assessment computer systems: Stockassessment.org, developed by DTU in Denmark, which is an online application for running stock assessments in R and is used widely throughout ICES stock assessment working groups; and the REDUS project run by IMR in Norway, which aims to encapsulate all of the processes in fish stock advice to allow the full process to be simulated. REDUS plans to use the TAF framework for their stock assessment and data raising procedures.

Regional Database and Estimation System (RDBES)

There has been good progress on the Regional DataBase and Estimation System in 2018. The RDBES benefitted from a special request from the EU Commission which enabled a number of workshops to take place in addition to what had already been planned/budgeted under the Council investment.

The dynamic data model has been further developed by the Core Group (a subgroup under the Steering Committee of the RDBES). The data structure is now considered stable and has been sent out to the countries for the second time to test and give feedback. The feedback in September 2018 from the countries was positive, it fits the purpose and covers the statistically sound sample design of the countries/institutes that have tested it. However, the data model is now is very complex and covers 32 different ways/hierarchies to sample all species in all countries. This means the development of the RDBES web and database system is not as far as planned, but there has been good progress towards a skeleton structure. It is now possible to maintain the codes in the RDBES using the ICES Vocabulary system for code maintenance, internally import very simple data sample files for all the 32 different hierarchies.

It is expected that during 2019, the user requirement specifications of the whole RDBES is finalised by the Core Group. On the system development side, it is anticipated that the following will be complete at the end of 2019; security module, set up a web site for testing the data file uploads, support the countries testing the upload, data overviews, download and deletion of uploaded data, all checks, a simple version control of the estimation scripts and execution, handling and storage of the estimation results.

It should be noted that the EU Commission has now abandoned the project for a European FishHub, that would have aimed to make detail fisheries dependent data available across all EU countries.

Database of Trawl Surveys (DATRAS)

Enhancement: *Expert revision and automatization of NS-IBTS ALK (age length key) substitution procedure*

Automatization of the substitution has been developed in R - an open source platform. This semi-automatic approach needs to be run for historical data to tune and achieve an even more accurate decision making process for borrowing ALK, and therefore further testing and code amendments are required to finalize.

Enhancement: *ROCKALL and SWC-IBTS data products and indices in DATRAS*

Indices calculation workshop at Marine Scotland in July 2017. DATRAS has implemented new survey design adopted by Marine Scotland after 2011. Surveys splits in two time series pre and post 2011, separate screening rules and calculation method has been discussed and implemented. Age base product calculation developed in R platform and will be part of ICES DATRAS github package.

Enhancement: *LFI *Large Fish Indicator for biodiversity indicator in Ecosystem overviews*

Focus has been on Fish Size Index time-series (proxy of LFI).

A Workshop is planned, chaired by Kai Wieland, expert on NS-IBTS and Henrik Degel, expert on IBTS, aimed to fully define the calculation of the swept-area based effort index across surveys and years. For this workshop DATRAS have prepared a protocol to extract an overview of missing data, across surveys and years. The second goal of this workshop is to apply this swept-area effort to the calculation of a fish size index. For this, we have an initial protocol to calculate time-series of Large Fish Index, based on OSPARS indicator method. Once the issues with the swept-area calculation are solved, this protocol will serve as a starting point to test the assumptions of this Index and their impact in different sets of data.

Enhancement: *Compute the estimations for maturity Ogives and provide the data and method on the DATRAS webpage*

This development is still in the planning stage. A second knowledge exchange is planned between Thuenen institute and ICES Data Centre to develop Baltic products as well as to develop generic approach applicable to all surveys. Maturity base product discussion will be part of 2019 IBTSWG meeting, which mainly focusses on North Sea standard species maturity.

Enhancement: *Pilot on automated data harvesting service with IMARES*

In progress, workshop organised in October 2017 at IMARES. Authorisation module which allows data submitter to go through the ICES authentication has been developed and tested. Automated screening and checking on the file submitted by the remote service also tested and application was deployed on the DATRAS server for further checking at <http://datras.ices.dk/WebServices/FileUploadDATRAS.svc?singleWsdl>. Web service synchronisation between python platform to .Net service is in progress at IMARES side.

DATRAS also benefitted from a special request from the EU Commission which enabled a number of workshops (for all ICES countries) to take place to 'unblock' the flow of data to DATRAS from surveys that have yet to provide data into DATRAS, or where there is a need to increase the quality of the data for specific cases in DATRAS.

DATRAS workshops 2018

- 1) The Workshop on DATRAS surveys- Bay of Biscay and Iberian Coast (WKDATR-BoB) met in Copenhagen, 11-13 June 2018 and was chaired by David Stokes, Marine institute Ireland and Vaishav Soni, ICES. Seven participants, representing Norway, Belgium, Ireland and the ICES Data Centre, joined the full meeting
- 2) The Workshop on DATRAS surveys- Bay of Biscay and Iberian Coast (WKDATR-BoB) met in Copenhagen, 4-5 July 2018 and was chaired by Vaishav Soni, ICES. Five participants, representing France, Portugal, Spain and the ICES Data Centre, joined the full meeting

The main goal of this workshop was to collect data which are in the pipeline from many years, as well as to resolve some submission doubts and issues of the data-submitters. Another goal was also to identify and resolve data quality issues in DATRAS, proposing quality check procedures for missing data to be applied during uploading/reloading processes, as well as in already existing exchange data.

Primarily, the participants of the workshop worked towards identifying the issues regarding current missing time-series for exchange data, resolve them, and identify the hurdles. Participant data submitters worked closely with the DATRAS team of ICES Data Centre to resolve their issues, which allowed them to upload the data directly into DATRAS database after applying those changes to their data. Erroneous data and misinterpreted data have been corrected in this workshop.

Row Labels	1965	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Baltic International Trawl Survey								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Beam Trawl Survey				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Beam Trawl Survey - Bay of Biscay (VIII)																																			
Deepwater Surveys																								1	1	1	1								
French Channel Ground Fish Survey				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
French Southern Atlantic Bottom Trawl Survey															1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inshore Beam Trawl Survey																			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Irish Ground Fish Survey																				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Irminger Sea International Deep Pelagic Survey																											1								
North Sea International Bottom Trawl Survey		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Northern Ireland Ground Fish Survey																																			
Norwegian Sea International Deep Pelagic Survey																																			
Portuguese International Bottom Trawl Survey																				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Scottish Rockall Survey - new (from 2011)																																			
Scottish Rockall Survey - old (until 2010)																																			
Scottish West Coast Bottom Trawl Survey (up to 2010)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
Scottish West Coast Groundfish Survey (from 2011)																																			
Spanish Gulf of Cadiz Bottom Trawl Survey														1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Spanish North Coast Bottom Trawl Survey								1	1	1			1																						
Spanish Porcupine Bottom Trawl Survey																				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Figure 1 DATRAS survey portfolio 1965 to present day

Data and Information Services Report

This report comprises activities from the ICES Data Centre and the Data and Information Group -DIG (SCICOM operational group).

DIG has continued close collaboration with ICES Data Centre, both in terms of identifying strategic areas most likely to impact ICES work, and in concrete steps to apply governance principles and evaluations to different development projects to ensure considerations of all relevant data management principles are considered.

Future Challenges and Opportunities Progress

In March, DIG and ICES Data Centre presented the initial Future Challenges and opportunities paper to SCICOM, that identified Machine learning, Cloud technology, and Open data and code sharing as the three biggest areas of challenge and opportunity. Initially, this was a document for discussion, but DIG and the Data Centre worked further on the approach during and after the May DIG meeting. This has now translated to four main headings (Machine learning, Cloud, open data and code and transparency of process) which will be used by DIG to list and track more specific challenges and opportunities in a risk management style approach.

Data Management and governance principles

DIG has previously presented a list of governance principles or areas of awareness. These are specifically designed to touch on all relevant areas of managing data within an organisation, and can be used to evaluate the readiness and any gaps in applications and management thereof. The DATRAS governance group was proposed to start evaluating trawl survey data against these principles, and have met twice informally (via webex) since January 2018. A resolution has now been proposed to establish the governance group under SGOM. The initial aim was to introduce the principles and ensure dialogue in the survey working groups, before work progresses this year to provide more concrete suggestions to ICES Data Centre.

DIG and ICES Data Centre also recognised that there was an opportunity to incorporate the governance principles at an earlier stage in newer projects to catch any potential issues earlier. Thus, DIG will this year establish a dialogue and quick review of the Transparent Assessment Framework (TAF) and European Seabird At Sea ESAS data platforms. In addition, a governance group for the development of the SmartDots product is also proposed as a resolution, which will make use of the general principles to help guide management of data and the SmartDots age reading platform in general.

Overall, for input data to an assessment, ICES now has governance structures established for Fisheries independent and dependent data (DATRAS Governance group, Steering Group for the Regional Database, WGFAST are proposed for Acoustic data), and as TAF starts to move beyond development to actuality, the governance framework is under discussion inline with the review described above by DIG. Governance is seen as particularly important to retain

continuity, consistency and transparency as the composition of policy frameworks affecting data collection, and advice clients has and will continue to change.

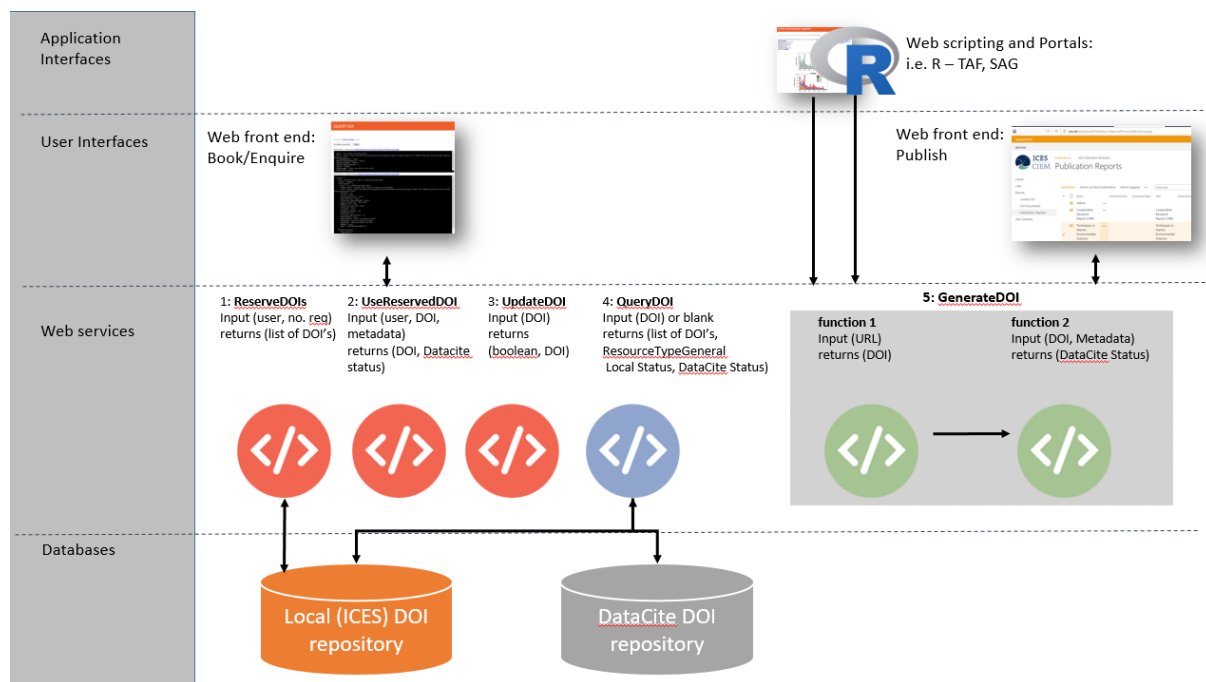
Data Guidelines process review

DIG inherited ownership of the ICES data guidelines from its former expert group format, but have struggled to progress review and responsiveness. While the current Data Guidelines remain relevant, there is a need to expand the scope of these guidelines to capture the more dynamic documentation and coding that is happening in parallel (or instead of) – WGFAST has had some experience in this area, and is looking to DIG and ICES Data Centre for guidance on this. There is therefore a recognised need to review the process to ensure the community can work iteratively and responsively on developing guidance, while there is also a desire to retain a recognised ICES publication. A smaller group of DIG members is developing a process that will enable both mechanisms to exist, while ensuring quality and citation of recognised ICES Data Guidelines. The draft proposal will be ready for the SCICOM March meeting. While this work is ongoing, there will be no attempt to revise or update existing guidelines.

Progress with Digital Object Identifiers

The importance of persistent identifiers for both scientific publications and data that are used in assessment is now well accepted in the ICES community. ICES have adopted the DataCite DOI standard and the roll-out, which has focussed on publications so far, is soon ready for data products. Currently, ICES has the ability to mint unlimited DOI's and the technical framework has now been developed in-house to support this for all types of publications (documents, datasets, URL's of data queries etc.)

The approach builds on a number of web services, which means the DOI's can be created/updated/populated with meta-data from trusted programmes and scripts. All publications in Sharepoint can in practice have DOI's assigned relatively easily, and likewise for other systems such as the Transparent Assessment Framework (TAF), Acoustic and DATRAS portals etc. The implementation at each node is to be specified within the governance mechanisms for the different systems.



First Hackathon in ICES

In May 2018, ICES hosted its first hackathon – WKINVITED. A hackathon is a semi-structured event that focusses on rapid development of an idea into a product. Teams work together, bringing different skills in terms of domain knowledge, technology or design, and aim to produce a prototype or more developed idea of how to approach and solve a problem.

WKINVITED mixed physical and remote participation, with a total of 16 participants, and a total of 5 ideas were developed during the one and a half day event. Overall, there was positive feedback from the participants, and the general consensus was that the event was a success, although lessons were also learned both in terms of requirements of resource for preparation, time available etc.

DIG discussed if a follow up event should be proposed, but at the same time, an opportunity has arisen whereby ICES will participate in the 2019 EMODNET hackathon instead. This is a well-resourced event on a much larger scale, and it was recommended that ICES should try a broader event with a scope for wider integration of data, to learn which format suits best. Neil Holdsworth has progressed discussions with EMODnet, and the ICES participation in the event in (most likely) May 2019 will go ahead.

ICES Linked Data becoming a Reality

With the redevelopment and revision of the ICES Vocabulary services, the underlying model for how keywords and vocabularies are stored and served has changed to enable better linkage between terms, both from inside and outside of ICES. This enables data to be connected to terms, which in turn are also connected to other keywords and concepts. At the outset, this may seem like a modest change, but it has the potential to enable ways of integrating and analysing data that would previously have required huge efforts.

One key aspect of enabling linked open data, apart from the work on vocabularies, is the ability to establish persistent identifiers or locations for data – otherwise, you cannot link together the terms and the data. ICES is already working towards enabling digital object identifiers for reports and DIG has recommended that new or revised data submission formats

incorporate the ability for national data submitters to include persistent identifiers which will increase the ability to track data lineage from source to use.

Upcoming Policy reviews

DIG, in close collaboration with the ICES Data Centre, is responsible for managing the process of evaluation and review of the ICES policy of management and dissemination of data. The group looked at initial challenges of the EU regulation on personal data protection (GDPR) and its impact on the existing data policies. The GDPR is most likely to affect data where natural persons can be identified; therefore the Vessel Monitoring System (VMS) and the related AIS are the data types most likely to be under scrutiny. While the initial analysis would indicate that ICES has well documented policies and procedures in place, this will be considered when the VMS data policy is updated as part of a scheduled review in the 2019 work cycle.

As noted by DIG, the data policy for the Regional Database (RDB) was revised by the SC-RDB in December 2017 (attached as Annex 2), it is currently being tabled to the Regional Coordination Groups (RCG's) for acceptance by the participating countries. In brief the changes are:

- Reference to both RDB and RDBES
- Reference to the new DCF regulation (EU) 2017/1004, and specifically as this now refers directly to a regional database
- Stronger reference from the DCF on quality directed towards member states
- New annex 1 developed to summarise all main articles from regulation that are relevant
- New annex 2 developed that specifies more precisely what is meant by use of data and public outputs of aggregated data

New projects and contracts

Council document [Del 03.3](#) highlights the overall status of projects and sub-contracts, as previously noted these make a significant contribution to the data infrastructure at ICES and the aim is to use these resources to enhance the development of the data platforms – the acoustic portal being a major recipient of H2020 funding. Not listed in the projects document is a new contract that ICES have signed with HELCOM to provide an online assessment tool for hazardous substances, which itself builds on the special request from OSPAR to provide such a tool for the OSPAR area.

Annex 1: 2018 Activity: Inputs and outputs to assessments and products

Activity	Project or System	Source funding	2018 Q1	Current Status	Comments
Pre-input assessment to	SmartDots platform Otoliths Exchange	DG MARE Special Request (for 2018)/ Institutes own investment		On track	Live in Beta version http://ices.dk/marine-data/tools/Pages/smartdots.aspx Joint collaboration with ILVO (BE) and DTU Aqua (DK). Successful completion of first age reading event exercise in February 2018. Will be used in a Mediterranean age reading exercise, interest from international community, as far afield as the Falklands. Will also link up to machine learning via WKMLEARN.
Quality assurance of input data to assessment	DATRAS fisheries independent data	DG MARE Special request (for 2018)/ Council investment (2017-18)		On track	2 data input workshops planned for i) Bay of Biscay, Iberian ii) North and Celtic seas
Indices for assessment input				On track	LFI calculation prepared for Baltic, finalizing expert validation ROCKALL and SWC-IBTS data products and indices documented and scripted and available in DATRAS

Activity	Project or System	Source funding	2018 Q1	Current Status	Comments
Governance of data products				On track	First meeting of DATRAS governance group convened in 2018.
Quality assurance of input data to assessment	Acoustic portal Fisheries independent data	H2020 AtlantOS project/ICES Core funding		Behind schedule	Some surveys missing from Norway, although data are starting to be prepared/included, as well as Iberian and Bay of Biscay surveys yet to be included.
Indices for assessment input		H2020 AtlantOS project		On track	Portal live and populated for a number of North East Atlantic and Baltic Surveys including HERAS, PELGAS, BIAS and BASS. http://ices.dk/marine-data/data-portals/Pages/acoustic.aspx
Raising and estimation of commercial catch data for input to assessment	Regional Database and Estimation System (RDBES) Fisheries dependent data	Council Investment (2017-2018)/ DG MARE Special request (for 2018)		Behind schedule	2018 focus is on finalizing as much as possible the underlying data model for all commercial fisheries sampling (at sea, port) and moving to implementation of the system. 2 workshops are supporting this, the first (WKRDB-MODEL) has already concluded and the results discussed with WGCATCH. A Github resource page with the formats, data model, etc. will be established so that institutes can actively participate/start using the information.

Activity	Project or System	Source funding	2018 Q1	Current Status	Comments
Protected species bycatch estimates	Bycatch database (PETS) WGBYC	ICES core/DCF		On track	Bycatch data format and portal fully established, in 2018 ICES ran a successful data call receiving data also from many Mediterranean countries
(ICES Area): Various spatial/tabular data products for analysis of fishing effort and impact	VMS and Logbook Fisheries dependent data	Various		Potential for data provision issues	Usually part of the OSPAR-ICES requests, however not agreed by OSPAR in 2018 workplan. Note that for the ICES area, data are still not provided by Spain, Russia and Greenland. Although Spain has indicated that they will provide data by end of July 2018, which is too late for advice/assessment but nonetheless a major step forward. DIG have reviewed VMS and AIS data provision in relation to the GDPR. Preliminary conclusion is that ICES has various measures in place for VMS (data call, VMS access policy, secure system), However for AIS, these measures are not in place (although at present ICES do not ask/receive AIS).
(Med and Black Sea) Various spatial/tabular		DG ENV Special request (for 2018)		On track	This is the first time that ICES will attempt a data call in the Mediterranean and Black sea under the EU MAP/DCF umbrella for use in evaluating methods for MSFD: Descriptor 6,

Activity	Project or System	Source funding	2018 Q1	Current Status	Comments
data products for analysis of fishing effort and impact related to MSFD D6					Criteria 2 (Seafloor impact) for Europe as a whole.
(NEAFC Area): Various spatial/tabular data products for analysis of fishing impact		NEAFC MoU		On track	Technical issues largely addressed in inter-sessional period between bilateral meetings in 2017 and 2018. Expect further improvements to data flow once agreed by NEAFC contracting parties.
Repeatable and documented assessments, quality control of inputs and outputs to assessment	Transparent Assessment Framework (TAF)	Council		On track	Latest news http://ices.dk/news-and-events/news-archive/news/Pages/All-systems-go-for-new-assessment-framework.aspx
	Stock Assessment Graphs (Database) SAG	ICES Core/DG MARE Special request		On track	Relating to visualization of advice beyond PDF, to prepare SAG for housing additional data from stock assessment sheets. The Commission is pleased that we are linking part of this work to the INSPIRE Directive, moreover we are working on a use case with the Commission on the application of INSPIRE models to Fisheries data outputs.

Activity	Project or System	Source funding	2018 Q1	Current Status	Comments
	Stock Information Database	ICES Core		On track	Rationalizing the stock information across stocks and quality controlling the information.
Repeatable and documented assessments, quality control of inputs and outputs to assessment	Contaminants Assessment Tool	OSPAR, HELCOM and (AMAP)		On track	Building on the approach for Eutrophication assessment tool that ICES developed with HELCOM. Implement for all 3 regional conventions/programmes to cover the entire ICES Area
	Eutrophication Assessment Tool	HELCOM, OSPAR		On track	Building on the assessment tool already developed under a HELCOM led project, OSPAR are have made a special request for ICES to develop this framework for their common comprehensive procedure for eutrophication assessment.



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SCICOM/September 2018

Doc 23b

Agenda Item 7.3

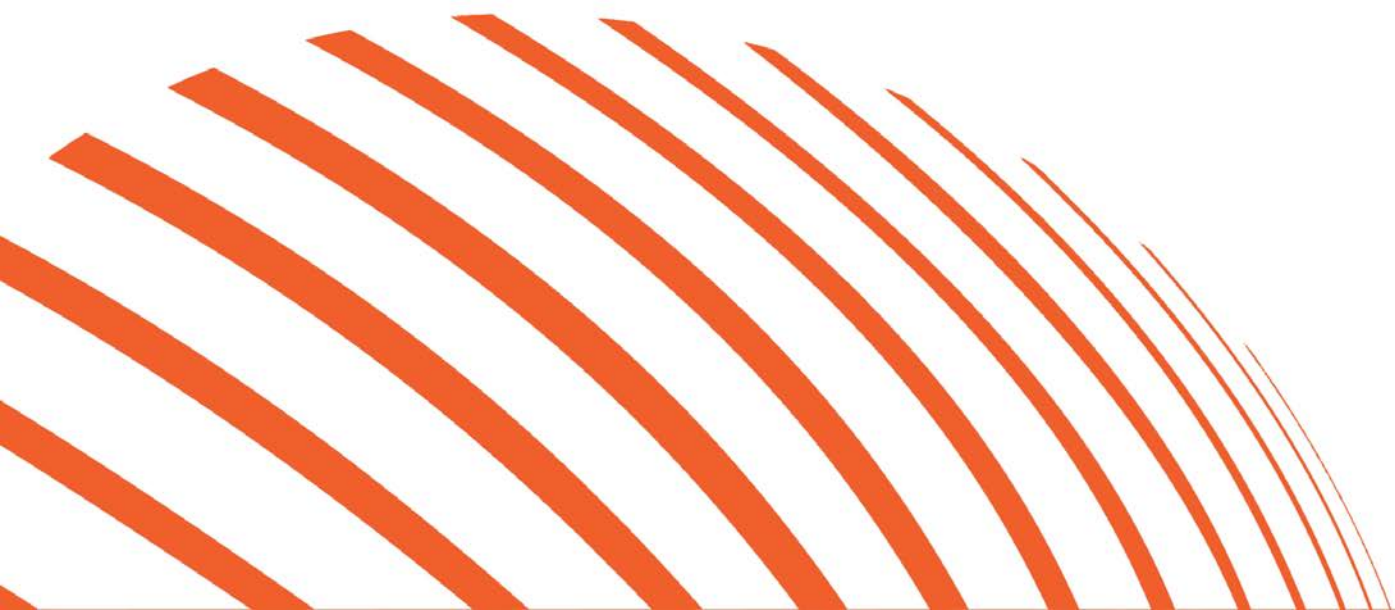
Revised on 10 September 2018

Commercial Fisheries Data

Data policy for the Regional Database (RDB) and Regional Database and Estimation System (RDBES)

11 December 2017

ICES - Science for Sustainable Seas



Goal

The present Regional Database, and the new Regional Database and Estimation System are herein referred to as the RDBES. The Regulation (EU) 2017/1004¹ is hereafter referred to as the Data Collection Framework (DCF).

The main aim of the RDBES is to:

- 1) To ensure that data can be made available for the coordination of regional fisheries data sampling plans, including for the DCF Regional Coordination Groups (RCGs),
- 2) To provide a regional estimation system such that statistical estimates of quantities of interest can be produced from sample data,
- 3) To serve and facilitate the production of fisheries management advice and status reports,
- 4) To increase the awareness of fisheries data collected by the users of the RDBES and the overall usage of these data.

The goal of this policy is to clearly state the conditions for data submission, data access and usage rights. The database herein is the regional database referred to in Article 18(1) of the DCF.

Scope

For the European Union Member States, the basis for data policy rules is the provisions of the DCF, specifically Article 18(1) available in the annex 1.

For non-EU countries, the basis for data policy rules is in accordance with the limitations on data use specified by each country².

This policy applies to all providers and users of data uploaded into the RDBES, and to ICES activities for providing access to data.

Access rights

According to the DCF, provision on access rights and time frame are described under Articles 17(1), 17(3) and 17(4) provided in the annex 1 to this document.

The DCF defines:

- i) **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
- ii) **Aggregated data** as the output resulting from summarising the primary or detailed data for specific analytical purposes

¹ 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)

² In response to official data calls to the RDB

Data use for fisheries management:

Advice to Fisheries Management

- i) Countries grant permission for **aggregated** data, see Annex 2, 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 **01 DEC** 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 MS³. The EU MS will be obliged to respond within two months from the date of the request.

Other uses

- iv) An entity requiring **detailed** or **aggregated** data from the RDBES, can request access in writing to each Country^{Error! Bookmark not defined.}. The EU MS will be obliged to respond within two months from the date of the request.

For requests related to scientific publication, for EU MS Article 17(7) of the DCF applies.

Persons from the European Commission have full access to, or can receive, EU countries' data from the RDB/RDBES.

An **inventory**, based on MS public reports, of data housed in the RDBES is available without restriction and on the RDBES website.

Access Roles

Based on the access granted in Access rights, users are given access to RDBES according to a role based matrix. For simplification and as guidance, the version presented below is shown with fewer roles and access types than are available in the actual role matrix that controls access in RDBES. All roles are managed by password controlled login, with the exception of 'Public' where no login is granted/required.

³ 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.

	National Responsible	Detailed Data Reader	Aggregated Data Reader	Public
Manage	X			
Process/estimate	X	X		
Read/Download data				
- Detailed data	X	X		
- Aggregated data	X	X	X	
- Inventory	X	X	X	X

Governance of the RDBES

The RDBES is hosted by ICES and is managed by a steering committee (SCRDBES).

Security

RDBES is hosted on a secure server and restricted to persons who have a user name and a password, a user name is for the sole use of that individual. Login is through a website secured with HTTPS protocol.

The RDBES follows the principles of personal data protection, as referred to in Article 2 of the DCF.

Data ownership

The national data in RDBES is owned by the individual countries.

Policy for Data Providers

Although the ICES Data Centre may perform some data quality/integrity control, the data providers always retain complete responsibility for data processing and data quality, according to Articles 14 and 16 of the DCF.

When changes (new data and revisions) are made in the data source (the national database containing the primary data) countries are responsible to in a timely manner update and process their own data in the RDBES.

It is the responsibility of the data provider to make sure that data that cannot be identified to any individual vessel or legal entity or at a resolution violating confidentiality rules⁴.

Policy for Use of Data

ICES, as the host and maintainer of the RDBES, will make data available in a timely way according to the defined **Access rights**

- Correct and appropriate data interpretation is solely the responsibility of data users.
- Data sources (individual data providers) must be duly acknowledged.
- Data Users are obliged to inform ICES of any suspected problems in the data.
- Data Users must respect any and all restrictions on the use or reproduction of data such as restrictions on use for commercial purposes

⁴ The principles of personal data protection, as referred to in Article 17(2) in Regulation (EU) 2017/1004.

Data can be shown in reports as described in Annex 2

Data Quality

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.

On the basis of the recommendations made by the SCRDBES, ICES develops and applies quality assurance procedures as appropriate and feasible, and in cooperation with data providers and other organizations. ICES may also receive reports on potentially erroneous data. ICES will inform data providers of relevant quality issues.

DISCLAIMER

Correct and appropriate data interpretation is solely the responsibility of data users. Data Users must not expressly or otherwise imply ICES substantiation of their work, results, conclusions and/or recommendations.

Whilst the data have been quality controlled by the supplying institutes, there are inherent flaws in gathering the information and care should be taken in analysing the data for purposes that the data were not primarily intended for. Thus users are urged to treat the data with caution.

If the user has any queries on the validity of the data, to report errors, or the conclusions to be drawn from the analysis they have undertaken, please contact RDBsupport@ices.dk. If the query is about a specific national dataset then the user may wish to contact the National Focal Point for Fisheries data collection (<http://datacollection.jrc.ec.europa.eu/national-correspondent>) or ACOM member for non-EU countries (<http://ices.dk/community/groups/Pages/ACOM.aspx>).

Annex 1: Relevant articles from “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”

Article 2 (Data protection): Where relevant, the processing, management and use of data collected under this Regulation shall comply with, and be without prejudice to, Directive 95/46/EC and Regulations (EC) No 45/2001 and (EC) No 223/2009.

Article 14(1): Member States shall be 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

Article 17(1): EU Member States shall set up adequate processes and electronic technologies to ensure an effective application of Article 25 of Regulation (EU) No 1380/2013 and of this Regulation. They shall refrain from any unnecessary restrictions to the dissemination of detailed and aggregated data to end-users of scientific data and other interested parties.

Article 17(3): In the case of requests made by end-users of scientific data in order to serve as a basis for advice to fisheries management, Member States shall ensure that relevant detailed and aggregated data are updated and made available to the relevant end-users of scientific data within the deadlines set in the request, which shall not be shorter than 1 month from the date of receipt of a request for those data.

Article 17(4): In the case of requests other than those referred to in paragraph 3, Member States shall ensure that the relevant data are updated and made available to the relevant end-users of scientific data and other interested parties within a reasonable period of time. Within 2 months from the date of receipt of the request, the Member States shall inform the requesting party of the duration of such time, which shall be proportionate to the scope of the request, and of the possible need of additional processing of the data requested.

Article 17(7): Where detailed data are requested for scientific publication, Member States may, in order to protect the professional interests of data collectors designated by the body in charge of the implementation of the national work plan, require that the publication of data be delayed by 3 years from the date to which the data refer. Member States shall inform the end-users of scientific data and the Commission of any such decision and of the reasons therefor.

Article 18(1): With a view to reducing costs and facilitating access to detailed and aggregated data for end-users of scientific data and other interested parties, Member States, the Commission, scientific advisory bodies and any relevant end-users of scientific data shall cooperate to develop compatible data storage and exchange systems, taking into account the provisions of Directive 2007/2/EC. Those systems shall also facilitate dissemination of

information to other interested parties. Such systems may take the form of regional databases. Regional work plans referred to in Article 9(8) of this Regulation may serve as a basis for agreement on such systems.

Link to Regulation

<https://publications.europa.eu/en/publication-detail/-/publication/dd3dc59f-557f-11e7-a5ca-01aa75ed71a1>

ANNEX 2 Use 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 RDB

The data cannot be shared with other persons outside the specific RCG or specific ICES Expert Group and cannot be used for other purposes than within the specific RCG or specific ICES Expert Group. The data can be stored at the RCG's or ICES Expert Group's SharePoint but must be password protected, and the chair must control access to the password. All persons who have a version of the data must delete the data after the specific RCG or specific ICES Expert Group have finished its work.

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 ⁵
------	---------	---------	---------------------	-------------------

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

⁵ Subdivision or unit (FAO definition, <http://www.fao.org/fishery/area/Area27/en>)

resolution is determined by selecting at least 4 out of the 7 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
---------------------	------	-------	---------	------------------	------------------------	-----------------------

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, métier 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	Métier 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 métiers, vessel size category, vessel power category, vessel length category and month are left out. If the data user wanted to include métiers 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.



ICES
CIEM

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

Council Meeting 2018

October 2018

Del-Doc 10

Agenda item 10

Secretariat report to Council

Council is asked to take note of the information, and specifically to:

- *Endorse the updated ICES Privacy statements*
- *Note the developments in the process to obtain ICES UN observer status in UN*
- *Note the developments in the Resource Coordination Tool (RCT)*
- *Note the HR and other administrative developments*

ICES Personal Data Protection Policy

Updated ICES privacy statements have been made available on the ICES website, following developments in international principles on personal data protection. The privacy statements concern the gathering and use of information provided by our meeting and event participants, as well as candidates applying for ICES vacancies.

The statements can be found under the links below, and have been shared with our community during the spring:

[Privacy statement concerning events](#)

[Privacy statement concerning meetings](#)

[Privacy statement concerning recruitment](#)

Resource Coordination Tool – current and planned use

At the 2017 Council meeting five countries, Ireland, Poland, Portugal, UK, and US volunteered to participate in a pilot project. The project is testing a new portal for the nomination of expert in the Resource Coordination Tool (RCT), as well as to provide feedback on information/report needs related to national participation in ICES activities, to assist with the design of reports to be generated from RCT.

Secretariat staff are continuing to work on opening the Resource Coordination Tool (RCT) so that Member Country Delegates may enter nominations entered directly into the system as well as access reports on their country's participation in ICES activities. Delegates from five countries have participated in the pilot group to steer developments towards maximum practicality and user friendliness.

In 2018, we received valuable feedback from member countries regarding the content and reporting capabilities for the so-called "Delegate Dashboard". Via the Delegate Dashboard, it is possible for delegates to easily view their country's active nominations as well as active institutes in the ICES RCT system. Here, delegates can add, edit, or deactivate nomination records.

Also on the Delegate Dashboard will be a link to a reporting portal, where delegates can view special reports for their country's activity—for example, expert activity by year or active chair-invited members. Custom reports can be created based on the needs of each member country.

ICES UN observer status application

Norway submitted the ICES application for UN observer status to the seventy-third session of the UN General Assembly, including an explanatory memorandum on ICES vision, membership, structure, and benefits for UN and ICES of granting observer status to ICES.

With the adoption of the agenda for the UN General Assembly, including this as agenda item 175, it will be important to gather co-sponsors, in addition to the ICES Member Countries, to support the draft resolution "Observer status for the International Council for the Exploration of the Sea in the General Assembly".

For this purpose an *aide memoire* has been developed, and an initial event (side event during the meeting of States parties to the UN Law of the Sea Convention) was organized in June in the Norwegian UN Mission in New York, with participation of almost 60 countries.

An additional event is scheduled by the Norwegian UN Mission in New York later this month, to build support for Observer status for ICES to the UN General Assembly.

Communications

Digital communications is the main focus for ICES communications activities: all news articles, event announcements, training courses, etc., are published on the ICES website and shared via social media. We are currently most active on three social media channels: [Twitter](#) (8671 followers), [LinkedIn](#) (7125 members), and [Facebook](#) (4475 likes) – numbers are as of 9 October 2018.

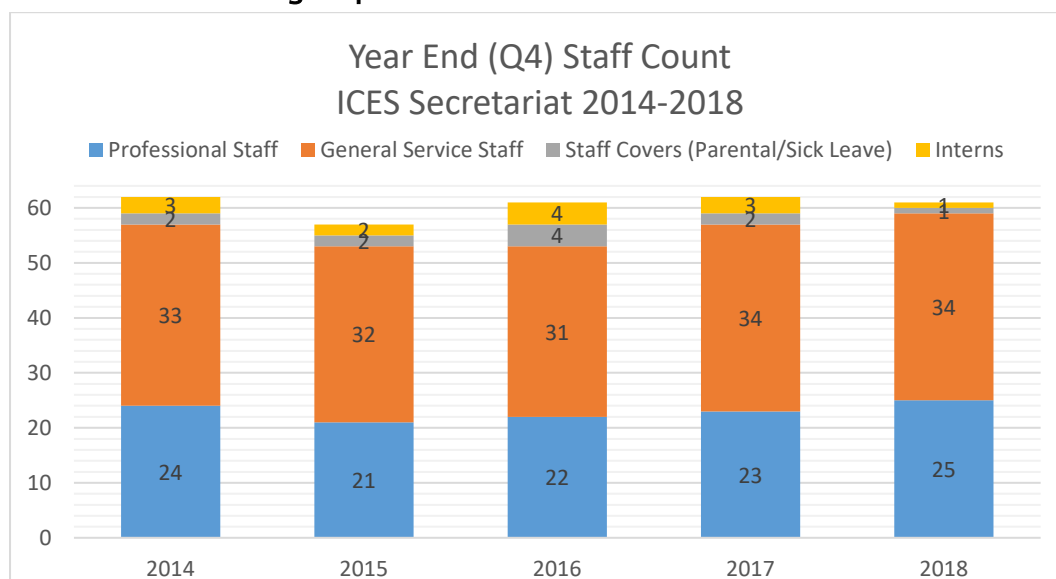
Twitter is the channel that gains followers most rapidly. However, Facebook is the most successful channel for attracting users to click on the links to the ICES website.

The information shared in social media originates mainly from ICES [news articles](#), as well as from ongoing and upcoming events and meetings. The bi-monthly [e-newsletter](#) includes in-depth feature articles, written by scientists in our network. It is sent via e-mail to 1599 subscribers.

Aided by an in-house designer, the communications department is also responsible for outreach for the ASC, including early career scientist activities, [outreach](#) for symposia, training courses as well as creating outreach products, such as [the Annual Report](#).

Human Resources

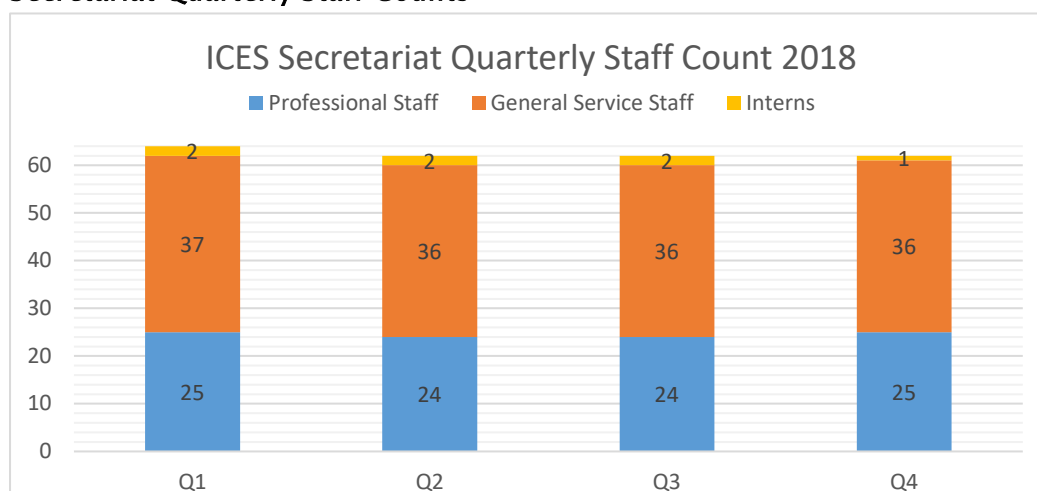
Secretariat Staffing Report – 5 Year Trend



Over the last 5 years, the Secretariat staff count has remained relatively stable, with an average of approximately 56 regular staff members. Note that there are currently 2 Professional Staff and 1 General Service Staff whose contracts are funded by equity.

Secretariat Staffing Report – Year 2018

Secretariat Quarterly Staff Counts





In the final quarter of 2018, there were a total of 61 staff at ICES, in addition to 1 intern.

There was a relative gender balance, with 33 women and 29 men working at the Secretariat.

New Staff Starting in 2018

Start Date	Name, Title	Note
1 Oct 2018	Lene Lindebjerg, Special Consultant (Finance & Administration)	3-month contract

Interns Starting in 2017

	Start Date	Name	Note
	7 Apr 2018	Silvia Ferrando	Wage subsidized internship with Science Department until 15 January 2019
	5 Sept 2018	Jamile Queiroz	Wage subsidized internship with Advice Department for one month

Contracts Ending in 2018

End Date	Name, Title	Note
28 Feb 2018	Morten Holdt, Online Training Coordinator	Contract ended
30 Mar 2018	Scott Large, Professional Officer	Resigned
31 Oct 2018	Simon Cooper, Communications Assistant	Resigned

Challenges for internationally-recruited staff

At the 2017 Council meeting we reported on the new decision by the Danish Ministry of Foreign Affairs giving EU/EEA citizens the possibility to register as regular European migrant workers. Hereby staff and accompanying family members avoid a so-called “administrative” registration status, complicating every-day life.

So far, three staff with EU citizenship have taken advantage of this new option.

New developments in the provision of social security for accompanying family members

At the 2017 Council meeting it was decided to offer private health insurance to Secretariat staff's accompanying family members from outside the EU/EEA, ensuring equal treatment for staff from all ICES member countries. This was necessary due to the Government of Denmark's exclusion of these family members from Danish social security, on equal footing with EU citizens.

In March 2018 the Ministry for Health, responding to a 2014 letter from ICES Secretariat, confirmed non-EU/EEA accompanying family members' right to full social security while residing in Denmark. The local authorities were made aware of this, and one accompanying partner (non-EU/EEA) has already received her Danish social security card.

Location of ICES headquarters

In June 2018 ICES Secretariat received a message from the Danish government informing that ICES headquarters would be moved to a new building.

This move is part of the Danish government's initiative to better utilize the state-owned office spaces which have become vacant, following the decision to move governmental agencies outside the Copenhagen region.

A dialogue has been initiated based on ICES needs and requirements to ensure that we will be relocated to a building that will provide at least the same, if not better facilities than are available now. This includes at least the same meeting room capacity, and easy access for visitors.

We have had several negotiations with the Danish authorities and have agreed that the building originally assigned to the ICES Secretariat is not suitable for the ICES community. Another building has been identified and we are currently assessing its viability as a suitable headquarters for ICES.

Council delegates will be kept informed of developments as more information becomes available.

Annex: Resource Coordination Tool (RCT)– an overview

The RCT consists of the following modules:

- A customer relationship management (CRM) system, recording key information on ICES Community and activities (this includes information from the former “Address Manager” database)
- A Sharepoint based system, supporting the calendar overview of the ICES activities, the recommendations database, and Resolutions database (in development)).

The RCT enables the creation of a variety of products, including:

Reactive products:

1. Overview of total participation in ICES work
(Countries/institutes/working groups/processes/experts/expert working days)
2. Overview of active participation by Member Country per year (as here - 2017:
https://community.ices.dk/Committees/nominations/_layouts/15/start.aspx#/Active%20EG%20Membership%20December%202017%20per%20member%20coun/Forms/AllItems.aspx –
3. From the above a variety of analyses can be made; groups with many/few experts, groups with a wide/narrow country representation, groups with academic/country representation beyond ICES member countries, list of chairs, etc.

Proactive products:

4. Coordination of use of human resources based on last year’s overviews
5. Direct nomination by the Member Countries of experts to the Expert Working Groups

Operational products:

6. A direct link between RCT and the website, allowing automatic updates to membership of Expert Working Groups on the website (As here:
<http://ices.dk/community/groups/Pages/Members.aspx?Acronym=COUNCIL>)
7. Creation of various lists, for various purposes (chairs, members, etc)

Changes to the Rules of Procedure

Council members will be invited to approve changes to the Rules of Procedure (RoPs), to (1) reflect the changes in the recruitment procedure for the ACOM and SCICOM Chair, (2) to respond to the need for a specific statement about ICES as an organization that does not seek to make profit, as well as (3) some minor editorial changes.

Further explanations for these changes are provided below. The specific changes to the RoPs follow in track changes.

At the 2017 Council meeting:

One member country objected to the change citing that the proposed removal of the step in the recruitment process may not provide sufficient “buy-in” from the committees to the process.

In connection with the revision of ICES leadership structures, including creating full-time ACOM and SCICOM Chairs, new recruitment procedures were also developed. After the experience of implementing the recruitment procedure, further improvements were suggested in the table below.

At its February meeting, Bureau supported the suggestion to streamline the process, protecting the confidentiality of applicants, and giving the sole responsibility to the recruitment panel.

Agreed recruitment procedure	Issues identified/areas for improvement
<p>1. The position of Chair of the ICES Science/Advisory Committee should be advertised as widely as possible, on the ICES website and by notifying ICES Member Countries, stakeholders, and cooperation partners, and with a clear outline of the timeframe of the various stages of the recruitment process, as well as an indication of the expected start date. The General Secretary will compile the applications.</p>	<p>No issues identified. The vacancy announcements were advertised widely, also using professional social media networks (LinkedIn).</p>

<p>2. A recruitment panel will be established with the following membership: Three SCICOM/ACOM members selected by SCICOM/ACOM of which one is appointed by SCICOM/ACOM as chair of the panel, two members of Bureau selected by the Bureau, an ACOM/SCICOM representative, the General Secretary, and the Head of Advisory Support/Head of Science Support. The outgoing Chair of SCICOM/ACOM cannot be appointed as member.</p>	<p>No issues identified.</p>
<p>3. The applications will be reviewed by the recruitment panel and the panel will develop a short-list (based on certain criteria defined in the job description).</p>	<p>Given the broad membership of the recruitment panels, and the interconnected nature of the ICES community, conflicts of interest presented themselves (recruitment panel members personally or professionally connected to applicants). This was dealt with in an ad hoc manner guided by the CoI policy and prevented any effect on the outcome.</p>
<p>4. The Chair of the recruitment panel will present the shortlist to SCICOM/ACOM for further selection of up to three candidates to go further to a more formal interview with the recruitment panel (nominations).</p>	<p>Reopening the process with ACOM/SCICOM, who had representatives in the recruitment panel and also chaired the panel, was in practice a merger of two very different processes. A professional recruitment process, and a recruitment by Committee.</p> <p>This made the recruitment non-confidential, and could potentially deter applicants from applying in future recruitments.</p> <p>-this also has the potential to create redundancy, and negate the efforts of the recruitment panel's priority ranking process.</p> <p>It is suggested to change the recruitment procedure to be conducted solely by the recruitment panel.</p>
<p>5. Based on the interviews a priority ranking of candidates will be created by the recruitment panel, i.e.,</p>	<p>With only two candidates, the priority ranking was self-evident.</p>

specifically stating that the listed candidates are qualified and recommended in priority order to do the job.	With up to five candidates, priority ranking was more difficult and the value of ranking number four (4) and five (5), etc. was not evident.
6. Finally, Council appoints the SCICOM/ACOM Chair according to the priority ranking, and thus approving that the process has been carried out according to the established procedure. This ensures that if the first priority candidate decides not to take the position, the list of candidates in rank order may be followed to fill the position.	No issues identified.
7. The position is for a three-year term, with a possibility for another three-year term (limit of two successive terms). The SCICOM/ACOM chair is subject to an evaluation process after one year, led by the President and Bureau. One year before the end of the three-year term a Bureau–SCICOM/ACOM panel consisting of 2 Bureau members and 2 SCICOM/ACOM members will evaluate if the contract of the SCICOM/ACOM Chair shall be extended for a further three years. They will provide a recommendation to Bureau, who will decide on the renewal.	No issues identified.

Revised Recruitment procedure:

1. The position of Chair of the ICES Science/Advisory Committee should be advertised as widely as possible, on the ICES website and by notifying ICES Member Countries, stakeholders, and cooperation partners, and with a clear outline of the timeframe of the various stages of the recruitment process, as well as an indication of the expected start date. The General Secretary will compile the applications.

2. A recruitment panel will be established with the following membership: Three SCICOM/ACOM members selected by SCICOM/ACOM of which one is appointed by SCICOM/ACOM as chair of the panel, two members of Bureau selected by the Bureau, an ACOM/SCICOM representative, the General Secretary, and the Head of Science Support/Head of Science Support. The outgoing Chair of SCICOM/ACOM cannot be appointed as member.

3. The applications will be reviewed by the recruitment panel and the panel will develop a short-list (based on certain criteria defined in the job description).
4. Based on the interviews a priority ranking of candidates will be created by the recruitment panel, i.e., specifically stating that the listed candidates are qualified and recommended in priority order to do the job.
5. Finally, Council appoints the SCICOM/ACOM Chair according to the priority ranking, and thus approving that the process has been carried out according to the established procedure. This ensures that if the first priority candidate decides not to take the position, the list of candidates in rank order may be followed to fill the position.
6. The position is for a three- year term, with a possibility for another three-year term (limit of two successive terms). The SCICOM/ACOM chair is subject to an evaluation process after one year, led by the President and Bureau. One year before the end of the three-year term a Bureau–SCICOM/ACOM panel consisting of 2 Bureau members and 2 SCICOM/ACOM members will evaluate if the

ICES as a non-profit organization

With regular intervals ICES status as a non-profit organization is being challenged. To be able to uphold this status we are requested to be able to provide proof of this in the founding documents.

It has not been considered sufficient to explain and refer to our work, or financial practices.

For this reason, we are suggesting **a new Rule** in the Rules of Procedure as follows:

“In the unlikely event of the dissolution of the International Council for the Exploration of the Sea, and after the reimbursement of contracts, project advances, and member state contributions in accordance with their shares in ICES, all assets will be distributed to a charitable organization, working in line with the purpose of the organization”

Microsoft licenses

ICES purchases and pays for Microsoft licenses at the rates for academia/non-profit organizations.

This is considerably cheaper than other rates.

To be able to uphold this we need to be able to document our non-profit status. We have so far “escaped” the request to be able to document via funding documents.

EC project policy

ICES participates in EU financed projects as an IGO. To be able to continue with this we likewise have to be able to document our non-profit status.

It is not clear what it would mean (administratively, legally, and financially) to lose the IGO status. But as described above, it would have severe financial implications for our Microsoft licenses.

Rules of Procedure

Revision history:

Changes adopted by Council on

3 October 2001

29 September 2004

20 October 2005

27 October 2006

19 February 2008

22 October 2008

22 October 2014

19 October 2016

18 October 2018

The Rules should be read in association with the ICES Convention of 1964

1 REPRESENTATION

Rule 1

Each Contracting Party shall inform the General Secretary in writing of the names of its Delegates on the Council. Delegates shall inform the General Secretary in writing of the names of experts and advisers appointed to attend scientific and business meetings when there is a requirement for *pro forma* representation.

Rule 2

The Council may invite any Government not party to the Convention and any international or other organisations having objectives related to those of the Council to be represented at its meetings by observers.

Rule 3

- i) Plenary sessions of the Council shall be open to attendance by all Delegates. The Chair of the Science Committee (i.e. the Consultative Committee as referred to in the ICES Convention) and the Chair of the Advisory Committee shall each have the right, *ex officio*, to attend and address such sessions. Any other person, with the agreement of the Council, may attend and address such sessions.
- ii) The General Assembly comprises Delegates, experts, advisers, observers and any other person attending the meeting of the Council with its approval. Any of those present may, unless the Council decides otherwise, address the Assembly.
- iii) Delegates may attend business sessions of subordinate bodies of the Council, such as the Bureau and Finance Committee. They may also designate individuals to attend Council meetings and business sessions of subordinate bodies of the Council. The General Secretary shall be informed in advance of the intention of delegates or their designee to attend such sessions. The Chair of the Council or of business sessions of subordinate bodies may limit attendance if necessary because of limitation of space, or if the subject matter of the session is deemed to be sensitive and requires confidentiality. Delegates, or their designee, may address the sessions they attend, at the discretion of the Chair, without the right to vote.

2 VOTING

Rule 4

- i) At the plenary sessions of the Council each Contracting Party shall have one vote which may be cast by either Delegate where more than one is appointed.
- ii) At any meeting of a Committee, the members (or any Delegate) may vote, provided that at meetings of the Committees established according to Rule 28 any Contracting Party shall exercise only one vote.

Rule 5

- i) Except as otherwise provided in the Convention, when a vote is taken in plenary sessions of the Council or in meetings of its Committees,

- a simple majority of the votes cast for or against shall be decisive.
- ii) In the event of an even division of votes in a Committee other than the Bureau the proposal before the Committee shall be regarded as rejected.
- iii) The Council and Committees shall vote by show of hands, except that:
 - a) in the Council a vote by roll call shall be taken if a two-thirds majority is required by the Convention or upon request of a Delegate;
 - b) all elections shall be decided by secret ballot after confidential nominations in writing.
- iv) For election to the office of President, First Vice-President, Vice-President or Chair or Vice-Chair of a Committee a candidate who secures votes numbering more than half the number of Contracting Parties represented at the meeting at which the vote is taken, shall be declared elected. If no candidate secures the number of votes required for election, then:
 - (a) if there are only two candidates, voting shall be continued until a candidate is elected;
 - (b) if there are three or more candidates, the candidate receiving the lowest number of votes shall be eliminated and voting continued in accordance with this paragraph until a candidate is elected, provided that if there are two or more candidates receiving the lowest number of votes it shall be decided by separate vote which candidate shall be eliminated.
- v) If the offices of two or more Vice-Presidents have to be filled at the same meeting separate votes shall be taken for each office.
- vi) At any time not more than one member of the Bureau shall be from the same member country.

Rule 6

In cases of urgency between meetings of the Council a vote of the Contracting Parties may be taken by post or by electronic means, in which a simple majority shall be a simple majority of the Contracting Parties.

Rule 7

Delegates representing a simple majority of the Contracting Parties shall constitute a *quorum* for plenary sessions of the Council.

3 PRESIDENT

Rule 8

The President shall be elected for a term of three years and shall not be eligible for re-election for the immediately succeeding term.

Rule 9

The duties of the President shall be:

- i) to preside at the General Assembly and plenary sessions of the Council, and at all meetings of the Bureau;

- ii) to decide when and where the Bureau shall meet;
- iii) to decide any questions of order raised at meetings over which he/she presides subject to the right of any Delegate to request that any ruling by the President shall be submitted for decision by vote;
- iv) generally, to make such decisions and give such directions to the General Secretary as will ensure that the business of the Council is carried out efficiently and in accordance with the decisions of the Council or of the Bureau;
- v) by virtue of his/her office, to attend and take part in the meetings of any Committee of the Council.

Rule 10

In the event of the office of President falling vacant from resignation or otherwise, the Council shall elect a new President at its next meeting.

4 VICE-PRESIDENTS

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 12

- i) Whenever the office of President is vacant the First Vice-President shall act as President until a new President assumes office in accordance with the provisions of Article 10 of the Convention; the First Vice-President shall also act as President whenever the President is unable to act.
- ii) The duties of the First Vice-President under paragraph (i) of this Rule shall devolve on the next senior Vice-President able to act if the office of First Vice-President is vacant or if he is unable to act.
- iii) A Vice-President shall not be precluded from acting as Delegate of a Contracting Party by whom he/she is appointed merely by virtue of being a Vice-President; but the First or any other Vice-President shall forthwith cease to act as a Delegate during any period when he/she is acting as President and during any such period the Contracting Party which appointed him/her shall have the right to appoint another person to serve as Delegate in his/her place.

Rule 13

It shall be the duty of the Bureau:

- i) to convene meetings of the Council in accordance with Article 7 of the Convention, to prepare the agenda for each meeting (after considering any proposals made by Delegates), and to circulate it to Contracting Parties and to Delegates one month before the date of the meeting;
- ii) to prepare for consideration by the Finance Committee at each annual meeting:
 - (a) the audited accounts for the preceding financial year;
 - (b) a preliminary account for the current financial year; and
 - (c) the Budget for the ensuing financial year and a Forecast Budget for the following year, and, after considering the report of the Finance Committee on these documents, to present them with such alterations as it may deem desirable to the Council;
- iii) to be responsible for the investment of funds of the Council and to give an account of such investments at the end of each ordinary annual meeting;
- iv)  to advise the Council on the appointment of a General Secretary,;
- v) subject to any general directions of the Council, to appoint such other staff as may be required for the purpose of the Council and to determine their duties and terms of appointment;
- vi) to consult the Science Committee on all matters affecting the scientific work of the Council and take into account advice tendered by that Committee.
- vii) to present to the Council for approval with such observations and amendments as it may deem appropriate, recommendations of all Committees including the Science Committee and the Advisory Committee, and to advise the Council as to the financial obligations involved in the approval of such recommendations;
- viii) to be responsible for the execution of resolutions of the Council and for all duties incidental to the Council's affairs and to report thereon to the Council at each ordinary annual meeting.

Rule 14

- i) Meetings of the Bureau shall take place as, when and where the President may decide.
- ii) The Bureau shall keep minutes of its meetings.
- iii) The Bureau shall arrive at its decisions by simple majority of the votes cast for or against. The President shall have a deliberative vote and, in the case of an even division of votes, a casting vote. Resolutions may be taken either at meetings of the Bureau or by correspondence.
- iv) Subject to this Rule the Bureau shall settle its own procedure.

6 GENERAL SECRETARY

Rule 15

- i) The General Secretary shall be the Chief Executive Officer of the Council and responsible to the Bureau for the management of the Council's staff and office.
- ii) The General Secretary shall be responsible for the receipt of all monies due to the Council and for disbursements in accordance with the Budget; he/she is authorised to meet unforeseen expenditure subject, in cases of doubt, to consultation with the President, and to sign cheques on behalf of the Council or authorise their signature; he/she shall also be responsible for the preparation of the Council's accounts and for drafting the Budget.
- iii) The General Secretary shall attend the plenary sessions of the Council and meetings of the Bureau and, as far as possible, meetings of the Science Committee. He/she may attend meetings of any other Committee of the Council.
- iv) The General Secretary shall provide secretarial services for all meetings of the Council and of the Bureau and, in consultation with the Chairs of Committees, arrange for such secretarial services as may be needed for meetings of the Council's Committees.
- v) The General Secretary shall issue as soon as possible after each meeting of the Council a report of the proceedings and transmit it to the Contracting Parties.
- vi) The General Secretary shall circulate to Delegates a provisional agenda for each ordinary meeting of the Council and intimate the date on which proposals for inclusion should be submitted for consideration by the Bureau.
- vii) The General Secretary shall be responsible for all matters connected with the Council's publications subject to consultation with appropriate office holders of the Council, including editors.
- viii) The General Secretary shall perform other such functions as may be assigned to him/her by the Council or the Bureau.
- ix) All communications to and from the Council shall be addressed to or emanate from the General Secretary, provided that all communications to Contracting Parties and also contracts, except those of a routine character, shall be signed by the President and the General Secretary.

7 ORDER OF BUSINESS

Rule 16

No proposal involving changes in the Rules of Procedure shall be considered at a meeting of the Council unless either (a) two months' notice of the proposal has been given to the Contracting Parties and Delegates, or (b) the Delegates present consent by unanimous vote.

Rule 17

The financial year of the Council shall be from 1 January to 31 December.

Rule 18

- i) The expenditure of the Council shall be regulated in accordance with a Budget approved by the Council at its ordinary annual meeting. A statement of the proposed Budget and a Forecast Budget for the ensuing year shall be circulated to Contracting Parties and Delegates two months before the meeting. The Council shall on the basis of the Forecast Budget determine the contributions to be paid by the Contracting Parties for the year to which that Budget relates.
- ii) The Budget approved by the Council shall not alter the contributions from Contracting Parties agreed in the Forecast Budget for that year, but may make changes in other sources of income, and in expenditures.
- iii) Excess of Income over Expenditure, or Expenditure over Income, on the annual accounts, shall be included as respectively Income or Expenditure in the next following Forecast Budget.
- iv) In the unlikely event of the dissolution of the International Council for the Exploration of the Sea, and after the reimbursement of contracts, project advances, and member state contributions in accordance with their shares in ICES, all assets will be distributed to another non-profit organization with similar goals, as approved by the contracting parties.

Rule 19

- i) The contributions of Contracting Parties in respect of any financial year should be paid on the 22 July preceding its commencement, but not later than 30 days after the beginning of the financial year.
- ii) Requests to Contracting Parties for the payment of their contributions shall be accompanied by a statement of the Council's proposed Budget for the year to which they relate.

Rule 20

- i) The Danish Delegate or Delegates and the General Secretary are charged with the safekeeping of the Council's funds.
- ii) The liquid funds of the Council and all bonds and other documents relating to the invested funds of the Council shall be lodged in a bank.
- iii) The Council's funds may be invested in bonds in which capital belonging to minors or other capital subject to public administration or control is allowed under prevailing Danish law.
- iv) Any document relating to the Council's invested funds signed on behalf of the Council by the General Secretary and one of the Danish Delegates shall be valid.
- v) In case of sale or change of bonds of the Council the General Secretary and one of the Danish Delegates are jointly authorised to give receipts valid in law and to perform all dispositions under real law.
- vi) The General Secretary and one of the Danish Delegates are authorised to

raise loans for the purpose of the Council on the security of the Council's bonds.

- vii) The Council's Auditor shall check the invested and liquid funds as of 31 December each year as soon as possible after that date for the purpose of preparing the Balance Sheet, and they shall once annually, at such time as they may choose, inspect the Council's funds. The Council's Auditor may consult the Danish Delegate or Delegates on any question in connection with the accounts.

Rule 21

- i) The Council shall pay the travelling and subsistence expenses incurred by the President and the Chair of the Science Committee and of the Chair of the Advisory Committee in attending meetings of the Council or the Bureau or when engaged on the business of the Council.
- ii) The travelling and subsistence expenses of the Vice-Presidents incurred in attending meetings of the Bureau other than those held in conjunction with ordinary meetings of the Council shall be paid by the Council.
- iii) The Council may pay the travelling and subsistence expenses of any person appointed by it to perform duties on behalf of the Council.
- iv) Travelling and subsistence expenses paid by the Council shall be calculated in accordance with a scale approved by the Council.

Rule 22

The Council may pay any person appointed by it to perform any prescribed duties for promoting work of the Council, and also to the Chairs of Committees such fees as it may approve from time to time.

9 COMMITTEES

Rule 23

- i) The Committees of the Council are those set out in Rules 24 to 28 with the terms of reference therein assigned to them and the constitution respectively specified in those Rules and Rule 29. Provided that in order to avoid unnecessary duplication or to secure better coordination between the work of Committees with related terms of reference the Council may give directions from time to time about the assignment of particular subjects to Committees and the relevant Rules shall be interpreted accordingly.
- ii) In addition, the Council may from time to time appoint such *ad hoc* committees as it thinks fit to perform such functions as it may determine.

Rule 24

- i) The Finance Committee shall examine:
 - (a) the audited Accounts of the Council for the preceding financial year;
 - (b) the preliminary Accounts for the current financial year;
 - (c) a Budget for the ensuing financial year and a Forecast Budget for the following year.
- ii) The Committee shall consider such other matters as may be referred to

it by the Bureau or as it may deem desirable and shall report its observations and conclusions to the Bureau.

- iii) The Finance Committee shall consist of one of the Delegates of Denmark and four other Delegates appointed by the Council for a period of three years, after which they shall not be eligible for re-appointment for the immediately succeeding term unless a member of the committee is appointed as Chair of the Finance Committee in which case he/she may serve one additional term. When a member of the Committee ceases to be a Delegate, he/she shall immediately vacate office.
- iv) The Council's First Vice-President should attend the meetings of the Committee without the right to vote.
- v) The Chair of the Committee shall be appointed in accordance with Rule 30 (ii).

Rule 25

- i) The Consultative Committee, as in the Convention, will be called the ICES Science Committee (SCICOM).
- ii) The Science Committee (SCICOM) shall oversee all ICES scientific interests.
- iii) Rules for the governance and management of the SCICOM are agreed by Council resolution.

Rule 26

- i) The Advisory Committee (ACOM) shall oversee all ICES advisory services.
- ii) Rules for the governance and management of the ACOM are agreed by Council resolution.

Rule 27

The Science Committee will ensure that all publications of the Council, and the arrangements for their preparation and issue are appropriately considered.

Rule 28

The Science Committee, on behalf of the Council, shall institute structures and processes to ensure that *inter alia* science programmes, regional considerations, science disciplines, and publications are appropriately considered.

Rule 29

The composition of structures established according to Rule 28 shall be determined by the Science Committee.

Rule 30

- i) According to the agreed procedure¹, the Chair of the Science Committee shall be selected by the recruitment panel and appointed by the Council, . The Chair shall hold office for a term of three years, with the possibility of one additional three-year term (limit of two successive terms).
- ii) The Chair of the Finance Committee shall be nominated by the Bureau from among the members of the Committee and appointed by the Council; the Chair of the Finance Committee shall vacate office on ceasing to be a Delegate.
- iii) According to the agreed procedure, the Chair of the Advisory Committee shall be selected by the recruitment panel and appointed by the Council. The Vice-Chairs are selected by the Advisory Committee and appointed by the Council. The Chair and Vice Chair(s) shall hold office for a term of three years, with the possibility of one additional three-year term (limit of two successive terms), subject to approval by the Council..
- iv) The Chair and the Vice-Chair(s) of the Science Committee and of the Advisory Committee shall not serve as a representative of a Contracting Party. At the time they assume the office of Chair or Vice-Chair, the Contracting Party should appoint another representative to the committee.
- v) The Chairs of the Science Committee and the Advisory Committee on assuming office shall cease to be Chair of any other Committee and the Committees concerned shall forthwith select successors.
- vi) If, for any reason, the Chair of any Committee is unable to complete his/her term of office, or is temporarily unable to act, the President shall nominate an interim Chair who will serve for the remainder of the year, or for such shorter period as may be decided by the President, until a new chair can be selected.
- vii) .

Rule 31

The Chair of the Science Committee (or in his/her absence the Vice-Chair) and the Chair of ACOM (or in his/her absence the Vice-Chair) shall have *ex officio* the right to attend ordinary meetings of the Bureau.

Rule 32

The functions of Chairs with respect to structures and processes established according to Rules 27 and 28 shall be established by SCICOM.



¹ Refer to procedure outlined in CM 2018 Del-xx.x.