ICES SCIENCE COMMITTEE

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SCICOM Progress Report 2015

An annual report to the ICES Council to describe the development and implementation of the ICES Science Plan

ICES International Council for the Exploration of the Sea

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Contents

1 Introduction (SCICOM Chair)

The SCICOM annual report to Council reviews the activities of the Science Committee and its science structures to implement the ICES Science Plan (2014–2018). The main responsibility of SCICOM is to enable future marine science that is relevant, credible, dynamic, and responsive in support of the ICES Strategic Plan.

The structural mechanisms that SCICOM utilizes to deliver the Science Plan are:

- Science Steering Groups – the expert groups are organized within steering groups to manage work and deliver the goals of the science vision. The portfolio of steering groups was renewed with the new Science Plan and now contains four science groups and one benchmark group that ensures the transfer of science to advice.
- Strategic Initiatives – are topical and crosscutting to introduce innovative and interdisciplinary thinking. The strategic initiatives include partnerships that strengthen ICES in a global context.
- Operational Groups – are supportive to the scientific needs of the organization and develop data policies, training, publication, and communication strategies and products.
- The Annual Science Conference – a major marine scientific event which enables ICES community to meet and network and new participants to be brought into ICES activities.
- The ICES Science Fund established 2014.
- ACOM/SCICOM Leadership meetings 4 times yearly. An important tool in strategic communication and planning of scientific developments that are of importance to current and future advice.

This document presents a summary of the establishment and achievements in the further implementation of the Science Plan. Reports from SCICOM Steering Groups, Strategic Initiatives and Operational Groups are included as well as advancements in scientific cooperation and the highlights from the Open Sessions at the ASC.

2 Science Development – The ICES Science Plan (SCICOM Chair)

2.1 Summary of SCICOM work

SCICOM is advancing the integrated understanding of marine ecosystems via activities in the Expert Groups, Strategic Initiatives, Symposia, Conferences and the ICES Science Fund Projects. The science performed is supporting the goals and driving the implementation of the ICES Science Plan (ISP) forward.

The Goals are implemented via the Science Plan and its 31 Priority areas. The Science Steering Groups (SSG) and affiliated Expert Groups each address an assigned part of the priorities and a more detailed description of activities are found under each SSG report below

SCICOM has documented the progress of the Science Plan via a mapping exercise . The course of action from Expert Group and their ToRs to implementation of a Science Prioritiy area underwent an extensive mapping exercise and is described in Section 2.2 1.

The mapping shows that all the Science Priorities are covered from good to very well. More importantly the mapping gave the Expert Groups the opportunity to identify their position within the ICES Science landscape and contemplate their contribution to the Strategic plan. The mapping is also forward looking and gives the Expert Groups an opportunity to identify where they would consider expanding their Terms of Reference into additional work related to the implementation of ISP.

Further implementation of ISP would include strengthening strategic areas. For this purpose the Science Fund is an important tool that have been in force 2014 and 2015 and is described in 2.4. The ICES Annual Science Conference (ASC) is carefully shaped towards covering not only the areas where ICES shows an excellence but also where we would like ICES to take an active role. More detail on ASC progress is found in section 3.8 and 5.4.

SCICOM is acknowledging the importance of cooperation with external partners and have actively developed connections wich has lead to several products and processes described in more detail under 2.3 .

The work of SCICOM and its meetings have been changed during 2015 to be more strategic and forward looking. Recurrent tasks are done intermittently and via the SCICOM Forum established in 2015. The response to new resolutions is flexible and swift not to lose any opportunity of development. The SCICOM meeting agendas have as an consequence of the new and more effective working method more time for strategic discussion, which is highly appreciated by the members.

A Bureau proposal for a reform of ICES Strategic Leadership and Science Leadership has been evaluated. A response to Bureau with SCICOM views and suggestions for development has been presented. SCICOM is given responsibility to structure the implementation and leadership for the Strategic Plan.

2.2 Progress and Implementation of Science Plan

2.2.1 Performance Measures

A mapping exercise was made by SCICOM Chair and SSG Chairs to map all EG ToR towards the priorities in the Science Implementation Plan.

The purpose was to identify strengths as well as finding the gaps while investigating areas where the EGs could consider new ToRs in relation to the Science Priorities. The

exercise gave a clear picture where we are and what activities need to be started to further advance the Science Plan. The design of the mapping also gives a quick link to where effort on a particular science priority is available. Action can be taken directly together with current EGs without starting new groups. A very important part of the work is that it enhances the participation of EG chairs in the ICES strategic work. The mapping gave EGs a deeper insight in the ICES Strategic Plan and understanding of their position and role in the Implementation Plan.

A spreadsheet including the 31 priorities of the Science Plan was circulated to the Expert Group chairs. The document collected feedback on what priority areas the EGs currently fulfil and also a brief summary on future work related to the priority areas that would be considered for the EG.

The mapping shows that all Science Priorities are covered in the Implementation Plan. A very useful result was that the Science Priorities that were assigned to the Steering Groups are more crosscutting than expected, especially between SSGEPD and SSGEPI. Due to the crosscutting coverage of Science Priorities the actual implementation is stronger than previously shown in the performance measurement of last year.

Science Plan priority	TOTAL Current ToRs	TOTAL Future ToRs
1. Assess the physical, chemical and biological state of regional seas and investigate the predominant climatic, hydrological and biological features and processes that characterise regional ecosystems	14	3
2. Quantify the nature and degree of connectivity and separation between regional ecosystems	10	4
3. Quantify the different effects of climate change on regional ecosystems and develop species and habitat vulnerability assessments for key species	9	8
4. Understand the influence of climate impacts across a range of temporal and spatial scales, from local to global and from seasonal to multidecadal and identify indicators of climate driven biotic responses and forecast trajectories of change	8	4
5. Quantify the role of structural and functional diversity in marine ecosystems in providing stability and resilience	6	3
6. Investigate linear and non-linear ecological responses to change, the impacts of these changes on ecosystem structure and function and their role in causing recruitment and stock variability, depletion and recovery.	8	2
7. Develop end to end modelling capability to fully integrate natural and anthropogenic forcing factors affecting ecosystem functioning	4	3
8. Define and quantify north Atlantic Ecosystem Goods and Services, model their dependence on ecosystem processes and habitat condition and their social, economic and cultural value.	7	2

Figure 1: Detail from the overview of Science Priorites and related Terms of Reference as documented by EG chairs in a mappings exercise how the Science Plan is implemented. Full excel document is available as a background document to the Council.

The mapping will be used in future to develop new ToRs and new initiatives, e.g theme sessions or other appropriate activities selected by the Steering Group chairs to further implement the Science Priorities. The mapping is seen as a development of qualitative (gut-feeling) Performance Measurement.

SCICOM found the mapping very useful to establish where we are, but also as a tool on how to move forward. The following ideas were raised as input to the mapping exercise:

- More is not always better in terms of how many ToRs cover a SP. SSG Chairs could have a role in steering this more. Further information can be extracted from the mapping. This is a relevant job when evaluating the multi-annual ToRs and extending Groups.
- Activities undertaken by some EGs are related to data collection, analysis and review, not so obviously connected to SP but that does not imply they are not doing an important job.
- Suggestion to expand the mapping exercise to include relevant ACOM groups, Strategic Initiatives, Science fund and ASC activities.
- The presence of secretariat staff and/or SSG chair when EGs are developing their next 3-year terms would be really useful to help them shape it to be in line with the Science Plan. We could also encourage the groups to choose the venue of the SSG chair for the last year of the Expert Group meeting.

Bureau asked for some examples on how the mapping could track actual ToRs/activities from an EG to a Science Priority. The amount of information is massive but can easily be extracted and summarised. Note that the below examples do not reflect the complete activity of the EGs but is a brief example of how a Science Priority can be linked to a group's existing ToRs and will contribute to creating future ToRs..

ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV)

SP1-assessing biological communities nearshore, as well as investigations of climate and biological drivers. SP 10 monitoring work meets this request especially in the Arctic SP 12- work is being done to develop ballast water management systems. **Future ToRs** SP 1- quantify the connectivity between ecosystems due to anthropogenic vectors

Marine Chemistry Working Group (MCWG)

SP 13- measures contaminants, eutrophication and chemical aspects of marine litter of relevance to MSFD SP 25 Working together with ICES Data Centre and OSPAR MIME. SP 28 developing Passive Sampler systems, SP 31 constantly rewriting and amending guidelines for sampling and analysis of POP, metals and chemical Oceanography parameters

Working Group on Marine Sediments in relation to Pollution (WGMS)

SP7- use of hydrodynamic modelling to explain spatial distribution patterns of contaminants in sediment and inform on sources and relate to MSFD measures

Working Group on Spatial Fisheries Data (WGSFD)

SP13 –informative work on DCF environmental indicators 5, 6 and 7 as well as MSFD descriptor 6. SP31- best practices document for VMS/Logbook data

Working Group on Fisheries-Induced Evolution (WGEVO)

SP6-developed a framework for Evolutionary Impact Assessement that allows investigating eco-evolutionary changes in fish stocks and their utility in terms of ecosystem

services. SP14- specific case studies to evaluate the impact of fisheries-induced adaptive changes on fish stocks utility. **Future ToRs SP4** developing methods to predict evolutionary changes in fish life-history traits induced by future climatic changes

Working Group on Zooplankton Ecology (WGZE)

SP 10- Revise lists of currently suggested (e.g. by OSPAR, HELCOM, and EU Member States) zooplankton indicators for biodiversity and foodweb status of relevance to MSFD **Future ToRs** SP2- will be able to quantify the nature and degree of connectivity and separation between regional ecosystems SP 5 Quantify the role of structural and functional diversity possible in future, based on data collected in the Zooplankton Status Reports

The mapping should be considered a living document of great informative potential. The Expert Groups that have not responded should be approached again to extend the information available. In future the mapping will help to develop new ToRs, new initiatives, e.g theme sessions or other appropriate activities. Based on the outcome of the mapping exercise the SG chairs and SCICOM chair will discuss strategic steps to take to implement the Science plan further.

The mapping in form of an excel spreadsheet is available as background document to the Council.

2.2.2 Science and IEA development

The scientific part of IEA is quite advanced even though the IEA framework and cycles are assessed to be at different levels of maturity. A wish to have a symposium with all groups has been expressed, which is congruent with the planning from the CSG MSFD wish to advance the IEAs and link to MSFD activities and other advice-related products. The aim would be to share experiences, present results from each group and discuss scientific products such as:

- Produce a manuscript on the issues surrounding IEA and the way forward – covering both ecosystem and human wellbeing, possibly as a food-for-thought paper in ICES JMS.
- Develop a position paper on a possible future H2020 project call in the arena of IEAs. The EC is currently consulting with member states, on future calls and this would be an ideal time to make such an approach.

Another part to be developed within the IEAs is the "social dimension". A Strategic Initiative on Human Dimensions (SIHD) has been established. SIHD would have the function to gather all "social dimension" activities. WGMARS is suggesting setting up "Stakeholder interactions case studies" as a way to involve the stakeholders. Case studies will be evaluated and analysed. Very important is the delivery of IEA science to advice. There is still a functional gap between the science groups and advice process. In the Baltic ecoregion WGIAB has created a daughter group (WKDEICE) to provide the advice products and avoid losing momentum of the scientific work in WGIAB. Other established frameworks that tie the science and advice together are addressing IEA in the Irish sea (WKIRISH), IEA and MSFD products in the Celtic sea (MSFDEMO), ecosystem considerations to support Ecosystem Based Fisheries Management (WKSIBCA)

The general approach is to move away from single Expert Group with a long-term planning for a framework of progressing events towards an IEA.This includes the much needed involvement from stakeholders, appropriate data calls and disseminations via symposia.

2.3 Scientific Cooperation

ICES is committed to provide the required scientific knowledge in collaboration with strategic partners. To study and understand the Marine Ecosystems we need an inclusive and inter-sectoral approach. For this reason SCICOM has started a more active outward looking approach in finding the strategic partners.

Below follow some examples of the work hitherto done on scientific cooperation. However SCICOM is planning to enter a phase of a strategic approach to find the appropriate partners. A review of ICES most strategic cooperation partners is planned.

PICES is an important scientific partner for ICES. The cooperation is productive and longstanding. PICES shows a true dedication to the ICES framework by attending the ICES ASC annually to exchange experience and review areas of importane for cooperation. The discussion in ASC 2015 included new roadmaps for currently shared groups (SICCME) and outlining potentially shared groups on ocean acidification and carbon seqestriation, as well as co-sponsorship of sessions at annual conferences on plastics/micro-plastics and ecosystem services in the context of pro-actively supporting the forthcoming sustainability goals. Developing the P/ICES Early Career Scientist Conference (Korea in 2017) will kick-off soon. Discussions about the next climate change symposium have begun. ICES and PICES could consider issuing joint press releases on important topics such as climate change in advance of the upcoming COP. Highlights from the Brazil meeting might be appropriate as content. New mechanisms for ICES representation in PICES work must be considered to maintain the productive collaboration

The cooperation with the Arctic partners has intensified rapidly during 2015. The ICES/AMAP/PAME/CAFF Workshop on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (WKICA) was very successful and will continue as a Working Group with multi-annual ToRs. Other scientific areas of mutual interest have been discussed including Ocean Acidification and Microplastics.

The cooperation with ICCAT has increased both on Advice and Science side. The Science Expert Group WGMG has suffered from low participation and loss of the current chair. The group worked by correspondence in 2014. The problem has been helped by organizing a co-operation with the ICCAT methods group. A resolution for a new joint methods group with ICCAT is prepared for approval by SCICOM in 2016. The cooperation with ICCAT will also result in a forum to bring regions together worldwide to compare developing methods and test new ideas. It will also be able to lobby for investment in research into stock assessment methods. ICES and ICCAT have already a well-established cooperation in the Training Programmes and advances by modelling experts will be effectively communicated to practitioners through training programmes. A coordination of expert participation in relevant meetings of relevant groups such as WGEF, WKSHARK and the benchmark process is planned between ICES and ICCAT.

SCICOM Chair and HoS attended the JPI first conference. It was noted that JPI has initiated two pilot actions in which ICES potentially can add value:

- Multi-use of infrastructures for monitoring
- Ecological aspects of micro-plastics in the marine environment

SCICOM is willing to discuss how to best support JPI Oceans and identify where links can be established for future collaboration. JPI Oceans has indicated that they will invite SCICOM Chair for a discussion on further collaboration.

The SCICOM Chair was invited to the Swedish institute for the Marine Environment (HMI) to give a presentation on ICES Strategy Plan and Scientific Implementation. HMI is a national center for interdisciplinary analysis and synthesis. On the Government's behalf they provide a coherent description of the environmental status of the seas around Sweden. A strategic area for HMI is called "People and the Sea" it addresses the opportunities and constraints for the development of maritime governance, knowledge production maritime communities and maritime regions. HMI's activities are based on collaboration among four universities: Umeå University, Stockholm University, Linnaeus University and University of Gothenburg. The participants were especially interested in the possibility to engage in ASC and Working Groups. HMI has as a consequence of the active collaboration taken active role in the development of SIHD and provides a co-chair, Eva-Lotta Sundblad.

Further outreach to partner collaboration included the Project Market Place at the ASC 2015 and an invitation to partners to submit theme sessions proposals (including in new formats (to ASC 2016).

The SCICOM Chair was invited to the European Marine Board Open session "New paradigms in science-based fisheries management" and subsequent discussion on EMB Science activities. The meeting took place in Croatia, 14–16 October.

2.4 Science Fund

The importance of the ICES Science Fund can be evaluated on different aspects of building a foundation of science around integrated ecosystem understanding: contribution to the science plan, visibility of ICES in the scientific community and the general public and scientific impact of the results and products.

SCICOM finds the Science Fund a valuable addition to the implementation of ICES Strategy. The character of seed money to kick-off research initiatives is emphasized for the Science Fund. The Science Fund makes ICES both a research performing and research funding organisation, and this enables ICES to act as a catalyst for the development of marine science as well as a potential to engage in debate and engagement within ERA-NETS. Science Fund projects can be included in the mapping of how we meet Science Priorities

SCICOM has assessed the Science Fund projects to give overall good to extremely good value for money. It is important that Science Fund is a long-term initiative. A progress in the direction of e.g sponsorship could be a way forward or collaboration with other funding mechanisms.

The Science Fund 2014 projects (8) reported by 1 July except one that was given an extended deadline and reported 1 August. SCICOM established a process for evaluating reports from Science Fund projects at the mid-term meeting. The appropriate experts within SCICOM fulfilled the review process by August. The initial reviews were discussed in the Science Fund subgroup and finally presented at the SCICOM meeting in September. All Science Fund project reports were approved by SCICOM and a letter has been sent out to the project leaders with the final payment.

The reviewers were overall impressed by the results for projects running over a short period and with small funding. It was concluded that Science Fund gives high value for the money spent. Most of the projects aimed at getting their results published in peer-reviewed journals. Given the relatively short time since the end of the 2014 call, not all these papers have yet been published but SCICOM has been notified of two published papers and three about to be published shortly.

Most of the projects presented their findings at symposia around the world. Results were presented at the ICES annual Science Conferences in 2014 and 2015, but also at the "Oceans past" conference, and the Johan Hjort symposium. One project has proposed and been accepted to lead a Theme Session in ASC 2016.

One of the explicit goals of the ICES Science Fund was to strengthen the links with academia. This goal was also clearly stated in the 2014 call for proposals, with PIs having to come from academia and applied research institutes. All projects adhered to this explicit requirement.

Some general remarks were raised by the Science Fund reviewers to consider in future:

- Scope of the project was in one case evaluated to be too wide and the Science Fund project is likely part of a bigger project. It is necessary to clarify what the Science Fund is actually paying for. However the outcome of the project and report was satisfying.
- Future products especially publications are not always clear and ICES should request notifications if and when a paper is published connected to the project.
- Dissemination should be clearer especially links to ICES Expert Groups, ASC Theme Sessions and Symposia.
- Links to ICES Science Plan should always be clearly stated.

The Science Fund 2015 was opened on 13 January. The deadline for applications was 10 March 2015 and successful applicants were informed in May 2015 for immediate implementation of their projects.

For the 2015 call a total of 21 proposals were received. The proposals were presented at the SCICOM SharePoint site and ranked by SCICOM A subgroup prepared a shortlist for review at the SCICOM mid-term meeting based on the ranking but also taking strategic evaluation into account. The process resulted in approval of 7 proposals. The Secretariat informed the approved and rejected proposals including motivations.

3 SCICOM Open Sessions

Monday, 21 September, Copenhagen, Denmark

3.1 Open Plenary: Highlights from ICES Science and Advice (Walther/Kirkegaard)

For the traditional SCICOM Open Plenary in ASC 2015 the SCICOM chair invited the ACOM chair to give a joint presentation on ICES Science and Advice.

The intention of the presentation was to highlight the ongoing communication between SCICOM and ACOM chair on the joint advancement of ICES Advice and Science. Particular emphasise was given to the intention of erasing the tradition of thinking of Science and Advice as two stand alone pillars in the ICES community

In a seamless presentation the ACOM and SCICOM Chair interacted to show what ICES Science and Advice has been, what it is now with focus on the not commonly known parts and gave the vision of what ICES Science and Advice can be in the future.

The message that ICES is a provider of Marine knowledge was a focal point and that in future the traditional advice on request will be accompanied by a wider knowledge provision. ICES is not only giving recommendations in respons to requests but also helping shaping the questions in an iterative process and providing the best available knowledge on the Marine ecosystems.

The presentation was extremely well received by the audience the presentation is available to Council as a background document.

3.2 Bridging the gap between data users and data providers (Schmidt/Handegard)

The open session Bridging the gap between data users and data providers was organized by the ACOM/SCICOM Steering Group on Integrated Ecosystem Observation and Monitoring (SSGIEOM) and ACOM/SCICOM benchmark steering group (BSG) and chaired by Jörn Schmidt and Nils Olav Handegard. The meeting was attended by 40 people, representing both survey groups, and integrated and traditional assessment groups.

The session was kicked off by a brief overview of the role of the SSGIEOM and its relation to the survey expert groups, followed by a presentation of the BSG focusing on the benchmark process and how the data and information from the survey groups are linked into the benchmark process. The introduction was closed by a brief presentation from the data and information group chair (Ingeborg de Boois) on the role of DIG and the data centre in the data flow from the survey groups to the users.

To get input from the community, the discussion items that were brought up were: How are data presented from the survey groups? What is lacking? How are changes in time series documented? When new information is requested, is there sufficient feedback to the survey groups whether the product was well received and used? Do we have an efficient IT infrastructure to handle the data? Is the survey following best practice in terms of statistical design, observation methodology, and bias considerations?

The first part of the discussion revolved around how the information from the surveys was presented. It was clear from the discussion that there still is a gap between the survey groups and the assessment groups. One of the reasons for this may be the different background and skills that the survey-people and the assessment people have.

The survey practitioners often have a good understanding of the survey gear/methodology, which is important for the bias considerations, but sometimes lacks statistical expertise to set up a proper survey design with corresponding data product estimators. WGISDAA was specifically set up to address gap. The expectation on what WGIDSDAA could contribute with could be better overseen by the steering group. WGISDAA also struggle with participation from the assessment groups, and ACOM and the benchmark group could facilitate a better attendance from that side. One suggestion to mitigate this was to set up specific workshops where WGISDAA and PGDATA experts could work together with the survey groups to address specific challenges with survey design, including estimators for the various data products emerging from the survey groups. There was also a suggestion that the (integrated) assessment expert groups should be present in the survey planning. Another item that was brought up was that the data preparation workshop in the benchmark process could be used to enhance the communication, and the SSG chairs should engage with the survey groups and facilitate these processes.

Another discussion dealt with the form of the report from the survey groups. It was clarified that the survey groups are responsible for their data products, and it was also highlighted that standardized tools for providing these products would be an advantage. It was also brought up that the current template for EG reporting was not optimal for reporting from the surveys, and it was consensus among the participants that a broader and more standardized format for reporting from the surveys was needed.

The discussions continued on how the data is received by survey groups and the flow (or lack thereof) of information back to the survey groups. It was quite clear that the lack of communication of the survey results from the assessment groups back to the survey groups needs attention. If the survey groups are not being informed about problem or inconsistencies, like the inability of a survey to track cohorts etc, the potential to improve the surveys will be lost. This needs to be built into the benchmark process and the BSG chairs need to ensure that this information is fed back to the survey groups. Furthermore, it was suggested that when there is a proposal on a benchmark, the survey groups needs to be informed in advance to be able to engage in the process at an early stage.

When wrapping up the session, a concrete suggestion to make information from the survey more easily available was made. It was suggested to set up a WK to work intersessionally to develop guidelines for reporting from survey that encapsulates more and standardizes the content from the survey reports. Marie Storr Paulsen, Amos Barkai, Maria Manuel Angelico, Sascha Fässler and SSGIOM chair agreed to develop the ToR for the WK, and SSGIEOM chair will ensure participation from all the survey group chairs.

3.3 Strategic Initiative on Climate Change and Marine Ecosystems (MacKenzie, Pinnegar)

The SICCME Open Session presented and summarized the main scientific and networking achievements of SICCME since the previous ICES ASC, and outlined plans for activities in 2016. The presentations included summaries of a major international conference and a week-long workshop. Additional presentations summarized how SICCME science and networking activtiies at two high-profile climate-ocean events for policymakers, and introduced a recently-started climate-ocean-fisheries reseaerch program in the north Atlantic (Færo-Greenland region). After each presentation there was discussion and questions with attendees at the session. The session was attended

by approximately 100-110 participants and jointly chaired by attending SICCME co-chairs Anne Hollowed, Brian MacKenzie and John Pinnegar.

John Pinnegar presented a summary of the 3rd Symposium on Effects of Climate Change on the World's Oceans held in Brazil in March 2015. The presentation highlighted key scientific findings related to hydrographic changes in the oceans (e. g., temperature, pH, oxygen concentration), the distribution and productivity of fish stocks and how exepcted future changes could affect fisheries and ecosystem management policy. One key point raised by a session attendee was how SICCME could interact with and contribute to the IPBES, given that climate change will have major impacts on population and species distributions and therefore biodiversity. This issue will need further attention in future as ICES evolves its strategy for input and collaboration with IPBES, and it is anticipated that SICCME will be able to contribute to these efforts.

John Pinnegar also presented summaries of presentations and workshops organzied by former SICCME co-chair Manuel Barange at the World Oceans Day, June 8, Paris and the conference on "Our common future under climate change", 7-10 July 2015, Paris. Additional details of these presentations are available in the Appendix to the SICCME Annual Report to SCICOM.

Anne Hollowed summarized findings and outcomes of a dedicated workshop on modelling effects of climate change on fish and fisheries. This workshop was held in Seattle in August 2015 and was attended by ca. 60 participants from the ICES and PICES communities. The meeeeting was structured into plenum and break-out discussion groups. intra-disciplinary breakout groups focused on regional climate modelling, modelling biological responses, and modelling fish dependent community responses. Breakout session convenors reported in plenary on the key recommendations of the intra - disciplinary sessions.

The group identified 14 potential regions where there was sufficient data to model the effects of climate change on fish and fisheries. The group recommended that a socio-economic workshop be proposed and convened in 2016 to address the range of possible management responses. The group clarified how the SICCME project is separate and distinct from a similar modelling activity, FISH-MIP. Additional details of the workshop are available in the Appendix to the SICCME Annual Report to SCICOM.

Mark Payne presented a summary of a 1-day workshop immediately preceding the Brazil symposium. The workshop was on the topic "Addressing uncertainty in projecting climate change impacts in marine ecosystems". The workshop was attended by ca. 25 participants and discussed the different sources of uncertainty in modelling climate change impacts on marine ecosystems, and how these can be quantified. The discussions have resulted in a multi-author manuscript which has been accepted for publication by the ICES Journal of Marine Science.

Eilif Gaard presented an overview of a recently started climate-oceanography-fisheries research project in the Faroe Island-Iceland-eastern Greenland region of the north Atlantic. This project started in2014 and runs 4 years. The overall program objective is to investigate climate and oceanographic changes in this region and their influences on plankton and fish. The program is supporting Ph.d. and postdoc projects on the following topics: (1) Marine climate effects on the marine primary production around the Faroes; (2) food for mackerel and other pelagic fish near the Faroes: zooplankton in relation to ocean climate; (3) migration of mackerel and other pelagic fish in relation to oceanography in the Northeast Atlantic; (4) changing distribution and migration of mackerel and other pelagic fish against East Greenland area. Further details are availabel from the program coordinator (eilifg@hav.fo).

Activities in 2016

Regarding activties in 2016, the co-chairs informed attendees of plans to hold 1-day workshops in connection to major conferences and theme sessions at the 2016 ASC of both ICES and PICES.

The ICES/PICES Workshop on Economic Modelling of the Effects of Climate Change on Fish and Fisheries (WKSICCME_Econ), chaired by Alan Haynie (USA), John Pinnegar (UK), Lisa Pfeiffer (USA), Mitsutaku Makino (JPN), Jörn Schmidt (DE), and Sophie Gourget (France) will be established and will meet in Brest, France associated with the existing 'Understanding marione socio-ecological systems' symposium, in June, 2016.

A second 1-day ICES/PICES workshop on Phase 1: Modelling Effects of Climate Change on Fish and Fisheries (WKSICCME-I), chaired by Anne Hollowed(USA), John Pinnegar (UK), Myron Peck (DE), and Mark Payne (DK) will be held in September, 2016 in Riga. PICES and ICES are also planning to organize at least 2 theme sessions, pending approval by Science Committees, at their 2016 Annual Science Conferences. These will be on topics related to adaptability of marine biota to climate change impacts and predictability of cliamte impacts at seasonal to decadal time scales. Further details will be available from conference websites.

3.4 Ecosystem Processes and Dynamics (Pierce)

The aim of the SSGEPD session was to discuss future directions for fundamental ecosystem science within ICES, its contribution to the ICES Science Plan and its role in underpinning advice. It also discussed structures and processes within ICES. The meeting was attended by approximately 40 people including several chairs of affiliated Expert Groups (e.g. BEWG, WGCEPH, WGHABD, WGRECORDS, WGZE). The presentations comprised an introduction given by Graham Pierce, including material provided by WGIMT and WGRECORDS, a presentation about the work of BEWG given by Silvana Birchenough, and a talk about ecosystem services, linked to WGRMES, delivered by Graham Pierce due to the delayed arrival in Copenhagen of the author Sebastian Villasante.

Following the presentations, there was a general discussion ranging across many topics, often more related to ICES structure and function rather than the scope of the work undertaken:

(a) Communication, integration and information flow within ICES – within the science structure and from science to advice

- How to improve communication between different Working Groups; the majority of communication between chairs is currently due to personal contacts
- How can we best integrate the work of all of the 17 EG's within SSGEPD to avoid duplication and ensure complementarity (and indeed the same applies to EGs falling under other Steering Groups and under ACOM).
- How do we bridge the perceived gap between science and advice sides (e.g. groups may not fully understand the rationale for work requested by ACOM nor how best to contribute to advice)
- Perhaps when relevant, ACOM could send someone to Working Group meetings to explain the Terms of Reference they have added. ACOM could also provide feedback on bottom-up generated Terms of Reference, indicating if and how they might be useful to the advisory process and if appropriate, how they could be more useful

- There is a need for EGs and their members to understand how the science feeds into to the overall advisory process – while not all science feeds directly into advice, presumably much of it is ultimately useful to underpin advice
- We need to improve communication between the Science Groups and the Advisory process, particularly so science group reports don't just end up on a shelf; integration of the end products back into the mainstream advice is important

(b) Working methods and constraints

- Groups need Terms of reference relevant to member interests, while recognising that they have a job to do for ICES; a good balance is needed.
- Lack of time to complete work on Terms of Reference
- Early warning on the new requests from ICES to the EG's in case that earlier preparation could be done intersessionally. This could help groups to concentrate on wrapping up outputs during annual meetings.
- Lack of resources (e.g. for some members to attend meetings)
- It could be useful to spread the work through the year in some cases although other groups find intersessional work to be problematic
- Physical meetings effectively buy people's time; web meetings may help advance intersessional work
- Ecosystem level work is easily dealt with in small groups, but there is still a need to bring together all the work together for wider ecosystem understanding/application. ICES is placed in a unique position to steer direction and bring together the EG's to provide the science to underpin ecosystem level work.
- Some EG's also could organise back-to-back meetings to ensure the work is complemented.

(c) Reporting format

- Big reports can be very useful due to the large amount of information conveyed.
- In some EGs the most important aspects are discussions of methods, data analysis, interpretation, etc, which can help to inform other colleagues – this still needs to be captured somehow though.
- The current trend for very brief 1st and 2nd year reports means that important information may not be communicated until the end of a group's 3-year life cycle. Hence some colleagues will miss out on the details if they have not been able to attend the meetings regularly.
- Appendices can be used to include the lengthy and detailed accounts of work for future reference – this could be considered to be good practice.
- Different EGs could produce dedicated outputs that could help to extend ICES work in different formats (e.g. leaflets, synthesis with key messages, podcasts, etc.

(d) Evaluation of work (top down and bottom up)

- Could some groups undertake peer-review the work of others?

- It is important for EGs to provide ICES with clear feedback on how the different EG's find the work and reporting processes in place.

3.5 Integrated Ecosystem Assessment (Reid)

The aim of this session was to discuss future directions for fundamental ecosystem science within ICES, its contribution to the ICES Science Plan, and its role in underpinning advice.

The problem is deciding if there exists a single, optimal balance of objectives, and trade offs to make to achieve them. Probably not, but can then use, for example, weighting in IEAs to point up different stakeholder views, as in the Ocean Health Index..

Need to identify, with stakeholders, and governance/management:

- Key problems – key pressures
- Key drivers
- Key objectives – operational objectives practical and pragmatic
- Need to include explicit descriptions of trade-offs. Fish for dolphins, ecosystem health for economic benefits

Show current uses of the ecosystem today, and project to the future under a range of different management approaches, multi-dimensional examinations in the context of ecosystem goods and services.

Iterative approach with adaptive management – have a go at defining objectives etc. with stakehoders, and iterate after experience with those, revisit. Fail fast, Fail soft

Need for structure and formality in setting up relationships between stakeholders, managers, scientists etc. So everyone knows their role, so everyone is clear on validity, and credibility, and that when a group expresses a view it will be taken seriously. Also very useful when dealing with high level e.g. government departments.

BUT

Real value in very informal and unstructured discussions with stakeholders, esp. e.g. fishermen

How to widen the network. Fish is not a very rewarding area for economists, except pretty weird ones!! Actually not really true, there are plenty of economists interested and working in this field. Outreach via conferences like MARE and IFFET.

Should we keep the disciplines separate and carry out the "integration" on products/outcomes not try and integrate throughout.

Need to consider the scale of the IEA and the scale of human perception of issues. Probably SH would be more interested at scales well below the ecoregion. Temporal scales are also important, how the ecosystem looked in the past, now and in the future? MSFD allows such smaller scale analyses.

Approaches should aim to reduce the complexity of the problems to help communicate and arrive at equitable solutions.

Complexity of human use of the sea will increase and leading to increasing numbers of conflicting objectives. New and more difficult multi dimensional trade offs. Will need contributions from the law, governance and wider.

A possible place to start – common baselines

- What do we mean by baseline, scientifically, economically, socially

- What is a baseline, pristine, sustainable, acceptably impacted etc?
- A process to agree on baselines – then objectives in terms of those baselines

Is incorporating a human dimension into an IEA a "wicked problem"?

From Wikipedia, the free encyclopedia

A wicked problem is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize. The use of term "wicked" here has come to denote resistance to resolution, rather than evil. Moreover, because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems.

3.6 Human Dimensions in Integrated Ecosystem Assessments (Schmidt)

The open session was organized by the ICES Strategic Initiative on the Human Dimension in Integrated Ecosystem Assessments (SIHD) and co-chaired by Eva-Lotta Sundblad, David Goldsborough and Jörn Schmidt. 100 participants attended the session from social science, the humanities, natural sciences and policy. The session started with five presentations, exemplifying different activities of interdisciplinary work (see agenda).

The open session on Integrated Ecosystem Assessments on Monday, 20 September brought up a couple of issues.

- Is there a single balance of objectives and trade offs?
- What happens if we actively change the system?
- Should there be formal structures or easy going anarchy?
- How should we widen the network?
- How can we limit complexity?
- What are baselines in a system?

The general discussion was intended to explore objectives and possible tasks for the Strategic Initiative. However the discussion emphasized over large parts on inter- and trans-disciplinary research in general and how different disciplines can and should work together. This emphasize on working together showed that many obstacles still exist for interdisciplinary work. These obstacles can be institutional barriers, funding schemes or even simply not understanding each other's language. Many examples of interdisciplinary work, however, do exist and it is also encouraging that many recent master courses are teaching interdisciplinarity, e.g. environmental management and thus younger scientists will grow up in an interdisciplinary environment. All practical examples show that it is necessary to work on an actual issue rather than trying to set up a conceptional framework for interdisciplinary collaboration. What kind of questions do we want to answer? What kind of questions can we answer in the current system and where do we need to adapt? And if these answers are meant to be advice, the question arises if the policy framework is able to take up this advice. Often the governance structures are not ready to handle integrated advice and dealing with explicit trade-offs. In addition to this, advice is often needed when the science is not yet ready to deliver.

In conclusion, an interdisciplinary approach should be envisaged from the beginning on, as integrated ecosystem assessment is a process. However, within this process, disciplinary knowledge should still be embraced to widen the opportunities.

3.7 Marine ecosystem baselines as the basis for reference points (Ojaveer, Pierce)

The principal aim of this session was to address the ICES Science Plan topic *'Develop historical baselines of population and community structure and production to be used as the basis for population and system level reference points*', reviewing the state-of-the-art in relation to historical baselines and methodological challenges associated with interpreting historical data, accounting for the different characteristics of different ecosystem components and effects of human activities. The following presentations were given:

- ✓ Historical baselines in the context of fish stock assessments and fishery management (Margit Eero)
- ✓ Setting baselines for eutrophication status in the Baltic Sea: experiences from implementation processes of EU WFD and MSFD (Georg Martin)
- ✓ Understanding seafloor integrity: providing advice and advancing our current knowledge in support of MSFD (Silvana Birchenough)
- ✓ Ecosystem dynamics in the Central Baltic Sea during the 20th Century - what does the "desired or pristine state" really mean to us? (Maciej Tomczak)
- ✓ Methodological considerations for defining historical baselines (Laura Uusitalo)

Some of the key conclusions include:

- ✓ Historical information may not be crucial for single species stock assessments and tactical management focusing on present situation and near future. However, a long term perspective is considered invaluable for ecosystem-based management, as it can enhance understanding of driver impacts and interactions in the ecosystem, thus supplementing modelling exercises with empirical evidence.
- ✓ Application of historical data is one of the four recommended approaches for generating levels of environmental variables used to describe eutrophication, although currently modelling is the clearly preferred approach.
- ✓ When developing historical baselines, it is advisable to choose variables with which do not have identification / determination issues, and to choose parameters that are robust to changes in sampling regimes.
- ✓ Care must be taken when interpreting the data, since "baseline" values may vary naturally, e.g. in relation to environmental conditions, which can mean that the first impressions are misleading.
- ✓ Ecosystem baselines remain currently as an open question. When starting to develop them, it is important to consider whether the various historical baselines associated with different ecosystem components are actually mutually compatible; and if they are, if they could still occur. It is proposed that a coherent vision of desired ecosystem state would be developed in a "historical IEA" exercise.

The presentations were followed by a general discussion. Important points raised included:

- ✓ The quality of historical data and associated uncertainty. If possible, we should revisit historical data as new evidence and methodologies become available
- ✓ The legacy of the historical component (History of Marine Animal Populations) of the global Census of Marine Life, CoML programme. The Working Group on History of Fish and Fisheries (WGHIST) is countinuing this activity in ICES by exploiting the data available from CoML.

- ✓ When interpreting historical data, in addition to considering abundance / biomass baseline levels, investigating variability over time is important.
- ✓ We should take account of unprecedented findings in the historical record. These help us to understand and record what we have lost over time.
- ✓ There is a clear link between how far back we are looking at and what we'll get (shifting baselines).

3.8 What makes a good conference? (Petitgas, Schmidt)

This session was co-chaired by Rudi Voss (Germany), Jörn Schmidt (Germany), and Pierre Petitgas (France).

The ASC brings toghether the ICES community at large, the greater marine science community as well as stakeholders and policy makers in fisheries and ocean management. Due to its importance for ICES, a group was established to review the format of the ASC (SRGASC) and evaluate whether the ASC is well on track in fulfilling its purpose. A questionnaire was developped in 2015 to get feed-back from ASC participants after the conference has ended. During the 2015 ASC, two alternative ways were organized to get direct feed back from participants, with simplified questionnaires: the session "What makes a good conference? Come and shape the future of the ASC" was organized for one hour during a lunch break and was run with the interactive online tool www.kahoot.it. Each participant in the room was connected on-line and responded to a survey by selecting answers to questions prepared in advance. Every one saw the answers immediately on the screen, which triggered lively comments. The session attracted 25-35 participants. One third were young scientists and two thirds were seniors, all mainly from national laboratories. They participated in the ASC for a mixture of reasons, including to make a contribution, network and get updated on a variety of topics. Most had the ASC high in their agendas and thought the conference was comprehensive in topics. Most agreed that the conference duration could be 4 days but with no more than 4 sessions in parallel. Most agreed that sessions should be run with flexible formats, allowing for innovative ways for presenting and interacting. Some suggested running short workshops to quickly learn hot topics. Most agreed that the poster session should be improved.

I AM ...	"Student"	"Early Career <5y"	"Senior 5-15y "	"Senior-Leader >15y "
- No.of answers	2	7	8	10

HOW MANY ICES ASCs HAVE YOU ATTENDED ?	"1"	"<5"	"5-10"	">10"
- No.of answers	6	7	9	6

YOUR CURRENT POSITION IS WITH ...	"National Lab."	"Academia"	"Policy"	"Industry"
- No.of answers	15	7	1	0

THE DURATION OF ICES ASC IS ...	"Too short"	"OK"	"1 day too long"	"2 days too long"
- No.of answers	0	17	10	4

THE NUMBER OF PARALLEL SESSIONS IS ...	"OK as is"	"Too Low"	"Too High"	"My program starts at 8 pm"
- No.of answers	9	0	18	3

YOUR MAIN MOTIVATION TO COME TO THE ASC IS ...	"a Talk / a Poster"	"Networking"	"Overview on new science"	"I was told to come"
- No.of answers	5	10	6	9

HOW IMPORTANT IS THE ASC IN YOUR CALENDAR?	"No 1 \"must have\""	"No 2"	"No 3"	"No 137"
- No.of answers	12	9	8	0

ARE YOUR MAIN TOPICS COVERED BY THE SESSIONS ?	"Yes, I made them"	"It's ok"	"It's difficult"	"No!"
- No.of answers	6	11	9	4

SHOULD THE SESSION STRUCTURE BE RETAINED ?	"Yes"	"No, it's outdated"	"More flexibility would be fine"	
- No.of answers	4	9	16	

HOW DO YOU PERCEIVE THE ASC ?	"Too conservative"	"There is hope..."	"Just right!"	
- No.of answers	4	21	5	

EVENTS FOR YOUG SCIENTISTS AT THE ASC ARE ...	"Great!"	"OK, but more is needed"	"Could be less"	'Didn't realize that there were any.'
- No.of answers	3	13	1	12

SHOULD POSTERS RECEIVE MORE ATTENTION ?	"No, current set-up is fine."	"No. Poster are useless ."	"Yes (bring more beer)."	"Yes (with innovative formats)."
- No.of answers	1	3	9	11

WOULD YOU STILL PARTICIPATE IF THE FEE WAS DOUBLI	"Yes."	"No."	"Yes, but not my students."	
- No.of answers	13	8	5	

HOW DO YOU RATE THE SOCIAL PROGRAM ?	"It's the best I know."	'Good, but should be improved.'	"Poor."	
- No.of answers	2	23	1	

DID YOU LIKE THE CONFERENCE GAME ?	"Yes."	"No."	"There was a game?"	
- No.of answers	12	4	14	

WILL YOU COME BACK TO THE ICES ASC?	"Yes, as every year."	"Would like to, but not sure."	"Only, if conference improves."	"Definitely not."
- No.of answers	16	17	0	0

DID WE FORGET SOMETHING IMPORTANT ?	"No."	"Yes."
- No.of answers	12	17

DID YOU LIKE THIS KAHOOT ?	"Yes."	"No."
- No.of answers	31	2

A discussion followed after the kahoot survey. Shorter presentations would allow to increase interaction and have more discussions during the sessions. Programming parallel sessions with similar topics should be avoided as much as possible. To avoid such situation, participants when registering could tick which sessions should not be programmed in parallel (was done in a former ASC). More plenary sessions could be programmed. Although activities are offered for Early Career scientists, more could be done, especially with regard to connecting to senior scientists (mentoring). Ways to increase interaction between participants could be looked for, e.g. allowing to catch the author of an oral or a poster contribution. Meeting points, set up at coffee breaks were mentioned. The list of participants with their affiliation should be made more accessible as well as the abstracts of contributions.

This feed-back will help design future ASCs.

4 Reports of Science Steering Groups

4.1 SCICOM Steering Group on Ecosystem Processes and Dynamics (SSGEPD, Graham Pierce, UK)

The ICES Steering Group on Ecosystem Processes and Dynamics provides a forum for ICES Expert Groups which work primarily to improve our understanding of the structure and function of marine ecosystems in the North Atlantic.

	Expert Group name	Acronym
1	Working Group on Integrated Morphological and Molecular Taxonomy	WGIMT
2	Benthos Ecology Working Group	BEWG
3	Working Group on Cephalopod Biology and Life History	WGCEPH
4	Working Group on Biodiversity Science	WGBIODIV
5	Working Group on Small Pelagic Fishes, their Ecosystems and Climate Impact	WGSPEC
6	Working Group on Phytoplankton and Microbial Ecology	WGPME
7	Working Group on Crangon fisheries and life history	WGCRAN
8	Working Group on Zooplankton Ecology	WGZE
9	Working Group on Oceanic Hydrography	WGOH
10	Working Group on the Biology and Life History of Crabs	WGCRAB
11	Working Group on Resilience and Marine Ecosystem Services	WGRMES
12	ICES IOC Working Group on Harmful Algal Bloom Dynamics	WGHABD
13	Working Group on Recuitment Forecasting in a Variable Environment	WGRFE
14	Working Group on Operational Oceanographic Products for Fisheries and the Environment	WGOOFE
15	Working Group on the Science Requirements to Support Conservation, Restoration and Management of Diadromous Species	WGRECORDS
16	Working Group on data poor diadromous fish	WGDAM
17	Working Group on Effectiveness of Recovery Actions for Atlantic Salmon	WGERAAS
18	Working Group on Fisheries-Induced Evolution	WGEVO
19	Workshop on Growth-increment Chronologies in Marine Fish: climate-ecosystem interactions in the North Atlantic 2	WKGIC2
20	Joint Workshop of the Working Group on Eel and the Working Group on Biological Effects of Contaminants	WKBECEEL
21	ICES/PICES Workshop on Modelling Effects of Climate Change on Fish and Fisheries	WKSICCME_Project

22	Joint ICES-PICES Working Group on Climate Change and Biologically-driven Ocean Carbon Sequestration **(Subject to approval by SCICOM)**	WGCCBOCS
23	ICES/PICES Workshop on Phase 1: Modelling Effects of Climate Change on Fish and Fisheries **(Subject to approval by SCICOM)**	WKSICCME1
24	Workshop on Sea Trout 2 **(Subject to approval by SCICOM)**	WKTRUTTA2

4.1.1 Scope of EG work

At the time of writing (October 2015), the Steering Group oversees the work of 17 Working Groups (WG) and 7 Workshops WK. The WGs comprise 11 groups focused on particular taxa or ecosystem components (BEWG, WGCRAB, WGCRAN, WGCEPH, WGERAAS, WGHABD, WGOH, WGPME, WGRECORDS, WGSPEC, WGZE), four focused on concepts or processes (WGBIODIV, WGEVO, WGRFE, WGRMES) and two focused more on tool and product development (WGIMT, WGOOFE).

The most recent Science Plan mapping exercise attracted responses from 12 groups associated with SSGEPD. Focusing on replies about the first nine topics of the Science Plan, i.e. those most closely associated with ecosystem processes and dynamics, it is evident that all these topics are covered to some extent – but to varying degrees (see Table below). Some groups have a very broad focus (e.g. BEWG) while others are mainly concerned with particular topics (e.g. WGBIODIV); both approaches can be very fruitful as evidenced by the output of the two highlighted EGs. It could be argued that a more top-down approach may be needed to ensure a better balance of Science Plan coverage. However, several obvious caveats apply: (1) groups outside SSGEPD also contribute to these Science Plan topics, so coverage may be better than it appears here, (2) ToRs proposed by EG members are more likely to embraced enthusiastically by the EGs than ToRs imposed from above, and (3) the Science Plan itself emerged to a large extent through a bottom-up process and a more relevant and agile science coverage may be achieved if EGs are able to select the topics they believe to be of most relevance. A compromise solution may be an extended dialogue between EGs and SG chairs, in which the possible future ToRs are discussed, before draft resolutions are written.

4.1.2 Overview of activities and achievements the expert groups

Four EGs completed their three year terms so far in 2015 and have submitted self-evaluations and resolutions for continuation. The working methods and deliverables of the four groups are diverse.

WGBIODIV has focused on an extensive review of MSFD implementation, generating a 310 page report. Much of the material in this report appears to be of publishable quality and its impact could be increased by turning it into a series of review papers. There were concerns during the last two years over attendance and it is apparent that the report is mainly the work of a very small core group but the outgoing chair was optimistic about future prospects under the leadership of the proposed co-chairs. WGCRAN cited an output of 32 publications and reports from its work. Clearly this is highly commendable but this level of achievement reflects the strong overlap between

the group's ToRs and the work carried out by members in their day jobs and the question could be asked how many of these publications would have been produced independently of WGCRAN. Nevertheless this is evidently an active and energetic group and one which also has an interest in contributing to the advisory process.

Table: Contribution of SSGEPD EGs to the first 9 ICES Science Plan topics (survey results).

TOPIC / GROUP	BEWG	WGBIODIV	WGCEPH	WGCRAB	WGCRAN	WGERAAS	WGEVO	WGIMT	WGOH	WGRMES	(SICCME)	WGZE	COUNT
1. Assess the physical, chemical and biological state of regional seas and investigate the predominant climatic, hydrological and biological features and processes that characterise regional ecosystems	1			1				1	1		1	1	6
2. Quantify the nature and degree of connectivity and separation between regional ecosystems			1	1	1			1	1		1		6
3. Quantify the different effects of climate change on regional ecosystems and develop species and habitat vulnerability assessments for key species		1	1	1						1	1	1	6
4. Understand the influence of climate impacts across a range of temporal and spatial scales, from local to global and from seasonal to multidecadal and identify indicators of climate driven biotic responses and forecast trajectories of change	1			1		1				1	1		5
5. Quantify the role of structural and functional diversity in marine ecosystems in providing stability and resilience	1									1			2
6. Investigate linear and non-linear ecological responses to change, the impacts of these changes on ecosystem structure and function and their role in causing recruitment and stock variability, depletion and recovery.	1		1				1				1		4
7. Develop end to end modelling capability to fully integrate natural and anthropogenic forcing factors affecting ecosystem functioning										1	1		2
8. Define and quantify north Atlantic Ecosystem Goods and Services, model their dependence on ecosystem processes and habitat condition and their social, economic and cultural value.	1			1	1					1			4
9. Identify indicators of ecosystem state and function for use in the assessment and management of ecosystem goods and services	1	1	1	1	1		1	1			1		8

WGPME reported completion of a review of methodology, assembly of an image collection and >80 time series and delivery of monitoring guidelines. WGSPEC highlighted its work with PICES and GFCM and production of a journal special issue and various papers.

SSGEPD was associated with two Cooperative Research Reports published in 2015, Identification guide for cephalopod paralarvae from the Mediterranean Sea (number 234) and Cephalopod biology and fisheries in Europe: II. Species Accounts (number 235), both arising in part from the work of WGCEPH and its members, and (in the latter case) the SSGEPD chair.

4.1.3 Activities at the Annual Science conference

Several the Theme Sessions at the 2015 Annual Science Conference were convened by SSGEPD-associated chairs:

(D) New approaches to measure and assess biodiversity, convened by the current and proposed incoming chairs of WGBIODIV,

(F) Small-scale fisheries under data-limited scenarios and (G) Managing marine ecosystem services in a changing climate, both co-convened by the WGRMES chair,

(H) Ocean acidification: Understanding chemical, biological and biochemical responses in marine ecosystems, co-convened by the BEWG chair,

(P) How to hit an uncertain, moving target: achieving Good Environmental Status under the Marine Strategy Framework Directive, co-convened by the SSGEPD chair

(T) Practical application of Genetic Stock Identification for the conservation, management, and restoration of diadromous fish species, convened by the chair of WGERAAS.

SSGEPD held an Open Session on Monday 21 September at the ASC. A summary of this session is given in Section 3.4.

The SSGEPD chair also co-convened the Open Session on Marine ecosystem baselines as the basis for reference points, held on 23 September.

4.1.4 Review and evaluation of progress

During 2014, a Core Group as established within SSGEPD, the currently active members being Ann Bucklin (WGIMT), Silvana Birchenough (BEWG) and Piotr Margonski (WGZE). Along with the SSGEPD chair, this group undertook a review of Expert Group reports generated during 2014-2015. To date, reports by 16 Expert Groups have been reviewed and the intention is to complete the detailed review during 2015. Some preliminary findings are summarised here and, unsurprisingly, touch on some similar issues to those discussed during the Open Session.

A general concern apparent among many EGs is **lack of resources** (i.e., dedicated funding and participation by people with appropriate / necessary expertise) to meet the mission and goals. In general, the broader the mission areas of the EG, especially those spanning both scientific and advisory needs of ICES, the more severe the shortfall in both money and human resources. It is also evident that achievement of objectives is more easily achieved in EGs where the work of the members is more similar to their day-to-day work. Careful focusing (narrowing) and prioritization of WG goals, with detailed ToRs defining realistic deliverables, could ameliorate some instances of resource limitation. A dialogue involving Expert Group chairs, Steering Group chairs and Delegates, prior to submission of Terms of Reference, might help to better align objectives and resources, provided that an efficient way could be found to cope with information coming in from a large number of different EGs simultaneously. Note that the process could be more complicated for groups with Chair-appointed members! A related topic is the extent to which **intersessional work** may be feasible and desirable.

Improving **communication and coordination**, between Expert Groups, across Steering Group boundaries and between Science and Advice remains an area of concern – a point worth addressing if the ICES science structure is to change Another perennial topic is finding the right balance between **top-down and bottom-up** Terms of Reference, and the trade-off between individual member interest against ICES science and advice priorities. Where Terms of Reference are provided by ICES, more detailed explanations (and/or explanation in person) may help to achieve better buy-in from Expert Group members. It may also be noted that the rather Eurocentric focus of some Expert Groups may discourage participation from non-European ICES countries.

Given the interest in defining appropriate performance measures, a focus on Expert Group **deliverables** seems inevitable. The move to 3-year Terms of Reference has to some extent removed the requirement for repetitive and formulaic annual reports. However, this can also have a downside, including uninformative intermediate report and consequent lack of evidence of progress during years 1 and 2 of the group life cycle – and the risk of delivery of enormous 3rd year reports. Arguably valuable (at least for

future reference) narrative that used to appear in annual reports is also being lost – not everything is readily captured in specific deliverables. In general, staggered production of deliverables is desirable, with some product delivered each year and more attention paid to user-friendly formatting. Some reports would benefit from substantial editing of language and format. As a final point, it would be useful distinguish those deliverables arising directly from work in the Expert Group and those brought to the group by its members as products of their day jobs.

Linked to the first two topics is the general desire for the **impact of Expert Group work** to be maximised. This does not simply mean publication, rather that the findings reach relevant end-users both within and beyond ICES, and that there is a mechanism for the findings to feed into science, advice and policy as appropriate.

4.2 SCICOM Steering Group on Ecosystem Pressures and Impacts (SSGEPI, Henn Ojaveer, Estonia)

4.2.1 Status of Steering Group Terms of Reference

General ToRs

a) Provide guidance to constituent EGs to ensure relevance to the Science Plan;

Continuous activity

b) Identify gaps and overlaps in the EG base in relation to the science plan and international standards in ecosystem and stock management tool; consolidate and form new EGs as appropriate;

Continuous activity

c) Seek feedback from and participation of advisory group experts in development of appropriate management tools under the current policy environment;

Needs to be addressed in future

d) Review the scientific products delivered by EGs to assure quality standards;

Continuous routine activity

e) Advise SCICOM on the form and substance of the ASC, symposia and workshops;

Continuous activity, incl. proposing ocean acidification workshop in 2016

f) Ensure communication among Steering Groups and their constituent EGs;

Continuous activity

g) Establish and nurture collaborations within and outside the ICES community;

Discussing collaboration with PICES, CIESM, JPI Oceans and BONUS (externally)

h) Identify and develop performance measures for realization of the Implementation Plan;

Performance evaluation of SSGEPI EG's for implementation of the Science Plan

4.2.2 EG Performance/MA ToR Progress

The following seven EG's will finish in 2015 and need to submit self evaluation reports: WGMBRED, WGPDMO, WGBEC, WGAQUA, WGVHES, WGSFD and WGSAM.

Five EG's (WGMBRED, WGPDMO, WGAQUA, WGVHES and WGSFD) have submitted self evaluation reports and indicated wish to continue their activities. All these five reports were positively evaluated and all EG's should continue. WGBEC hasn't submitted yet the report and WGSAM meeting will take place later in 2015.

Three expert groups (WGBOSV, WGITMO and MCWG) have not yet switched to a three-year.

In only a few cases (see below) expert groups have both sufficient numbers of experts and the proper kinds of expertise to fulfill their terms of reference.

4.2.3 EG participation

- In general, participation seems not to be the major problem at least for majority of the EG's.
- WGHIST had attendance problems in previous years, but due to back-to-back meetings with EU COST Action 'Oceans Past Platform' these difficulties are likely solved during 2015-2018.
- Two EG's have reported as having difficulties in addressing ToR's with sufficient manner and detailness: WGEXT (with slight participation issue related to underrepresentation of some countries) and WGAQUA (lack of participation with key expertise).

4.2.4 Expert Groups under SSGEPI

	Expert Group name	Acronym
1	Working Group on Marine Benthal and Renewable Energy Developments	WGMBRED
2	Working Group on Marine Renewable Energy	WGMRE
3	Working Group for Marine Planning and Coastal Zone Management	WGMPCZM
4	Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem	WGEXT
5	Working Group on Pathology and Diseases of Marine Organisms	WGPDMO
6	Working Group on Biological Effect of Contaminants	WGBEC
7	Working Group on Aquaculture	WGAQUA
8	Marine Chemistry Working Group	MCWG
9	Working Group on Marine Sediments in Relation to Pollution	WGMS
10	Working Group on Social and Economic Dimensions of Aquaculture	WGSEDA
11	Working Group on Application of Genetics in Fisheries and Mariculture	WGAGFM
12	Stock Identification Methods Working Group	SIMWG
13	Working Group on the value of Coastal Habitats for Exploited Species	WGVHES
14	Working Group on Spatial Fisheries Data	WGSFD
15	Working Group on Marine Habitat Mapping	WGMHM

16	Working Group on the History of Fish and Fisheries	WGHIST
17	Working Group on Multispecies Assessment Methods	WGSAM
18	ICES Working Group on Introduction and Transfers of Marine Organisms	WGITMO
19	ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors	WGBOSV
20	Working Group on Risks of Maritime Activities in the Baltic Sea	WGMABS
21	Working Group on Methods of Fish Stock Assessments	WGMG
22	Workshop on Probabilistic Assessments for Spatial Management	WKPASM
23	Workshop on Conflicts and Coexistence in MSP	WKCCMSP
24	Bayesian Belief Network Case Studies **(Subject to approval by SCICOM)**	WKBNCS
25	ICES/PICES Workshop on Economic Modelling of the Effects of Climate Change on Fish and Fisheries **(Subject to approval by SCICOM)**	EconWKSICCME

4.2.5 Science Highlights

All EG's under SSGEPI have several scientific outputs which deserve attention. However, due to space limitations, a few highlights of some groups are presented here. These represent already completed or near-completion work:

Jones, S. R. M., Bruno, D. W., Madsen, L. & Peeler, E. J. 2015. Disease management mitigates risk of pathogen transmission from maricultured salmonids. Aquaculture Environment Interactions 6: 119-134.

Establishing and standardizing methods for receiving VMS/Logbook data from ICES data calls. This includes proposing data formats, work on evaluating the data quality and in 2015 working on a Data Guidelines document.

Lipcius R., Eggleston D.B., Fodrie J., Rose, K., Van der Meer J., Van de Wolfshaar K.E., Vasconcelos R, M. Wilbur, Genny Nesslage. Populations models quantifying the value of coastal habitats for exploited species (under prep.)

Engelhard G.H., Thurstan R.H., MacKenzie B.R., Alleway H.K., Bannister R.C.A., Cardinale M., Clarke M.W., Currie J.C., Fortibuoni T., Holm P., Holt S.J., Mazzoldi C., Pinnegar J.K., Raicevich S., Volckaert F.A.M., Klein E. and Lescrauwaet A-K. ICES meets marine historical ecology: placing the history of fish and fisheries in current policy context. ICES Journal of Marine Science (submitted)

Extensive literature review of existing and potential molecular techniques to evaluate infectious disease and parasite spread from transferred sea-food into wild populations

Lehtiniemi M, Ojaveer H, David M, Galil B, Gollasch S, McKenzie C, Minchin D, Occhipinti-Ambrogi A, Olenin S, Pederson J 2015. Dose of truth—monitoring marine nonindigenous species to serve legislative requirements. Marine Policy 54: 26–35.

4.2.6 Examples of EG activities that fulfil the ICES Strategy and Science Plan

ICES SCIENCE PLAN OBJECTIVE	EXAMPLE OF THE ACTIVITY
Develop historical baselines of population and community structure and production to be used as the basis for population and system level reference points.	Open session on 'Marine ecosystem baselines as the basis for reference points' at ICES ASC 2015 (as SSGEPI/SSGEPD joint activity)
Develop methods to quantify multiple direct and indirect impacts from fisheries as well as from mineral extraction, energy generation, aquaculture practices, and other anthropogenic activities, and estimate the vulnerability of marine ecosystems to these impacts.	WGMRE ToR: Identify cross-sectoral issues involving marine renewable energy, for example opportunities for co-location, interactions with fishing, aquaculture, fisheries and Marine Conservations Zones.
Develop indicators of pressure on populations and ecosystems from human activities such as eutrophication, contaminant and litter release, introduction of alien species, and generation of underwater noise	WGITMO ToR: Continue addressing EU MSFD D2 on further developing and evaluating NIS indicators and screening and identification of species of concern WGSFD ToR: DCF indicators and MSFD Descriptor 6
Develop tactical and strategic models to support short- and long-term fisheries management and governance advice and increasingly incorporate spatial components in such models to allow for finer scale management of marine habitats and populations	WGSFD ToR: Review on-going work for analysing VMS data and developing standardized data products
Quantify and map biological, ecological, and environmental values, with an aim to optimize ecosystem use and minimize environmental impacts in relation to ecosystem carrying capacity	WGVHES ToR: Quantify the importance of habitats for exploited species
Develop science in support of advisory needs in marine aquaculture systems, minimizing environmental impacts, and integrating other marine sectors	WGAQUA ToR: Analyse and assess the potential ecosystem services and impacts of aquaculture, including extractive aquaculture approaches for environmental impact biomitigation

4.2.7 Interaction between ACOM and SCICOM

Expert groups under SSGEPI are very strongly involved in responding to the incoming advice requests. In addition, several EG's advance science directly relevant to several ACOM groups or address high-priority subject-areas in ICES (e.g., EU Marine Strategy Framework Directive, Aquaculture and Arctic). The examples from 2015 include:

- WGSFD: responding to OSPAR (Support for the development of common and candidate OSPAR biodiversity indicators for benthic habitats: Benthic habitats) and HELCOM (Pressures from fishing activity (based on VMS/logbook data) in the HELCOM area relating to both seafloor integrity and management of HELCOM MPAs) requests,
- WGBOSV and WGITMO: addressing OSPAR request to review of draft OSPAR JAMP Eutrophication Guidelines on phytoplankton species composition,

- WGAQUA: response to OSPAR request on Inter-actions between wild and captive fish stocks,
- WGMHM: responding to OSPAR request on Support for the development of common and candidate OSPAR biodiversity indicators for benthic habitats: Benthic habitats,
- WGAGFM: response to recommendations submitted from the Benchmark Workshop on Northern Haddock Stocks (WKHAD),
- SIMWG: provision of expert advice on the evaluation of stock identity of several commercially exploited species: plaice in ICES sub-area IIIa (request from WKPLE), haddock in ICES sub-area IV and Via (request from WKHAD), European anchovy ICES Division IXa (request from WGHANSA), megrim in ICES subarea VIIIc and IXa (request from WGBIE) and greater silver smelt (request from ADGDEEP),
- WGPDMO: response to OSPAR request on development of a common monitoring protocol for plastic particles in fish stomachs and selected shellfish on the basis of existing fish disease surveys,
- WGEXT and MCWG: engagement in MSFD-related work (Essentially Descriptors 8 and 9, but also D1, 4, 6, 7, 11).

4.2.8 Perceived needs and gaps

- The expertise of WGAQUA does not cover all aquaculture topics that were identified by ICES prior to formation of the group. For example, WGAQUA lacks expertise on product quality, consumer safety & health, and aquatic animal health & welfare,
- Data delivery is in a few cases major issue and should deserve high-level attention. Fishing intensity maps (surface and subsurface fishing abrasion) were produced to answer requests from OSPAR and HELCOM (based on nationally submitted VMS/Logbook data). However, and because not all countries submitted the requested data, the outputs from WGSFD suffered,
- The 3-year cycle puts a major pressure (albeit unintentional) on drafting ToR reports in the final year. The absence of key members during that year prevents completion of ToRs on which they have been leading, or which they were contributing too in a significant manner. The 3-years cycle is also less favourable for conducting a 1-year scoping exercise to assess issues related to potentially recommending a new ToR,
- Several EG's under SSGEPI (such as WGEXT, MCWG, WGITMO, WGBOSV) produce valuable new knowledge which could be used in addressing MSFD. Thus, there might be a need for better coordination of such activities in ICES to assemble all the valuable science produced,
- Further communication between MCWG and ICES Data Centre is needed to ensure that the data available through the MCWG will be stored in the data centre as much as possible and feasible,
- A few EG's (WGVHES, WGBOSV) mentioned that very little work/communication happens outside the annual meeting. This was seen as problem to efficiently achieve EG ToR's,
- Not all important human-induced pressures affecting marine ecosystems are dealt with currently in SSGEPI EG's. Two of them - plastics and ocean acidification – will receive attention in coming years through dedicated activities. This will result

in more comprehensive evidence on the magnitude of external pressures and their impacts on marine ecosystems.

4.3 SCICOM/ACOM Steering group on Integrated Ecosystem Assessments (SSGIEA, Dave Reid, Ireland)

4.3.1 Status on SG Terms of Reference

General ToRs (for all SSGs)

a) Provide guidance to constituent EGs on ToRs and outputs to ensure relevance to the Science Plan;

IEA Science Plan component and EG ToRs fully aligned.

b) Identify gaps and overlaps in the EG base, and consolidate and form new EGs as appropriate;

Geographical coverage of IEA groups covering all European waters from the Barents Sea to the West Mediterranean, plus NW Atlantic. In 2015, the potential for a new area was explored under WKICA and a new IEA WG has been proposed Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (WGICA) in collaboration with AMAP, CAFF & PAME. The need for a dedicated EG for the provision of detailed ecosystem advice in the Baltic was identified and a new group proposed - WKDEICE – Workshop on DEveloping Integrated AdviCE for Baltic Sea ecosystem-based fisheries management. Finally, as a pilot for linking the IEA work to MSFD advice, a further new EG was set up and met in the spring (WGMSFdemo) focussed on the Celtic Sea.

c) Review the scientific products delivered by EGs to ensure the maintenance of appropriate quality standards;

No new products to date.

d) Advise SCICOM on the form and substance of the ASC, symposia, and workshops;

Done.

e) Ensure communication among Steering Groups and their constituent EGs;

Continued strong collaboration with SSGIEOM and production of a joint report - Workshop on the review of the ecosystem survey requirements (WKSUREQ).

f) Establish and nurture collaborations within and outside the ICES community;

Ongoing.

Overarching ToRs for SSGIEA

g) Map the EGs and their ToRs against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritized.

IEAs, EGs, and ToRs are strongly linked to the Science Plan. Priorities for Assessments, Ecosystem Descriptions, and delivery of trend information to advice have been established.

h) Promote the development of the Regional Ecosystem Descriptions in standardized formats along the lines proposed by WKECOVER and WKDECOVER. Propose additions and improvements to those guidelines in collaboration with constituent EG.

Regional Ecosystem Descriptions have been prepared in all areas and are being updated as appropriate. Standardized formats following WKECOVER and WKDECOVER are being incorporated.

i) Work with ACOM/SCICOM Benchmark Steering Group (BSG), and chairs of WKBEMIA 2013 to develop benchmark guidance for developing IEA in the constituent IEA EG.

In general, the IEA work is not yet ready for full benchmarking. However, an approach has been piloted through WKIRISH Workshop on the impact of ecosystem and environmental drivers on Irish Sea fisheries management.

j) Promote the development of outlined Integrated Ecosystem Assessments with the IEA EG. It is recognized that a variety of approaches to IEA exist, and different approaches will be appropriate to the different IEA EG based on skill sets and local conditions. SSGIEA will promote innovative approaches including using partial component based analyses, and use of combination quantitative and expert judgement approaches.

Formal IEA, following arrange of approaches are under construction in all IEA EG. The basic approach is for full IEAs but with focus on particular key linkages.

k) Maintain a watching brief over initiatives in IEAs in the wider community beyond ICES. This should include new approaches or methods for IEAs, and broadening of the IEA concept to potentially include economic and social drivers and impacts.

Ongoing.

l) Promote the development within EGs of standards and guidelines for good practice and quality assurance in the collation and use of data. This should extend to the maintenance of archived data used in the IEAs, and documentation of all the steps taken to arrive at a conclusion for a given IEA, and the possible involvement of the ICES Data Centre.

Ongoing

4.3.2 EG Performance/MA ToR progress

All the EGs are performing well. With the exception of SGSPATIAL, the EG have all developed multi-annual ToRs. WGMSFDemo is new and had their first meeting in the last year. WGIAB successfully reached the end of their three year ToR, and have completed the self evaluation process, and submitted new 3 year ToR.

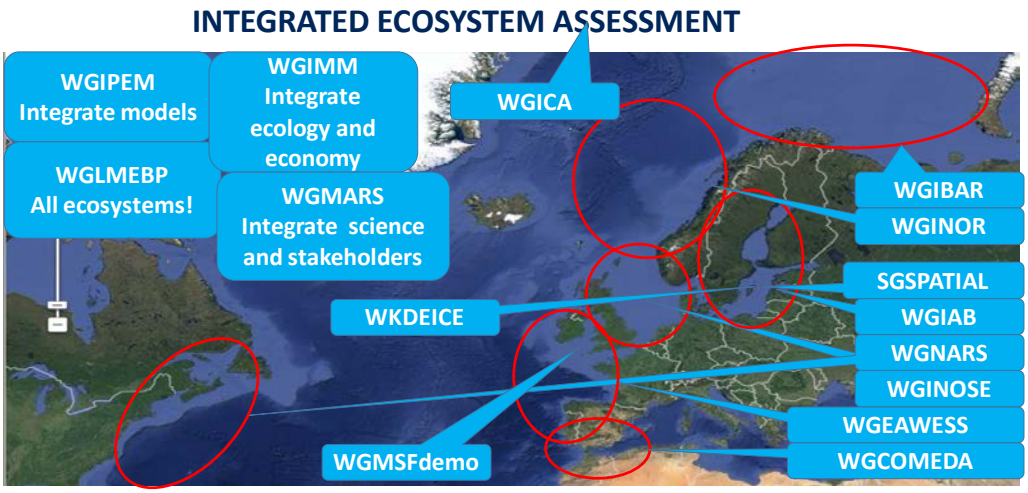
4.3.3 EG Participation

Attendance at most EG meetings held since the last report has been good.

Structural diagrams of the consistent EGs

The figure below shows the geographical coverage of the component groups of SSGIEA. The groups identified in the right-hand panels are the geographically specific Integrated Ecosystem Assessment groups. All aim to develop appropriate IEA methodologies, Regional Ecosystem Descriptions and start to identify operational ecosystem advice to managers. WGICA is a newly proposed group to set up IEA in the central Arctic Ocean. The four groups in the left panels have a more general remit and also support the work of the geographically focused groups. WGIPEM is targeted on developing the ecosystem models needed for IEA. WGMARS aims to support the integration of the wider community of stakeholders and WGIMM to link up with economists and social scientists. Finally WGLMEBP sets the ICES IEA work in the global context of the LME programme. Two further groups have been proposed.

Firstly, WGMSFdemo, to explore how to provide MSFD advice from ongoing monitoring in the Celtic Sea. WKDEICE has been proposed to develop specific proactive and responsive advice on ecosystem interactions with fisheries in the Baltic Sea.



Expert groups in SSGIEA. *=groups which are being moved to SSGIEA.

	Expert Group Name	Acronym
1.	Working Group on Integrative, Physical-biological, and ecosystem modelling	WGIPEM
2	Workshop on Spatial Analyses for the Baltic Sea	WKSPATIAL
3	Working Group on Ecosystem Assessment of Western European Shelf Seas	WGEAWESS
4	Working Group on the Northwest Atlantic Regional Sea	WGNARS
5	Working Group on the Integrated Assessments of the Barents Sea	WGIBAR
6	Working Group on Integrating Ecological and Economic Models	WGIMM
7	Working Group on Integrated Assessments of the North Sea	WGINOSE
8	Working Group on Large Marine Ecosystem Programme Best Practices	WGLMEBP
9	ICES/HELCOM Working Group on Integrated Assessments of the Baltic Sea	WGIAB
10	Working Group on Comparative Analyses between European Atlantic and Mediterranean marine ecosystems to move towards an ecosystem-based approach to fisheries	WGCOMEDA
12	Working Group on the Integrated Assessments of the Norwegian Sea	WGINOR
13	Working Group on Maritime Systems	WGMARS
14	Working Group to Demonstrate a Celtic Seas wide approach to the application of fisheries related science to	WGMSFDemo

	the implementation of the Marine Strategy Framework Directive	
15	ICES/AMAP/CAFF/PAME Workshop on Integrated Ecosystem Asessment (IEA) for the Central Arctic Oean	WKICA

4.3.4 Science Highlights

These highlights are the personal selections of the SSG Chair and in no way reflect the importance and value of any work not mentioned here. Some groups are not highlighted here, as these groups did not meet in the last year e.g. WGINOR & WGLMEBP (meeting in September 2015).

WGCOMEDA Mallorca May 2015

- Key population traits that stabilize and shape fish community dynamics: a portfolio effect analytical framework across Mediterranean and Atlantic ecosystems.
- Investigating the resilience – resistance at different levels through the patterns and drivers of functional diversity of fish communities across Mediterranean and Atlantic Seas.
- Biodiversity, community and ecosystem traits changes at regional scales.
- Exploring a demographic portfolio using pelagic forage species across Mediterranean and Atlantic ecosystems.
- Investigating patterns and drivers of functional diversity of benthic ecosystems.

WGIAB Cadiz March 3 years ToR ended. Self evaluation completed.

- The Baltic ecosystem functioning activity focused on identifying and exploring key trends and linkages in the Baltic Sea foodweb.
- DEMO 3 (DEMOnstration exercise for Integrated Ecosystem Assessment and Advice of Baltic Sea cod)
- short and midterm projections/scenarios of Baltic cod dynamics based on different types of modelling,
- practical implementation of Integrated Advice for Baltic cod

WGIBAR Kirkenes June 2015

- The BS is currently changing and the state differs from previous periods.
- The recent period is characterized by
    - warming,
    - decreased ice cover,
    - expansion of boreal stocks north-wards into the Arctic subregion,
    - large and thriving stocks of cod, haddock and capelin, and moderate fishing pressure.

WGINOSE Hamburg March 2015

- Continued development of the BBN model to explore the relationships between identified important ecosystem components of the North Sea and to

make predictions of state changes in response to different management scenarios.

- The BN model structure has to be designed to answer specific questions
- Spatial scale for a BN model should be based on the spatial structure of data
- Do not over extend the spatial scale or utility of the BN model.
- Specific assessment/advice questions should be defined before the model structure is developed

WGNARS Dartmouth February 2015

- Emphasis on group discussion, interaction, analysis, and decision-making.
- Two specific ecoregions Georges Bank/Gulf of Maine and the Grand Banks
- Identify alternative management strategies to achieve 2014 objectives
- Identify multiscale ecosystem responses to large-scale drivers and key human activities outlined in 2014.
    - Bottom AND surface temperature, sea ice cover and timing, freshwater input, stratification and salinity
    - Fishing and energy development and/or exploitation

WGEAWESS Cadiz March 2015

- Full ODEMM analyses have been completed for the Celtic Seas and Bay of Biscay regions, with fishing as the main pressure sector
- Ecosystem trends,
    - decline in fishing pressure from the Celtic Sea to the Portuguese coast. But increase in the Gulf of Cadiz.
    - Possible rise in key indicators such as the Large Fish Indicator in the Irish Sea and Bay of Biscay, but not in the Celtic Sea and Portuguese waters.
- Mean Sea Surface Temperature has increased in all areas of the Celtic Seas Ecoregion.
- Zooplankton community analysis in the Cantabrian Sea suggests a regime shift between 2001 and 2006.

WK/WGICA Bergen May 2015

- Proposal for a new working group to develop an IEA for the Central Arctic Ocean

WGIMM May Webex

- Continued investigation of coupled models, currently 26 analysed models.
- ICES ASC Session "Social, economic, and ecological impact assessment across marine sectors?"
- Review paper "Evaluation of Integrated Ecological-Economic Models – Review and Challenges for Implementation" for ASC and peer reviewed journal.
- Problems with attendance and finding dates

WGIPEM Plymouth March 2015

- Focus on zooplankton modelling - joint, 1-day meeting with WGZE.
    - Identified good examples of studies that included both models and observations to integrate knowledge on processes.
    - But this is relatively rare. Collaboration needs
        - standardization of measurements;
        - stronger interaction between disciplines;
        - databases or catalogues that show where and which data are available;
        - iterative steps following data sampling, building models, integrating processes, identifying knowledge gaps, informing sampling programs on which parameters to measure etc.
        - efficient and statistically sound ways to compare (or integrate) models and observations.

WGMARS Copenhagen December 2014

- ICES Expert Group network analyses completed – we are all connected, sort of!
- "What hat are you wearing?" manuscript started in 2013.
    - the different individual and institutional roles with which fisheries scientists in the ICES community are faced.
- WGMARS catalysed a stake-holder-scientist meeting on herring spawning ground mapping in 2015.

WGMSFDemo Dublin April 2015

- CFP data use to carry out a Celtic Seas wide assessment for Descriptor 1, 3, and 6 using selected OSPAR Indicators (both common and candidate).
- Progress on an ecosystem-based stratification for the Celtic Seas.
- Quality assured data from the DATRAS data-base that is suitable of the calculation of the MSFD indicators.
- WGMSFDemo will collate and quality assure the relevant data during 2015 and should be in a position to run a Celtic Seas wide assessments using selected indicators in 2016, feeding into the OSPAR 2017 Intermediate Assessment.

WKSpatial Gothenburg November 2014

- Stomach contents showed that in more hypoxic areas cod were feeding at a lower rate, and on less benthic prey
- Low condition cod also take less pelagic (high value?) prey.
- Indicators of the spatial distribution of cod, sprat and herring, from ICES-coordinated international surveys, using the centre of gravity, were updated.
- Proposed continuation via workshops, and will continue to examine cod stomachs and the small-scale properties of fish spatial distribution

4.3.5 ACOM and SCICOM Interaction

In 2014 it was agreed that SSGIEA would be represented on both ACOM and as an aex-officio member of ACOM. This was discussed and agreed by SCICOM at the ASC. The SSG chair attended the autumn meeting of ACOM in this capacity, and in particular the discussion focused on advice delivery and incorporation of the human dimension. As a result, and along with the BSG, WKIRISH1 was set up and successfully run in the spring of 2015 to help link ecosystem work with fish stock advice. A similar process led to the proposal for WKDEICE to provide ecosystem and fisheries advice in the Baltic.

4.3.6 Perceived Needs and Gaps

As stated in the 2014 report, one important future need for SSGIEA is to look to holding a joint meeting of the EG groups and especially the IEA groups. It has been recognized that at this developmental stage, the different EGs will develop based on local conditions and on skills available. However, in the future, we will need to start a process of harmonizing the approaches between groups. The SSG chair explored the possibility of holding a joint workshop session under the auspices of the new EU funded project AORAC under H2020-BG-2014-1, on Atlantic collaboration on wide scale ecosystem issues, but this proved outwith the scope of that project. The SSG chair will explore with the ICES secretariat the potential for a follow up workshop to WKRISCO to fulfil this role. .

4.3.7 Examples of EG activities that fulfil the ICES Strategy and Science Plan

All the regional EG under SSGIEA have principally focussed on Goal 1 of the strategic plan "*Develop an integrated, interdisciplinary understanding of the structure, dynamics, and the resilience and response of marine ecosystems to change*", and on Goal 2 *"Understand the relationship between human activities and marine ecosystems, estimate pressures and impacts, and develop science-based, sustainable pathways.*

This includes the development of a range of worked IEA examples and detailed ecosystem descriptions.

Under Goal 3 *"Evaluate and advise on options for the sustainable use and protection of marine ecosystems"*, the groups are starting to develop the concepts of proactive advice, principally linked to fisheries advice, where ecosystem effects may be important, e.g. in the Irish and the Baltic Seas. The work of the new WGMSFDemo also specifically addresses this area in the context of MSFD advice using CFP data. The work on coupled models by WGIMM & WGIPEM also greatly enhances this understanding.

4.4 SCICOM/ACOM Steering Group on Integrated Ecosystem Observation and Monitoring (SSGIEOM; Nils Olav Handegard, Norway)

4.4.1 Status on SG Terms of Reference

Tor a-f) are common terms of reference for all SSGs and specifies the tasks on how to consolidate EG base, form new EGs, ensure the coupling to the strategic plan, and communication in general between the EG on matters. The specific ToRs for the steering groups are reported on in the following.

ToR g) Identify shortfalls in skills and knowledge needed to achieve the SG objectives, and where capacity building is needed in particular areas, so that ICES can develop training or other solutions. A process to address this was reported on last year, and the findings can be found in last year's report. In summary the common gaps that were reported were lack of hydrographic skills (WGIPS), socio-economics (WGRFS) and analytical skills including

survey design and statistics (IBTSWG, WGIPS, WGBIFS). The impacts of the gaps are difficulty in optimizing over complex survey objectives, the use of recreational fisheries data (socio-economics) and analyses of hydrographical data.

ToR h) Map the EGs and their ToRs against the information and data that ICES needs to deliver the Science Plan and its advisory work, suitably prioritised (SP1.1).

The WKSUREQ concluded that a formalized system for mapping the information flows across the organisation is needed. DIG has initiated a process on collecting metainformation about where the different data products are used, there is an ongoing task to map the SSGIEOM EGs to the information and data they are delivering (7 out of 11 survey groups have responded on this) and there is an initiative between ACOM chair, head of data, DIG and SSGIEOM to formalize this process. The chair aspires to have an overview that maps this in place within 2016.

ToR i-j) The development of methodology and adding value to surveys are mainly carried out within the technology groups (e.g. WGFAST, WGFTFB) and WGISUR+WGISDAA, respectively. Developments for fishery data collection schemes are considered PGDATA and associated EGs (WGCATCH, WGBIOP, WGRFS). AtlantOS is a H2020 project that several of the EGs within the SSG is involved with, and the objective is to develop data processing software for acoustic data and enable the ICES data centre to host data from acoustic surveys.

ToR m) Promote the development within EGs of standards and guidelines for good practice in data collection.

The ICES series of survey protocols (SISP) are progressing well, and almost all survey groups have either finalized the job or have an advanced draft in place. Based on discussions in the SCICOM open session on improving the linkages between data providers and data users, a more standardized way of reporting was proposed. The standard should include how to document time series changes for the data users, and a workshop (WKSUREP) to provide data reporting guidelines from the survey groups was proposed to SCICOM in response to this. The WK will approach the survey groups, the users, including assessment groups, and the survey development groups like WGISUR, PGDATA and WGISDAA.

4.4.2 EG performance/MA ToR Progress

Two groups, the IBTSWG and the WGEGGS2 completed their 3 year cycle and both groups asked for continuation, which was endorsed by SCICOM. Meetings with the chairs from both groups have been conducted and new ToR's have been prepared in accordance with the ICES strategic plan. They are included in the SCICOM resolution package.

4.4.3 EG participation

EG participation is a reoccurring theme, both in terms of skills and attendance. From the point of view of the SSG chair, there seem to be a skill-gap between the survey groups within the SSG and data user groups (typically the assessment groups) that hampers communication. Hopefully the standard data reporting guidelines from the surveys could improve this situation.

4.4.4 Structural diagrams of the consistent EGs

	Expert Group Name	Acronym
1	Interntional Bottom Trawl Survey Working Group	IBTSWG

2	Working Group on North Sea Cod and Plaice Egg Surveys in the North Sea	WGEGGS2
3	Working Group on Recreational Fisheries Surveys	WGRFS
4	Working Group on Biological Parameters	WGBIOP
5	Planning Group on Data Needs for Assessments and Advice	PGDATA
6	Baltic International Fish Survey Working Group	WGBIFS
7	Working Group on Mackerel and Horse mackerel Egg Surveys	WGMEGS
8	Working Group on International Deep Pelagic Ecosystem Surveys	WGIDEEPS
9	Working Group on Beam Trawl Surveys	WGBEAM
10	Working Group on Fisheries Acoustics, Science and Technology	WGFAST
11	ICES-FAO Working Group on Fishing Technology and Fish Behaviour	WGFTFB
12	Working Group on Target Classification	WGTC
13	Working Group on Integrating Surveys for the Ecosystem Approach	WGISUR
14	Working Group of International Pelagic Surveys	WGIPS
15	Working Group on Improving use of Survey Data for Assessment and Advice	WGISDAA
16	Working Group on Electrical Trawling	WGELECTRA
17	Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VII, VIII and IX	WGACEGG
18	Working Group on North-east Atlantic continental slope surveys	WGNEACS
19	Working Group on Nephrops Surveys	WGNEPS
20	Working Group on Atlantic Fish Larvae andEggs Surveys	WGALES
21	Working Group on Commercial Catches	WGCATCH
22	Workshop on Age Reading of Chub Mackerel (*Scomber colias)*	WKARCM
23	Workshop on Age Reading of Dab (*Limanda limanda*)	WKARDAB2
24	Workshop on Age Reading of Seabass (*Dicentrarchus labrax*)	WKARDL
25	Workshop on Age Reading of Horse Mackerel, Mediterranean Horse Mackerel and Blue Jack Mackerel (*Trachurus trachurus, T. mediterreaneus* and *T. pictatus*)	WKARHOM2
26	Workshop on Age Reading of Saith (*Pollachius virens*)	WKARPV
27	Workshop on Maturity Staging of Mackerel and Horse Mackerel (*Scomber scomber* and *Trachurus trachurus*)	WKMSMAC2
28	Workshop on implementation studies on concurrent length sampling	WKISCON2
29	Workshop to Plan and Integrate Monitoring Program in the North Sea in the 3rd quarter	WKPIMP

30	Workshop on the review of the ICES acoustic-trawl survey database design	WKIACTDB
31	Workshop on Egg staging, Fecundity and Atresia in horse mackerel and mackerel	WKFATHOM
32	Workshop on the ICES Egg and Larval Database	WKIELD
33	Workshop on the review of the ecosystem survey requirements	WKSUREQ
34	Workshop on evaluating current national acoustic abundance estimation methods for HERAS surveys	WKEVAL
35	Workshop on scrutinisation procedures for pelagic ecosystem surveys	WKSCRUT

4.4.5 Science highlights

The WGFAST arranged a symposium on ecosystem acoustics. The symposium attracted global participation establishing ICES as a major contributor to this field. See separate report from the symposium.

4.4.6 Examples of EG activities that fulfil the ICES Strategy and Science Plan

See the preceding section on the SSG ToR, where each SSG ToR is linked to an item in the implementation plan. Under each ToR the EG that addresses the specific ToR is mentioned.

4.4.7 Interaction between ACOM and SCICOM

There is a clear need for better communication between data users and data providers, c.f. the report from the BSG/SSGIEOM open session during the ASC 2015. Several actions have been taken to improve this, including developing data reporting guidelines, the SSG chairs participation in the ACOM meeting, and data overview portals.

It is also worth noting that it is not necessary the communication between SCICOM and ACOM at a higher level that is the challenge. It is more that specialized survey groups and data users groups need to communicate on specific issues for relevant for both groups, rather than a situation where communication is established at ACOM /SCICOM level or steering group level.

4.4.8 Perceived needs and gaps

The need for a framework to evaluate and obtain an overview of the data from the survey groups and where this data flows is seen as a main gap. This should be seen as something more than simply an overview of what is presently being collected. The idea is that this could be used as a framework to include the work of WGISUR that could visualize how additional information from the survey groups could be used in, e.g., the IEA processes. The framework must contain the use and potential use of the information, including precision and bias considerations of the various data products. For any advisory process, the information that is used in the advice should be easily available. It could also serve as tool to visualize where the information from a survey flows to document how the survey effort was spent. There are processes initiated to address this, but it will need both development and maturation to fulfil its ambition.

4.5 Benchmark Steering Group (BSG; Jörn Schmidt, Germany)

The Benchmark Steering Group has further worked since the SCICOM midterm meeting on the six tasks. BSG has met during the ASC on Tuesday, 22 September during a lunch break to update on the work on these tasks. The following report builds on the minutes of this meeting.

Task 1: Identifying gaps and incremental improvements in the current benchmark processes

(a) Benchmark timeline: benchmark is a 1.5-2 year process, not just 1 or 2 isolated workshops. The BSG has produced a timeline to help structure the work through the different stages of this process, stressing the importance that sufficient preparatory work is conducted in advance of benchmark workshops. We are now following this timeline for the benchmarks scheduled for 2017.

(b) The subgroup had recommended providing better guidance for external reviewers. The stock assessment benchmark guidelines were revised in January 2015 and guidance for external reviewers now indicates that reviewers must produce a short reviewer's report, which must state whether the benchmarked assessments are appropriate for the provision of management advice.

(c) The subgroup also recommended that of the 3 external reviewers that normally participate in benchmark workshops, one is from an ICES area (but from a different eco-region than pertains to the benchmark), so as to increase the pool of potential reviewers and to ensure that one of the reviewers is familiar with the standard ICES procedures, including the framework for setting reference points. No official ICES response on this, but is happening more often in any case.

(d) Better choice of benchmark proposals: guidance for EGs so that they can make proposals in line with ICES strategic goals.

(e) Regional ecosystem benchmarks: Irish Sea benchmark process going on at present, and will provide ICES with very valuable experience. Detailed discussion of this benchmark process is under Task 3 (below).

(f) One thing over which ICES has no control is the participation of relevant experts and the time they have to perform work. So whereas in the BSG we try to set up a process that can help deliver the required results, we have no power to ensure experts will be available to engage in the process and do the required work.

Conclusions: there isn't any immediate urgent task for this subgroup to perform. The 2017 benchmarks are underway and a BSG subgroup will meet shortly to review the issue lists and try to establish links with other EGs that can contribute to these benchmarks. We need to see how things progress as we follow the BSG agreed timeline for the 2017 benchmarks. For future benchmarks ICES should try to make more use of 'internal' externals (see point c above). It should be noted that a benchmark process can be stopped before the final workshop if sufficient data are not available or if too little work has been done. Rate of progress in the earlier part of the process (e.g. data evaluation workshop) would indicate if it would be necessary to stop or postpone a process.

Task 2: Integration with the data quality assurance groups (PGDATA)

PGDATA met in July 2015 co-chaired by Marie Storr-Paulsen and Mike Armstrong (Jörn Schmidt participated in PGDATA from BSG). PGDATA had 2 main ToRs of relevance for BSG:

a) Review previous ICES benchmark and data compilation reports focusing on quality and utilisation at the benchmark meeting

b) Use the planned benchmark meeting for the Irish Sea as a test case: work with the assessment team to identify the data needed, and develop guidelines for compilation and evaluation of relevant data for benchmark assessments

Main outputs:

- Evaluation of on-going benchmark processes with focus on data quality
- A user friendly template or guideline to improve the process by using the Irish Sea as a case study
- PGDATA shall act as a link between data expert groups and assessment groups (benchmark groups)

Conclusions: Need to ensure that PGDATA developments are incorporated in the benchmark process. In the case of the Irish Sea benchmark, Pieter-Jan Schon, who is very involved in Irish Sea benchmark, also took part in the PGDATA meeting; additionally, Mike Armstrong, co-chair of PGDATA, will chair the Irish Sea data evaluation workshop. So there should be good linkages and transfer of knowledge between the work conducted at PGDATA and the Irish Sea regional benchmark process.

Task 3: Integrated assessments and benchmarks (the presentation focused on the experiences from theWKIrish1 meeting with scientists and stakeholders on September 14-15)

The scoping meeting was held in Dublin on 14-15 September to identify priority actions for the subsequent Irish Sea benchmark meetings. Good attendance from scientists and stakeholders. Main issue identified: Truncated age structure in cod, haddock, whiting, and sole. Stakeholder partners expressed frustration that management measures continue to fail (total mortalities continue to be very high, truncated age structure continues).

Avenues for exploration during the coming months:

- Truncated age structure (cod, haddock, whiting, and sole)
  - Explore empirical evidence of changes in age structure over time
  - Investigating hypotheses of accelerated mortality in Irish Sea
  - Identify hypotheses and investigate tracks for the apparent greater mortality in the Irish Sea (e.g. Carbon 14 signature expected to be very distinctive in Irish Sea fish because of Sellafield nuclear site; the idea is to analyse otoliths of fish caught in other areas, mainly Celtic Sea, to investigate if the fish originate from Irish Sea)
- Multispecies models (results end 2016)
  - EcoPath with EcoSim
  - Ensemble model

Stakeholders will be involved in this process by providing knowledge that will help parameterize trophic interactions in EwE.

Funding is required for the Carbon 14 otolith analysis and for EwE model development; It is not entirely clear at this stage if funding will be available, some scientists are investigating possibilities.

Timeline:

WKIrish 1- Scoping with stakeholders (September 2015)

WKIrish 2- Data Evaluation meeting (November 2015)

WKIrish 3- Stock Assessment meeting, to be renamed... (March 2016)

WKIrish 4- Ecosystem Description and Model tuning (Spring 2016; in conjunction with WGEAWESS meeting)

WKIrish 5- Autumn 2016

Conclusions: very useful and challenging process that can be very helpful for the advancement of integrated benchmarks, assessment and advice. BSG will continue to follow and support this process. The funding needed to develop part of this work is a concern, given that there is no guaranteed source of funding at the moment.

Task 4: Integrating by-catch (marine mammals) advice with fish stocks advice

Simon Northridge's work is closely linked to WGBYC. Simon Northridge spent a few days with the North Sea assessment WG and the Bay of Biscay and Iberia assessment WG this year. Those meetings were to explore together with assessment experts possibilities for integrating by-catch advice with fish stock catch advice. Making progress in these WGs was difficult because even though scientists were welcoming, they were well buried in the things they needed to do to deliver the single-stock catch advice. Simon suggested 3 possible avenues for progressing with this work: provide non-quantitative advice (i.e. identify high by-catch métiers), quantitative advice based on effort data and observed by-catch rates, quantitative advice based on full integration of by-catch in stock assessment models. The first of these options is the easiest for quick delivery of a product. The intermediate option is likely possible with the available data. The third option is more uncertain and would, in any case, be more long-term. It is also necessary to find a place for this type of advice in the ICES advice sheets; it is expected that the new Fisheries Advice sheets, currently under development, would be the most appropriate location for it. WGBYC has a by-catch database and work on it is required, so that it is structured in a way that is more appropriate for a variety of uses.

Graham Pierce presented the work of WGMME, who had been given the following ToR: 'Compile a matrix of threats to the predominant cetacean species in each of the MSFD regional seas. Consider ways in which this information could be incorporated into the ICES advice'. The rationale for this ToR was to allow putting the threat posed by by-catch in the context of other threats. WGMME produced this matrix, considering the marine mammal species selected for the OSPAR common indicators and/or selected by MS in their initial evaluations for MSFD, as well as species considered common and regular. The list of pressures was that agreed by ICG-COBAM (2012). Threat levels were mainly based on informed expert judgement, referring to available data and literature, and classified as High/Medium/Low. For more detail, including explanation of these criteria, see WGMME 2015 report. The resulting matrix identifies by-catch as posing a high risk for harbour porpoise and ringed seal in the Baltic, harbour porpoise in the Greater North Sea, harbour porpoise and common dolphin in the Celtic Sea (including West of Scotland), harbour porpoise, common dolphin and coastal bottlenose dolphin in the Bay of Biscay and Iberian waters. By-catch is not considered a major threat for marine mammals in the Macaronesian area.

As part of this subgroup's work, Mark Tasker will attend the WGMIXFISH-Methods group in October to explore possibilities of integrating by-catch advice with their work on mixed fisheries. ACOM has requested that a demonstration advice on by-catches of marine mammals be available for the ACOM December 2015 meeting. This will need to be prepared over the next 2 months and should consider the work done by Simon Northridge and WGBYC as well as WGMME. There will also be a need to consider whether there should be follow up both in WGBYC and WGMME of this year's work. Mark Tasker is the ACOM leadership person that has been requested in ACOM to follow up on this entire process.

Conclusions: subgroup to work with Mark Tasker towards preparing demonstration advice for the December 2015 ACOM meeting.

Task 5: Role of WGSAM and reviewing of multispecies/ecosystem models for use in benchmarks

Daniel Howell (WGSAM co-chair) will attend WGMIXFISH-Methods in October 2015 to continue the collaboration that these two groups started last year. In particular, they are considering developing models that could account for both technical and biological interactions. The Fcube models used by WGMIXFISH have many métiers and a reduction in the number of métiers is needed to be able to deal with technical and biological interactions simultaneously.

Daniel Howell also explained that WGSAM 2014 conducted a key SMS run for North Sea and even though WGSAM reviewed it (within the available time constraints), an error was later discovered at the same time as an ICES stock assessment meeting and that ways to try and minimise the chance of error should be found. Sigrid will attend WGSAM this year to explore the development of validation methods for complex models (e.g. checks of model outputs against available historical data, sensitivity of results to key assumptions, also potentially analyses with simulated data). Mark Dickey-Collas asked how this linked with WGIPEM's work, and Sigrid Lehuta explained that she's a member of WGIPEM but that she found this group a little reluctant to get involved with the benchmark process, possibly because they are afraid that getting closer to the advisory process might burden them with tasks they consider outside their remit. However, a new subgroup in WGIPEM was proposed (in waiting for approval) to address model skill assessment and possibly start the move toward the use of model results for assessment and advice. Back to back meetings by region, of IPEM members and IEA or assessment working groups were envisaged.

Conclusions: The BSG subgroup to continue work along the lines suggested above

Task 6: Improve integration of WGISDAA (Improving the use of survey data for assessment and advice) in benchmark process

ICES continues to view WGISDAA as an important element in its advisory process by feeding into the benchmark process. However this formal arrangement has conflicted with financial and workload pressures on individuals involved in the assessment process so that WGISDAA rarely had the opportunity to contribute significantly to the benchmark procedure. To make WGISDAA expertise more widely available the meeting has been moved to a period following the July based advisory process to allow the examination of survey issued discovered during the assessment process to be evaluated when more resources are available. In addition it provides the opportunity to make plans for contributions and advice into the benchmark process, which starts with the data workshops in October. The WG group has been working with survey scientists to advise on possible improvements to survey design and efficiency, but because of the

issues mentioned earlier is still short on the input and, importantly, involvement from the assessment working groups.

The following discussion focused on how to improve the connection between the work of the survey groups and the work of those using their products, in particular, the benchmark workshops or the assessment working groups. It was felt that more coordination is necessary between SSGIEOM chair, PGDATA and WGISDAA.

Conclusions: The subgroup will be extended by SSGIEOM chair (Nils Olav Handegard) and PGDATA co-chair (Marie Storr-Paulsen) to work with WGISDAA on improving the communication between survey and assessment groups.

5 Reports of SCICOM Operational Groups

5.1 Data and Information Group (DIG; Ingeborg de Boois, Netherlands)

The Data and Information Group (DIG) met in Copenhagen, 18-20 May 2015. 15 people representing 9 different countries, a representative from OSPAR, Head of ICES Data Centre, and ca. 10 members of the ICES Data Centre joined the meeting. ACOM was represented in the group.

5.1.1 Data availability in ICES groups

The ICES strategic plan implementation influenced by the limited systematic understanding of what data sources are being used, by whom, what is the quality of these data, how access is provided to these data, and when, and where the gaps in provision of data and data products are. This undermines the advice process, and is likely a cause of inefficiencies and duplication of effort.

To (1) have an overview of the datasets/-products used and/or created by all ICES Expert Groups, and (2) gain insight in the data flows between the groups, DIG proposed the following approach to ACOM, SCICOM and SSGIOEM chairs.

Eight pre-selected ICES Expert Groups will be asked to fill in meta data of the datasets/-products they use and/or create and/or manage in an online catalogue, which will be publicly available and searchable. After the eight groups have provided the information, the information and the filling process will be evaluated by DIG, and other groups will be asked to add to the catalogue. The catalogue will also be pre-filled with information about existing ICES managed datasets and data products (stock assessment graphs, survey indices, ICES database regional datasets, etc.). Currently, ICES Data Centre works with WGHIST on the template for the catalogue. This will be ready before the WGHIST meeting in October 2015. Filling in by the eight pre-selected groups is scheduled before the DIG meeting in May 2016.

5.1.2 Automated DATRAS resubmission

ICES Data Centre and IMARES work together on automated resubmission of data in DATRAS. The facility will be available for other institutes when it is operational. By automated resubmission DATRAS and the institute's database will be identical. Currently, resubmission of data is time-consuming, resulting in differences between the source database and the information in DATRAS.

5.1.3 Digital data citation

Introducing DOIs by ICES is possible in due time (see also PUBCOM report). DIG and SSGIOEM will discuss how to implement this for survey data series.

5.1.4 DIG Strategic goals and progress

On all elements of the strategic plan related to data, there are now concrete activities and progress towards achieving the goals (see the DIG Data Plan tables in Annex 2). DIG are reviewing this twice a year and will keep SCICOM informed if further action is needed in order to facilitate progress or discuss alternative approaches.

5.2 ICES Training Programme (Steven Cadrin, USA)

The ICES Training Programme was initiated in 2009 to help build capacity in ICES and to support the scientists involved in the advisory process. ICES offers training courses by high-profile scientists and instructors to ensure that scientists whose work is related

to the advisory process, have the necessary skills. The objective of ICES training is quality assurance in the advisory process.

The ICES Training Programme has been successful in meeting its objectives of increasing the scientific capacity of the ICES community and promoting best practices in marine science. Thirty-five ICES courses and several co-sponsored courses have been offered on a wide diversity of skills, including stock assessment (introductory and advanced), ecosystem modelling, model building, management strategy evaluation, Bayesian inference, fisheries advice, trawl survey design and evaluation, integrated ecosystem assessment, analysing and visualization of Vessel Monitoring Systems, communication of science and advice, and how to lead an effective technical meeting. Each course was taught within the context of the ICES science and advisory system to demonstrate best practices as well as state-of-the-art technical skills. More than 800 students have attended ICES courses from over 30 countries. Most students have been from ICES member countries, representing all member countries but one. Many students and several instructors are from other countries and cooperating organizations.

5.2.1 Progress Report

In 2014, the ICES Training Programme offered five courses, four of which were offered subsequent to the 2014 Training Programme report:

- Stock Assessment Introduction (33 participants; 14-18 July 2014; Copenhagen, Denmark)
- Design and Analysis of Statistically Sound Catch Sampling Programmes (23-27 June 2014; Copenhagen, Denmark).
- Marine Spatial Planning: Processes and Tools (27-31 October 2014; Copenhagen, Denmark)
- Stock Assessment Advanced (12 participants; 3-7 November 2014; Copenhagen, Denmark)
- Application of Geostatistics to nalyse spatially explicit Survey data in an Ecosystem Approach (27 participants; 8 - 12 December 2014; Fontainebleau, France)

Completed course reports for 2014 and 2015 are available on the ICES website (http://ices.dk/news-and-events/Training/Pages/Previous-reports.aspx), and the budget for each course is reported in Table 1.

The 2015 ICES Training Programme has completed one training course, and another five courses are planned for the autumn season, to take place at ICES HQ in Copenhagen:

- Stock Assessment Introduction, 15 – 19 June, ICES, Copenhagen, Denmark (22 participants)
- Opening the box: stock assessment and fisheries advice for stakeholders, NGOs and policy makers, 8-9 October, ICES, Copenhagen, Denmark (15 applicants to date)
- Social science methods for natural scientists, 13-16 October, ICES, Copenhagen, Denmark (11 applicants – tentatively postponed)
- Model development in fish stock assessment: ADMB, TMB, and SAM, 2-6 November, ICES, Copenhagen, Denmark (21 applicants to date)
- Analysing and visualization of VMS and EU logbook data using the VMS tools R package 9-13 November, 2015, ICES Copenhagen, Denmark (15 applicants to date)

- Fisheries management to meet biodiversity conservation needs, 7-10 December 2015, ICES, Copenhagen, Denmark (9 applicants to date)

The ICES Training Programme has also contributed to providing training courses for the DGMARE. This year we offered a two-day general introduction to stock assessment, another will be offered in October on Maximum Sustainable Yield, and possibly another general introduction to stock assessment in November.

5.2.2 Training courses in 2016

Proposals for new and repeated courses are being considered. The Training Group is soliciting instructors for several other courses identified by SCICOM (e.g., climate change). The training group will meet at the ICES ASC to review course proposals and evaluate the business plan as well as continue developments on online teaching and university credits for ICES courses.

New course proposals received to date:

- Training Course in the R Environment (contact Einar Hjorleifsson and Bjarki Þór Elvarsson)
- Training course on broadband/wideband acoustics (contact Dezhang Chu and Verena Trenkel)
- Data-Limited Stock Assessment (contact Anne Cooper and Jim Berkson)
- Management Strategy Evaluation: an Introduction (contact Carryn Lee Le more and Jose de Olivera)

Decisions on which courses, timing and soliciting instructors will be made at the Training Course meeting during the ASC.

5.2.3 Online Training Initiatives

In response to the SCICOM encouragement to develop online training, several initiatives were undertaken. The Training Group recognizes that participation in courses has decreased, and online training could provide a cost-effective method for reaching a wider audience for meeting the programme objectives.

The Training Group, with the support of ICES staff, has been evaluating the various approaches to online training and decided that the most appropriate step would be to expand on the current in-person, lecture-based format with a 'blended' course (i.e., partly in-person and partly online). The 2015 stock assessment introduction course included two online sessions that were designed to expand upon the course and address two deficiencies in the course. An online session was conducted via WebEx to introduce students to R, and the session was effective in preparing students for the in-person portion and allowed more effective use of the limited course time. Another online session is planned to review and discuss a written assignment, which was not possible in the 5-day lecture format, but is an important aspect of the topic. The Training Group will discuss this trial and the most appropriate next step.

ICES staff has corresponded with the World Maritime University and visited their campus in Malmo, Sweden to assess their capabilities for online training. Staff will report to the Training Group on their assessment for the consideration of online courses in the ICES Training Programme. The training group has proposed to use part of the income generated by the Training Programme as well as funding granted by the Bureau in June 2015 (100K out of the total of 300K) to develop the course "how to chair a successful technical meeting", run for the first time in 2012 into an online course. By

doing so, ICES EG Chairs (current and incoming) may better be able to participate. "Externals" will have to pay a fee taking the course.

Overview of income (negative values in red) and expenses (positive values in black) for training courses in 2014 and first half of 2015

1061-26	TCDASSCSP2014	-96,462.52	
1061-26	TCDASSCSP2014	150,950.67	
1061-26	TCDASSCSP2014	54,488.15	Design
1061-27	TCSAI2014	-174,257.99	
1061-27	TCSAI2014	65,402.21	
1061-27	TCSAI2014	-108,855.78	
1061-28	TCMSP2014	-104,071.55	
1061-28	TCMSP2014	131,914.79	
1061-28	TCMSP2014	27,843.24	
1061-29	TCSAA2014	-48,994.73	
1061-29	TCSAA2014	105,591.61	
1061-29	TCSAA2014	56,596.88	
1061-30	TCAGS2014	-156,181.90	
1061-30	TCAGS2014	101,524.19	
1061-30	TCAGS2014	-54,657.71	Geostat
1061-33	TCSAI2015	-137,125.62	
1061-33	TCSAI2015	95,784.86	
1061-33	TCSAI2015	-41,340.76	
		-65,925.98	Total

5.2.4 Training courses 2016

Following the training course meeting on Tuesday 22 September, it was decided that the following courses would be pursued, with the aim of offering them in 2016. This list is still tentative, pending the agreement and availability of instructors are course facilities

- **Training Course in the R Environment** (contact Einar Hjorleifsson and Bjarki Þór Elvarsson) (to be redcued from the proposed seven days, to five days)
- **Training course on broadband/wideband acoustics** (contact Dezhang Chu and Verena Trenkel) (pending confirmation of number of participants, and potential additional costs of survey attendance)
- **Data-Limited Stock Assessment** (contact Anne Cooper and Jim Berkson)
- **Management Strategy Evaluation: an Introduction** (contact Carryn Lee Le more and Jose de Olivera)
- **Stock assessment advanced** (Jan Jaap Poos and second instrcutor TBC)
- **Social Science Methods for Natural Scientists (**Marloes Kraan *et al*). Suggested to run this course in conjunction with the ICES symposia *Understanding marine socio-ecological systems: including the human dimensions in Integrated Ecosystem Assessments* in May, in France.

5.2.5 Training courses in 2017 and beyond

- Stcok assessment introduction
- Opening the box: Stock Assessment and Fisheries advice for stakeholders, NGOs and policy makers
- Climate change
- SS3 Modelling
- Geostatistsics
- Ecosystem Modelling for fisheries management
- Catch sampling and design and analysis of smapling programmes.

5.3 Publications and Communications Group (Secretariat)

PUBCOM met on 19 September 2015. It was chaired by Mark Dickey-Collas, following the recent resignation of Myron Peck as chair, with 17 participants. The meeting noted and thanked Myron for his efforts and leadership during the 2½ years of his tenure as chair of PUBCOM. Then PUBCOM reviewed the year's activities and was briefed by Adi Kellermann of developments in SCICOM in relation to business groups.

5.3.1 Publications- ICES Journal of Marine Science

IJMS remains competitive and submissions continue to increase (forecast 722 for 2015 v 445 in 2012) IJMS is the largest fisheries journal in terms of submissions. Current acceptance rates ca. 35-40%, but to remain within page budget for 2016, more stringent criteria need to bring this down to ca. 30%. Marketing efforts continue to be successful e.g. popular Editor's Choice and Food for Thought articles. Many top cited articles from 2014 were from ICES symposia volumes. However, despite symposia attracting large numbers of participants (300+), some still result in very few submissions. Acceptance rates also vary greatly between symposia. Clear link between motivated conveners and resulting papers in symposia volume. EiC encouraging them to be proactive.

As submissions increase, IJMS cannot publish everything and must maintain page budget. Having increased page budget in recent years, subscriptions and prices cannot increase proportionately. OUP monitors this balance closely together with EiC and ICES. Financial implications of recent page budget increase were not as conservative as predicted due to a one-off archive deal -> 18.5% profit share increase to ICES in 2014. This is unlikely to be repeated and future financial budgets are more conservative. Production times remain competitive. Handling time from submission to first decision ca. 40 days. Time from receipt of final manuscript to online publication down from 5.5 weeks in 2014 to 3.2 weeks in 2015. Backlog of online published papers being allocated to specific volumes also dramatically reduced. Impact Factor for 2014 is 2.38 down from 2.53 in 2013. One explanation is the dilution effect of increased submissions.

OUP and ICES continue to monitor whether moving completely away from print would be beneficial. Currently 1.2% of total potential institutional readership has access to printed journal. OUP has relatively liberal embargo period (1 year). OUP website steers readers towards no-longer embargoed articles and free to read e.g. Editor's Choice as this can help citation factor. On request from PUBCOM, OUP will examine if they can provide additional regional statistics, particularly to see changes in citations and developing countries. PUBCOM is pleased with the general development of the IJMS and thanks EiC and OUP for their hard work.

The OUP contract to publish the ICES Journal of Marine Science is up for renewal 31 December 2016. The terms of the contract require 1 year's notice should ICES decide

not to renew it. The secretariat requested PUBCOM's feedback on the relationship with OUP as a publishing partner. PUBCOM finds there is a good working relationship with OUP and unlikely to do better financially elsewhere.

PUBCOM recommended to continue with OUP as our publishing partner.

5.3.2 In-house Publications (CRR, TIMES, disease leaflets, survey protocols)

Reports from the editors were reviewed and accepted. The editors were thanked again for another year of successful work. A brief discussion took place about the functioning of TIMES.

CRR series editor presented a proposal for improving publication procedure for CRRs. This led to wider discussion on the current role of CRRs. They are valuable and provide an outlet for a synthesis of the science, but the niche is narrowing, e.g. scientists increasingly encouraged to publish in peer-review journals. SCICOM was asked to consider the role of the CRRs including the including a proposal for how to establish a process within SCICOM to identify expert group reports/symposia, etc, that among other things, contribute to the implementation of the ICES Strategic Plan, and how to proceed with the synthesis of this information. The series editor's proposal will be revisited by PUBCOM once the overall CRR issue is examined by SCICOM.

PUBCOM recommended for TIMES that the series editor and secretariat address the use of TIMES with the expert groups and consider improving the TIMES relevance and delivery mechanisms.

PUBCOM recommended that given the narrowing niche of grey literature, and increasing difficulty securing submissions and finalizing reports with authors, SCICOM should consider the role of CRRs, and the need for a strategic review of how to communicate and highlight ICES Expert Group work.

5.3.3 Communications (including events, website, social media and design)

Digital communications plays a big role. Social media offers a cheap way of rapidly expanding communications to a large network. Three channels are the focus of ICES: LinkedIn (discussions and professional notifications) - 5663 members, Facebook (daily activity) - 2015 "likes", Twitter (followers of ICES account more than doubled in a year, important channel) - 2379 followers. In 2014, 9.8% of the traffic to the website came via social media.

Work of EGs is promoted more than ever – LinkedIn announcements of reports, focus articles in newsletters, and website blog "In Other Words". OUP is introducing Alt-Metrics (impact of research in social media sphere) for IJMS articles. It was noted by OUP and PUBCOM that ICES communications provides valuable service in promoting IJMS and is seen by many partners as an excellent communications tool with a wide network. The ICES design, first introduced on the website, has extended fully to publications, powerpoints, etc. Full design guide is now available for designers and inspiration for ICES community.

Numerous outreach events have been organized, particularly during ASC – providing mentoring to early career scientists and others. Science communication networking event taking place this year with participation from 11 Member Countries – aim to produce proposal for science communication Open Session at ASC 2016.

PUBCOM expressed interest in future video opportunities e.g. interviews, instructional, overviews, etc. ICES communications team open to any video/multimedia suggestions, particularly those that can be achieved with available resources.

5.3.4 Review of Category 1 and Category 3 Publications

There were three category 1 resolutions; two for CRRs and one for the re-launching of the ICES Identification leaflets for plankton (formerly Fiches d'Identification du Plancton). All three were discussed. For the plankton leaflets, following the initial submission in 2014, the editors redrafted the resolution with the requested additional detail. PUBCOM supports the proposal and suggests that SCICOM help formulate the proposal into a standard draft resolution.

There were no Category 3 resolutions provided to PUBCOM for consideration.

PUBCOM recommended SCICOM to accept all three category 1 resolutions.

5.3.5 DOI (Digital Object Identifiers)

Secretariat provided update on the progress towards the introduction of DOI (Digital Object Identifiers) numbers. A contract is being signed with DTU Library (the local provider in Denmark). ICES will be able to mint up to 1,000 DOIs annually for publications and datasets. ICES Secretariat will report back to PUBCOM on the progress of the introduction before the SCCOM mid-term meeting.

5.3.6 IJMS conveners' poll and general feedback

A previous PUBCOM and SCICOM action item asked that feedback be requested from conveners affected by the 2012 move away from guest editors of IJMS symposia volumes. A questionnaire was sent out to all concerned and two replies received. Generally positive feedback, and ICES and OUP intend to use the questionnaire for all future conveners to improve the service the journal provides.

5.3.7 Extended abstracts for the ASC

The utility of extended abstracts at ASC and the resulting additional processing time required by ICES Secretariat staff was discussed. It is still causing confusion for many presenters. PUBCOM has drafted a recommendation to SCICOM to discontinue extended abstracts (shown in Annex 1 of the PUBCOM report).

PUBCOM requested SCICOM to consider the document.

5.4 ASC 2015, Copenhagen, Denmark (ICES Conference Coordinator)

5.4.1 Participants

By 4 September, 620 participants had registered for the 2014 ASC. (510 at the same date in 2014)

The early registration fee closed on 1 August to encourage participants to register early.

At a final count on Friday 25 September, 734 people had registered in total, with participants from 37 countries. We had 77 late registrations and 34 no shows.

5.4.2 Presentations and withdrawals

In May we received 542 abstracts (448 in 2014). Following the theme session convenors' selection process, to date, we had 326 oral presentations and 126 posters during this year's ASC. We received ca 40 withdrawals.

Theme session K "Sustainable approaches to aquaculture in the context of environmental change" received only six submissions, so the convenors elected to cancel the session. Theme session J "CIA on the loose" received five submissions, so was run as a workshop. The contributors were asked to present posters.

5.4.3 Registration

The registration fee included morning and afternoon coffee. Lunches were not included this year. This model was tested and deemed successful in 2014, so was used again this year.

5.4.4 Travel funds

24 successful candidates received travel funds from ICES. Most of them were first time participants. In total funds amounting to 10,000 Euro were distributed this year.

5.4.5 Social arrangements

Copenhagen Municipality kindly invited us to an opening reception on Tuesday 22 September at the Copenhagen City Hall at 19:00, with a welcome from Lilian Parker Kaule, member of the employment and integration committee and culture committee (Medlem af Beskæftigelses- og Integrationsudvalget og medlem af Kultur- og Fritidsudvalget.)

The poster session was held on Wednesday 23 September in the foyer of the DGI byen conference centre. There were two free drinks (drinks tickets allocated upon registration), and a cash bar. Drinks were sponsored by the Danish Pelagic Producers Organisation, with a welcome from Esben Sverdrup-Jensen.

Wednesday evening also saw the launch of a new event at the ICES ASC, namely the Projects marketplace. A chance for interaction and discussion with members of key marine projects and initiatives. Project representatives were invited to exhibit in the foyer during the week, with a culmination on the Wednesday evening event (17:30 – 19:00).

The conference dinner was an informal street party, on the top floor of DGI byen, with a great view of the city. Tickets were on sale at the conference registration desk at 40 EUR (not including drinks). 202 tickets were sold.

5.4.6 Conference programme and handbook

This year the handbook was once again be available as i-paper format, available via the ICES ASC website.

The tri-folder programme was be available as usual at the conference in the conference bags.

The extended abstracts were available on a SharePoint site, with access limited to registered conference participants. Access to the site was granted one week before the conference start.

http://www.ices.dk/sites/pub/ASCExtendedAbstracts/SitePages/Home.aspx

Due to limited funds, and the disappointing number of users last year, we did not make use of a conference app this year. For future years a mobile version of the entire ICES website is being considered.

Average attendance at theme sessions and open sessions at ASC 2015

	Title	Av. pax
A	Advancement of stock assessment methods for sustainable fisheries	130
B	Operationalizing ecosystem-based fisheries management	112
C	Ecosystem monitoring in practice (Co-sponsored by PICES)	60
D	New approaches to measure and assess biodiversity	84
E	Beyond ocean connectivity: embracing advances on early life stages and adult connectivity to assessment and management challenges	80
F	Small-scale fisheries under data-limited scenarios	
G	Managing marine ecosystem services in a changing climate (Co-sponsored by PICES)	61
H	Ocean acidification: Understanding chemical, biological and biochemical responses in marine ecosystems (Co-sponsored by PICES)	80
I	A holistic ecosystem approach for marine management and conservation: Opportunities through the application of genetic and genomic approaches	56
J	CIA on the loose (workshop)	
L	Science-industry partnerships: The value of cooperative research in fisheries and marine management	88
M	Social, economic, and ecological impact assessment across marine sectors?	60
N	Seafloor habitat mapping: from observation to management	78
O	Marine spatial planning and fisheries: A stock-take on approaches, examples and future needs	85
P	How to hit an uncertain, moving target: achieving Good Environmental Status under the Marine Strategy Framework Directive	97
Q	From genes to ecosystems: spatial heterogeneity and temporal dynamics of the Baltic Sea (Co-sponsored by BONUS)	85
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S	Basin-scale dynamics at lower trophic levels in the North Atlantic	
T	Practical application of Genetic Stock Identification for the conservation, management, and restoration of diadromous fish species	50

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Bridging the gap between data users and data providers	38
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6 Reports of the SCICOM Strategic Initiatives

6.1 ICES/PICES Strategic Initiative on Climate Change effects on Marine Ecosystems (SICCME; Brian MacKenzie, Denmark, John Pinnegar, UK, Anne Hollowed, USA, PICES, and Shin-ichi Ito, Japen, PICES)

6.1.1 Introduction

SICCME activities are contributing to the overall goals and objectives of both SICCME itself, as well as many of those within the existing and new ICES and PICES Science Plans. This strategic initiative is co-chaired by Drs. Anne Hollowed (USA), Shin-ichi Ito (Japan), Brian MacKenzie (DK) and John Pinnegar (UK).

6.1.2 Recent activities in 2014-2015

The largest event with which SICCME was involved since the 2014 ASC was the organisation and execution of the 3rd International Symposium on the Effects of Climate Change on the World's Oceans, March 23-27, 2015, Santos, Brazil. SICCME co-chairs and members were involved with the overall organisation and planning of the symposium (e. g. convenors or members of steering committee), as well as its execution as chairs of several sessions.

World Oceans Day 2015 Celebration, *8 June 2015, UNESCO Headquarters, Paris, France.* In honour of the United Nations World Oceans Day, celebrated each year on 8 June, the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) organized a full day dedicated to the ocean and its link to the climate system. This event will lead up to the 2015 Paris Climate Conference (COP21). Manuel Barange, representing SICCME, reported on scientific outcomes of the Brazil 2015 conference at a special event for politicians and policy makers (including the French minister of the environment and Prince Albert of Monaco).

Our common future under climate change, *7-10 July 2015, UNESCO headquarters, Paris France*. This four-day Conference is the largest forum for the scientific community to come together ahead of the COP21 of the UNFCCC in 2015 . SICCME ex-Chair Manuel Barange and current co-Chair Shin-Ichi Ito addressed delegates at a parallel session entitled "Transformative pathways to sustain marine ecosystems and their services under climate change", chaired by Manuel Barange and Luis Valdes.

The ICES/PICES Workshop on Modelling Effects of Climate Change on Fish and Fisheries (WKSICCME_Project), chaired by Francisco Werner (USA), Kirstin Holsman (USA), Michio Kawamiya (JPN), Trond Kristiansen (NO), Myron Peck (DE), and Anne Hollowed (USA), will be held in Seattle, USA, August 10-12 , 2015 to:

a) identify a suite of representative future fishing and ecosystem scenarios that could be employed for use in evaluating climate change effects on fish and fisheries.
b) identify a suite of climate models and representative concentration pathyways that would be used to project climate change.
c) Identify suites of single species climate enhanced projection models, multispecies climate enhanced projection models, full food web (e.g., EcoSIM), and dynamic spatially explicit ecosystem models that would be used to project the implications of a and b on commercially important marine fish stocks in the northern hemisphere.

The workshop is being organized primarily by NOAA and IMR as a contribution to SICCME within ICES and PICES, and is expected to attract 50-60 participants.

ICES ASC 2015 theme session G: Managing marine ecosystem services in a changing climate (Co-sponsored by PICES) Conveners: Sebastian Villasante (Spain), Manuel Barange (UK), Keith Criddle (PICES).

SICCME activities since fall 2014-2016.

2014:

Theme sessions at intl. conferences:

2nd International Ocean Research Conference "One Planet One Ocean"

Session "New frontiers in modelling for oceanography, fisheries and marine ecosystem management" Chaired by Pierre Petitgas (France) & Shin-ichi Ito (Japan), Barcelona (Spain), 18 November 2014

2015 ICES ASC Theme and topic sessions, working groups

Theme Session G: Managing marine ecosystem services in a changing climate (Co-sponsored by PICES) Conveners: Sebastian Villasante (Spain), Manuel Barange (UK), Keith Criddle (PICES)

2015 Conferences and Workshops:

3rd Intl. Symposium on Effects of Climate Change on the World's Oceans, Brazil, 2015

-conference completed successfully, including following sessions and workshops chaired by SICCME members:

Theme Session S9: Impact of climate change on ecosystem carrying capacity via food-web spatial relocations. 3rd Effects of Climate Change on the World's Oceans symposium, Brazil, 2015. Co-convenor B. MacKenzie (SICCME co-chair) and Mark Payne

Theme Session S10: Forecasting climate change impacts on fish populations and fisheries. 3rd Effects of Climate Change on the World's Oceans symposium, Brazil, 2015. Co-convenor A. Hollowed (SICCME co-chair), J. King (S-CCME, Canada) and others

Theme Session S11: Impacts on coastal communities. 3rd Effects of Climate Change on the World's Oceans symposium, Brazil, 2015. Co-convenor M. Barange (SICCME co-chair)

Workshop: Addressing uncertainty in projecting climate change impacts in marine ecosystems. 3rd Effects of Climate Change on the World's Oceans symposium, Brazil, 2015. Co-convenors: M. Payne, B. R. MacKenzie, M. Barange, W. Cheung

ICES/PICES Workshop on Modelling Effects of Climate Change on Fish and Fisheries (WKSICCME_Project), chaired by Francisco Werner (USA), Kirstin Holsman (USA), Michio Kawamiya (JPN), Trond Kristiansen (NO), Myron Peck (DE), and Anne Hollowed (USA), will be held in Seattle, USA, August 10-12 , 2015

PICES Annual Meeting

Topic Session S7 "Past, present, and future climate in the North Pacific Ocean: Updates of our understanding since IPCC AR5"; Co-Convenors: Chan Joo Jang (Korea), Ho-Jeong Shin (Korea), Zhenya Song (China), Sukgeun Jung (Korea), Anne Hollowed (USA), Kyung-Il Chang (Korea), Angelica Peña (Canada), Shin-ichi Ito (Japan); Qingdao (China), 22 October 2015

PICES Annual Meeting, S-CCME business meeting, Qingdao (China), 17 October 2015

Keynote presentations at major conferences and events, 2015:

World Oceans Day 2015 Celebration, 8 June 2015, UNESCO Headquarters, Paris, France.

-presentation by Manuel Barange on behalf of SICCME

Our common future under climate change, 7-10 July 2015, UNESCO headquarters, Paris France. –presentations by Manuel Barange and Shin-ichi Ito. Session **Transformative pathways to sustain marine ecosystems and their services under climate change**

Con-convened by M. Baranage and L. Valdes.

6.1.3 Future Activities in 2015-2016

PICES Annual Meeting, Topic Session S7 "Past, present, and future climate in the North Pacific Ocean: Updates of our understanding since IPCC AR5"; Co-Convenors: Chan Joo Jang (Korea), Ho-Jeong Shin (Korea), Zhenya Song (China), Sukgeun Jung (Korea), Anne Hollowed (USA), Kyung-Il Chang (Korea), Angelica Peña (Canada), Shin-ichi Ito (Japan); Qingdao (China), 22 October 2015.

The ICES/PICES Workshop on Economic Modelling of the Effects of Climate Change on Fish and Fisheries (WKSICCME_Econ), chaired by Alan Haynie (USA), John Pinnegar (UK), Lisa Pfeiffer (USA), Mitsutaku Makino (JPN), Jörn Schmidt (DE), and Sophie Gourget (France) will be established and will meet in Brest, Franice associated with the existing 'Understanding marione socio-ecological systems' symposium, in June, 2016.

A 2nd 1-day ICES/PICES workshop on Phase 1: Modelling Effects of Climate Change on Fish and Fisheries (WKSICCME-I), chaired by Anne Hollowed(USA), John Pinnegar (UK), Myron Peck (DE), and Mark Payne (DK) will be held in September, 2016 in Riga.

PICES and ICES are also planning to jointly organize at least 2 theme sessions, pending approval by Science Committees, at their 2016 Annual Science Conferences. These will be on topics related to adaptability of marine biota to climate change impacts and predictability of climate impacts on marine ecosystems and biota at seasonal to decadal time scales.

6.1.4 SICCME leadership:

Three of the co-chairs of SICCME (2 from ICES and 1 from PICES) are scheduled to end their terms in 2014-2015.

The terms of the two ICES appointed co-chairs are scheduled to end at end of 2015 (i. e., following completion of the three year standard term and a 1-year extension at request of SCICOM chair.). Replacement of the chairs will be staggered to maintain continuity. M. Barange rotated off after the Brazil symposium and has been succeeded by Dr. John Pinnegar, CEFAS, UK as of April 1, 2015. B. MacKenzie will stay on until end of 2015. One scientist has indicated a willingness to serve as co-chair: Prof. Dr. Myron Peck, University of Hamburg, Germany. His nomination has been approved by SCICOM at its September meeting.

One of the PICES co-chairs, S. Kim, completed his term at end of 2014, and has been succeeded by Shin-ichi Ito (Japan).

6.2 Strategic Initiative on Biodiversity Science and Advice (SIHD; Jörn Schmidt, Germany, Eva-Lotta Sundberg, Sweden, David Goldsborough, the Netherlands

6.2.1 Summary of activities

The Strategic Initiative had its kick-off meeting during the ICES ASC in Copenhagen at a lunch break meeting on Wednesday, 23 October. 18 participants attended the meeting representing ICES internal and external activities (see membership). In addition 5

– 8 people were not able to attend the meeting, but also expressed interest to be part of the core group. The core group wants to organize its work through concrete actions. However the meeting was too short to discuss and decide on these actions. The actions and the work plan of the Strategic Initiative will be decided on a 2 day workshop, which will likely take place early 2016 in IJmuiden in the Netherlands.

The view in the group was that there is still no clear framework or process of IEAs in ICES, which opens opportunities to develop the social sciences approaches along with approaches in natural sciences, allowing integration early in the process. This process is also necessary to exchange the understanding of language between the different disciplines and develop a common framework.

One suggestion was that IEA should be regarded as a process (in line with the NOOA approach) The SIHD could contribute to ICES work by analysing where things done by social scientists can fit in.

Among the possible actions discussed by the group was a 'pre-mortem' analysis of the Strategic Initiative to identify how aspects of social sciences (including economics) and the humanities can be integrated into ICES work on integrated ecosystem assessments. This will necessarily also touch aspects, which are outside IEAs, including current examples in fisheries work, but the focus was felt to be important to allow the work on concrete actions.

Another important point that was addressed during the meeting was the need to analyse the policy and governance landscape for IEAs and to identify, which questions decision makers want to get answered. Depending on the time horizon when these questions need to be answered, these questions may allow a focused development of actions for the Strategic Initiative.

6.2.2 Past events

TIME	EVENT	VENUE
23 September 2015	Open Session at ICES ASC	Copenhagen, Denmark

6.2.3 Upcoming events

TIME	EVENT	VENUE
Early 2016	Internal 2 day SIHD workshop	IJmuiden, Netherlands
23 – 27 May 2016	Theme session at World Fisheries Congress, 'How can natural science and social science research be integrated into science advice so that it is useful to policy makers and the broader society?'	Busan, South Korea
29 May – 3 June	Symposium on 'Understanding marine socio-ecological systems: including the human dimension in integrated ecosystem assessments' – MSEAS 2016	Brest, France
September 2016	Open Session at the ICES ASC	Riga, Lithuania

6.2.4 Membership

SIHD decided to work with a number of core members to work on SI related activities. The activities will be led by one or two core members and can include also participants outside the core group.

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6.3 Strategic Initiative for Stock Assessment Methods (Steve Cadrin, USA, Ciaran Kelly, Ireland, and Mark Dickey-Collas, ICES)

The ICES Strategic Initiative for Stock Assessment Methods (SISAM) was designed to assure that scientists can apply the best stock assessment methods for developing management advice for fisheries. The first stage of SISAM culminated in a simulation-based workshop to evaluate performance of stock assessment methods and the World Conference on Stock Assessment Methods (WCSAM, 17-19 July 2013, Boston USA). The second stage of SISAM involves continued coordination with Regional Fishery Management Organizations and national agencies, the development of "good practice" guidelines, and further evaluation of model performance. In the second phase of SISAM, progress was made in global coordination of advancement in stock assessment methods, and development of best practices guidance for stock assessment methods.

A theme session on "Advancement of Stock Assessment Methods for Sustainable Fisheries" was convened by SISAM leadership at the 2015 ASC. The theme session promoted the exchange of developments and identification of best practices from ICES assessment groups as well as from Regional Fishery Management Organizations, national fisheries agencies, and academic research. Contributions covered a wide variety of topics that are relevant to stock assessment methods, including the development of new stock assessment methods, performance evaluation of alternative methods for supporting management advice, methods for data-limited situations, incorporation of multispecies and environmental processes in stock assessment, methods for ecosystem assessment and supporting ecosystem-based fishery management, and effectively communicating stock assessment results to fishery managers and stakeholders.

Two joint-sessions were submitted to the 7th World Fisheries Congress (WFC, Busan Korea, 23-27 May 2016). A session on "Advancements in stock assessment and the provision of management advice," initially proposed by SISAM leadership, will serve as the introductory session for a related session on "An honest appraisal of stock assessment, reference points, harvest control rules and management strategy evaluation." SISAM leadership is involved in the dialog with the International Commission for the Conservation of Atlantic Tunas (ICCAT) on a joint expert group on stock assessment methods. In general, ICCAT and ICES have many of the same member countries and many of the same stock assessment scientists are contributing to science and advice for both organizations. Therefore, coordination of methods development should benefit both ICES and ICCAT. SISAM leadership is also involved in the Center for the Advancement of Population Assessment Methodology (CAPAM) and related

Good Practices Guides on selectivity, growth modelling, and data weighting. A CAPAM workshop on "Data conflict and weighting, likelihood functions, and process error" is planned for 19-23 October in La Jolla, USA.

7 Conclusions (SCICOM Chair)

- An extensive documentation by mapping of EGs and their ToRs shows that the Implementation plan and Strategic Priorities are well to very well covered.
- Overall SCICOM concludes that the Science Plan is approaching the end of its second year with implementation that proved being more extensive than shown in the previous performance evaluation, due to cross-cutting benefits not previously documented.
- The mapping includes mechanisms to identify future initiatives which can strategically be developed.
- SCICOM has worked with major organizational issues during the year.
- SCICOM responded to a proposal to reform the Science Leadership and will engage in the design of the future leadership.
- An extensive documentation and review of the ASC was performed. The ASC has already started to become an even more attractive venue.
- The first EGs have concluded their multi-annual ToRs and SCICOM has succesfully implemented a process for evaluation.
- Several IEAs are working on ecosystem and fisheries advice products (WKDEICE, MSFDEMO).
- The Strategic Initiatives play a major role in ICES positioning in a global context. A Strategic Initiative on Human Dimensions in Integrated Ecosystem Assessments (SIHD) was approved and had its inaugurating meeting in ASC 2015.
- The Science Fund is an important complement to ICES Science and should be considered as a long-term approach. The concluded projects from 2014 show that Science Fund gives good to extremely good value for money.
- SCICOM has increased efficiency by working with recurrent tasks via SCICOM Forum leaving more time for strategic discussions in the real life meetings.

The launching of the new Science Plan has been well received in the marine science community. The SCICOM Chair would like to thank the SCICOM members and Chairs of Steering Groups, Strategic Initiatives and Operational Groups for their dedication, responsiveness and hard work in the first year of the new Science Plan.

Annex 1: 2015 List of ICES SCICOM Expert Groups that were dissolved, established, renamed or that changed committee

Type of Action	Name	Chair – Outgoing	Chair – Incoming
Change of Chairs	*SCICOM Steering/Operational Groups/Strategic Initiatives*		
SSGEPD	Steering Group on Ecosystem Processes and Dynamics	Graham Pierce, UK	TBD
PUBCOM	Publications and Communications Group	Myron Peck, Germany	TBD
TRAINING	Training Group	Steven Cadrin, USA	Daniel Duplisea, Canada
SICCME	ICES/PICES Strategic Initiative on Climate Change effects on Marine Ecosystems	Manuel Barange, UK, Brian MacKenzie, Denmark	John Pinnegar, UK, and Myron Peck, Germany
Established Strategic Initiative			
SIHD	Strategic Initiative on the Human Dimension in Integrated Ecosystem Assessments (SIHD)		David Goldsborough (Netherlands), Eva-Lotta Sundblad (Sweden), and Jörn Schmidt (Germany)
Dissolved Strategic Initiative			
SIBAS	Strategic Initiative on Biodiversity Science and Advice (SIBAS)	Henn Ojaveer, Estonia, Mark Tasker, UK	SIBAS dissolved
Established	*Expert Groups*		
SSGEPD	ICES-PICES Working Group on Climate Change and Biologically-driven Ocean Carbon Sequestration (WGCCBOCS)		Nianzhi Jiao, China, Louis Legendre, France, and Richard Rivkin, Canada
SSGIEA	ICES/AMAP/CAFF/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (WGICA)		Chairs to be decided
Change of Chairs	*Expert Groups*		
SSGEPD	Working Group on Biodiversity (WGBIODIV)	Simon Greenstreet, UK	W. Nikolaus Probst, Germany and Oscar Bos, the Netherlands
SSGEPD	Working Group on Small Pelagic Fishes, their Ecosystems and Climate Impact (WGSPEC)	Jürgen Alheit, Germany (outgoing Co-Chair)	Athanassios Tsikliras, Greece (incoming Co-Chair)
SSGEPD	Working Group on Phytoplankton and Microbial Ecology (WGPME)	Xose Anxelu Moran, Spain (outgoing Co-Chair)	Marie Johansen, Sweden (incoming Co-Chair)
SSGEPD	Working Group on Crangon fisheries and life history (WGCRAN)	Marc Hufnagl, the Netherlands	Josien Steenbergen, the Netherlands

Type of Action	Name	Chair – Outgoing	Chair – Incoming
SSGEPI	Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)	Neil Ruane, Ireland	Ryan Carnegie, USA
SSGEPI	Working Group on Aquaculture (WGAQUA)	Pauline Kamermans, Netherlands, Peter Cranford, Canada, and Karin Kroon Boxaspen, Norway	Dave Jackson, Ireland, Myriam Callier, France, and Ole Torrissen, Norway
SSGEPI	Working Group on the Value of coastal Habitat for Exploited Species (WGVHES)	Rom Lipcius, USA and Håkan Wennhage, Sweden	Josianne Støttrup, Denmark, Rochelle Seitz, USA, and Karen van de Wolfshaar, the Netherlands
SSGEPI	Working Group on Marine Habitat Mapping (WGMHM)	Pål Buhl-Mortensen, Norway	James Strong, UK
SSGEPI	Working Group on Marine Chemistry (MCWG)	Katrin Vorkamp (outgoing Co-Chair)	
SSGEIA	Working Group on Integrated Physical-biological and Ecosystem Modelling (WGIPEM)	Myron Peck, Germany and Rubao Ji, USA	Morgane Travers-Trolet France, and Marc Hufnagl, Germany
SSGIEA	ICES/HELCOM Working Group on Integrated Assessments of the Baltic Sea (WGIAB)	Christian Möllmann, Germany	Saskia Otto, Germany, Martin Lindegren, Denmark
SSGIEA	Working Group on Ecosystem Assessment of Western European Shelf Seas (WGEAWESS)	Enrique Nogueira, Spain, Dave Reid, Ireland, Pascal Laffargue, France, and Maria de Fatima Borges, Portugal	Steven Beggs, UK and Eider Andonegi, Spain
SSGIEA	Working Group on the Northwest Atlantic Regional Sea (WGNARS)	Sarah Gaichas, USA	Geret DePiper, USA
SSGIEOM	International Bottom Trawl Survey Working Group (IBTSWG)	Anne Sell, Germany	Kai Wieland, Denmark and Corina Chaves, Portugal
SSGIEOM	Working Group 2 on North Sea Cod and Plaice Egg Surveys in the North Sea (WGEGGS2)	Christophe Loots, France	Matthias Kloppmann, Germany
SSGIEOM	Working Group on Biological Parameters (WGBIOP)	Francesca Vitale, Sweden	Pedro Torres, Spain
Dissolved	***Expert Groups***		
SSGEPD	ICES/PICES Workshop on Modelling Effects of Climate Change on Fish and Fisheries (WKSICCME_Project)	Francisco Werner, USA; Kirstin Holsman, USA; Michio Kawamiya, Japan; Trond Kristiansen, Norway, Myron Peck, Germany; and Anne Hollowed, USA	

Type of Action	Name	Chair – Outgoing	Chair – Incoming
SSGEPD	Workshop on Growth-increment Chronologies in Marine Fish: climate-ecosystem interactions in the North Atlantic 2 (WKGIC2) [to be dissolved after the meeting on 18-22 April 2016]	Bryan Black, USA, and Christoph Stransky, Germany	
SSGEPD	Workshop of the Working Group on Eel and the Working Group on Biological Effects of Contaminants (WKBECEEL) [to be dissolved after the meeting on 25-27 January 2016]	Caroline Durif, Norway, and Bjørn Einar Grøsvik, Norway	
SSGEPI	Workshop on Probabilistic Assessments for Spatial Management (WKPASM)	Vanessa Stelzenmüller, Germany, and Roland Cormier, Canada	
SSGEPI	Workshop on Conflicts and Coexistence in Marine Spatial Planning (WKCCMSP) [to be dissolved after the meeting in February 2016]	Andreas Kannen, Germany, and Kira Gee, Germany	
SSGIEOM	Workshop on the ICES Egg and Larval Database (WKIELD)	Cindy van Damme, the Netherlands, and Carlos Pinto, Denmark	
SSGIEOM	Workshop on the review of the ecosystem survey requirements (WKSUREQ)	David Reid, Ireland, and Nils Olav Handegard, Norway	
SSGIEOM	Workshop on evaluating current national acoustic abundance estimation methods for HERAS surveys (WKEVAL)	Ciaran O'Donnell, Ireland	
SSGIEOM	Workshop on scrutinisation procedures for pelagic ecosystem surveys (WKSCRUT)	Matthias Schaber, Germany	
New Workshops			
SSGEPI	Bayesian Belief Network Case Studies (WKBNCS)		Roland Cormier, Canada, and Vanessa Stelzenmüller, Germany
SSGEPI	ICES/PICES Workshop on Economic Modelling of the Effects of Climate Change on Fish and Fisheries (WKeconSICCME)		Alan Haynie, USA; John Pinnegar, UK; Lisa Pfeiffer, USA; Mitsutaku Makino, Japan; Jörn Schmidt, Germany; and Sophie Gourget, France
SSGEPD	ICES/PICES Workshop on Phase 1: Modelling Effects of Climate Change on Fish and Fisheries (WKSICCME1)		Anne Hollowed, USA, John Pinnegar, UK, Myron Peck, Germany, and Mark Payne, Denmark
SSGEPD	Workshop on Sea Trout 2 (WKTRUTTA2)		Ted Potter, UK, and Johan Höjesjö, Sweden

Type of Action	Name	Chair – Outgoing	Chair – Incoming
SSGIEA	Workshop on developing integrated advice for Baltic Sea ecosystem-based fisheries management (WKDEICE)		Rudi Voss, Germany, Christian Möllmann, Germany, and Maciej Tomczak, Sweden
SSGIEOM	Workshop on cost benefit analysis of data collection in support of stock assessment and fishery management (WKCOSTBEN)		Mike Armstrong, UK and Jon Helge Vølstad, Norway
SSGIEOM	Workshop to establish reporting guidelines from survey groups (WKSUREP)		Nils Olav Handegard, Norway, and Marie Storr Paulsen, Denmark
SSGIEOM/BSG	Second workshop on the impact of ecosystem and environmental drivers on Irish Sea fisheries management (WKirish2)		Mike Armstrong, UK,
EGs Renamed			

Annex 2: DIG Data Plan tables

Regional Facilitation Headline action	Detail	Performance measure	Timing	Status DIG 2015	Status DIG 2014	Resource implication Data Centre	DIG	Other
Regional operational products for Marine Strategy Framework Directive (MSFD) and Data Collection Framework (DCF)/Multi-annual programme (DC-MAP)	(a) MSFD workflow: Collaboration between ICES Data Centre and Regional Sea Conventions/other organisations with respect to MSFD (WISE-Marine production process). This assumes a good flow of data/data harvesting into the data centre, and this can imply more resources in certain data types where data are not readily provided. (b) Leading to a joint MSFD data flow vision paper. Also depends on WISE-Marine. Link to secretariat plan.	(a) Workflow(s) operational and ready for uptake into WISE-Marine (b) Joint paper strategy accepted by stakeholders at EU level	- (a) OSPAR Hazardous substances: milestone 2014 - (a) HELCOM Eutrophication: milestone 2014 - (a) OSPAR Eutrophication (2015) - (b) MSFD Data vision paper: 2014.	05/2015: a. Progress on all workflows i.e. EUTRO-OPER, (see also chapter 4 of this report). b. complete 09/2015: a. EUTRO-OPER link: http://ocean.ices.dk/eutro-oper/ Baltic boost funded – ICES DC to build up data flow and indicators (cf EUTRO-OPER) for contaminants Impulsive underwater noise project funded under OSPAR, building up noise register before spring 2016	05/2014: a. Progress on all workflows i.e. EUTRO-OPER, (see also chapter 4 of this report). Online tools are developed. Documentation on methodology is still not there. b. Started, drafted template and vision paper under development. Vision paper accepted by WGDIKE.	This assumes a good flow of data/data harvesting into the data centre, and this can imply more resources in certain data types where data are not readily provided.		
	New processes/products from **existing data** Advisory and Science with respect to MSFD: calculations for indicators. Needed: data selections, algorithms,	a) Uptake of ICES dataset products in EG's responsible for MSFD indicators b) Operational provision of datasets, including discovery and download services	Fish and litter Timeframe: 2014-2015 for development, and from 2016 onwards fine-tuning	05/2015: (offshore) litter: see section 4.6 of this report 09/2015: OSPAR data call on litter from trawl surveys	05/2014: (Offshore) litter: In progress. Drafted extension to trawl survey format			

	calculation examples. Challenge: who is going to decide on the final calculations and data selections? Workshop on MSFD related DC-MAP indicators. Refer to table (MSFD table of ICES data/WG's and their operational product linkage)				for marine litter, needs further iteration. ICES will try to establish a WG on Marine litter as a complement to existing groups/RSC processes			
	New datasets and products Advisory and Science: MSFD - master data holdings; data storage, calculations for indicators. Noise, microplastics, acoustic fish data (WGFAST). Needed: data collection guidelines, data, responsible WGs for data, algorithms, calculation.	Products and/or regional data management established (where mandate is given)	2015 for setup, implementation from 2016 onwards.	05/2015: Microplastics & acoustic data: see section 4.6 of this report. Indicator calculation: see section 4.2 of this report 09/2015: WKEVAL (acoustics, Aug 2015) created formats and draft data flow WKIACTDB (acoustics, Oct 2015) final plan for acoustics database, trawl data and oceanographic data		Depending on the level of ambition regarding establishing new international datasets and systems, additional resources may be required		
	- Data requirements with regard to multi-species assessments (input for assessments). Currently, multi-species assessments are applied in e.g. Baltic, but insufficient spatial data products are available. Baltic, other areas. (action plan to be created). Needed: clear data request (unless no data are available)	(a) Successful data call(s) (b) Provision of spatial data products	Baltic: 2014-2015	05/2015: no action 09/2015: WGINOSE requests for data to feed the model (2014, 2015). No other requests received.	05/2014: no action			

	- Data requirements for e.g. one species from all fish surveys (WGEF, WGNEW) ; search facility over all data, not only for raw data but also for products. (joint WGEF, WGNEW, DIG proposal -action DIG chair)		workshop in 2014 to list product requirements	05/2015: WKIDP took place and was successful. Report available via ICES website 09/2015: Ingeborg check with Vaishav on WKIDP action status	05/2014: workshop is planned in October and will be chaired by Clara Ulrich	Workshop participation and follow-up		
End-to-end workflow for scientific advice production	- RA-CMS linking to data outputs from Expert groups (connecting the scientific reports to advice production).	Successful implementation of interfaces to a) scientific output from EG reports b) scientific output from assessment models	Starting 2014 (depends on timing RA-CMS development).	05/2015: Standard graphs: see section 4.6 of this report 09/2015: SLD (stock list database) – containing definition of the stock (reference database). Advice is starting to use it.	05/2014: Process delayed. Currently concentrating on stock input and expanding standard graphs to other stocks. System renamed CARA.	Volume of activity on RA-CMS would require additional technical resource		
	- RA-CMS linking to data outputs from RDB-Fishframe	See (b) above	2015	05/2015: no action 09/2015: no action as RDB Fishframe is related to RCMs. This is next phase.		Dependent on progress in development (and funding) of RDB-Fish-Frame		Dependent on progress in development (and funding) of RDB-Fish-Frame
Mobilising aquaculture specific data	- Aquaculture databases: exact description to be decided. Related to WGAQUA.	Products and/or regional data management established (where mandate is given)	starting from 2014.	05/2015: no action needed (agreed upon by WGAQUA as the group does not see the need for an aquaculture database)	05/2014: no action	Depending on the level of ambition regarding new datasets and systems, additional resources	Depending on the level of ambition regarding new	

						may be required	da-tasets and sys-tems, addi-tional re-source s may be re-quired	
Mobilising Arctic specific data	- In cooperation with AMAP, getting data from small artic re-search institutes. Imple-menting data formatting tool.	Milestone: implementing the tool, first half 2014. Performance measure: receiving data	starting 2014	05/2015: Slow progress, some testfiles exchanged. The structure of the data committees is not clear. Meeting in October relate to the polar data forum; Helge Sagen and Taco de Bruin will attend 09/2015: Helge to report on it in May 2016	05/2014: In progress. Some testing and need further documentation of SIMON sys-tem Helge Sagen (DIG) nomi-nated to Com-mittee on Information and Data Service (CDIS) of SAON	A higher level of technical sup-port/guid-ance could be antici-pated		

International Standards and interoperability			**Timing**	**Status DIG 2015**	**Status DIG 2014**	**Resource implication**		
Headline action	**Detail**	**Performance measure**				**Data Cen-tre**	**DI G**	**Other**
Ensuring INSPIRE readiness for ICES managed datasets/data services	- describe and make available all ICES/ICES ex-pert group managed da-tasets, data products or services through ISO/IN-SPIRE standards to allow their discovery and reuse	- All ICES datasets, includ-ing those that exist only within an expert group , are adequately described and the 'discovery' infor-mation are available	- Request to EG's to be filled 2015	05/2015: Technical complete; Jens Ras-mussen helped validating the Data Centre's work. Not pub-lished yet.	05/2014: ICES Data Services have an online system (INSPIRE compatible).	Some addi-tional guid-ance and tools		ICES ex-pert groups will need to incor-porate

	by other expert groups, processes and member country activities	through the ICES online portals		Content: no information from EGs 09/2015: see above		will be needed		into their work
Encouraging the broader use of ICES datasets by implementing IODE quality flagging schema	building on the quality control database that is in the process of being populated and then exposing this to online users in a digestible way to make the linkage between type of data, type(s) of QC performed and the QC flags applied to the data	- QC database online - QC flags included in data downloads	2014-2018	05/2015: is in work plan –work planned after DIG 2015 meeting. 09/2015: see action list for follow up	05/2014: no progress			

Knowledge transfer and professional development				Status DIG 2015	Status DIG 2014	Resource implication		
Headline action	**Detail**	**Performance measure**	**Timing**			**Data Centre**	**DIG**	**Other**
Input to key data symposia and science meetings	- Data theme sessions (ASC, IMDIS etc): annual theme session proposal ASC by DIG	(a) presentation and promotion of ICES work at key events (b) requests for new services/projects resulting from those activities	-IMDIS runs in 2015, 2017 - ASC annual cycle	05/2015: Proposal 2015 ASC was not accepted by SCICOM. There is a need for 'Data' as a topic at ASC, but may be in a different format than a theme session.	05/2014: IMDIS will not take place in 2015 so a proposal for ICES ASC 2015 was prepared by DIG 2014			
Training and reference guides for scientists and data managers	- ICES training courses: 'Making the most of ICES Data', modular, webinars?. - Online materials and guidance: WKIDG in 2014	(a) metrics on usage of reference materials (b) requests for new services/projects resulting from reference materials/training (c) Increased awareness of data management/ICES services in new sectors	- Training: end 2017 - Workshop to produce reference guide in 2014 (WKIDG, proposed)	05/2015: DIG worked on a proposal for training development 09/2015: see action list for follow-up	05/2014: In progress.		Leading workshop	

Data stewardship and data management

Headline action	Detail	Performance measure	Timing	Status DIG 2015	Status DIG 2014	Resource implication		
						Data Centre	DIG	Other
Data archaeology; identifying and making available datasets that are relevant to the marine community	- (a) benthic historic data recovery. Plan ready, no timeframe. Connected to BEWG, DGMARE (DC-MAP related), perhaps EMODnet biology? - (b) Legacy data: data that are in other systems, but not available to the wider world. Linking to other data archives i.e. through metadata -(c) other historic data	(a) inclusion of pilot project in EMODnet biology (b) Providing discovery services for archived information (through EG's) (c) Where resource, to run data recovery projects	(a) Start 2014. (b) follow-on from 'INSPIRE readiness' activity under heading 3	05/2015: a. see section 4.5 of this report b. see section b. see section 4.5 and 7.2.3 of this report c. no action 09/2015: b. WGHIST & metadata from EGs c. WGHIST metadata	05/2014: a. benthic historic data recovery proposal was ready. After discussion not put there due to wrong focus. Work package is on hold. b. See chapter DIG report 2014 chapter 5	Historic data recovery will require additional resources/ funding and this may be possible in part through EMODnet biology		
Ensuring ICES data are citeable in the digital age, and therefore making the datasets easier to discover	Digital data citation and publication: ensuring ICES data are citeable in the digital age, and ensuring contributing data sources are duly credited, as well as guiding the ICES member countries on how to approach digital citation	Creating a strategy for digital citation of data resources, in agreement with PubCom	2014-2015	05/2015: See section 5 of this report 09/2015: Minting DOIs possible in autumn 2015 DIG 2016: practical implications of DOIs (IODE cookbook)	05/2014: in progress. See chapter DIG report 2014 chapter 5			

Data stewardship and data management						Resource implication		
Headline action	**Detail**	**Performance measure**	**Timing**	**Status DIG 2015**	**Status DIG 2014**	**Data Centre**	**DIG**	**Other**
Maintaining the user rights, security and integrity of the data sources to ICES managed datasets	- Data policy, facilitation of rights issues - Data security, and implications if data portfolio changes in nature (i.e. VMS, VME etc.)		Annual basis, 2014-2018	05/2015: No action needed, data policy update scheduled for 2016. See also section 5.2.2 of this report **2016: relate to new DCF!**	05/2014: RDB-FishFrame data policy drafted but not agreed by all participating countries yet			