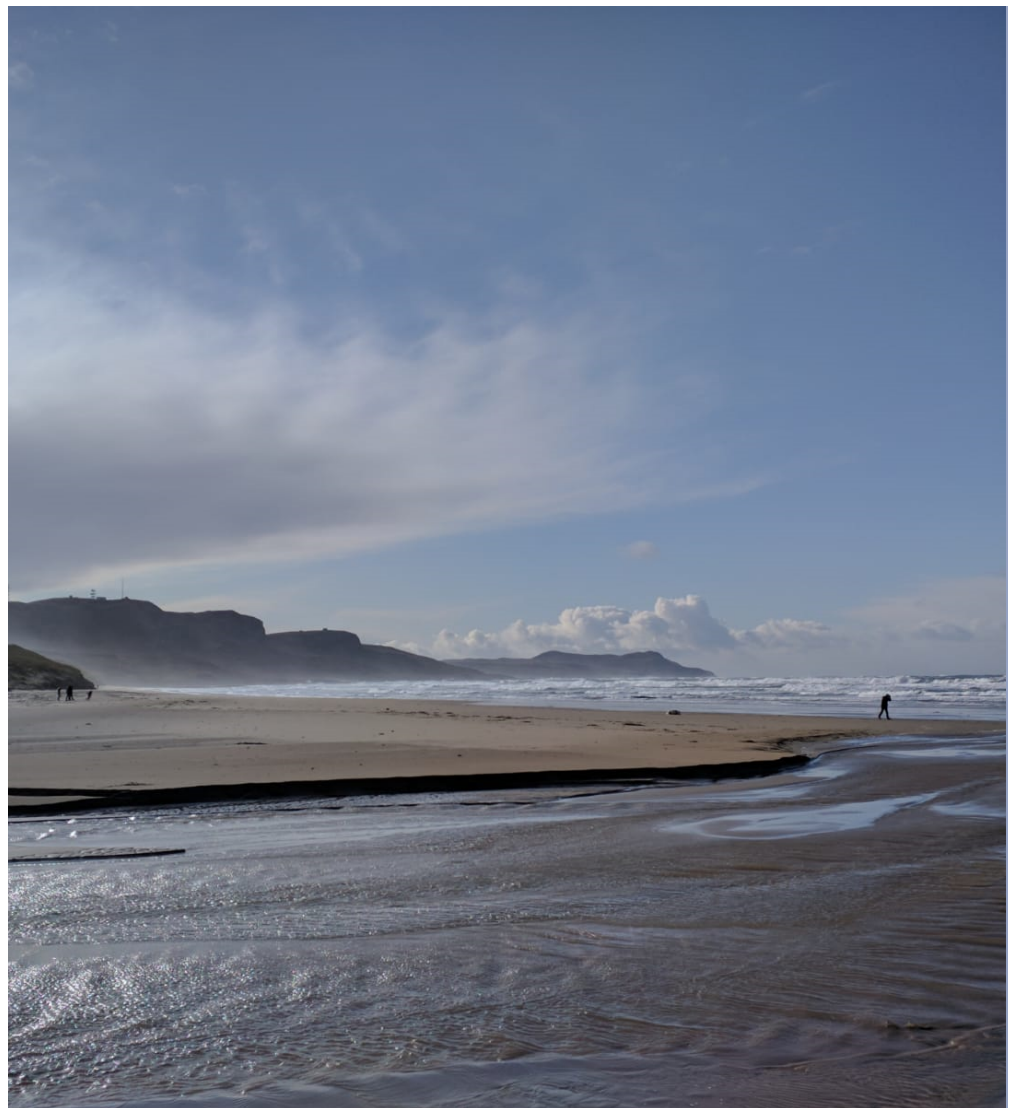


REPORT OF THE SCIENCE COMMITTEE (SCICOM), MARCH 2023

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ICES BUSINESS REPORTS



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Contents

i	Executive summary	3
1	Opening and introduction of agenda and timetable.....	4
2	Accomplishments in 2022	4
3	Follow-up on decisions taken at the meetings of SCICOM (September 2022 meeting and on SCICOM Forum) and other action items (SCICOM Chair).....	5
4	Tour de table	5
5	Update reports and highlights from Steering Groups	6
	5.1 Ecosystem Processes and Dynamics Steering Group.....	6
	5.2 Data Science and Technology Steering Group	7
	5.3 Aquaculture Steering Group	7
	5.4 Integrated Ecosystem Assessments Steering Group.....	8
	5.5 Fisheries Resources Steering Group	9
	5.6 Ecosystem Observation Steering Group	10
	5.7 Human Activities, Pressures and Impacts Steering Group.....	11
6	Update reports from Strategic Initiatives.....	12
	6.1 Update from Strategic Initiative on Climate Change Impacts on Marine Ecosystems.....	12
	6.2 Update from Strategic Initiative on the Integration of Early Career Scientists.....	12
	6.3 Update from Strategic Initiative on the Human Dimension	13
	6.3.1 Proposal to change SIHD into a Steering Group	13
7	Strategic Initiative on Education	15
8	Report from WGCHAIRS	16
9	Science Plan.....	17
	9.1 Report from MIRIA and MIACO emerging science exercise and offshore wind exercise	17
10	Breakout 1 (Science Plan).....	19
11	Plenary discussion on Science Plan evaluation	20
	DAY II: Wednesday, 15 March 2023.....	21
12	Welcome and summary of Day 1	21
13	Update reports from Operational Groups.....	22
	13.1 ICES Science Impact and Publication Group	22
	13.2 ICES Training Group	22
	13.3 ICES Data and Information Group.....	23
14	Follow-up on EBM Framework.....	24
15	Visibility of Science	26
	15.1 Feedback from WGCHAIRS	26
	15.2 Communications	26
16	Library.....	27
17	Report from Advisory Committee	28
18	Stakeholder Engagement Strategy – Implementation Plan	30
19	Gender Equality Plan and DEI.....	31
20	Update from Secretariat.....	33
	20.1 ICES co-sponsored symposia.....	33
	20.2 Projects – Project Engagement Strategy.....	34
21	Science Cooperation.....	35
	21.1 PICES cooperation.....	35
	21.2 Arctic research	35
	21.3 UN Decade	35
	21.4 Other UN Activities	35
22	Breakout 2 (Emerging science needs)	37

23	Plenary discussion on Breakout 2.....	38
	DAY III: Thursday, 16 March 2023.....	39
24	Update of Merit Award Guidelines	39
	24.1 Proposal to change merit award categories	39
25	Update on ASC 2023.....	40
	25.1 Chaperones for keynote speakers	40
	25.2 Appointment of Award Selection Group for ASC 2023 (tasked to select the ASC merit awards).....	40
26	ASC 2024.....	41
	26.1 Appointment of 2024 ASC Group	41
	26.2 Conveners for contributed papers session	41
27	Open Forum.....	42
28	Closing remarks	43
Annex 1:	List of participants.....	44
Annex 2:	Reports from Breakout Groups (1–4) –science topics	47
Annex 3:	Reports from Breakout Groups (1–4) –emerging science needs	59
Annex 4:	List of actions and decisions	68

i Executive summary

The Science Committee (SCICOM) meeting was a hybrid meeting, with in-person and online attendance. The Committee received updates on ongoing activities and discussed strategic developments relevant to the Committee.

Key actions from the meeting included:

- SCICOM support for a co-sponsored symposium in 2025, and the nomination of members into the ASC Award Selection Group 2023 and the Theme Session Selection Group for 2024.
- SCICOM support for establishing a new Steering Group on the Human Dimension (pending finalisation and final approval by SCICOM)
- SCICOM support for establishing the Strategic Initiative on Graduate Education (pending finalisation and final approval by SCICOM)
- SCICOM expressed strong support and approved the ShinyApp guidelines proposal.
- A proposal for a symposium seeking co-sponsorship for 2025 was presented, and the Committee was invited to rank the proposal in an online tool.
- SCICOM agreed that the current Early Career Scientist merit awards should be merged with the overall merit award category, and the new overall award category should consist of two awards for best presentations and two for best poster. Early career scientists will be considered for these awards.

The Steering Group, Operational Group and Strategic Initiative Chairs provided brief updates on the work of the groups and initiatives.

The Conference Coordinator provided an update on the planning for the ASC in 2023 and the conference in 2024. SCICOM selected members for the Award selection Group, chaperones for the keynotes, conveners for the contributed paper session, and members for the theme selection group for 2024.

The Committee received a presentation on the WGCHAIRS meeting in January 2023 and noted the increasing challenge of recruiting new chairs for groups and hybrid meetings.

The ICES editor introduced the online library launched in March 2022, which the Committee received well. New functionalities allow better tracking of the use and citation of ICES publications and peer-reviewed publications produced by Expert Groups.

The Chair of the Integrated Ecosystem Assessments Steering Group (IEASG) presented the progress of the ACOM/SCICOM Subgroup on EBM. The framework developed provides the basis for ecosystem-informed science and advice. The groups will publish the framework as a Cooperative Research Report (CRR) and develop an implementation plan.

The Coordinating Officer presented the Gender Equality Plan, the work of the Diversity, Equity and Inclusion subgroup of WGCHAIRS.

A report from MIRIA and MIACO on the interactive sessions on emerging science and offshore and marine renewable energy development was presented.

Two breakout group sessions worked on the Science Plan evaluation (considering science topics to be used to report on EG activities (in addition to the Science Priority areas) and mechanisms to be included in the Science Plan that will allow horizon scanning or foresighting as part of the process to ensure that emerging topics, scientific as well as societal and political, are identified. The outcomes of the breakout groups will be brought to the Science Plan Evaluation Sub-group for follow-up.

1 Opening and introduction of agenda and timetable

SCICOM Chair welcomed all participants to the SCICOM meeting, held at the ICES Secretariat, Copenhagen, with the option to attend the meeting online.

New members since the SCICOM September 2022 meeting received a special welcome: Evan Howell (USA), Hrönn Egilsdóttir (Iceland) and Lynda Webster (UK, alternate).

SCICOM Chair drew participants' attention to the new [Code of Ethics and Professional Conduct](#) and asked that if anyone could not abide by the code, they should make this clear to the meeting. No person suggested they could not follow the code.

The agenda for the SCICOM meeting (14–16 March) was introduced and approved with no comments.

2 Accomplishments in 2022

SCICOM Chair, with reference to the [SCICOM Progress Report 2022](#), gave a short presentation on the accomplishments in 2022:

- The breadth of the ICES scientific network was illustrated with a wordle based on expert group names and some statistics on Expert Group meetings. In 2022, ICES had 141 expert groups, and 210 meetings were held with 8190 participants (distinct number: 3600).
- A Letter of Cooperation was signed with the Scientific Committee on Oceanic Research (SCOR) at the UN Ocean Conference in Lisbon.
- Two key documents were approved by ICES Council, the Code of Ethics and Professional Conduct and the Stakeholder Engagement Strategy.
- Emerging Science in 2022 includes a new workshop established and tasked to develop a research roadmap for offshore and marine renewable energy (WKOMRE; meeting held in March 2023), an ASC session on integrated monitoring, the Working Group on Ocean Negative Carbon Emission (WGONCE) has been very active (endorsed UN Ocean Decade Programme), and the new Working Group on Greening the Research Fleet (WGGRF) will have its first meeting in April. WGMPAS, dealing with Marine Protected Areas and other spatial measures held its first meeting in November 2022.

3 Follow-up on decisions taken at the meetings of SCICOM (September 2022 meeting and on SCICOM Forum) and other action items (SCICOM Chair)

SCICOM Chair drew everyone's attention to Document 4-1, Minutes of September 2022 SCICOM meeting, and Document 4-2, Actions completed from September 2022. The following actions were brought to the attention of the meeting:

- **Recurring action:** A request is made to SCICOM to enquire whether ICES material might already be digitized by member country institutions, and whether this content could be shared with ICES (to be sent to ICES Editorial Office). A list will be provided with the content of interest by ICES Editorial Office.
- **Action completed:** SCICOM is requested to nominate a new member for the Awards Committee as from 1 January 2023. This will be taken through the SCICOM Forum. Congratulations to Manuel Hidalgo (Spain)

4 Tour de table

A tour de table was conducted, introducing all in person and online participants.

5 Update reports and highlights from Steering Groups

5.1 Ecosystem Processes and Dynamics Steering Group

Steven Degraer (Chair of EPDSG) provided an update of the Ecosystem Processes and Dynamics Steering Group (EPDSG) divided under the following subtopics:

EG interaction/communication. EGs have expressed that there is currently a lack of one-to-one interaction between EG Chairs. The SG Chair's effort to address this was through an 'EPDSG speed-dating' exercise which helped connect different EGs and through conducting bilateral meetings between SG Chair and EG chairs.

EPDSG theme session. The group has identified long-term data series to be presented at a theme session at the 2024 ASC. This will be further discussed at the next EPDSG EG Chairs meeting.

ICES promo text for recruiting chairs. The EPDSG Chair raised the issue of the need to increase ICES representation, engagement and recruit new talent and skills that are missing in ICES. The decision from the previous SCICOM meeting (September 2022) to create 'EG presentation videos' to provide a short introduction to what the EGs are and what kind of expertise they provide have lost momentum because it was too difficult to implement.

It was raised in the meeting that the recruitment of Chairs in EPDSG EGs is challenging since a few EGs have struggled to find chairs to replace outgoing chairs. A proposed solution was to provide a short presentation of the merits of taking the role of EG Chair at ICES.

A few expert groups had expressed interest to continue the 'EG presentation videos' project under EPDSG. These EGs will be connected to the ICES Secretariat Communications team.

Comments

The ASG Chair shared that the Aquaculture Steering Group also struggles to get engagement and recruit chairs. A recommendation was made to interrogate the reasons for the lack of engagement from chairs, whether Covid has affected the momentum, or whether it is a lack of financial and institutional support or other reasons.

Another concern raised was that some EG Chairs are still not fully aware of where in the ICES community their expert group is placed and what the assignment as expert group chair involves, including the time commitment. Additionally, many chairs do not know their national delegates, affecting their ability to connect with the larger ICES network.

'Training for chairs' was brought up in the meeting as a plan for the future to provide support and prepare incoming chairs for the role and expectations of chairing an ICES EG.

The EPDSG Chair shared that the steering group is currently gathering feedback from all the EG Chairs on how much time is taken up carrying out responsibilities as a chair to get a clearer picture of what is expected of a chair and for better guidance for future chairs.

Action: SCICOM Chair noted the comments in relation to the recruitment of new chairs for expert groups. This issue will be tabled at the next Steering Group Chair's meeting in May 2023, and the results will be reported back to the SCICOM September meeting.

5.2 Data Science and Technology Steering Group

Jens Rasmussen (DSTSG Chair) presented highlights and updates from the Data Science and Technology Steering Group. It has been highlighted that it is critical to upkeep close collaboration between DSTSG group, with ICES Data Centre and Data Information Group.

It has been decided that the Working Group on Atlantic Fish Larvae and Eggs Surveys (WGALES) will move to the Ecosystem Observation Steering Group (EOSG) due to better alignment of topics. The change of steering group will need to be formally approved through the Resolution forum before the WGALES first meeting under the new resolution in November 2023.

The continuation of the Working Group on Machine Learning in Marine Science (WGMLEARN) is being challenged due to the lack of interest in participants chairing a potential new term. The group has been granted a one-year extension of their 2019-2021 resolution. The need and benefit from the outcome of this group to ICES community has been highlighted. WGMLEARN's work is an important part of ICES focus and might be incorporated into advice processes in the future. Further support from ICES is necessary to ensure the continuation of this group, and collaboration between WGMLEARN and other expert groups should be encouraged.

5.3 Aquaculture Steering Group

Ann-Lisbeth Agnalt (Chair of ASG) provided an update on the Aquaculture Steering Group (ASG), which comprises expert groups working with the basics of aquaculture.

The Steering Group chair reported that all six EGs have scheduled physical meetings in 2023. It was also raised that there is a concern about low engagement in some EGs, whereby only ten people are actively engaged. One working group, WGSPA, was dissolved due to the inability to find a new chair and low engagement levels.

Three new EGs were proposed to be created under ASG to cover the topics of food safety and nutrition, animal welfare, and sustainable feed production (circular economy).

Aquaculture overviews

ASG members have been involved in producing aquaculture overviews (AO). It was shared at the meeting that the work has been relevant for a new emergence of marine management because the AOs provide a good background for planning and management.

Comments

The ACOM Chair supported the three proposed new EGs because of their importance in discussing the blue and circular economies. ACOM predicts more advice requests in this area, which stresses the need to find experts in this area.

Concerning the animal welfare EG, questions were raised on whether capture (in addition to aquaculture animals) would be included in the definition of capture. The ASG Chair confirmed that capture would be included under animal welfare.

On the topic of nutrition, questions were raised on whether human nutrition will also be included. The SG Chair stressed that aquaculture nutrition would be the main focus of the proposed EG on food safety and nutrition.

5.4 Integrated Ecosystem Assessments Steering Group

Debbi Pedreschi (Chair of IEASG) gave an update on the Integrated Ecosystem Assessments Steering Group (IEASG). The overall work is progressing well. However, the capacity challenge is the main issue, and an additional challenge is related to the suspension of the Russian Federation. There are internal plans within the IEASG to do half-day exchanges on 1) stakeholder engagement for IEA, and 2) IEA, methods comparison (IEA ingredients).

Some additional points were raised for discussion with SCICOM:

- Difficulties finding new chairs
- Potential new groups:
 - WGTRANS – Working Group on Transdisciplinary Activities: working together to figure out how to work together, for example, through collaborative case studies. Focus on how to do transdisciplinary science – Human Dimension Steering Group (HUDISG);
 - WGPOLICYLAB – to develop the ideas around the development of Policy-labs, integration between Science and Policy. Could be allocated to HUDISG;
 - WGKRAKEN – a sandbox group for developing innovative ideas, out-of-the-box thinking, brainstorming, and advancing EBM. IEASG;
 - WGIEAABNJ – IEAs for Areas Beyond National Jurisdiction (ABNJ). Oceanic North-east Atlantic Ecoregion. ICES have a large area beyond national jurisdiction, so this should be an area we should focus on since we do IEA for them. Differences in governance, types of fisheries, and role in carbon;
 - WGISEM – Integrating social (incl. economic) and ecological modelling because we need to make a link to ecology and economics and include social-economic thinking – so developing tools in this space are quite strategic. Complimentary to WGIPEM. A critical tool for IEA. It could be placed in either IEASG or HUDISG.

Some of the current IEASG groups will likely be moved to the new Human Dimension Steering Group (HUDISG), which would free up some space for new groups. Nevertheless, it is important to consider the difficulties with getting new chairs when considering new groups. There should be strategic thinking about these topics of groups in relation to the science plan and our goals.

The floor was opened for questions and comments, with key points being:

- We might need to retire or stop other groups or work to make space for new groups.
- Some of the proposed groups (e.g., WGTRANS, WGPOLICYLAB) could work better as workshops. If this is the case, it eliminates the issue of chairs. Another benefit of the workshops is that you attract experts outside the steering group. However, it was also pointed out that sometimes having a workshop doesn't necessarily replace having a working group.
- Not all groups will be recruiting from the same pool of potential chairs. The new topics of the proposed groups may bring in a new pool of members and potential chairs (e.g. more social scientists, etc.).
- There was some support for WGTRANS, WGIEAABNJ, and WGKRAKENS as working groups. However, comments were noted to ensure to avoid overlap with ToR of already existing working groups to avoid duplication of work. Also, WGTRANS expertise should span beyond one WG or SG; it should reach other SGs as well.
- We should be careful putting too high a demand on small groups of experts (e.g. deep-water ecology experts) to avoid creating competition between the different group meetings that they need to attend, which would have a negative impact on the advice products.

5.5 Fisheries Resources Steering Group

Jonathan White (Chair of FRSG) gave an update from Fisheries Resources Steering Group (FRSG), which is working towards improving the collaboration, communication, and coordination among expert groups undertaking stock assessments, and communicating their needs and issues. Statistics were presented for the advice production, which showed a slight reduction in the number of assessments because some assessments have become bi-annual. There are 58 Expert Groups under FRSG, and most WGs have plans in place regarding where and when they will meet this spring. FRSG Chair informed SCICOM of a number of issues that are currently on the table:

Operational issues:

- Resourcing is fine generally, but there are some holes and weaknesses. (WGEF shortage of experts; WGWIDE is missing a chair).
- Data Limited Methods (continued) implementation and working groups are becoming accustomed to the methods.
- Benchmark Process has been updated. A benchmark process is needed if a stock assessment approach needs to be changed. The Benchmark Oversight Group (BOG) is overseeing the process. Inter-benchmarks will be dropped, and the following process applies to different levels of changes to be implemented: i. EG-Internal-update; ii. EG-External-Review-update; iii. Benchmark.

Science development:

- Two important workshops planned WKREBUILD2 and WKNEWREF, working on reference points & Rebuilding plans.
- Recreational catch into stock assessments is becoming more important, and there is a need to figure out how to gather this information and feed it into commercially based stock assessments – “what & how”
- Perception of stocks – how do fishers and stakeholder’s review and perceive the state of stocks and how do we increase the understanding from fishing community, managers and NGOs and feed this into the stock assessments
- Cod: There are workshops related to research roadmap (how and what research needs to be undertaken for the full range of cod stocks); i. Research roadmap, ii. North Sea, West of Scotland multi-component stock assessment
- Conservation elements will be implemented to ICES advice sheets this year and this is seen as a big step forward and a very welcome development!

Future science support to EGs highlighted included **ORE** (Off-shore Renewable Energy); **EB(f)M** (Ecosystem Based (fisheries) Management); **Genetics**: Stock-ID; eDNA & spp. presence; stock sizes - what can genetics do and how can we develop that and use it for improving stock assessments and **Cod** – Research roadmap.

Questions and comments

ASG Chair asked if the rebuilding plans are also part of the roadmap for cod, and whether restocking (which may be seen as quite controversial) is considered as an option? FRSG Chair responded that WKREBUILD is not focusing on cod, but their recommendations are likely to impact the cod assessments.

ASG Chair, in relation to genetics, mentioned that the Working Group on Application of Genetics in Fisheries and Aquaculture (WGAGFA) is quite involved in the fisheries aspects of genetics.

They convened a theme session at the ASC 2022 on “[Growing together: prospects and opportunities for environmental DNA and fisheries sciences](#)”, and it would be relevant to check the outcome of that theme session.

5.6 Ecosystem Observation Steering Group

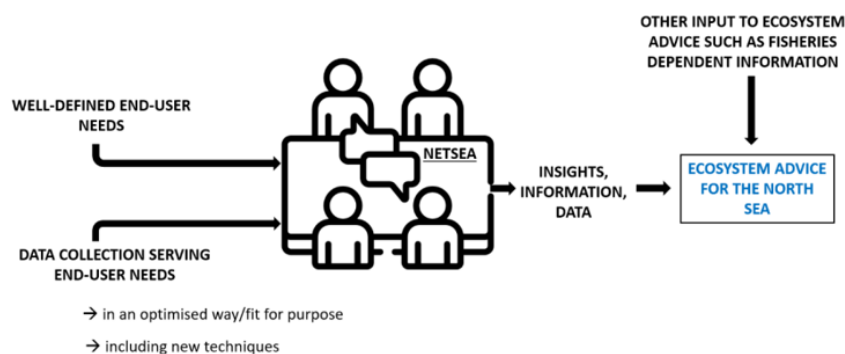
Joël Vigneau (Chair of EOSG) presented a summary of the steering group’s activities in 2022, as well as plans for 2023.

- In 2022 there were 14 WGs and 2 Wks under EOSG remit;
- The two strategic Wks which were held (WKUSER2 and WKPILOTNS-FIRMOG) are meant to shape the future of EOSG;
- One WG meeting was postponed to ensure in-person participation (WGSSE);
- The new resolutions adopted or proposed so far are WGFTFB, WGSINS, WGACEGG, and four other WGs are expected to provide new resolutions;
- Three workshops are planned for 2023: WKMADE (resolution approved), WKTAG, and another workshop with no acronym yet.

The challenging position of WGELECTRA was presented. The group concluded the research on their main topic and needs to explore if there are other related research topics to justify continuation. The future of WGELECTRA will be discussed during the group’s meeting this year.

The EOSG Chair presented the new perspective on survey coordination as an outcome of the WKPILOT, which focused on the feasibility of a regional group dealing with fisheries independent information. A proposal to set up NETSEA (Networks for Surveys Towards Ecosystem Advice for Surveys Towards Ecosystem Advice) was introduced, and it included the scheme of meetings of the core group NS-NETSEA (North Sea NETSEA) as well as expected positive outcomes of the initiative:

- data collection: better fit-for-purpose task allocation;
- ecosystem assessment: better understanding of ecosystem processes;
- single stock assessment: more robust data for modelling;
- alignment with the EU initiative EOOS (European Ocean Observing System).



The scheme of NETSEA

Lastly, the EOSG Chair presented upcoming initiatives and plans, which included:

- Promoting the outcomes of successful WKUSER2, which focused on improving the flexibility of design of surveys aiming to accommodate dynamically changing circumstances, as well as the future of fisheries-independent surveys. The ASC theme

session on the Future of fisheries-independent surveys was brought up as a tool for preparing for another possible edition of the WKUSER in 2024.

- The follow-up on the recommendations of WGQUALITY to develop standard reports and overviews of fisheries independent data was pointed as an important task, which should improve the data management and data utility, and steady progress on that issue was recommended.
- The need for increasing links to other SGs on technical issues with DSTSG and end-users of fisheries independent data like IEASG and FRSG was mentioned and efforts towards further development of transversal communication was recommended by the chair.

5.7 Human Activities, Pressures and Impacts Steering Group

Andrew Kenny (Chair of HAPISG) presented a summary of the HAPISG activities and highlights for the past six months:

- The Joint ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV) commented on the IMO “Review of the 2011 guidelines for the control and management of ships biofouling to minimize the transfer of invasive aquatic species.”
- The Working Group on Economics (WGECON) published a paper on “Integrating economics into fisheries science and advice: progress, needs, and future opportunities” (ICES Journal of Marine Science)
- Recent workshops:
 - Workshop on the Revision of the DOME Litter Data Format (WKLIDA)
 - Workshop on Small Scale Fisheries and Geo-Spatial Data 2 (WKSSFGE02)
 - Workshop on a Research Roadmap for Offshore and Marine Renewable Energy (WKOMRE)
- Forward look:
 - Working Group on the History of Fish and Fisheries (WGHIST) is organising a workshop as part of ICES Sea-Unicorn meeting in May on Human Impacts on Marine Functional Connectivity - “Geohistorical perspectives on functional connectivity patterns.”
 - Workshop on Implementation of Stakeholder Engagement Strategy (WKSTIMP) is taking place in May 2023
 - WG Chairs leading four Theme sessions at the 2023 ASC in Bilbao, Spain: (A) offshore marine renewable energy; (C) fisheries bycatch; (F) molecular tools for biodiversity and climate change; (L) trade-offs in EBM

6 Update reports from Strategic Initiatives

6.1 Update from Strategic Initiative on Climate Change Impacts on Marine Ecosystems

Alan Baudron (Chair of SICCCME) reported from Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCCME).

OSPAR cooperation. This year SICCCME started a new term, with new Terms of reference. SICCCME is coordinating efforts with OSPAR and identifying possible collaborations.

Ecosystem overviews. SICCCME would like a standardized climate change impact section in each overview. Would like to push this development.

ECCWO5 in Norway is scheduled for April, and an ICES/PICES/ “Workshop on integrated modelling to identify climate change tipping points in marine ecosystems” will take place during the symposium.

SICCCME is developing a roadmap and, to this end, is developing a template for working group chairs to submit information on climate-related research.

At the ASC 2023 ICES/PICES/SICCCME is convening the theme session [Towards climate-informed ecosystem-based fisheries management](#), SICCCME is working to attract abstracts.

Questions

IEASG Chair commented that the best place to turn for a conversation regarding the ecosystem overviews would be the Ecosystem Operational Group and feedback from SICCCME would be very welcome. The WKCLIMAD recently published its report, which will start building a better framework for incorporating climate-informed advice into the overviews.

FRSG Chair asked if there has been any focus or consideration of looking at single stocks concerning climate change. For instance, cod is being pushed further north due to the temperature change, and FRSG Chair was also keen to follow the outcome of the tipping points work. SICCCME Chair responded that marine ecosystems also involve fisheries, and last year SICCCME, together and SIHD liaised on this.

6.2 Update from Strategic Initiative on the Integration of Early Career Scientists

Amanda Schadeberg (Chair of SIIIECS) updated the meeting on the strategic initiative’s activities since the last SCICOM meeting and on activities in the coming period.

SIIIECS received a high interest in interdisciplinary training for the ‘InterDis 2023’ summer school, co-sponsored by Oyster, EuroMarine, and ICES. It has been raised that also non-early career researchers might be interested in interdisciplinary training, which could be expanded to community members that are new to ICES.

Collaboration between ICES and PICES early career networks is highly valued. It has been highlighted that a joint focus on collaboration should continue in the future despite the challenges of working globally across different time zones. It has been discussed that activities under ICES should cover the challenges associated with transitioning from early career scientist networks onwards.

The development of FAQ materials for outreach is done under SII ECS. These materials are also valuable for other groups and initiatives and should be available for use across the whole ICES community.

6.3 Update from Strategic Initiative on the Human Dimension

Katell Hamon (Chair of SIHD) provided an update from Strategic Initiative on the Human Dimension (SIHD).

Enjoyed all the events around the ASC last year, and this was good for the SIHD community. The SIHD sticker was quite popular! Since the ASC, there has been communication through the SIHD Forum on opportunities for collaboration. SIHD contributed to the EBM course for DGMARE about the human dimension of ecosystem-based management, and a course on social science methods is planned for the second part of the year.

Social Science in ICES

- SIHD Chair was invited by WGINOSE and WGEAWESS chairs to give a presentation on human dimension work.
- Furthermore, in April, the SIHD Chair will meet with WGECON, WGSOCIAL, WGBESEO, and WGMARS on the future of the human dimension in ICES, including the possibility of developing SIHD into a steering group.

SG interaction

- There have been active discussions with the Chair of IEASG on synergies and discussions with FRSG to assess the degree of inclusion of the human dimension in ICES stock assessments and formulate recommendations.

Coordination

- SIHD members are actively involved in conferences in 2023: ECCWO5, EAFE, MARE, ASC, (MSEAS, 2024)

6.3.1 Proposal to change SIHD into a Steering Group

Katell Hamon (SIHD Chair) presented the rationale for the proposal to change SIHD into a Steering group. SIHD has been working on developing the human dimension integration within ICES, and there has been broad interaction with expert groups under IEASG, HAPISG, ASG, and EPDSG. A steering group would provide the best available support to thematically closely linked expert groups by institutionalising communication with working groups and steering groups. It would also enable clearer communication with the Advisory Committee and Science Committee.

The next steps would involve approval of the draft resolution for the new Human Dimension Steering Group (HUDISG) with the following specific ToR:

- Represent and provide leadership of social sciences and humanities in ICES
- Expand and consolidate inter- and transdisciplinary approaches in support of Ecosystem-Based Management (EBM)

After consultation with SG and WG chairs, existing working groups would be transferred to the new Steering Group. No groups would be moved without prior agreement. SIHD will consider inclusion of all EG linked to the human dimension and there will also be proposals for establishing new groups.

Decision/Action: SCICOM endorsed the establishment of the new Steering Group on the Human Dimension (pending finalisation), and the SIHD Chair will be invited to the next Steering Group Chair's meeting in May to discuss further the transition process and transfer of working groups, as well as consolidating the SG draft resolution. Once finalised, the draft resolution will be posted on the Resolutions Forum for approval.

7 Strategic Initiative on Education

Gavin Fay (School for Marine Science and Technology University of Massachusetts Dartmouth) and Margarida Castro (University of Algarve, Portugal) presented a new Strategic Initiative on Graduate Education proposal. This Strategic Initiative is building on the WKEDU, which showed a need for long-term capacity building within the ICES principles and framework and creating structures to aid in building the expertise. The three draft Terms of References for the Strategic Initiative are built on building structures and linkages to create learning opportunities for capacity building.

The discussion raised whether an ICES Strategic Initiative is the right vehicle for the presented aims. This was answered with the example of SIIIECS using work plans and feeding into various places within ICES structures.

A question was raised about the focus and the scoping of the Strategic Initiative, and whether the focus should be on Graduates or Early Career Scientists, and whether there is potential overlap with the training program. The scoping was a major part of the work done by WKEDU, and there has been work on synthesizing this. WKEDU further compiled places/groups where students already participate with ICES in different capacities. The Strategic Initiative would aim to make the opportunities for participation accessible to a broad set of interested students.

Potentially create guidelines for integrating ECS in WGs and interacting with students in early career stages, as this would open pathways for student participation in ICES expert groups.

Action: The draft resolution for the Strategic Initiative on Graduate Education will be posted on the forum for official approval by SCICOM in the coming weeks after the SCICOM March meeting.

8 Report from WGCHAIRS

SCICOM Chair provided a brief report from the annual meeting of ICES Expert Group Chairs (WGCHAIRS), held on 23–26 January 2023 as a fully online event. The first day of the meeting was focused on new/ incoming chairs and included presentation of guidelines, discussions on expectations and responsibilities. The three remaining days consisted of a joint advice/ science day and two dedicated days focused individually on advice and science themes. Overall, WGCHAIRS was a successful meeting with a high level of interactions.

Advice day topics: Conservation aspects in advice; Challenges and solutions for advice based working groups; Guidelines for Benchmarks; Exploring reference points; Transparent Assessment Framework; Advice online.

Combined day topics: Gender and inclusivity in ICES; Code of Ethics and Professional Conduct; Methods for the knowledge that flows into advice; ICES Publications & the new ICES library; update from Overviews; Role of Scientists in ICES.

Science day topics: ICES Science visibility; Science Plan implementation/ Communication; EBM framework; followed by individual Steering Group breakout meetings.

Feedback and concerns from the community:

- An increasing challenge with recruiting new chairs for groups. The Secretariat is looking into possibilities of advertising the chair role, highlighting opportunities and benefits. Groups are encouraged to appoint task/ ToR leads with a view to spread the workload across group members.
- An increasing challenge with running hybrid meeting. The Secretariat is looking into organising training sessions for EG chairs to address needs/ concerns, including the hybrid challenge. The community is encouraged to help identifying training needs.

<p>Action: ‘Hybrid meeting format’ to be added as an agenda point for SCICOM September meeting.</p>
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The Secretariat is planning to organise a traditional in-person event for EG Chairs during the ASC 2023. The WGCHAIRS 2024 meeting will be held in a hybrid format.

9 Science Plan

9.1 Report from MIRIA and MIACO emerging science exercise and offshore wind exercise

Exercise on emerging science and offshore renewables

SCICOM Chair presented emerging science topics identified during the scoping exercise at the annual meetings MIRIA and MIACO, held in January 2023. The aim was to identify science areas and the best ways of supporting their development. The session focussed on the medium and long-term needs.

Medium-term themes clustered around the following topics:

- Wider ecosystem considerations, including ecosystem services, MSFD indicators, and accounting for predator needs
- Operationalizing EBM
- Social-ecological trade-offs
- Spatial considerations, including MPAs and OECMs, displacement of fishing fleets, distributional changes, spatially explicit models
- The effect of an increase in marine and offshore structures, including renewable energy developments
- Aquaculture, including environmental effects
- Climate change effects and how to consider that in advice
- Future survey and monitoring needs include science-industry partnerships, new technologies
- The use of Omics, including stock id, observation and monitoring, and surveillance (e.g. bycatch identification)
- Bycatch, including mitigation and management
- Decarbonisation of the fishing fleet
- Using stakeholder knowledge and data

Long-term themes clustered around the following topics:

- Food security
- Food safety, including emerging contaminants like nano- and microplastic
- Deep-sea mining impacts on fisheries
- New species
- Effect of carbon capture and storage
- Effect of habitat restoration
- The use of big data and artificial intelligence in assessments

The above will feed into the strategic development of future activities, including workshops and working groups. A detailed overview is available in Document 10.1-1.

MIRIA and MIACO participated in a modelling exercise to build a conceptual model of the challenges managers face with expanding marine renewable energy facilities. The results are available in Document 10.1-2. This exercise will feed into three ICES working groups on Chair introduced the topics for the SCICOM subgroups to work on and to present in plenary. The SPE-SG will use the outcomes.

Offshore and marine renewable energy

Development of offshore and marine renewable energy is a high priority topic and an essential opportunity for the ICES community. ICES currently has three groups who are working directly on the topic (WGMBRED, WGOWDF, WGOORE). In addition, there is an increasing number of other groups who have started including the offshore and marine renewables in their terms of reference. ICES needs to act urgently: to fill knowledge gaps, develop and use best practices and synthesize information.

ICES is looking into developing a roadmap to address rapid development of offshore and marine renewable energy. With this aim, a Workshop on a Research Roadmap for Offshore and Marine Renewable Energy (WKOMRE) has been established. The roadmap will provide subsequent steps for the short, medium, and long term.

Initial summary of the WKOMRE:

- Agreed on a strategic roadmap document for OMRE
- Focused on overarching themes of OMRE
 - Science: effects of OMRE on marine ecosystem structure and function
 - Science: effects on OMRE on current ICES activities (e.g., fisheries, conservation)
 - Data: effects on and opportunities for ICES Data activities
 - Advice: apply EBM in current advice and develop new advice
- Identified challenges and opportunities for ICES
- Identified potential outcomes for ICES
- Identified short-term steps
 - Consider establishing ICES Strategic Initiative
 - Three co-chairs or Strategic Initiative lead
 - Include early career scientists

WKOMRE recommendations will be issued in the workshop report due in the beginning of May 2023. Spin-off workshops & activities are expected to take place in the coming months. SCICOM members expressed a strong support emphasizing that timing, as well as stakeholder engagement, is crucial.

10 Breakout 1 (Science Plan)

The breakout groups were asked to draft a list of science topics that can be used together with the Science Priority Areas to characterize the Expert Group ToR and can be used to report on the activities of Expert Groups in addition to the Science Priority Areas.

Can these be the same for all Science Priority Areas?

Do we need to add priority topics to the Science Priority Areas?

HAPISG had carried out an exercise with the expert groups to link their ToR with higher level Science Topics (Table 1). SCICOM was asked to work with this initial list to identify whether they can be used in combination with the Science Priority areas to describe the nature of any given ToR.

The summary of the work was presented in plenary and the outcome will be used by the Science Plan Evaluation Subgroup (SPE-SG).

Table 1. Science Topics

1 Spatial Management Issues	11 Training and Education Material
2 Assessing Biodiversity Benefits	12 Shipping Data Analysis
3 Data/ Assessment Products & Tools	13 Trade-off Analysis
4 Habitat Mapping and SDMs	14 Economic Data Analysis
5 Fisheries Data Analysis	15 Indicator Development
6 Guidelines Preparations	16 Analytical Method Development
7 Quality Assurance Issues	17 Renewable Energy Data Analysis
8 Ecological Effects Analysis (incl. cumulative)	18 Marine Litter Data Analysis
9 Contaminants Data Analysis	19 Marine Aggregate Data Analysis
10 Climate Change Considerations	20 Non-Indigenous Species Data Analysis

11 Plenary discussion on Science Plan evaluation

The rapporteurs for each of the four breakout groups presented their discussions and suggestions in plenary. Working documents and breakout group rapporteur summaries are provided in Annex 2.

SCICOM Chair thanked the breakout groups for the contributions and asked to have the summaries organised and put forward to the Science Plan Evaluation subgroup. Based on the discussions, the SCICOM Chair explained the next steps and asked everyone to think about clear recommendations on activities and actions to be taken by the Science Plan Evaluation Group.

DAY II: Wednesday, 15 March 2023

12 Welcome and summary of Day 1

SCICOM Chair welcomed all participants to Day 2, and gave a brief summary from Day 1 and introduced the agenda for Day 2 of the SCICOM meeting.

13 Update reports from Operational Groups

13.1 ICES Science Impact and Publication Group

Nils Olav Handegard (Chair of SIPG) presented an update from the Science Impact and publication Group (SIPG).

SIPG leader- and membership

The current SIPG chair will rotate off by the end of the year, and SIPG is therefore looking for a new chair, preferably to be found among current SCICOM members.

Action: SCICOM is invited to nominate candidates for the SIPG Chair

SIPG meets 2–3 times per year. The main tasks for SIPG in 2023 will be a continuation of tasks started in 2023:

- Library reporting capabilities and potential new functionalities are being explored
- Evaluation of current publication series.
- How to publish publications that do not currently fit to any structure/standard publication type.

Ruth Anderson (Lead Editor) informed SCICOM that IJMS is now open access, Gold Open Access, compliant with all major funding agency mandates.

13.2 ICES Training Group

Anders Nielsen (Chair of Training Group) presented an update to SCICOM on the ICES Training Programme, including which strategies are involved in forming the programme for the coming year and giving an overview of the training courses of 2023, and showing a brief evaluation of the courses that successfully ran in 2022.

It was brought up in discussion with SCICOM that there should be a reflection about the accessibility of courses if they are offered as in-person courses only, and also consider if there should be recorded material online which poses challenges in the current contracts. Courses are currently either being run in person or online, but without being recorded and made available online.

Action: Training Group is asked to analyse the courses that have been run in the past to see if they reflect the Science Plan and if they are focusing on certain areas only, and if there are any gaps where courses would be needed in the future.

13.3 ICES Data and Information Group

Sjur Ringheim Lid (Chair of DIG) and Neil Holdsworth (Head of Data and Information), with reference to Doc 14.3-2, presented a proposal for guidelines for the hosting and publication of ShinyApps by the ICES Data Centre for SCICOM approval.

Challenges. ShinyApps require continuous development and maintenance, which involve resource implications, and therefore it will be important to set up a good process to ensure this is in place:

- All content and functioning of the ShinyApp is the responsibility of the App owner.
- ICES (Data Centre) is responsible for the ShinyApp.io service and annual review
- DIG is responsible for reviewing performance metrics at their annual meeting

Moreover, ICES integrity for science-based advice needs to be safeguarded, and therefore ShinyApps should follow (as close as possible) FAIR principles for data provision and access.

Structured approval process. Once all requirements (licensing conditions, completing a full data profile, clear ownership, and maintenance responsibilities defined) for the ShinyApp publication have been fulfilled, it can be approved by ACOM (as an advice request) or SCICOM (as a draft resolution for a new publication). Once approved, the code will be published, ICES Data Centre will update metadata records, and a landing page will be added to the ICES website. Finally, there will be technical tests and a review of the metadata and the published application.

Decision: SCICOM expressed strong support and approved the ShinyApp guidelines proposal.

Data Preservation Plan

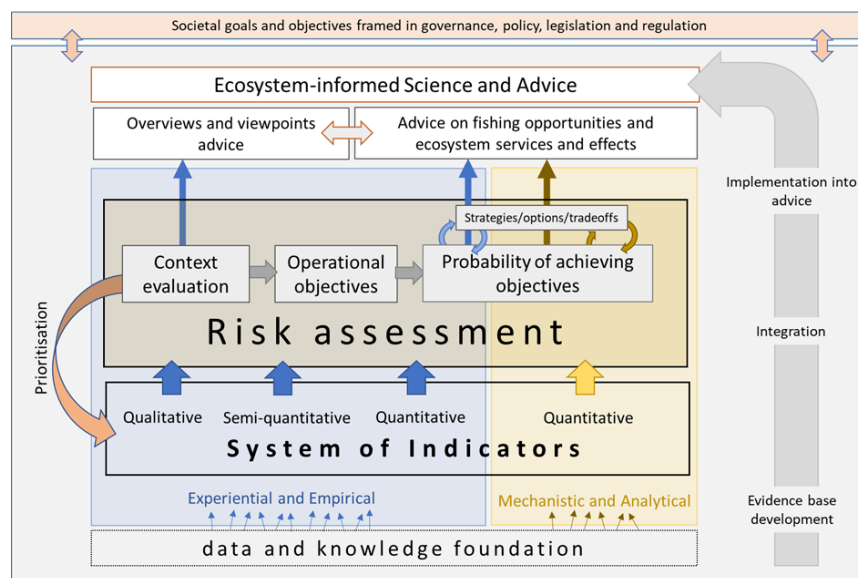
DIG is preparing the ICES Data Preservation Plan as part of the Core Trust Seal continuous improvement process for ICES Data Centre. A first draft will be prepared for the DIG annual meeting in May 2023, and the plan is to have a final draft ready for approval at SCICOM September 2023 meeting.

14 Follow-up on EBM Framework

Debbi Pedreschi (Chair of IEASG) presented on behalf of the Ecosystem Based Management Framework subgroup, chaired by herself and Marie-Julie Roux (ACOM member).

After the previous presentation of the framework to WGCHAIRS in January 2022, some issues were pointed out which led to additional discussions and inputs from social scientist and others. This led to the framework and diagram to be updated to improve the following:

- Emphasize incorporation of multiple knowledge and data types (base)
- Position ecosystem-informed advice closer to governance/policy objectives and decision-making (top)
- Better highlight the importance of strategies/options/trade-offs exploration loops in both empirical (blue) and analytical (yellow) space



Next step is to clarify and agree on fundamental ideas/principles underlying the Framework for Ecosystem-Informed Science and Advice (FEISA) to help its implementation:

1. Knowledge plurality as the basis for ecosystem-informed science and advice
2. Ecosystem-informed science has a role in guiding the definition of operational objectives
3. Ecosystem-informed advice involves routine formulation and exploration of alternative hypotheses, scenarios, and pathways for ecosystem effects
4. Ecosystem considerations will affect the level of risk associated with the advice
5. Risk as the currency for communicating potential, demonstrated or projected consequences of alternative management options and ecosystem considerations in advice

These principles are consistent with ICES advisory plan, and advisory framework and principles. They are important as they imply a shift from aspirational goals to changes in practice, helping us to identify priorities and pathways to forward with implementation.

A list of suggested priority areas was presented before the floor was opened up for questions and comments. Key points include:

- Feedback loops are not explicitly in the diagram, for simplicity sake, but can be included in the description of the diagram and/or detailed in the CRR.
- There is an interest in seeing how this framework can be translated from conceptual to practical use and how it is applied to data and actual situations and include case studies to apply the concept – this will be published with the CRR currently being produced by the EBM group.
- The framework does not aim to enforce specific methodology on any groups but instead to bring together what we are already doing – the framework is to get us more on the same page rather than giving us more things to do.

Decision: SCICOM acknowledged and appreciated the work and time that went into the EBM framework, and there was overall support and approval from SCICOM to go forward with the work on the framework. Additionally, SCICOM approved the proposal from ACOM on putting forward the diagram/schematics to the ICES in-house graphic designer. All SCICOM members were encouraged to contact Debbi Pedreschi and support the work and the group.

15 Visibility of Science

15.1 Feedback from WGCHAIRS

SCICOM Chair provided an update on the visibility of science based on feedback from the January WGCHAIRS meeting. The presentation urged SCICOM members to think of how to increase the visibility of science in terms of products that can be produced in addition to existing ones.

ICES as an international cooperation platform

SCICOM members were recommended to think about highlighting the value of ICES as an international science cooperation platform. This was mentioned as an opportunity for two-way communication to the audience that ICES is trying to reach and to member/funding countries.

15.2 Communications

Celine Byrne (ICES Communications Officer) provided an update of the current tools ICES employs to communicate (ICES website and various social media channels), as well as addressing feedback received from WGCHAIRS (January 2023).

Feedback included requests for an improved ICES website, more visibility for training courses, and more outreach to various audiences. WGCHAIRS felt that ICES needs to engage newer people -such as students- and raise ICES profile with for example, policy-makers. The possibility of collaboration with the communication teams of our member institutes was suggested as one way to do this.

ICES Communications is currently working on a video series comprising 10 videos on different ICES topics. SCICOM members were encouraged to subscribe to [ICES Youtube Channel](#), watch and share the videos.

ICES Communications would like to reinstate the one-day communications professionals meeting previously held at the ASC so that comms professionals from across the network could meet to discuss challenges and share ideas.

Action: SCICOM members were asked to send the contact details of their communications team by the end of March to ICES Communications team <communications@ices.dk> team so they can be invited to Bilbao in September.

The UK national member suggested to arrange online meetings for more contact between the communications teams. It was also raised in the meeting that most communications officers from other organizations would most likely not be able to attend the meeting in Bilbao due to low capacity and financial constraints. This was agreed also by the Spanish and French SCICOM members.

16 Library

Ruth Anderson (Lead Editor) gave an update on the ICES Library. Since the launch in March 2022, the views, downloads, and citations have steadily increased. The readership is globally distributed, originating from 179 countries. The top 20 countries are mainly ICES member countries, Italy, Austria, and China.

The migration from the old library is ongoing, almost complete back to 2004. Groups that need access to ICES historical content are welcome to contact the Publications department for help.

Users can now register with the ICES Library, and the benefits include:

- Increase your recognition as an ICES author and have your profile where your published content is displayed
- Follow specific ICES content and receive alerts when items are published that match your criteria
- Create your private collections of ICES content

SCICOM Chair thanked for the presentation and acknowledged the big step forward with the implementation of the ICES Library.

Questions and comments

Congratulations were extended to SIPG and Publications team for the successful implementation of the new library, and thanks for the responsiveness to requests from the Publications team, also taking on challenges (such as HTML products, datasets, and interactive maps), which shows there is a lot of flexibility in the library.

A question was raised as to whether it would be feasible to set up a direct link from the expert group community web pages to the library, taking you to the figshare page showing the publications and outputs for a given group? It was confirmed that, during this year, the groups should all get this direct link to the library.

17 Report from Advisory Committee

Mark Dickey-Collas (ACOM Chair) presented a review of advice activities in 2022, as well as outcomes of the ACOM meeting in 2023. There was a short display of the basics of ICES advice, including the vision and mission statement. A summary of the advice-giving processes in 2022 included the numbers of advice produced in Fisheries, Biodiversity, Impacts of fishing, Ecosystem & fisheries overviews, and aquaculture overviews. A map of key advice requestors was presented, including EU, UK, Norway, Iceland, Greenland, Faroe Islands, HELCOM, NASCO, NEAFC, and OSPAR.

Next, the ACOM Chair displayed the advice process with its key stages and their elements graphically:

- 1) Request – including formulation, screening, expectations, and resources; covers recurrent advice and special requests;
- 2) Production – analysis by expert groups, reporting through database and TAF, and data and methods;
- 3) Release – advice by consensus, explanation, and rationale.

The advice process is governed by the 10 principles of advice, which were briefly described by the ACOM Chair.

Advice outputs include Overviews (Ecosystem, Fisheries and Aquaculture), Viewpoints, Reviews, Regular advice (on catches, bycatch, habitats, and innovative gears), and Special requests. The listed advice products are available not only in the format of PDFs, but also interactive maps and html products.

As a next point, new developments implemented into Advice in 2022 were presented:

- 42% of category 3 stocks MP or MSY advice (4% in previous year)
- Revised precautionary Harvest Control Rules widely implemented for data limited stocks
- Benchmark of Vulnerable Marine Ecosystem (VME) methods
- Conservation advice guidelines & implementation in eel advice
- Communication of mixed fisheries advice revised
- Further implementation of ensemble approaches for stock assessments and forecasts
- Stakeholder engagement strategy completed

Among challenges which became apparent in 2022, the ACOM chair pointed:

- Baltic Sea advice: science to underpin advice requests for stocks & ecosystem not coming through in the most optimal way
- Request formulation: increasing demands for transparency on requests & acceptance
- Legal & 3rd party expectations & our obligations for advice & advice processes

The following news from the beginning of 2023 were presented:

- Release of beta version of the online advice platform; the full release is planned for June 2023 <https://ices-taf.shinyapps.io/online-single-stock-advice/> full release June 2023
- Release of benchmark guidelines – expert group flexibility, review, full benchmark
- Publishing of the WKCLIMAD report (available at
- <https://doi.org/10.17895/ices.pub.22196560.v3>)

In regards to quality, the following steps have been taken by ACOM:

- Considerations of various ways to adopt recommendations by WGQUALITY
 - Moving to quality framework based on ISO 9001:2015
 - Drafting quality manual
 - Acceptance of quality policy provided by WGQUALITY
 - Further exploration of quality processes & quality objectives
- Engagement in the adoption and training of Transparent Assessment Framework (TAF)
- Data profiling tool (DPT)
- New ACOM benchmarks pushed forward

The updates regarding fishing opportunity advice included publication of the WKLIFEXI report, proposal of a workshop on perceptions of advice (Workshop on accounting for fishers & other stakeholders - WKAFPA), upcoming work on reference points and rebuilding framework in 2023, and possible creation of a roadmap for recreational fisheries.

In terms of ecosystem services and effects, challenges related to the following areas were presented:

- Process of developing recurrent ES&E advice were presented
- Revision of the bycatch roadmap (in light of the EU Biodiversity Action Plan)
- Creation of a more robust spatial advice

Lastly, a list of overarching issues was presented and it included:

- Advice in 2023 for fish stocks in the Barents Sea
- Framework for ecosystem-informed science & advice (FEISA)
- Ecosystem-based fisheries management for NEACF
- ACOM interacting with ICES project policy & prioritisation

The discussion which followed the presentation regarded the issue of increasing demand for social and economic science input to Advice and ways of encouraging and incorporating those, as well as related challenges.

18 Stakeholder Engagement Strategy – Implementation Plan

Firstly, the ACOM Chair stressed the importance of ICES stakeholder engagement strategy and quickly outlined the process of creating it. The current ICES stakeholder engagement strategy is available online, and also captured by the most recent ICES Strategic, Science and Advisory Plans. The strategy lists four key roles in regards to stakeholders:

- Expert
- Contributor
- Observer
- Partner

The key elements of the stakeholder implementation strategy were listed: mission & goals, scope, context & rationale for engagement, roles & responsibilities of stakeholders & researchers, and definition of a stakeholder was presented:

- those who affect or are affected by a decision, process, or action of ICES (including scientists & knowledge providers operating within ICES network)

In addition to the above definition, the central role scientists as unique “internal stakeholders” in network was stressed. Next, the goals of engagement were listed:

- ensure input from various communities of knowledge
- engage stakeholders & advice requesters to develop & deliver current & future advice products for changing priorities of managing marine activities
- increase legitimacy, ownership, & accountability for creation of knowledge
- facilitate knowledge exchange & collaboration when addressing operational, tactical, & strategic challenges, thus enhancing innovation & social learning

Then requirements for implementation of the strategy were presented, and they included:

- Monitoring criteria
- Evaluation of engagement
- Annual reporting
- Updating ICES Stakeholder Engagement Strategy (every 3-5 years)

Next, the four phases (preparation, starting, active and end phase) were presented as a step-by-step plan of evaluation of each engagement process.

Lastly, the ACOM Chair introduced the goals of the already approved workshop on implementing stakeholder engagement strategy (WKSTIMP), chaired by Marta Ballesteros (Spain), Ashley Wilson (UK) and Alexandre Rodriguez (Spain) and planned for May 2023.

19 Gender Equality Plan and DEI

Ellen Johannesen (Coordinating Officer) presented a progress update on the ICES Gender and Equality plan (GEP). Diversity is about all the visible and invisible difference between people. The 2019 strategic plan has provided the platform to address this issue. Our goal is to make a more inclusive organization broadly, and strive to be an organization that people want to be a part of and work with.

In 2022, the gender equality plan was developed through a participatory process. A WGCHAIRS Diversity, Equity, and Inclusion (DEI) subgroup was formed to facilitate discussion and develop guidance for Chairs on how they can foster greater inclusion and diversity in the operation of their working groups.

Last year the Gender Equality Plan was approved by Council but the joint effort on addressing this issue continues, it is important to think about increasing the representation in the groups, but also to address culture change needed. The subgroup had three meetings on representation, voice & operations, and engagement. Action points and recommendations were identified:

- Training for chairs: DEI and orientation working on the ICES system, leading meetings and interactions with groups.
- Regular DEI sessions at the Annual Science Conference.
- Improving the databases to have systematically collected information on ICES community demographics.
- Encourage national delegates to consider DEI/EDI in their nominations (Actioned/Council subgroup ToRs in development)
- Consider if a more formal structure is needed for the DEI work in ICES
- Update Guidelines for ICES groups with ideas developed by the WGCAHIRS DEI subgroup.

An additional DEI subgroup meeting will take place in April and, moving forward, the conversation on the training needed for chairs will continue.

Having this DEI & GEP presentations at SCICOM is important to find ways in how we can talk and act on recommendations. Soft measures are helpful but we need to discuss at committee level on how to move forward in the future to reinforce specific actions to support this initiative. A discussion is needed on how to further progress specific actions that go beyond soft measures.

An example of mandatory actions is the UN rule of having two chairs: One male and female, one for a developing country and one for the developed country. This action fosters diversity of representation on a leadership level, but this can also create challenges to find a balance on finding on keeping existing members and bringing new members on board.

Currently, many groups are finding it difficult to find chairs to fill the roles and the selection process is based on who volunteer as a chair as well as who has the support of their institute. With this reality in mind, an important question arises: Who is really willing and open to be the chair of groups?

New strategies to support a greater diversity of people to the role of chair are needed, including training, mentorship, and succession planning.

We also need to keep in mind institute obligations in consideration when selecting new chairs, previous obligations with institutes makes it difficult for candidates to create space for leadership roles within ICES. It is important to create an environment that people want to and can join,

these are the strategies that need to be discussed, and training the chairs is one first step towards this goal. Currently there is lack of movement from higher levels at ICES, especially regarding succession planning on higher levels which is really needed for the organization to become more diverse and inclusive.

Actions:

- Act on recommendations, while keeping in mind current challenges and limitations on finding new chairs.
- Continue to develop DEI training needed for chairs.

20 Update from Secretariat

20.1 ICES co-sponsored symposia

Camilla Scharff-Olsen (Science Department Officer) presented a general update on ICES co-sponsored symposia and the proposed resolution for SCICOM review and approval.

For the general update:

- The Secretariat is currently updating the “ICES Symposium Guidelines for Conveners” which are expected to be finalized by the end of 2023.
- A new “Report 2” template for conveners has been made and will be used for all 2023 symposia.
- All previous symposium reports have been moved to the new library (https://ices-library.figshare.com/sponsored_symposia_reports).

In 2023 and 2024, ICES has committed to co-sponsor the following symposia:

- From Echosounders to the Cloud: Transforming Acoustic Data to Information, 27–30 March 2023, Portland, Maine, USA;
- 5th International Symposium on the Effects of Climate Change on the World's Ocean (ECCWO5), 17–21 April 2023, Bergen, Norway;
- Human Impacts on Marine Functional Connectivity, 22–25 May 2023, Sesimbra, Portugal
- Baltic Sea Science Congress (BSSC), 21–25 August 2023, Helsinki, Finland;
- The Second International Symposium on Plastic Pollution in the Arctic and Sub-Arctic Regions, 22–23 November 2023, Reykjavik, Iceland;
- 7th Zooplankton Production Symposium, 17–21 March 2024, Hobart, Australia;
- Third International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic, 15–19 April 2024, Tromsø, Norway;
- Marine Socio-Ecological Systems (MSEAS) - Navigating global change in the marine environment, 3–7 June 2024, Yokohama, Japan;
- Oceans Past 2024: Historical perspectives on human-ocean interactions: deep understandings for informing ocean futures, 25–28 June 2024, Penryn, Cornwall, United Kingdom.

With reference to Document 20.1-2, a draft resolution requesting ICES co-sponsorship was presented to SCICOM for evaluation and approval for 2025. An electronic vote was then opened for 48 hours to SCICOM voting members to cast their votes based on the scientific content and alignment with the ICES Strategic and Science Plans.

Decision: The draft resolution for the 2025 Symposium on Future-proofing Surveys: Integrating Probability and Non-probability Methods in Fisheries was supported by SCICOM, including EUR10,000 in support for participation of Early Career Scientists, a special issue of IJMS, and Secretariat support for conference website, registration and abstract submission facilities, and promotion of the symposium via website news and social media posts.

20.2 Projects – Project Engagement Strategy

Wojciech Wawrzynski (Head of Science Department) gave an update on project strategy and roadmap.

There has been a changing landscape in project funding programs, especially in Europe. There are different opportunities now for ICES projects, and for this reason ICES Bureau initiated discussion on a new roadmap. The objective is to strengthen the science cooperation plan based on projects and to look into the role that ICES can play in a long-term perspective. Last year, Council (Secretariat task group and member states) concluded that project cooperation is necessary to determine research priorities and align approaches on how to get involved in projects. ACOM is part of this process and there has been discussion on ACOM's contribution to research priorities and getting Secretariat resources to support this work.

Next steps:

- Reconfirming the commitment from Council and task participants.
- Have an online meeting to brainstorm about the process.

In late spring or summer, ICES will organize a consultation meeting with ICES member institutes to reflect on science priorities from ICES member countries to:

- Identify commonalities and priorities to increase participation.
- Identify ways to align ICES contributions to international projects with the need of member countries support.
- Brainstorm on how to strengthen the position of the organisation in the institutional landscape, as well as international research planning and coordination.

Currently ICES is increasing capacity in-house giving us the opportunity to develop knowledge and expertise in areas which are relevant for both the ongoing science development as well as the advice-related topics.

Action: Present all the projects that we currently have at the next SCICOM meeting to identify gaps and areas in which we should be involved.

21 Science Cooperation

SCICOM Chair, with reference to Document 21-1 presented a brief update on the latest events since September.

21.1 PICES cooperation

ICES has ongoing cooperations with PICES on joint groups, co-sponsored symposia, and through other joint activities, including the ICES-PICES Ocean Decade Steering Committee, with the joint programme SmartNet. PICES and ICES are in constant communication on how to navigate the ongoing situation with the suspension of Russian scientists which is still affecting these joint activities.

21.2 Arctic research

ICES is an official observer for both the conference of the parties for the Central Arctic Ocean Fisheries Agreement (CAOFA), as well as the Science Coordination Group. ICES is represented in two of the working groups under the Science Coordination Group, namely the Mapping and Monitoring working group and the Data Sharing Plan working group.

There were two meetings as part of the Science Steering Committee on the planning for the Fourth International Conference on Arctic Research Planning (ICARP IV) process which is a ten-year international Arctic science planning process and conference that is led by the international Arctic Science Council. ICES is also involved in the planning of the third International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic.

21.3 UN Decade

A key activity under the UN Decade and the joint ICES/PICES Ocean Decade steering Committee is the global survey on the "Ocean We Want". The survey was implemented in four countries: U.S.A., France, Japan and Australia and will give us input on what people think about the ocean we want and involve citizens around the world. The survey is addressing the outcomes of UN Decade which are linked to the 10 challenges. A clear and deep understanding of the outcomes can contribute to better formulate the challenges based on general public opinion and needs.

21.4 Other UN Activities

SCOR and MetaZooGene Working Group held a symposium in 2022, right after the ASC in Dublin, aiming to develop new insights into biodiversity, biogeography, ecology and evolution of marine zooplankton based on molecular approaches.

ICES is currently in the process of drafting an update on the agreement with the North Atlantic Fisheries Organization to include more scientific cooperation. Furthermore, ICES is drafting a cooperation agreement with the North Pacific Anadromous Fisheries Commission (NPAFC) and is renewing the agreement with the North Atlantic Fisheries Organization (NAFO).

Action: SCICOM was encouraged to consider potential candidates for scientific cooperation, keeping in mind that the basis for initiating cooperation agreements should always be concrete activities, such as joint workshops, working groups or symposia, and to forward any suggestions to SCICOM Chair.

22 Breakout 2 (Emerging science needs)

The breakout groups were asked to:

(1) think about mechanisms to be included in the Science Plan that will allow to address the following question:

What are the topics we should do and that should be included in the next plan?

Horizon scanning or foresighting need to be part of our process to ensure that emerging topics, scientific as well as societal and political, are identified.

(2) to list topics that answer the above question.

The breakout lasts 60 minutes. SPE-SG invites SCICOM to dedicate some time, at the subgroups' discretion, to each of the two tasks.

The summary of the work was presented in plenary and the outcome will be used by the SPE-SG. The breakout group summaries are provided in Annex 3.

23 Plenary discussion on Breakout 2

The rapporteurs for each of the four breakout groups presented their discussions and suggestions in plenary. Working documents and full breakout group rapporteur summaries were uploaded to the SCICOM SharePoint site. SCICOM Chair thanked the breakout group members and leads for their contributions.

A huge variety of relevant topics and a prioritisation mechanism will be needed. Will filter these through the Science Plan Evaluation Subgroup, and bring back for SCICOM discussion in September.

SCICOM Chair summarised two important suggestions coming out of this exercise, i.e. the ideas to initiate two new strategic initiatives:

- Strategic Initiative on Artificial Intelligence
- Strategic Initiative on Offshore Winds

(or consider other suitable mechanisms for these areas)

- Policy labs (as a sandbox activity to reflect and explore)

Actions/next steps:

SCICOM Chair will bring the outcome of the SCICOM breakout groups to the Science Plan Evaluation Subgroup.

The possibility of establishing new strategic initiatives on offshore winds and artificial intelligence will be tabled at the next Steering Group Chairs meeting.

SCICOM members are requested to document national science and policy priorities to identify common themes. This request will also be given to Council Delegates. A template will be provided to structure the input.

DAY III: Thursday, 16 March 2023

24 Update of Merit Award Guidelines

Lidia Yebra (Chair of the Award Selection Group in 2021 and 2022) updated the meeting on the process and outcome of the ASC 2022 merit award selection.

24.1 Proposal to change merit award categories

During the 2022 September SCICOM meeting, the Award Selection Group proposed changing the merit awards categories. In previous years, merit awards comprised the following categories: Best overall presentation, Best early career scientist presentation (2 awards), Best overall poster, and Best early career scientist poster. In 2022, following the trend from the 2021 ASC, early career scientists have been dominating all categories. Therefore, it was proposed to remove specific early career scientist categories from merit awards and have two awards for 'Best Presentation' and one for 'Best Poster' starting at the ASC 2023 in Bilbao. This change was proposed after consultation with leading members of SII ECS. The new proposal highlights inclusion across career stages and includes diversity, equity, and inclusion criteria.

Furthermore, shortlisted early career candidates not chosen for the awards will be named in the award ceremony to increase the visibility of their work. All awarded early career scientists will receive a voucher prize for participating in an ICES-cosponsored activity. The total budget available for early career scientist vouchers is EUR 3000.

Decision/Action: As an outcome of a productive discussion, the proposal was adjusted, and it was agreed that merit award categories will now consist of two awards for best presentations and two awards for best posters. Early career scientists will be considered within these categories. The ICES website will be updated accordingly, and the text will be revised to explain the new merit award categories clearly. If needed, the Award Selection Group will operate with a degree of flexibility in their award categories to expand merit awards categories further. Suggestions included considering an award for best debut presentation and poster. Further recognition of shortlisted early career candidates should be included in the presentation.

The community of early career scientists will be further consulted and encouraged to provide feedback on the processes. Clear guidance will be given to the Award Selection Group participants, and improved language on diversity and inclusion will be used in the evaluation guidelines and promotion of the awards. The Award Selection Group should further strive for increased diversity of career stages amongst its members to have a wider reach in terms of evaluation.

25 Update on ASC 2023

Ena Briesemeister (Conference and Training Coordinator) presented the dates and venue for the ASC 2023, which will take place in Bilbao, Spain, from 11–14 September 2023. The SCICOM meetings will be taking place on Sunday, 10 September, and Friday, 15 September.

25.1 Chaperones for keynote speakers

SCICOM representatives were appointed as hosts and contact persons for the keynote speakers, to introduce them to the plenary and to hand over a gift from ICES. The SCICOM Chair thanked the volunteers for their willingness to contribute.

Decision:

SIIECS will nominate a host for ECS keynote Marine Cusa.

Pierre Petitgas was appointed host for Patricia Miloslavich, **Scientific Committee on Oceanic Research (SCOR)**.

SCICOM did not appoint a chaperone for the local a keynote speaker, Ángel Borja, since the keynote will take place during the opening ceremony.

25.2 Appointment of Award Selection Group for ASC 2023 (tasked to select the ASC merit awards)

Decision: Antonina Santos (Chair), Evan Howell, Joël Vigneau, John K. Pinnegar, Andrew Kenny, Brian R. MacKenzie, Mette Skern-Mauritzen, Katell Hamon, Jos Schilder, Lidia Yebra, and an ACOM member (to be announced), were appointed for the 2023 ASC Award Selection Group.

26 ASC 2024

The Conference and Training Coordinator presented the dates and venue for the ASC 2024, which will be taking place in Newcastle, UK, from 9–12 September 2024.

26.1 Appointment of 2024 ASC Group

Decision: John Pinnegar (UK, Chair), Andrew Kenny, Brian MacKenzie, Jos Schilder, Mette Skern-Mauritzen, Joel Vigneau, Lynda Webster (UK), ACOM Chair, SCICOM Chair, Head of Science, volunteered to be members of the 2024 ASC Group doing the pre-selection of 2024 theme session proposals for final decision of SCICOM.

The call for Theme Sessions for the ASC 2024 will open in April 2023 and will be published on the ICES website. It will be closed in mid-June 2023. In addition to the selected theme sessions, the host country will decide on a session.

26.2 Conveners for contributed papers session

Decision: Jos Schilder and Artūras Razinkovas-Baziukas offered to convene the contributed papers session at the ASC 2024.

Action: Ideally three conveners are sought for the contributed papers session and it would be appreciated if an additional convenor from ACOM could be found. SCICOM and ACOM chairs to communicate the call for volunteers to ACOM.

Action: Post the 'out of the box' network session for the ASC 2023 on the SCICOM Forum with Debbi Pedreschi, Marie-Julie Roux, Katell Hamon and Artūras Razinkovas-Baziukas as network session conveners.

27 Open Forum

SCICOM Chair invited topics for the SCICOM Open Forum, either now or for the SCICOM September meeting.

The ICES policy of facilitating all meetings in the hybrid format was discussed. Arguments both for and against the online and hybrid format were raised. The ACOM Chair challenged the hybrid format in regards to difficulties with managing dynamic discussions over controversial topics. It was also pointed out that the hybrid format does not support efficient group management; conversations tend to stay unclosed and issues are often postponed. The SCICOM Chair expressed appreciation for the technical capabilities in ensuring inclusivity. The matter of ICES and SCICOM carbon footprint was raised by the EOSG chair.

28 Closing remarks

SCICOM Chair thanked for two and a half days of great work, good dialogue, and good decisions, as well as an extensive exchange on the Science Plan evaluation. The SCICOM Chair expressed his commitment to ensuring sufficient time for discussion at forthcoming meetings.

Thanks were extended to the steering group chairs for creating a good working environment with EGs, and for contributing to having productive SG Chair meetings on a regular basis. SCICOM Chair would be reaching out to national SCICOM members individually with a view to gaining a better understanding of the situation in the member countries, and it would also be useful to involve more alternate members in the work of SCICOM.

SCICOM Chair thanked the secretariat team for supporting SCICOM and the community.

SCICOM was reminded about the call for nominations for the Prix d'Excellence and Outstanding Achievement Awards with a deadline of 1 May!

Annex 1: List of participants

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Annex 2: Reports from Breakout Groups (1–4) – science topics

Breakout Group 1

Participants: Debbi Pedreschi (IEASG Chair), Lena Bergström (Sweden), Joël Vigneau, EOSG Chair, Brian MacKenzie (Denmark), Antonina Santos (Portugal), Andreas Kannen (Germany), Artūras Razinkovas-Baziukas (Lithuania), Alan Haynie, General Secretary

Current Science Plan feedback

Pros:

- Good to have one
- The priorities work well and should be retained- but should be themes
- Well written, clear and concise, easily readable (highly accessible) – and this should be maintained
- Clearly Interdisciplinary (keep and advance!)
- The Science plans (in series) document the evolution of ICES, and its ways of working and how they have changed. We like this and suggest the way we work is a good focus for the science plan rather than a to-do list of tasks

Cons

- We were not entirely clear who the audience is – is this for ICES, or for its clients, or stakeholders, or general public, or all the above?
- Tasks too specific. For an outsider it can be hard to see where to engage/where you fit in if the tasks are too specific. Broader topics give a better ‘hook’ for people to engage with ICES
- Tasks too specific. Makes it difficult to link to group activities to the plan.
- The task approach has not been very successful. Groups are not engaged with them, and SG Chairs have to repeatedly chase (or assign!) codes to groups to get them to be used!
- The Strategic Initiatives are not easy to map to science plan (covered by Strategic Plan?)

Suggestions and comments

- Move from defining “tasks” to “topics”, in order to have a more functional alignment between the Science plan and the work of the Expert groups
- Consider an additional theme on foresighting/horizon scanning/ emerging science
- We need to be careful of the number of topics to keep it manageable and increase uptake. However, it also needs to be comprehensive and inclusive. It was agreed that topics, which are much shorter than tasks, would be easier to engage with, even if they remained a large number. Topics can be defined by a single word or 2-3 words.
- Science plan should be better linked to users of ICES work and stakeholders to identify priorities (in an ongoing and iterative manner), rather than specifying priorities, which will evolve and change.
- Better link with other frameworks/documents e.g. the stakeholder engagement strategy and strategic plan (especially foresighting/emerging science aspects)
- Again, not clear where Strategic Initiatives fit into structure - specifically SIEDU – not a topic, but a cross-cutting theme
- Topics will help groups and individuals to more easily see cross-collaboration opportunities and synergies
- We suggest consideration of a three-tiered coding system: Themes, topics, methods (incl. tool development). This would facilitate collaborations in terms of both common methods (being used to address different topics) and common topics (being addressed using different methods)

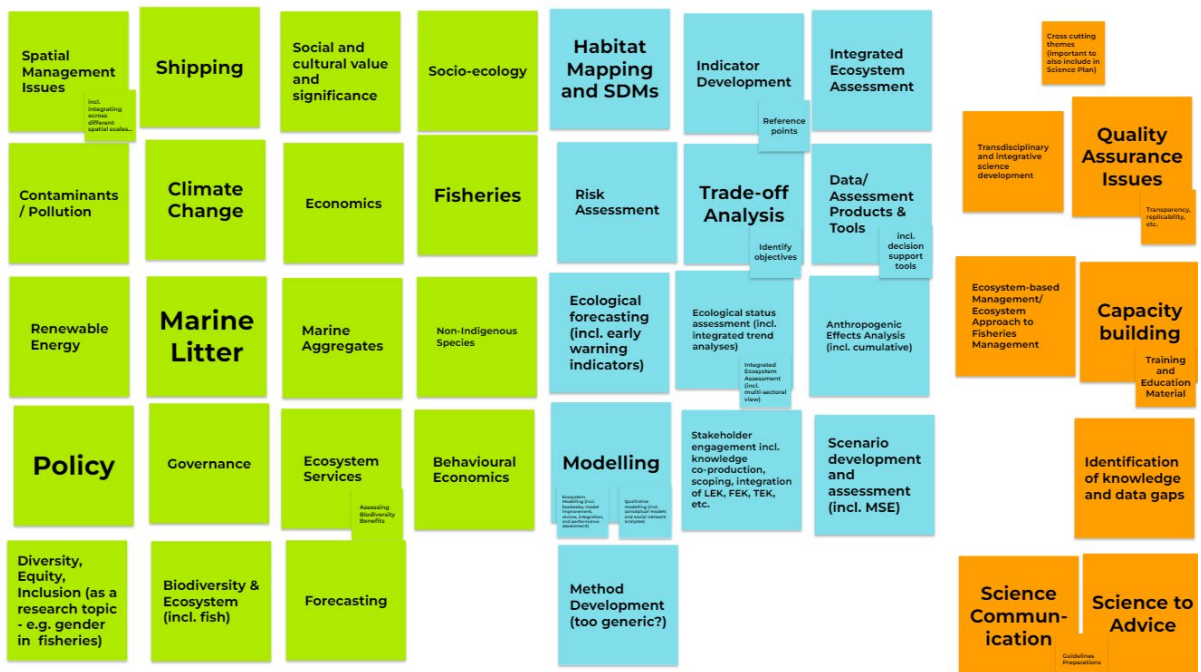
- Topics and themes do not need to be nested: instead a separate list that can be cross-linked better facilitates integration and cross-linking.
- Define the “topics” based on 1) what is already being done in the expert groups and 2) additions based on needs foreseen by SCICOM, ACOM and others to produce a combined bottom-up and top-down approach. Using a ground-up approach of mapping ToR runs the danger of focusing only on what we DO, but it is equally important to flag what we WILL DO.
- We need to maintain blue skies science topics (not just science for advice)
- There was recognition that the plan needs to be comprehensive, but it was also questioned if it was useful if it is all-encompassing..... (we could just say we do everything marine!) We need to avoid that the plan develops into a “catalogue of all types of marine science that can be done”, instead it needs to stand out as the plan of ICES.
- Recommendations for how to identify topics and select topics
 - Map key words from expert groups under all Steering groups
 - Harmonise wording (see suggestions on Debbie’s sticky notes)
 - Identify words that are shared by many groups
 - Omit words that are shared by almost all groups, ie those that are too generic to be informative (e.g. fish, ecosystem, etc.)



We also tackled some of the topics. We added to the HAPISG topics with ones relevant to IEASG (still missing the other SGs). We also amended some of the listed topics to remove the focus on analysis, and just include them as topics (e.g. Marine Litter Data Analysis -> Marine Litter). Those in yellow are HAPISG, those in blue are IEASG, those in pink are common to both (there may be more). This already illustrates how commonalities can be immediately identified using this approach. We also highlighted (in orange) cross-cutting themes/ ways of working, that should be included in the plan, but do not fit so well into this framework. Some topics were also highlighted as a part of another topic (smaller post-its).



If coloured by type (topics = green; methods/tools = blue, integrative issues = orange), it looks like this:



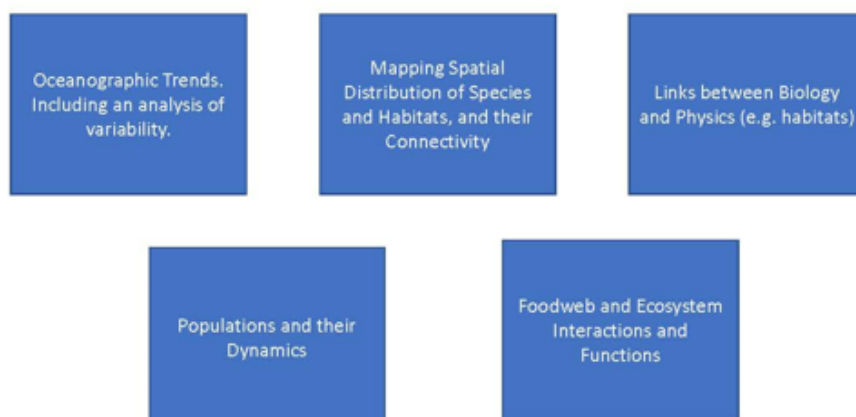
Breakout group 2

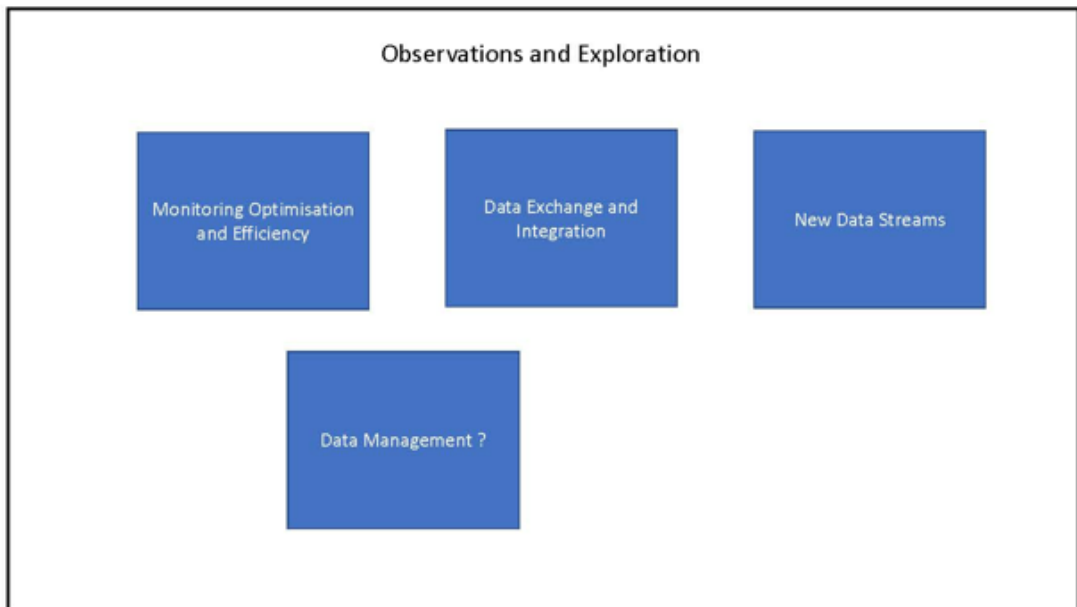
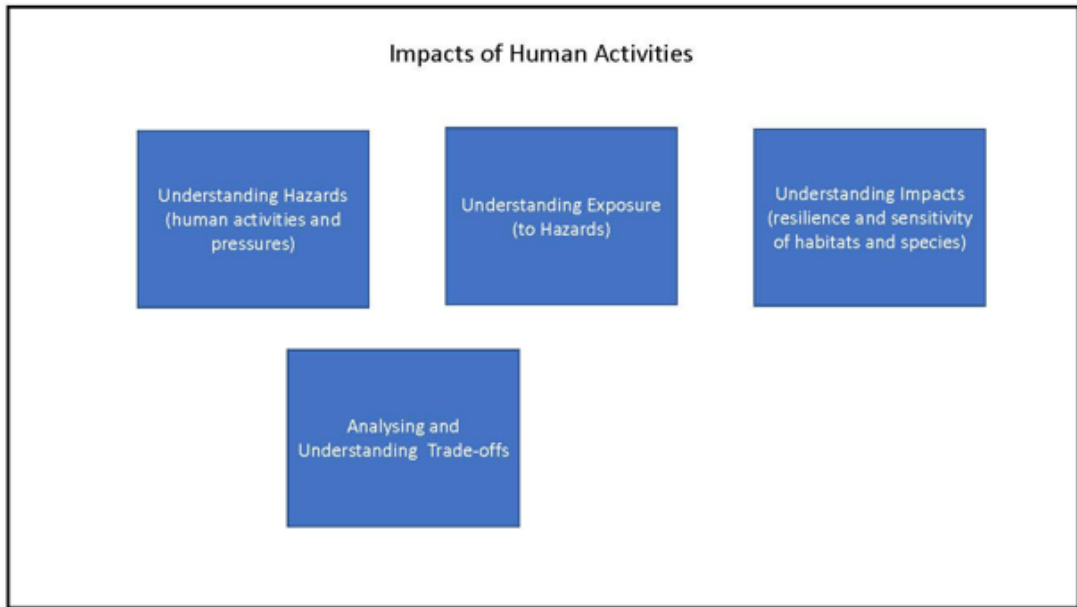
Participants: Andy Kenny (HAPISG Chair), Pierre Petitgas (France), Fergal McGrath (Ireland), Lidia Yebra (Spain), Evan Howell (USA), John Pinnegar (UK), Mark Dickey-Collas (ACOM Chair), Anders Nielsen (Chair of Training Group)

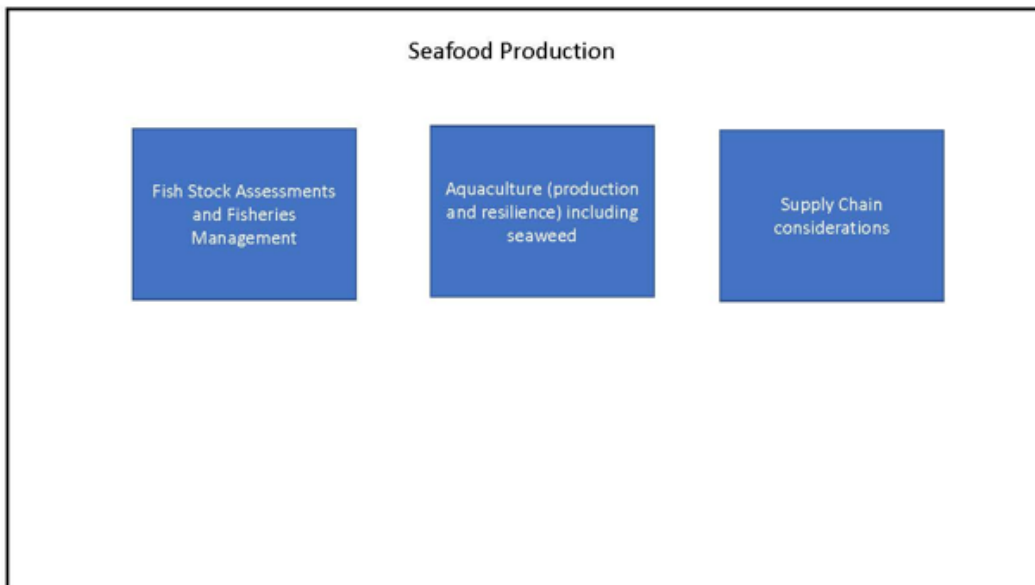
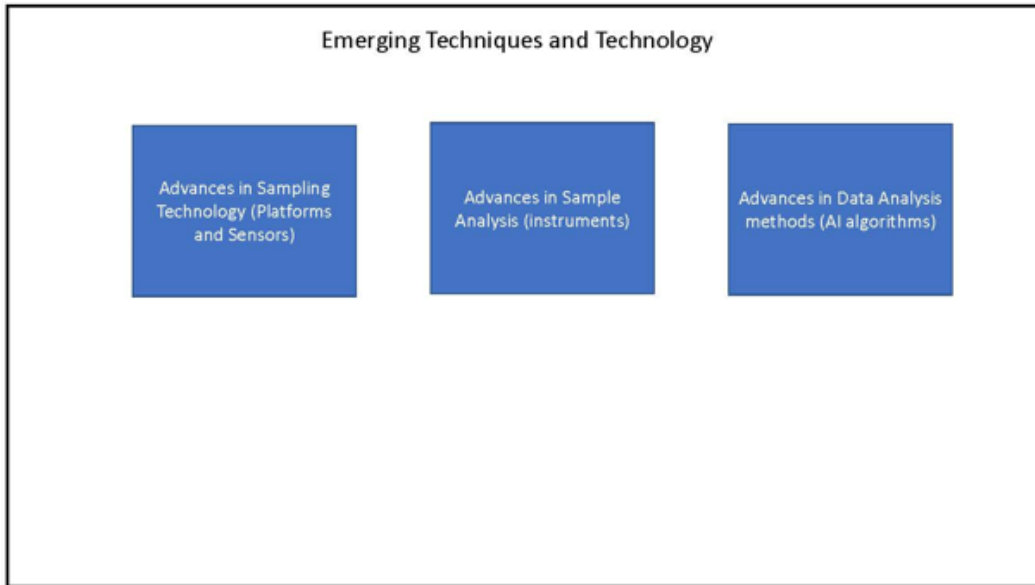
General Notes on Group 2 Discussions – Breakout Session 1.

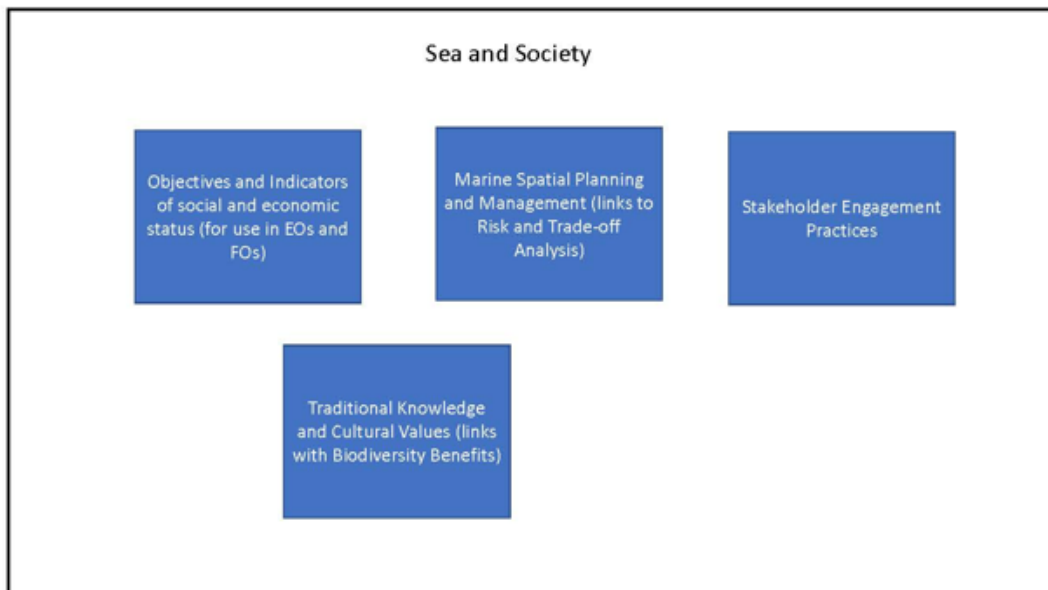
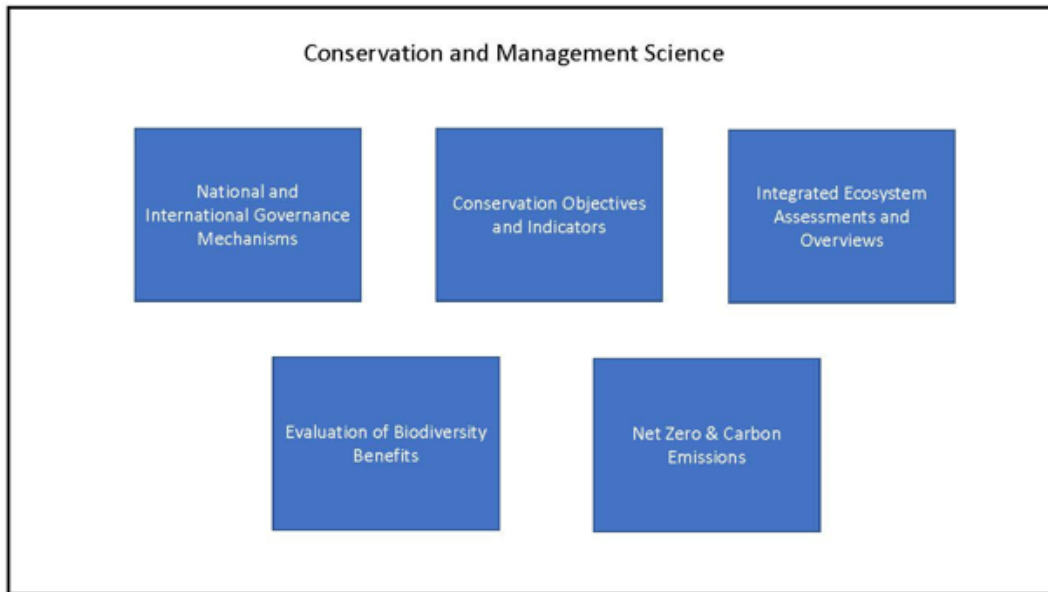
1. General agreement with existing scientific priorities, although they should possibly be referred to 'themes'. It was also noted that the text describing the 'themes' needs to be up-dated especially in relation to recognising the importance of climate mitigation and adaption needs. The 'themes' were considered to be sufficiently high level as not to need changing now or in the near future.
2. The sub-group agreed that the best use of time would be to look at the existing set of tasks to see if they could be described at a higher level making them more amenable for use as 'generic science topics' corresponding to the science 'themes'.
3. The intention was to identify generic science topics from the bottom-up based on what we already have in terms of tasks, and then compare the results with the science topics identified by HAPISG to see if there was any duplication or missing science topics that need to be highlighted – there was insufficient time available to complete this last step of the exercise.
4. What follows are the 'higher level' scientific topics identified by the sub-group by scientific 'theme' using the tasks already provide in the science plan. We reduce 41 Tasks to 27 more generic Science Topics.

Ecosystem Science – Understanding Ecosystems









Breakout group 3 (online)


Participants: Sarah Bailey (Canada, alternate), Hrönn Egilsdóttir (Iceland), Jens Rasmussen, DSTSG Chair, Katell Hamon (SIHD Chair)

The Task

Draft a list of science topics that can be used together with the Science Priority Areas to characterize the Expert Group ToR and can be used to report on the activities of Expert Groups in addition to the Science Priority Areas.

Can these be the same for all Science Priority Areas?

Do we need to add priority topics to the Science Priority Areas?



Science for sustainable seas

Science Priorities



Ecosystem science

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



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



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



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



Seafood production

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



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




Sea and society

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

Science for sustainable seas

4 Codes for mapping terms of reference and Annual Science Conference theme and network session proposals to the ICES science plan

Science plan code	Task linked to code	Associated priority in science plan
1.1	Assess and report on trends in ocean climate.	Ecosystem science
1.2	Improve understanding of the oceanography of semi-enclosed and shelf seas and the wider north Atlantic ocean.	Ecosystem science
1.3	Describe links between the physical and biological environment and their influence on production, biogeochemical cycles and other ecosystem functions, and consequences for the stability and resilience of ecosystems and the services they provide.	Ecosystem science
1.4	Describe connectivity within and among ecosystems, of many species and life stages at a range of spatial scales, and assess the ecological consequences.	Ecosystem science
1.5	Develop methods to map and predict the distribution of seabed and pelagic habitats and biodiversity and their sensitivity to environmental variation and change.	Ecosystem science
1.6	Develop and apply molecular, morphological and other taxonomic methods to describe and identify species.	Ecosystem science
1.7	Describe life histories, their links to the environment and responses to environmental change, including phenotypic and genetic adaptation.	Ecosystem science
1.8	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.	Ecosystem science
1.9	Conduct comparative analyses of the structure, function and dynamics of ecosystems in ICES regions and beyond.	Ecosystem science



HAPISG Ideas...

Table 1 Science Topics

1 Spatial Management Issues	11 Training and Education Material
2 Assessing Biodiversity Benefits	12 Shipping Data Analysis
3 Data/ Assessment Products & Tools	13 Trade-off Analysis
4 Habitat Mapping and SDMs	14 Economic Data Analysis
5 Fisheries Data Analysis	15 Indicator Development
6 Guidelines Preparations	16 Analytical Method Development
7 Quality Assurance Issues	17 Renewable Energy Data Analysis
8 Ecological Effects Analysis (incl. cumulative)	18 Marine Litter Data Analysis
9 Contaminants Data Analysis	19 Marine Aggregate Data Analysis
10 Climate Change Considerations	20 Non-Indigenous Species Data Analysis



Science for sustainable seas

Other Ideas...



- **Mapping current ToRs against science codes** to see which ones are being used and which are not
- See which science codes are **not** being used by EGs / ICES; ToRs are the important part
- Plan is quite general/broad; what is the real relevance of the plan?
- Are there ToRs that don't fit well? Have the ToRs of the EGs changed over last five years?
- Ecosystem Overviews now get input from different EGs
- How we work across groups is not highlighted – it is important/part of the richness of ICES
- **Data/Quality** as the foundation; **Expert Domains** in the middle; **Integration**/warehousing of knowledge; **feedback** loop
- **dynamic**; push/pull; vertical activities, transdisciplinary
- Science plan should match needs of our clients
- **Impacts assessment**, incl. **socio economic** as well as ecological; **Trade-offs**
- **Integration** of activities is missing; **transdisciplinary**; **ecosystem science** includes social
- Science priorities can be **silos**
- SGs can be silos – it is improving
- Is it (silos) the plan or the structure of ICES?
- Machine learning – need to interact with other EGs to identify questions and crosscutting work
- Human Dimension – provides context to Overviews (does not work in isolation)
- ICES previous plan had only 3 pillars – need to reflect what's going on, but not flood the plan with every possible activity

Science for sustainable seas

Other Ideas...



- How can ICES **respond** to shocks – impact of covid on surveys; Russia/fuel crisis – impacts on the environment?
- Is ICES equipped to answer acute questions?
- **Climate** is not explicitly represented – strategic initiatives should have clear linkages in the Plan
- How do we fit climate in the day to day activities? Missing opportunity of using SI to frame issues and guide activities that are important across EGs
- 30% by 2030 (COP15 - CBD) – how to approach it – should it be included/considered for next five years – touches on all activities
- Very **comprehensive/inclusive** Plan currently
- Links to codes may not be genuine – useful to map codes but also look at ToRs to identify weaknesses/areas where few groups are linked
- PowerBI – drill into the ToRs and use it as a tool rather than invent a new list of words
- Transdisciplinary work – **metrics about groups and specific tasks** (e.g. who is working on 6.2? Can they come to the WGMPA to ensure there is integration, standardization)
- What is the point of mapping ToRs to Codes if the info is not used?
- If we are going to come up with a new list, how will it be used?

Other Ideas...



- Science largely driven by ability to meet advisory needs
- Engaging with stakeholders (updates from MIRA and MIACO) to identify emerging needs
- Gaps and priorities – **push and pull** – existing topics to pull from and push up new issues identified from the science side
- Need to find a mechanism to highlight the **bottom-up** emerging issues
- **Mix of targeted advisory work as well as 'pure' science is a strength**
- Missed opportunity – make use of new codes/new words/mapping activities if we are going to go to the effort to collect it

Breakout group 4 (online)

Participants: Jonathan White (FRSG Chair), Ann-Lisbeth Agnalt (ASG Chair), Ellen Kenchington (Canada), Ivars Putnis (Latvia), Dariusz Fey (Poland), Sjur Ringheim Lid (DIG Chair), Henrik Nygård (Finland)

General comment

ICES approach to science can have two motivators:

- 1) curiosity driven
- 2) application driven

Science topics

- Science topics are useful and can be formulated to serve all (or most) Science Priority areas
- The list of science topics already covers a lot. The list should rather be condensed, than expanded.
- The Science topics listed in Steven's presentation can be identified also in the list of Science topics by Andy, however not a one-to-one match. "Biology and Ecology", however could well be a point of its own, as it encompasses basic knowledge relevant for many of the science topics.
- The science topics seem to be named to better describe WG activities than being science topics. For example, Shipping could be a science topic, whereas Shipping data analysis is a WG activity.
- To align more with the term Science topics, we would drop the words "data analysis" from the currently listed topics.
- One relevant topic not included, Risk assessment, and is added

List of Science topics:

1. Spatial management issues
 - components from "Spatial distribution" and "Marine management" from Steven's list fits here
 - 17. Renewable energy could be merged with this one
2. Assessing biodiversity benefits
 - unsure how to interpret "benefits" in this context. Is it related to ecosystem services, or assessing benefits for biodiversity?
 - "Long-term series" from Steven's list could fit here
3. Data/Assessment products and tools
 - 15. Indicator development could be merged with this one
 - components from "Operational products" and "Marine management" from Steven's list fits here
4. Habitat mapping and SDM
 - "Spatial distribution" from Steven's list fits here
5. Fisheries data analysis
 - could include also aquaculture, i.e. Fisheries and Aquaculture data analysis
 - "Fisheries" from Steven's list fits here
6. Guidelines preparation
 - is this a science topic?
7. Quality assurance
8. Ecological effects analysis
 - 19. Marine aggregates and 20. Non-indigenous species could possibly be merged with this one

9. Contaminants data analysis
 - 18. Litter data analysis could be merged with this one
10. Climate change considerations
 - “climate change” from Steven’s list fits here
11. Training and educational material
12. Shipping data analysis
13. Trade-off analysis
14. Economic data analysis
 - could be Socio-economic data analysis to better include the human dimension
15. Indicator development
 - merge with 3. Data/Assessment products and tools
16. Analytical method development
 - “modelling” from Steven’s list could fit here
17. Renewable energy data analysis
 - merge with 1?
18. Marine litter data analysis
 - merge with 9?
19. Marine aggregate data analysis
 - merge with 8?
20. Non-indigenous species data analysis
 - merge with 8?
- (21.) Biology and Ecology
- (22.) Risk assessment

Science Priorities

- current Science Priorities could be named Themes, and the Tasks could be priorities within the themes
- *Climate change* should be included as a Science Priority, or Theme

Annex 3: Reports from Breakout Groups (1–4) – emerging science needs

Breakout group 1

Participants: Debbi Pedreschi (IEASG Chair), Lena Bergström (Sweden), Joël Vigneau, EOSG Chair, Brian MacKenzie (Denmark), Antonina Santos (Portugal), Andreas Kannen (Germany), Artūras Razinkovas-Baziukas (Lithuania), Alan Haynie, General Secretary

Recommendations:

- Continue discussing! Iterative approach with continual review and feedback on topics to check if still relevant
- Continual review of socio-political situation and emerging science to identify new things to be included (what is changing that we need to respond to)
- Introspection and reflection (important, ongoing and iterative) - is what we are doing still relevant and useful?
- Continue and improve/widen dialogue between ICES, clients, and wider stakeholders - i.e. let us talk to each other!!! (access to DGMare, DGENv, etc.) so we know what's coming down the line.... acknowledge this is not possible on a widespread basis, but some strategic groups could engage (e.g. WGBESEO, WGSOCIAL, new group on policy labs)
- Suggestion to have an additional theme on foresighting / emerging science / horizon scanning – then all relevant topics can be cross-linked to this theme, and it helps to flag this as an activity of relevance to all groups.
- Perhaps this is something that we should include in the ToR of WGKRAKEN
- Not directly foresighting, but many of the things we discussed are a different approach and/or a new way of doing things. ICES (and the world!) is in a period of rapid change. Evolution / Change management approaches including integrating new ways of doing things (transdisciplinary and different forms of knowledge) etc. would be useful. (may relate to WGTRANS)

Topics Suggestions (broadly grouped)

Key message: Strong support for continued development on integration and expansion of ecosystem and climate aspects into the advice.

In the below, there are many overlaps between the broad topics (highlighted in grey)

Social aspects

- Crises and socio-political impacts on marine uses (e.g. *inter alia* fisheries)
- Response and resilience to drastic change
- Art of stakeholder engagement
- spatial representation of economic and social indicators
- Trans-disciplinary practices and integration (ecological, societal, legal)
- Scientific support for governance (e.g. High Seas Treaty)
- Trends in marine policy (including foresight)
- Power dynamics and how the influence policy / management decisions
- Continue and expand on integrating FEK, LEK and TEK
- Behavioural economics
- Study of decision-maker behaviour
- Agent based behavioural modelling (modelling actor behaviour)
- Societal implications of marine use change

- Natural capital: assessing and quantifying the economic (and cultural?) value of marine ecosystem services, and/or SEEA (UN approach)
- Adaptive human behavioural responses (e.g. around windfarm site use)
- Reconciling fishing with other anthropogenic activities (finding their place in the general picture)
- Marine Energy and society / coastal communities (repercussions as well as opportunities)

Trade-offs:

- particularly conservation-exploitation
- marine use space change
- better communicate different options
- better communication of CONSEQUENCES of management options
- better communication of uncertainty

Climate Change

- Energy transition in fisheries and aquaculture (emerging technologies, fuel efficiency)
- Impacts of fish extraction on carbon cycle
- Impacts of hydrogen extraction, incl. desalination (emerging industries)
- climate change impacts - extreme events
- ecosystem changes from climate change versus those from human marine activities (such as wind farms)

Marine Renewable Energy

- Ecological impact of windfarms
- Effects of OWFs on MPAs / MPA management
- Opportunities for and obstacles to coexistence of fisheries, MRE, and MPA
- MRE and opportunities to improve knowledge on the ecosystem (sensor equipment, ...)
- Social repercussions for coastal communities from effects of MREs on fisheries

Surveying and Data

- Integrating acoustic data for continuous surveys from vessels
- New data collection methods in scientific surveys to mitigate the impact on the seabed and on the living resources
- Integration of new data streams from new technology
- MRE and opportunities to improve knowledge on the ecosystem (sensor equipment, ...)

Tools, Methods

- Digitising advice, improve interaction ability
- virtual reality tools - better illustrate impacts and trade-offs
- Digital twin of the ocean – how to operationalise and use it!
- Robotics (sampling – and more?)
- Serious gaming approaches
- Expansion of Shiny tools and applications
- Machine learning and AI for big data analyses
- Innovation in stock assessment models (e.g. close-kin capture - recapture, ...)

Communication

- Improve visualisation and communication tools in general (see above)
- How to communicate increasingly complex concepts, topics, multi-sectoral and multi-actor views, and improved transparency on assumptions, uncertainty etc.all the while making is easier to understand!
- Better science communication - bridge the gap between knowledge and understanding.
- See trade-offs section.

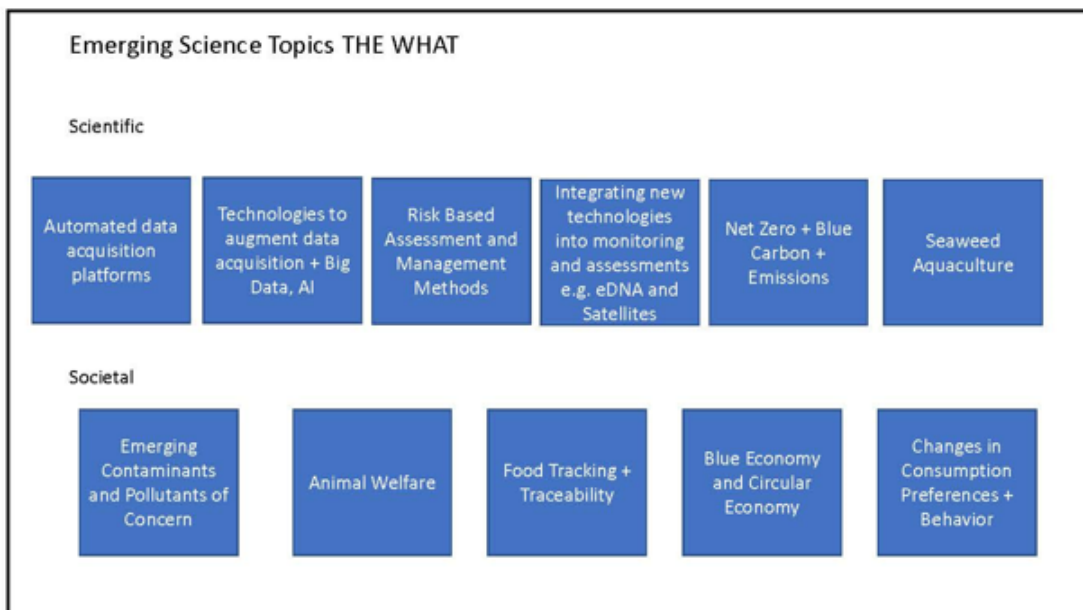
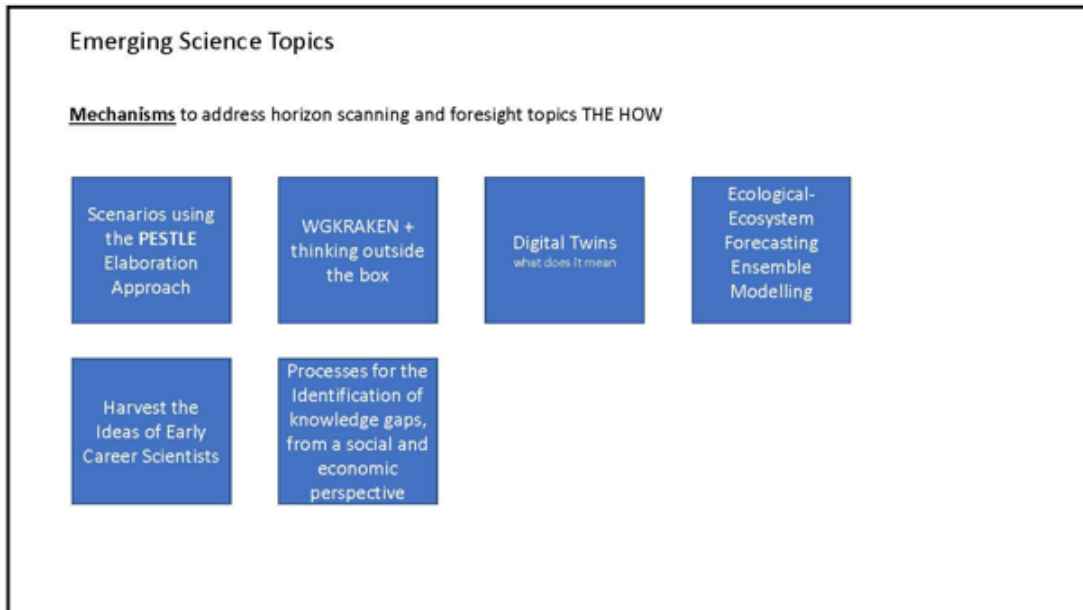
Miscellaneous

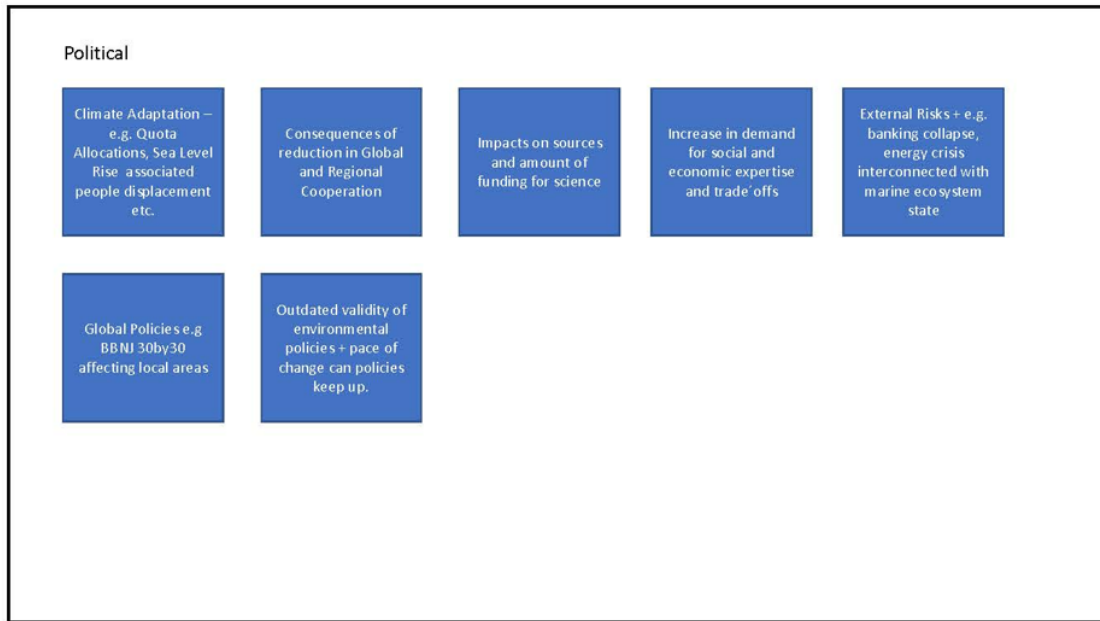
- BREAK THE SILOS - advice on a single sector should include its impacts on other sectors and vice versa
- Additional Sectoral Overviews, e.g. Shipping Overviews
- Cumulative (anthropogenic and non-anthropogenic) effects to the ecosystems [already a research topic but to be given high priority]
- Scale issues; surveying, management, priorities, policy, etc.... Integrating impacts (and cumulative effects) - perspectives change depending on view, amplified by climate change and changes in species distribution
- Connectivity (ecological, societal, legal) coastal and open sea
- Adaptive animal behavioural responses (e.g. around windfarm site use)
- Marine Protected Areas, trade-offs in implementation
- Microplastics
- Ecosystem Services
- Effects of human marine uses on the ecosystems capacity to provide ecosystem services
- Nature-based solutions
- Uptake of innovation and creativity in science
- Assess usefulness of some long-established approaches.....are they still relevant? Are there things we can drop?



Breakout group 2

Participants: Andy Kenny (HAPISG Chair), Pierre Petitgas (France), Fergal McGrath (Ireland), Lidia Yebra (Spain), Evan Howell (USA), John Pinnegar (UK), Mark Dickey-Collas (ACOM Chair), Anders Nielsen (Chair of Training Group)





Breakout group 3 (online)

Participants: Jens Rasmussen (DSTSG Chair), Côme Denechaud (SIIECS Chair), Sarah Bailey (Canada)

SCICOM members are asked to:

(1) think about mechanisms to be included in the Science Plan that will address the following question: What are the topics we should do and that should be included in the next plan?

- Within SG – through SG Chair
- Cross-cutting mechanisms (across SGs)
- Feedback loop between advice producers and data producers - Workflow / data flow needs - QA/QC of data feeding models/advice
- Mechanism for adding/evaluating new methods/improving methods/mixed methods
- Early careers and space for new ideas/methods
- Workshops/Pilot projects – integrated/multidisciplinary, rather than siloed EGs
- Academic collaboration

Horizon scanning or foresighting need to be part of our process to ensure that emerging topics, scientific as well as societal and political, are identified. SCICOM is (2) also invited to list topics that answer the above question.

- **Machine learning**, automation, deepL, AI – integrating use in new areas and challenges of using/groundtruthing/training
- **Big Data** (storage and redundancy of datasets kept by multiple users)
- **Autonomy** – survey implications of AUVs – change/tradeoffs in resource deployment and data quantity/type (quality); gain high spatial/temporal resolution but loss of detail/knowledge from physical sampling (**evaluating the relevance of more data** (data volume/precision with fewer dimensions)
- SI to bring in new expertise?
- Need to test and **evaluate the benefits/tradeoffs** of new technology against data needs – identify the best tools; challenge the idea of ‘improving’ traditional methods vs. adding on other methods
- Impacts of shipping; spatial analyses (GIS); access to higher resolution data (temporal/spatial) supporting higher resolution assessments

Horizon scanning or foresighting need to be part of our process to ensure that emerging topics, scientific as well as societal and political, are identified. SCICOM is (2) also invited to list topics that answer the above question.

- **Role of ICES?** Data provider/partner rather than host of data? **Safeguarder of data and standard methods**
- **Addressing misinformation** (chat gpt) and 'blackbox' effect; poor quality analyses that appear reliable
- Integration/collaboration of biology and computer science – identifying questions/problems and assessment of/context for results
- **Safe harbour of expertise** – taxonomy and knowledge needed as reference databases for Omics/training of AI; Importance of **baseline research**

Breakout group 4 (online)

Participants: Ann-Lisbeth Agnalt (ASG Chair), Ellen Kenchington (Canada), Sjur Ringheim Lid (DIG Chair), Henrik Nygård (Finland), and Jonathan White (FRSG Chair).

Climate change:

- Needs to be a consideration in all of our work and ICES advice
- Tipping points
- System changes
- Assemblage shifts
- Species movements
- New fisheries
- Conservation developments
- Aquaculture
- Area based management changes/shifts

Carbon capture:

- Aquaculture and low trophic production
- Culture for restoration (e.g. coral restoration; mangrove restoration; sea-grass)
- Carbon cycling – re-mineralisation

Information Technology:

- Artificial intelligence
 - Loss of transparency – questions of replicability from machine learning, where the method is not visible – “back-box science”.
 - “Benchmarking/ Validation/ Ground truthing of such needs to be investigated to objectively qualify results – Guidelines of AI/ Machine learning.
 - e.g. Otolith age reading
 - Scallop abundance estimated
 - Snow crab abundance estimated
 - *Nephrops* burrow estimates
 - VME
 - What is the necessary human intervention levels to QC automated counts and is it necessary to incorporate correction factors.
- Automated realtime data and Big data – how is it processed, data flows (linked with AI)
- Edge computing
- Digital Twins

Marine Spatial Planning:

- VME
- Renewable energy/ offshore wind farms
- Offshore BBNJ
- Cumulative impact evaluation
- Climate change

Trans-disciplinary work:

- This covers much of how we work, hope to work in the future, linking with many aspects of our work, including Spatial management off-shore wind farms, and EBM (Risk Assessments).
- Cumulative impact evaluation

Greening the fleet and fisheries:

- Fishing tracking
- Automated vessels USVs – fish finders
- Bycatch use and offal use process through to fish-feed
- Secondary products oils – human products
- Shell processed for re-use (bivalves/ molluscs decapods)

Meso-pelagics:

- Food security – primary/ secondary
- Biodiversity
- Ecosystem services
- Benthic-pelagic coupling
- (Consider collaborating with PICIES and work undertaken in the Pacific)

Ecosystem processes, modelling and Ecosystem Based Management:

- What don't we know
- How to join what we do know
- Diverse sources of information
- What is important – What do you want to know?
- "Total Production Cap" concept – a "system balance metric" in NAFO (Andrew Kenny!?!)
targeted metric for your modelling (EQSIM or other)
- Ecosystem services
- Cumulative impact evaluation

Scales Patterns and Processes – Observation scales

- Matching sampling tools, scales, and ecosystem patterns and advice
- Connectivity issues
- Modelling assumptions
- Phenology – timings and linkages, connective across ecological processes and trophic levels.

Assessing impacts of changes in social and political aspects of society

- Covid impacts (sampling/ markets human activities in general)
- Noise levels
- Anthropogenic light – coastal
- Political drivers:
 - Data collection
 - Societal demands
 - Indigenous people's interactions
 - Wind farms
 - Russia-Ukraine impacts on the marine and science and ICES activities
 - Brexit
 - Nordstream gas pipeline

Annex 4: List of actions and decisions

Action/Decision	Section	Deadline	Responsible
Action: SCICOM Chair noted the comments in relation to the recruitment of new chairs for expert groups. This issue will be tabled at the next Steering Group Chair's meeting in May 2023, and the results will be reported back to the SCICOM September meeting.	5.1	May–September 2023	SCICOM Chair
Decision/Action: SCICOM endorsed the establishment of the new Steering Group on the Human Dimension (pending finalisation), and the SIHD Chair will be invited to the next Steering Group Chair's meeting in May to discuss further the transition process and transfer of working groups, as well as consolidating the SG draft resolution. Once finalised, the draft resolution will be posted on the Resolutions Forum for approval.	6.3.1 Proposal to change SIHD into a Steering Group	May 2023	SCICOM Chair
Action: The draft resolution for the Strategic Initiative on Graduate Education will be posted on the forum for official approval by SCICOM in the coming weeks after the SCICOM March meeting.	7 Strategic Initiative on Education	May 2023	SCICOM Chair/Secretariat
Action: 'Hybrid meeting format' to be added as an agenda point for SCICOM September meeting.	8 Report from WGCHAIRS	September 2023	SCICOM Chair
Action: SCICOM is invited to nominate candidates for the SIPG Chair	13.1 ICES Science Impact and Publication Group	September 2023	SCICOM members
Action: Training Group is asked to analyse the courses that have been run in the past to see if they reflect the Science Plan and if they are focusing on certain areas only, and if there are any gaps where courses would be needed in the future.	13.2 ICES Training Group	September 2023	Anders Nielsen (Training Group Chair)
Decision: SCICOM expressed strong support and approved the ShinyApp guidelines proposal.	13.3 ICES Data and Information Group	-	-

Action/Decision	Section	Deadline	Responsible
Decision: SCICOM acknowledged and appreciated the work and time that went into the EBM framework, and there was overall support and approval from SCICOM to go forward with the work on the framework. Additionally, SCICOM approved the proposal from ACOM on putting forward the diagram/schematics to the ICES in-house graphic designer. All SCICOM members were encouraged to contact Debbi Pedreschi and support the work and the group.	14 Follow-up on EBM Framework	Ongoing	SCICOM members
Action: SCICOM members were asked to send the contact details of their communications team by the end of March to ICES Communications team <communications@ices.dk> team so they can be invited to Bilbao in September.	15.2 Communica-tions	Com-pleted	SCICOM members
Actions: - Act on recommendations, while keeping in mind current challenges and limitations on finding new chairs. - Continue to develop DEI training needed for chairs.	19 Gender Equal-ity Plan and DEI	SCICOM Sep-tem-ber meet-ing	DEI Subgroup
Decision: The draft resolution for the 2025 Symposium on Future-proofing Surveys: Integrating Probability and Non-probability Methods in Fisheries was supported by SCICOM, including EUR 10,000 for Early Career Scientists, IJMS, and Secretariat support for conference website.	20.1 ICES cospon-sored symposia	-	-
Action: Present all the projects that we currently have at the next SCICOM meeting to identify gaps and areas in which we should be involved.	20.2 Projects - Project Engage-ment Strategy	Septem-ber 2023	Wojciech Wawrzyn-ski
Action: SCICOM was encouraged to consider potential candidates for scientific cooperation, keeping in mind that the basis for initiating coop-eration agreements should always be concrete ac-tivities, such as joint workshops, working groups or symposia, and to forward any suggestions to SCICOM Chair.	21.4 Other UN Activities	Ongoing	SCICOM Members
Actions/next steps: SCICOM Chair will bring the outcome of the SCICOM breakout groups to the Science Plan Evaluation Subgroup. The possibility of establishing new strategic initi-atives on offshore winds and artificial intelli-gence will be tabled at the next Steering Group Chairs meeting.	23 Plenary discus-sion on Breakout 2	May– June 2023	SCICOM Chair, SCICOM members

Action/Decision	Section	Deadline	Responsible
SCICOM members are requested to document national science and policy priorities to identify common themes. This request will also be given to Council Delegates. A template will be provided to structure the input.			
Decision/Action: As an outcome of a productive discussion, the proposal was adjusted, and it was agreed that merit award categories will now consist of two awards for best presentations and two awards for best posters. Early career scientists will be considered within these categories. The ICES website will be updated accordingly, and the text will be revised to explain the new merit award categories clearly. If needed, the Award Selection Group will operate with a degree of flexibility in their award categories to expand merit awards categories further. Suggestions included considering an award for best debut presentation and poster. Further recognition of shortlisted early career candidates should be included in the presentation.	24.1 Proposal to change merit award categories	June 2023	Secretariat
Decision: SII ECS will nominate a host for ECS keynote Marine Cusa. Pierre Petitgas was appointed host for Patricia Miloslavich, Scientific Committee on Oceanic Research (SCOR). SCICOM did not appoint a chaperone for the local Spanish keynote speaker, Ángel Borja, since the keynote will take place during the opening ceremony.	25.1 Chaperones for keynote speakers	-	-
Decision: Antonina Santos (Chair), Evan Howell, Joël Vigneau, John K. Pinnegar, Andrew Kenny, Brian R. MacKenzie, Mette Skern-Mauritzen, Katell Hamon, Jos Schilder, Lidia Yebra, and an ACOM member (to be announced), were appointed for the 2023 ASC Award Selection Group.	25.2 Appointment of Award Selection Group for ASC 2023 (tasked to select the ASC merit awards)	-	-
Decision: John Pinnegar (UK, Chair), Andrew Kenny, Brian MacKenzie, Jos Schilder, Mette Skern-Mauritzen, Joel Vigneau, Lynda Webster (UK), ACOM Chair, SCICOM Chair, Head of Science, volunteered to be members of the 2024 ASC Group doing the pre-selection of 2024 theme session proposals for final decision of SCICOM.	26.1 Appointment of 2024 ASC Group (chaired by John Pinnegar, SCICOM member, UK)	-	-

Action/Decision	Section	Deadline	Responsible
Decision: Jos Schilder and Artūras Razinkovas-Baziukas offered to convene the contributed papers session at the ASC 2024.	26.2 Conveners for contributed papers session	-	-
Action: Ideally three conveners are sought for the contributed papers session and it would be appreciated if an additional convenor from ACOM could be found. SCICOM and ACOM chairs to communicate the call for volunteers to ACOM.		September SCICOM meeting	SCICOM Chair
Action: Post the 'out of the box' network session for the ASC 2023 on the SCICOM Forum with Debbi Pedreschi, Marie-Julie Roux, Katell Hamon and Artūras Razinkovas-Baziukas as network session convenors.		July 2023	IEASG Chair