

Science Committee Summary Report for Council (2019)

Background

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

1 Introduction

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

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

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

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

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

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

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

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

2 Science Plan implementation

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

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

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

The seven ICES science priorities are:

1. Ecosystem science

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

2. Impacts of human activities

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

3. Observation and exploration

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

4. Emerging techniques and technologies

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

5. Seafood production

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

6. Conservation and management science

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

7. Sea and society

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

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

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

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

3 Supporting expert groups

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

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

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

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

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

4 Growing scientific engagement

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

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

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

5 Science communication

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

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

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

6 ICES Scientific Reports

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

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

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

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

7 Linking science and advice

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

8 Annual Science Conference and future scope of this event

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

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

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

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

9 International collaboration

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

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

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

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

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