

Oceanography Committee (OCC) Resolutions

2008/2/OCC01 The **Working Group on Zooplankton Ecology [WGZE]** (Chair: M. C. Benfield*, USA) will meet in Tórshavn, Faroe Islands from 30 March – 2 April 2009 to:

- a) Produce a summary of recent developments in plankton research and monitoring (e.g. seasonality, abundance, community structure, biodiversity, evidence/rationale for incorporating zooplankton in monitoring) with a view to further analysis and subsequent publication;
- b) Assess and report on the outcomes of WKZEM, the ASC 2008 theme session Q, and the 2008 WGZE/WGPBI joint meeting;
- c) Provide expert knowledge and guidance to ICES Data Centre on a continuous basis including a progress on the digitizing project and begin an inventory of historical data and samples;
- d) Review the ICES Plankton Status Report and report on the progress of linking the Status Report data to the ICES data centre;
- e) Review progress in zooplankton taxonomy with particular reference to developments within ICES;
- f) Produce an overview of trends in plankton communities in the ICES area, including jellyfish, for the ICES Position Paper on Climate Change.

WGZE will report by 1 May 2009 for the attention of the SCICOM and ACOM.

Supporting Information

Priority:	The activities of this group are a basic element of the Oceanography Committee, fundamental to understanding the relation between the physical, chemical environment and living marine resources in an ecosystem context. Reflecting the central role of zooplankton in marine ecology, the group members bring a wide range of experienced expertise and enthusiasm to bear on questions central to ICES concerns. Thus the work of this group must be considered of very high priority and central to ecosystem approaches.
Scientific justification and relation to action plan:	<p>a) The central ecosystem role of zooplankton and demonstrable links with climate change are increasingly realized. The sample and data collation effort for zooplankton is growing, alongside expanding national and international demands for monitoring data. There are moves and projects proposing global syntheses, regional ecosystem assessments and autecological studies of key species across latitudinal ranges. These projects, syntheses and global collaborations must be enabled and supported.</p> <p>b) The Joint WGZE/CIESM Workshop to compare Zooplankton Ecology and Methodologies between the Mediterranean and the North Atlantic (WKZEM) to be held in Crete, Greece, 27–30 October 2008, will be a major international event. The outcomes will be important to the future aims and plans for plankton research. As the originators of the symposium, the WGZE should assist in producing a review of the outputs and issues highlighted. Similarly, as the proposers of Theme Session Q for the 2008 ASC, and as one half of the joint WGZE/WGPBI meeting in April 2008 we would like to follow up on progress made in these events.</p> <p>c) Within ICES and generally, data management of biological information needs to be reviewed and ongoing efforts and consultations discussed.</p> <p>d) This is a repeating task established by the Working Group in 2000 to monitor the plankton abundance in the ICES area. The material presented under this item updates and expands the annual Summary Plankton Status Report in the</p>

	<p>ICES area. Reported results are significant observations and trends based on a wide range of time-series sampling programmes. Efforts are in hand to expand the report spatially and to include phytoplankton and elementary physics and to facilitate comparative analyses and setting monitoring standards and recommendations.</p> <p>e) The WGZE has been very active in defending taxonomic skills in the ICES region (e.g. promoting taxonomic training courses, producing zooplankton checklists, ecological indices based on zooplankton diversity and collating data of zooplankton abundance at a wide distributed network of sampling sites). With this ToR the group seeks to work towards the development and enhancement of the existing ICES Fiches Identification Sheets and for developing them into a modern web-based format.</p> <p>f) This is a request from SGCC in order to contribute to the ICES position paper on Climate Change.</p>
Resource requirements:	Resource required to undertake the activities of this group is negligible. However, ICES must be committed to provide some sponsorship and support for workshops, publication costs for the Plankton Status Report, and the 4th Zooplankton Symposium.
Participants:	The group has an enthusiastic core membership, and is successfully making efforts to attract broader participation both across ICES nations and across relevant skills. The Group is normally attended by some 20–25 members and guests.
Secretariat facilities:	None, beyond communication support.
Financial:	Beyond the publication costs for the Plankton Status Report and the Proceedings of the WKZEM Workshop, no other current financial implications.
Linkages to advisory committees:	The Group reports to the Oceanographic Committee, ACE and ACME (information also relevant to some ACFM aims). Mainly WGZE provides scientific information on plankton and ecosystems and welcomes input from other committees, working/study groups etc..
Linkages to other committees or groups:	Any and all working and study groups interested in marine ecosystem monitoring and assessments, modelling and/or plankton studies, including fish and shellfish life histories and recruitment studies. Strong working links have been developed between WGZE and Mediterranean colleagues (CIESM).
Linkages to other organizations:	Links with the WGMDM, WGRP, WGCCC, WGPE and WGHABD are intended and some contact is maintained. The WGZE input to REGNS is an ongoing effort. The Plankton Status Report is of interest and practical use to a range of interested groups within ICES, PICES, CIESM, GOOS and GLOBEC with other national and international research groups and agencies. Increasingly marine research, marine management and even marine institutes are re-aligning to take an ecosystem view. These linked and collaborative approaches between many working and study groups must be encouraged. IGBP, SCOR, ESF, COML/CMarZ, and others have research activities meetings etc., of interest and relevant to the activities of the WGZE. Contacts are maintained through networking and collaborative activities.

2008/2/OCC02 **The Working Group on Modelling Physical Biological Interactions** [WGPBI] (Co-Chairs: Charles Hannah, Canada, and Uffe Thygesen, Denmark) will meet in El Rompido (Huelva) Spain from 31 March to 2 April 2009 to:

- a) Discuss and evaluate new results concerning physical-biological interactions;
- b) Complete the publication of the Manual of Recommended Practices for Modelling Physical-Biological Interactions in Fish Early-Life History;
- c) Prepare for the ASC theme session on "Death in the Sea," the Workshop on Mortality (WKMOR) and evaluate advances on modelling fish early life stages;
- d) Demonstrate potential effects of climate change on the lower trophic levels of marine ecosystems;
- e) Develop a statement of requirements for monitoring data to be useful for development and validation of models of physical-biological interactions and review the state of micro-instrumentation available for use in monitoring;
- f) Meet with the Working Group on Modelling Harmful Algal Bloom Dynamics (WGHABD) and develop projects of mutual interest.

WGPBI will report by 30 April 2009 to the attention of the SCICOM.

Supporting Information

Priority:	The WG should be given high priority, since it is concerned with the evaluation and development of the modelling tools used to increase the understanding of the interaction between the living resources in the sea and its ambient physical and abiotic environment. This understanding is essential to the successful development of predictive capability of the state and evolution of the ecosystem for issues such as harmful algal blooms, eutrophication, marine protected areas, fish recruitment, and global change. This contributes directly to fulfilling the vision of ICES, "to improve the scientific capacity to give advice on the human impact on, and impacted by, marine ecosystems."
Scientific justification and relation to action plan:	<p>The work of WGPBI contributes to the following ICES Activities:</p> <p>Action Plan no. 1.5 (modelling biological-physical interactions in the sea),</p> <p>Action Plan no 1.1 (provide feedback about research needs),</p> <p>Action Plan no 1.2 (increase knowledge with respect to functioning of the ecosystem).</p> <p>a) Providing a forum for the presentation and discussion of new results is an important component of the Group's mandate.</p> <p>b) The participants at WKAMF have completed the "Manual of Recommended Practices for Modelling Physical-Biological Interactions in Fish Early-Life History". A resolution for publication as an ICES Cooperative Research Report has been prepared.</p> <p>c) The larval fish subgroup identified mortality as the top priority topic. To address this issue we propose a Theme Session for the 2009 ICES ASC and a workshop for 2010. The group also supports Sarah Hinckley (WGPBI member) and co-authors Bern Megrey and Al Hermann in their proposal to write a book tentatively titled "Methods for spatially-explicit individual-based modeling of marine organisms: coupling of biology with hydrodynamics." The book was inspired by the WKAMF Manual of Recommended Practices. WGPBI will continue to evaluate advances on modelling fish early life stages with a focus on the topics recognised as priority topics by the group in 2008.</p> <p>d) Global circulation models predict significant warming throughout the globe under higher levels of greenhouse gas. Precipitation and wind fields are also</p>

	<p>predicted to change and these atmospheric changes will impact the ocean with effects on hydrographic properties, currents and ultimately marine ecosystems. Politicians, fisheries managers and increasingly the public are demanding answers from scientists on the most likely outcome from predicted climate change.</p> <p>e) The amount and availability of environmental monitoring data is increasing in the ICES area. As potential users of the data, the modellers need to make a statement about the requirements for the data to be useful for model development and application over the next 5–10 years. For example what are the modellers requirements for a minimum suite of observables, and for archival and assessibility? The draft statement needs to be revised intersessionally. In addition, instrumentation is constantly evolving and getting smaller. The WG needs to understand what is possible in terms of mounting instruments on gliders and floats.</p> <p>f) WGPBI and WGHABD have planned an overlapping meeting for 2009. The goal is to explore topics of mutual interest between members of the WGs and facilitate collaborations between members of the two groups.</p>
Resource requirements:	None
Participants:	The WG is normally attended by some 20–30 members and guests. The Working Group benefits from the participation of those outside of the modelling community. Observational and experimental scientists with an interest in physical-biological interactions are encouraged to attend.
Secretariat facilities:	None.
Financial:	No financial implications.
Linkages to advisory committees:	ACOM
Linkages to other committees or groups:	ICES-IOC Working Group on Harmful Algal Bloom Dynamics, WGRP, BSRP, WGLESP, WGZE, LRC
Linkages to other organizations:	The work of this group is closely aligned with similar work in GEOHAB (IOC/SCOR), GLOBEC (IOC/SCOR), IMBER and PICES.

2008/2/OCC03 **The Working Group on Operational oceanographic products for fisheries and environment [WGOOFE]** will be established (Co-Chairs: Morten Skogen*, Norway, Mark Dickey-Collas*, the Netherlands), will meet at GKSS/BSH in Hamburg, Germany, 24-26 November 2008 to:

- a) Prior to meeting, publicise the activities of the working group to attract potential members, with an emphasis on users;
- b) Through the delivery of working documents present initial oceanographic products (based on the findings in WKOOP in 2008) that can be realistically regularly delivered from the group or individual members;
- c) Refine and evaluate this list of products to the needs of the users, including format and timing, and identify gaps in the products available.
- d) Initiate the process on identifying who is to regularly produce and disseminate what products and when. Where practical, tailor products to fill the identified gaps;

- e) Promote and ensure exchange with operational organizations and services (for example GMES MCS, GOOS regional alliances) to stimulate development of products appropriate for the ICES user base.

WGOOFE will report by 10 December 2008 to the attention of the SCICOM.

Supporting Information

Priority:	There is an urgent need to incorporate the field of operational oceanographic products into ICES to be able to support fisheries research, assessment and management advice and other ecosystem approach related activities.
Scientific justification and relation to action plan:	WGOOFE justification: a) To make the products of WGOOFE relevant and encourage them to be used within ICES, it is essential to engage users in the work of the WG, and not make the group a fora only for operational oceanographers. b) Available operational oceanographic products are to be used as initial products to initiate a dialogue with the users of their needs and possible use of the products. c) The dialogue will define improved products to better meet the user needs d) To ensure regularity of the products to be delivered WGOOFE will identify the producers e) Several large projects are running operational oceanographic services. To ensure the relevance of their works, WGOOFE will establish a close dialogue with these initiatives to stimulate for delivery of relevant (to ICES) products.
Resource requirements:	No specific resource requirements beyond the need for members to prepare for and participate in the meeting, and preferably participation from ICES data centre
Participants:	The Group should have participants from organizations dealing with operational services and/or development of operational techniques, and participants that are identified of users of such products.
Secretariat facilities:	None.
Financial:	No financial implications.
Linkages to advisory committees:	An obvious very close link with ACOM activities.
Linkages to other committees or groups:	There would be a strong interaction with other experts groups within OCC such as WGZE, WGHABD, WGOH and WGRP, and modelling activities e.g. in WGPBI, PGNSP, NORSEPP, WGRED, REGNS. Later also with the ICES Advisory Programme.
Linkages to other organizations:	The WG must interact with IOC/JCOMM/GOOS/EuroGOOS/ArcticGOOS/GMES/GEOSS. The group should also have a close relationship with MyOcean

2008/2/OCC04 **The Working Group on Oceanic Hydrography [WGOH]** (Co-Chairs: Glenn Nolan*, Ireland, and Hedinn Valdimarsson*, Iceland) will meet in Texel, The Netherlands from 10–12 March 2009 to:

- a) update and review results from Standard Sections and Stations;
- b) consolidate inputs from Member Countries to, and continue development of, the ICES Report on Ocean Climate (IROC), and align data source acknowledgements in IROC with ICES policy; archive data used to compile report;
- c) provide support to other Expert Groups requiring information on oceanic hydrography in support of their responses to the OSPAR request on 'An

assessment of the changes in the distribution and abundance of marine species in the OSPAR maritime area in relation to changes in hydrodynamics and sea temperature;

- d) take action for strengthening the role of WGOH and physical oceanography within ICES; such as SGGOOS and explore areas of mutual interest with international climate monitoring programmes;
- e) provide expert knowledge and guidance to ICES Data Centre (possibly via sub-group) on a continuous basis;
- f) contribute to ICES Climate Change position paper including:
 - 1) Warming trends in the North Atlantic
 - 2) Sea ice cover changes in “hot spots” chapter
 - 3) Physical properties and circulation in the North Atlantic.

Prepare draft/outline report for consideration of SGCC at spring meeting 2009.

WGOH will report by 30 April 2009 to the attention of the SCICOM and ACOM.

Supporting Information

Priority:	The activities of this Group are fundamental to the fulfilment of the Oceanography Committee’s Action Plan.
Scientific Justification and relation to Action Plan	<p>Action Plan Nos. 1.2, 1.3, 1.6, 1.7, 1.10, 5.13.4, 5.14 and 6.3.</p> <p>This is a repeating task established by the Working Group to closely monitor the ocean conditions in the ICES area. The materials presented under this item will be utilised to prepare an overview of the state-of-the-environment in the North Atlantic for 2006.</p> <p>The Working Group recognises the need for disseminating climate information in a timely and appropriate manner. This agenda item will allow WGOH members to prepare the document during the meeting, thus avoiding delays in the dissemination of the information. We will review proposed new developments in IROC content.</p> <p>This is in support of a request from OSPAR.</p> <p>Links have been made with the CLIVAR programme; it would be of benefit both to ICES and the international programmes to enhance internal information exchange.</p> <p>To follow up on the ICES General Secretary’s suggestions for increasing the visibility of WGOH within ICES. To improve communications between working groups under the ICES system.</p> <p>This is in compliance with a request from the ICES Data Centre</p> <p>The work of the proposed Expert Group will be relevant for WGOH.</p> <p>g) this is a request from SGCC in order to contribute to the ICES position paper on Climate Change.</p>
Resource Requirements:	No extraordinary additional resources
Participants:	WGOH members; Chair of Oceanography Committee.
Secretariat Facilities:	N/a
Financial:	Publication and reproduction costs for the IROC.

Linkages to Advisory Committees:	Advisory Committees on Fishery Management, Marine Environment, and Ecosystem
Linkages to Other Committees or Groups	Publications Committee; Consultative Committee; ICES/IOC Steering Group on GOOS
Linkages to Other Organisations:	IOC, JCOMM, CLIVAR

2008/2/OCC05 **The ICES IOC Working Group on Harmful Algal Bloom Dynamics [WGHABD]** (Chair J. Silke, Ireland) will meet in El Rompido (Huelva) Spain from 31 March to 2 April 2009 to:

- a) review and update of JAMP Eutrophication monitoring guidelines (OSPAR request no. 6, 2009)
- b) review and report on the compilation of national practices across ICES areas for Harmful Algae and Phycotoxins monitoring and prioritize updating of the IOC-MONDAT Data Base.
- c) with reference to modelling in the ICES region, review the state of knowledge of initiation, maintenance and senescence of cyanobacteria blooms, including transfer of toxins and effects on the foodweb.
- d) discuss and formulate the description and justification for a thematic session on HABs in the Baltic Sea for the 2010 ASC.
- e) identify the requirements for observing specific TPA and HAB species in near real time using automated techniques and produce forecasts of Harmful Algal Events using observations and models.
- f) Wish to pursue by interdisciplinary work with WGPBI the development of joint TORs and a joint WG sessions in 2009
- g) discuss and report new findings that pertain to harmful algal bloom dynamics. Bring new findings in phytoplankton population dynamics models to the attention of WGHABD for discussion.
- h) collate and assess National reports (Country Reps) and collect data for HAEDAT
- i) review the UK's DEFRA funded literature and data analysis on HABs and nutrient enrichment. Identify follow up activities.
- j) review the publications in Journal of Sea Research from the ICES Workshop on Time-series Data Relevant to Eutrophication Ecological Quality Objectives (WKEUT)
- k) contribute to ICES Climate Change position paper by reviewing current climate change effects in HABs events. Prepare draft/outline report for consideration of SGCC at spring meeting 2009.

WGHABD will report by 8 May 2009 to the attention of the SCICOM.

Supporting Information

Priority:	The activities of this group are fundamental to the work of the Oceanography Committee. The work is essential to the development and understanding of the effects of climate and man-induced variability and change in relation to the health of the ecosystem. The work of this ICES-/IOC WG is deemed high
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Scientific justification and relation to action plan	<p>priority.</p> <p>Action Plan No: 1.1, 1.2, 1.5, 1.7, 1.10, 1.11, 1.12, 2.3, 2.9, 3.2, 4.11, 5.10, 5.13, 5.16, 6.1, 6.2, 6.3, 6.4, 8.1, 8.2, 8.4.</p> <p>Term of Reference a)</p> <p>This is a response to OSPAR request no. 6 (2009). Advice to be delivered to OSPAR by 1 June.</p> <p>Given that the JAMP Monitoring Eutrophication Monitoring Guidelines for nutrients, oxygen, benthos, phytoplankton and chlorophyll are now over 10 years old, there is a need to review, and where required update, the guidelines to reflect technical developments, best practice and to ensure that the guidance remains fit-for-purpose. The purpose is to support the monitoring of these parameters for the assessment of eutrophication under the Comprehensive Procedure and, more generally, for WFD and MSFD monitoring.</p> <p>The request to ICES has two aims:</p> <ol style="list-style-type: none"> i. add more specifications in the current guidelines which includes not only listing different possibilities on analysis but also expressing the most commonly used method if it comes to a choice between different methods and prioritise recommended methods and illustrating best practice so it should be more clear which option to go for as a priority. ii. add standards and protocols to be used for developing techniques that have not been used as a standard parameter but have recognised added value to support assessments from a more general validation perspective to complement ship-borne measurements. <p>For each parameter further clarification in the guidelines is needed on the aspects set out below:</p> <p>Biomass of phytoplankton: Chlorophyll a:</p> <ol style="list-style-type: none"> i. advice on the kind of analysis to be performed on chlorophyll a (advantages and disadvantages of acidification procedure) ii. Advice on the type of chlorophyll a most suitable to report on (total, active, Phaeophytin) iii. required frequency of sampling for accurate estimate of mean and 90th percentiles during growing season (study of Sweden) <p>Term of Reference b)</p> <p>A wide variety of monitoring practices at the national or regional level hampers time-series comparisons across ICES region. In the first instance it is important to document these monitoring activities. While it should be noted that in parallel the group of National Reference Laboratories in Europe producing a compilation of the management practices for Toxic Algae Events, WGHABD working with IOC can assist in the completion of a similar exercise through the ICES and IOC member states for both HABs and Toxin producing algae and their impacts.</p> <p>Term of Reference c)</p> <p>The cyanobacteria HABs in the Baltic Sea are thoroughly studied and a wealth of information is already gathered that could be more efficiently used in modelling, specifically in the development of species of interest models for the main HAB forming cyanobacteria. WGHABD facilitates the cooperation of modellers and oceanographers/biologists therefore rendering this a suitable forum for the compilation of existing knowledge of critical aspects of cyanobacteria HABs with reference to modelling.</p> <p>Term of Reference d)</p> <p>Harmful Algal Blooms influences the whole ecosystem in the Baltic. New knowledge pertaining e.g. to oxygen deficiency and phosphate dynamics as well as the introduction of new zooplankton species (e.g. <i>Mnemiopsis leidyi</i>) should be of interest to the ICES community. Also results from several HAB-related projects in the EU-BONUS research programme should be ready for</p>
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presentation at the 2010 ICES-ASC.

Term of Reference e)

Use information from the inventory together with knowledge of bloom dynamics and existing modelling capabilities to identify (i) regional locations where the first HAB observation and forecasting systems should be implemented and (ii) the observational and infrastructural components required to achieve these capabilities.

Term of Reference f)

HAB physical-biological processes is limited. Improved knowledge of the validation of these models and the status of coupled physical-biological process knowledge is essential to improve models for HAB dynamics.

Term of Reference g)

The forum for presenting new findings has been an excellent tool for promoting the discussions about topics of general interest. There are obvious reasons to continue with this topic as a term of reference.

Term of Reference h)

National reports on the previous years highlights of each country's HAB events is a useful means of comparing the regional patterns, and synthesizing the occurrence of HAB events in the ICES area. These reports can also incorporate information necessary for HAEDAT.

Term of Reference i)

Review the 2008 UK assessment of HABs and nutrient enrichment and consider what further work might be undertaken and whether the report should be used as the basis for an ICES cooperative research report.

Term of Reference j)

The WKEUT workshop discussed 17 long-term phytoplankton datasets from European and North American coastlines in order to allow comparative analyses of phytoplankton dynamics in response to nitrification and weather driven changes. Among questions addressed to the datasets were those relating to HABs such as "Have the seasonal bloom patterns and/or bloom species, including HABs, changed over time; is it possible to identify indicator species"? This term of reference will review the publications stemming from this workshop.

Term of Reference k)

The steering group on climate change (SGCC) will publish an ICES position paper on climate change in 2010. One chapter includes the impact of climate change on HABs. WGHABD are tasked with compiling a review of current studies on climate trends and change in HABs both observed and projected. This review will be edited into a chapter for the position paper

Resource Requirements	The research programmes which provide the main input to this group are already underway, and resources already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group is normally attended by some 20–25 members and guests
Secretariat Facilities	None
Financial	No financial implications
Linkages to Advisory Committees	There are no obvious direct linkages with the advisory committees
Linkages to other committees or groups	WGHABD interacts with WGZE, WGPE, WGPBI.
Linkages to other organizations	The work of this group is undertaken in close collaboration with the IOC HAB Programme. IOC should be consulted regarding ToR or discontinuation of the WG prior to the ASC. There is a linkage to SCOR through the interactions of the IOC-SCOR GEOHAB Programme.

2008/2/OCC06 The ICES-IOC Steering Group on GOOS [SGGOOS] will be renamed the ICES GOOS Steering Group [IGSG] (Chair: Jon Hare*, USA) and will meet at Woods Hole (USA) in 25-26 March 2009 to:

- a) identify and improve the global and regional linkages between ICES and GOOS bodies:
 - i) Review the outcome of 2008 Meeting of GRAs (Guayaquil, Ecuador, November 2008);
 - ii) Prepare the participation of ICES in 2009 Meeting of I-GOOS
 - iii) Promote the cooperation of ICES in IOOS (US);
 - iv) Enhance cooperation of ICES in EUROGOOS.
- b) identify and steer the development of components and activities of ICES contributing to GOOS, as well as GOOS products relevant to ICES:
- c) identify and steer the development of regional ICES, PICES and GOOS pilot projects to demonstrate the benefits of taking a GOOS approach in the ICES context:
 - i) Review recent developments in IBIROOS;
 - ii) Review recent developments in US and Canadian GOOS;
 - iii) Review recent developments in Ferry-Box consortium.
- d) identify and steer the development of appropriate outreach activities to disseminate information about ICES and GOOS and to articulate the benefits of taking a GOOS approach in the ICES context:
 - i) Promote a special session and plenary lecture on GOOS at the ICES ASC in 2010 (France);
 - ii) Link information on this group and ICES at the GOOS web site;
 - iii) Recommend a joint session in cooperation with WGOH and EGU/AGU.

IGSG will report by 30 April 2009 for the attention of the SCICOM.

Supporting Information

Priority:	The activities of the ICES GOOS Steering Group must be considered essential for the participation of ICES as an active regional partner in GOOS.
Scientific justification and relation to action plan:	<p>Term of Reference a) To provide annual summaries of GOOS activities to inform both the ICES and IOC communities and to recognize potential areas for collaboration.</p> <p>Term of Reference b) To foster collaboration on data exchange and use within ICES and to raise awareness on data products needed for GOOS-related work. (ii) To promote the use ICES GOOS products.</p> <p>Term of Reference c) To promote and extend the development of GOOS regional projects in the ICES area</p> <p>Term of Reference d) A Special Session and Plenary Lecture on GOOS was driven by the action points and recommendations since 2004. The review of the Action Plan in 2006 and recent changes at both ICES and GOOS structure and plans justifies this action. (ii) Visibility of ICES GOOS activities in the web is required. (iii) Physical oceanography within ICES, besides GOOS products, needs also promotion outside ICES.</p>

Resource requirements:	N/A.
Participants:	GOOS, EuroGOOS, and other relevant GOOS bodies are free to contribute to the Group. Delegates are asked to ensure good representation of all ICES disciplines in this Group. Ideal participants are those already connected with GOOS activities in member countries.
Secretariat facilities:	None.
Financial:	No financial implications.
Linkages to advisory committees:	Marine monitoring activities are closely relevant to the interests of all ICES Advisory Committees.
Linkages to other committees or groups:	All ICES Science Committees have an active interest in this Group. Amongst the closely aligned Working Groups are many of the Oceanography Committee's Groups and IBTSWG under LRC.
Linkages to other organizations:	IOC, GOOS, EUROGOOS, PICES.
Secretariat marginal cost share:	ICES:100%

2008/2/OCC07 **A Workshop on Understanding and quantifying mortality in fish early-life stages: experiments, observations and models [WKMOR]** (Co-Chairs: A. Gallego*, UK, E. North*, USA, and E. Houde*, USA), will be held on 22–24 March 2010 in Aberdeen, Scotland to:

- a) Review current and emerging laboratory, mesocosm, field and modelling methodology aimed at understanding the underlying mechanisms that control mortality during fish early-life stages;
- b) Summarize the state of our understanding of the mechanisms that control mortality of fish eggs, larvae and juveniles, identify information gaps, and list future research directions as proceedings from the workshop;
- c) Develop recommended techniques to quantify mortality in the field and model its impact on subsequent recruitment.

WKMOR will report by 15 May 2010 for the attention of the SCICOM.

Supporting Information

Priority:	This workshop will bring together state-of-the-art knowledge about a process which is critical for the understanding of recruitment in marine fish.
Scientific Justification and relation to Action Plan:	<p>The Workshop contributes to the new ICES Strategic Goal #3 that ICES should lead the development of methods and tools needed in support of operational ecosystem observation services, in order to improve the understanding of climate change and impacts to our oceans and marine ecosystems.</p> <p>The topic of fish early-life mortality has been the subject of considerable research. Nevertheless, it is still considered one of the main topics where substantial progress remains to be made (see WKAMF Report). With the development of new laboratory and field observational techniques, and the advance of modelling methodology, it is time to review approaches for estimating, simulating, and improving our understanding of the processes that control mortality. The workshop goal is to develop recommended practices for quantifying mortality in the field (e.g. accounting for advection/diffusion effects) and for constructing process-based forecasting tools that quantitatively link spawning stock biomass/egg production and post-juvenile stages. The</p>

	proposed workshop will focus on technical and methodological issues, important physical-biological processes (inc. density-dependence), and on future research needs. This workshop will foster information exchange between international organizations such as ICES and PICES. The workshop, and the international collaboration that result from it, will advance the application of cutting-edge modelling approaches to issues that are critical for fisheries management such as understanding fish recruitment variability.
Resource Requirements:	The research programmes which provide the main input to this group are already underway, and resources already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants:	This Workshop should attract 25–50 participants and will include some scientists from outside the regular ICES scientific community. We plan to identify participants during the 2009 ASC Theme Session proposed by WGPBI entitled “Death in the sea – Mortality in the zooplankton and early-life stages of marine fish (estimates, processes and outcomes)”. We also will invite participation from ICES groups with an interest in physical-biological interactions and fish recruitment processes (e.g. WGRP, WGZE, WGFE) and from groups such as GLOBEC and PICES.
Secretariat Facilities:	None
Financial:	No financial implications
Linkages To Advisory Committees:	Relevant to the work of the advisory structure
Linkages To other Committees or Groups:	WGRP, WGZE, WGFE

2008/2/OCC08 **The Working Group on Recruitment Processes [WGRP]** (Co-Chairs: R. D. M. Nash, Norway, and T. Miller, USA) will work by correspondence in 2008/2009 to complete and produce products that involve:

- a) co-convene with WGPBI a workshop entitled “Understanding and quantifying mortality in fish early-life stages: experiments, observations and models” (WKUM) with Co-Chairs Gallego, North, Petitgas and Houde will be held on 29–31 March 2010 in Aberdeen, Scotland [dates and venue to be confirmed];
- b) complete the synthesis and review of the evidence of sources, patterns and consequences of selective processes in fish early life history and its relevance to our understanding of forecasts of year-class strength. (carried over from 2008;)
- c) based on the results of the review of selective processes in early life history, prepare an ICES Cooperative Research Report that identifies the challenges presented to sustainable fisheries management (capture and aquaculture) of selective processes in early life history;
- d) summarize and analyse data relevant to multistage models of recruitment to determine whether patterns exist either within species or within ecosystems that may lead to generalizations regarding the nature of population regulation (carried over from 2008).

WGRP will report by 4 May 2009 for the attention of the SCICOM.

Supporting Information

Priority:	Because the relationship between spawning stock and recruitment is fundamental to the scientific approach to fisheries management, the work of this group should be considered of high priority to ICES.
Scientific Justification and relation to Action Plan:	<p>Action plan 1</p> <p>ToR a and b) Action plan 1.2, 1.3, 1.6</p> <p>At present there is a general lack of information on the causes of mortality in young stages of fish. In particular predation mortality. It is only recently that new analytical tools are being developed (specifically genetics based) that will allow the levels and sources of predation to be identified. This information is fundamental to our understanding of the processes that affect recruitment levels.</p> <p>ToR c) Action plan 1.2, 1.3</p> <p>The identification of where in the pre-recruit life history year-class strength is determined is important for determining useful recruitment indices and forecast models for recruitment. There are a number of species that have been sampled regularly, both multiple sampling of a cohort over if young stages and over a number of years. A collation of these data will provide insight in to variability with a species across different environments and between species within an environment.</p>
Resource Requirements:	The WG requires active participation from the members assigned by the Delegates. A complement of 15–20 active members is required to accomplish the work identified in the resolution.
Participants:	In addition to regular members, the WG feels there would be benefit from greater participation by individuals with quantitative skills in the area of biometry and population dynamics.
Secretariat Facilities:	Secretarial assistance will be required for an annual report.
Financial:	No financial implications
Linkages To Advisory Committees:	The activities of the WG are developing to provide more accurate medium-term forecasts of stock projections
Linkages To other Committees or Groups:	The activities of the WG are designed to provide input of knowledge to various Assessment WGs. There is no potential overlap in activities because the latter do not have the resources to consider the nature of this new knowledge outside the scope of their current activities. WGZE has close ties with the work of the Group. WGPBI also has close ties with WGRP – several people sit on both WGs.
Linkages to other Organisations:	GOOS, GLOBEC and NAFO through its Working Group on Reproductive Potential.

2008/2/OCC09 **A Joint PICES/ICES Working Group on Forecasting Climate Change Impacts on Fish and Shellfish [WGFCCIFS]** will be established (Co-Chairs: A. Hollowed*, USA, Manuel Barange*, UK, Suam Kim*, Korea, and Harald Loeng*, Norway) and will meet on 21 June 2009 one day prior to the GLOBEC Synthesis meeting in Victoria B.C, Canada to:

- a) discuss frameworks and methodologies for forecasting the impacts of climate change on the growth, distribution and abundance of marine life with particular emphasis on commercial fish and shellfish;
- b) review the results of designated case studies to test methods;
- c) plan for an intersessional meeting in early 2010 where scientists can present, discuss and publish forecasts of climate change impacts on the world's commercial fish and shellfish resources;
- d) establish techniques for estimating and communicating uncertainty in forecasts;
- e) evaluate strategies for research and management under climate change scenarios, given the limitations of our forecasts;
- f) identify and analyse the work of other ICES Expert Groups on issues related to climate change impacts related to commercial fish and shellfish.
- g) take into consideration the work by WGPBI.

WGFCCIFS will report by 1 September 2009 for the attention of the ICES Climate Change Steering Group, ICES SCICOM, PICES FIS and POC Committee.

Supporting Information

Priority:	The work of the FCCIFS Workign Group is essential to ensure that ICES and PICES will be able to provide guidance on the potential impacts of climate change on marine ecosystems and the response of commercial fish and shellfish resources to these changes.
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Scientific justification and relation to action plan:	The work done within ICES and PICES on Climate Change and fisheries has been diverse and has included: a) guidance on methods for selection of IPCC scenarios for use in projections; b) techniques for downscaling IPCC scenarios to local regions, c) development of coupled ecosystem models for use in evaluating climate induced shifts in environmental conditions, d) literature documenting relationships between climate forcing and marine fish and shellfish distribution and production, and e) stock assessment techniques for evaluating management strategies to mitigate the impacts of change. A challenge facing ICES and PICES is the need to integrate all of this research to provide stakeholders with quantitative estimates of the potential impact of climate change on marine life throughout the world. This challenge calls for the establishment of an interdisciplinary research team composed of experts from around the world who will focus attention on the development of common and standardized frameworks for forecasting climate change impacts on marine life with particular emphasis on commercially important fish and shellfish. ICES and PICES should act now to ensure that our research communities develop the capabilities to provide quantitative contributions to the next IPCC reports and to provide guidance for management under climate change scenarios.
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Several case studies will be identified by the Steering Group based on their potential for contributing to methodological development and the opportunity for comparison of marine species and community responses

	to climate forcing in different ecosystems. Members of the working group will be responsible for encouraging the development of regional interdisciplinary teams responsible for the production of forecasts. Members of the working group will provide guidance to the regional teams by providing a framework for the development of the forecasts and communication of new advances in analytical tools. The culmination of the working group's effort will be presentation and discussion of results at an intersessional meeting and publication of results in a peer reviewed journal by 2011. The timing for the publication is critical because the future IPCC AR5 report is slated for release in 2013 and the IPCC only allows references to published papers.
Resource requirements:	No specific resource requirements beyond the need for members to prepare for and participate in the meeting.
Participants:	These would include climatologists, oceanographers, ecologists, stock assessment scientists, ecosystem modellers, fisheries managers and economists. Participation is sought from members of PICES and ICES as well as scientists from the southern hemisphere. Potential working group members: James Overland, U.S.A., Shin-ichi Ito, Japan, Michael Foreman, Canada, Thomas Okey, Canada, Richard Beamish, Canada, Daniel Duplisea, Canada, Jason Holt, UK, Keith Brander, Denmark, Jürgen Alheit, Germany.
Secretariat facilities:	This group is likely to have high demand on the computing resources of the Secretariat, but no additional software/hardware is anticipated beyond that which is currently available.
Financial:	ICES invitational travel for 4 invited scientists, PICES invitational travel for 4 scientists.
Linkages to advisory committees:	An obvious very close link with the ICES Climate Change steering committee and the PICES FUTURE Scientific Steering Committee.
Linkages to other committees or groups:	Methodological issues are within the mandate of this Group but for the purpose of this meeting this issue is not on the agenda. Fish stock assessment methods for forecasting and conducting management strategy evaluations will be discussed, as will various ecosystem modelling approaches. Techniques for selecting and downscaling climate change scenarios for use in forecasts will also be discussed. Knowledge of the mechanisms underlying commercial and other species and community responses to shifts in oceanography will be critical to the formation of forecasts.
Linkages to other organizations:	ICES and PICES will seek widened participation for this group including contact with relevant academic and intergovernmental organisations including fisheries managers and FAO for this meeting.
Secretariat marginal cost share:	ICES 50%, PICES 50%.

2008/2/OCC10

The ICES/GLOBEC Working Group on Cod and Climate Change [WGCCC] Co-Chairs: G. Ottersen, Norway and Dr. Kai Wieland, Denmark) will, in its present format, be closing down at the end of 2009 together with GLOBEC. WGCCC will work by correspondence in 2008-2009 (with a 2 hour meeting in connection with the 2009 ASC) to:

- a) publish the reports on three recent workshops, as reviewed by the Chair of the Oceanography Committee, in the *ICES Cooperative Research Report* series:
 - i) Decline and Recovery of cod Stocks throughout the North Atlantic, including tropho-dynamic effects (WKDRCS),
 - ii) Integration of

Environmental Information into Fisheries Management Strategies and Advice (WKEFA), and iii) Cod and Future Climate Change (WCFCC).

- b) continue working towards finalizing the WGCCC book on cod;
- c) contribute to the GLOBEC synthesis book;
- d) plan and hold a theme session at the 2009 ICES ASC on Advances in marine ecosystem research: what we have learned from GLOBEC and what we can carry forward in future climate related programs;
- e) organize a workshop at the 3rd GLOBEC Open Science Meeting Victoria, Canada 22-26 June 2009 on CCC – *the past, the present and future challenges*.

WGCCC will report by 1 November 2009 for the attention of the SCICOM.

Supporting Information

Priority:	The group is developing the application of environmental information in the Advisory Process and also the relationship between ecosystem change and fish population dynamics. It therefore has high priority.
Scientific justification and relation to action plan:	The work will be carried out to review past activities, and carry out synthesis activities including books, the workshop and theme sessions. By the end of 2009 we aim to have thoroughly covered all items in our Strategic plan.
Resource requirements:	The research programmes which provide the main input to this group are already underway, and resources already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants:	The Group is normally attended by some 15–20 members and guests.
Secretariat facilities:	None.
Financial:	No financial implications.
Linkages to advisory committees:	Linkages with advisory committees are being developed.
Linkages to other committees or groups:	Living Resources Committee, WGZE, and WGRP Expert Groups
Linkages to other organizations:	Close linkages with other GLOBEC activities and also some links to PICES.

**Approved at SCICOM Meeting 8 January 2009 – and a New Version of
WGFCIFs Terms of Reference**

2008/2/OCC09 A Joint PICES/ICES Working Group on Forecasting Climate Change Impacts on Fish and Shellfish [WGFCIFs] will be established (Co-Chairs: A. Hollowed, USA, Manuel Barange, UK, Suam Kim, Korea, and Harald Loeng, Norway) and will meet on 21 June 2009 one day prior to the GLOBEC Synthesis meeting in Victoria B.C, Canada to:

- b) Promote research on climate change impacts on marine ecosystems by scientists in ICES and PICES member nations through coordinated communication, exchange of methodology, and organization of meetings to discuss and publish results;
- c) In collaboration with relevant expert groups in PICES and ICES, develop frameworks and methodologies for forecasting the impacts of climate change on marine ecosystems, with particular emphasis on the distribution, abundance and production of commercial fish and shellfish;
- d) Review the results of designated case studies to test methods;
- e) Explore techniques for estimating and communicating uncertainty in forecasts;
- f) Explore strategies for research and management under climate change scenarios, given the limitations of our forecasts;
- g) Plan for a science symposium in early 2010 to present, discuss and publish forecasts of climate change impacts on the world's marine ecosystems, with particular emphasis on commercial fish and shellfish resources;
- h) Produce publications that are relevant to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change;
- i) Publish report(s) summarizing work.

WGFCIFs will report by 1 September 2009 for the attention of the ICES Climate Change Steering Group, SCICOM, and by 1 October 2009 to the PICES FIS and POC Committees.

Supporting Information

Priority:	The work of the WGFCIFs is essential to ensure that ICES and PICES will be able to provide guidance on the potential impacts of climate change on marine ecosystems and the response of commercial fish and shellfish resources to these changes.
Scientific justification and relation to action plan:	The work done within ICES and PICES on Climate Change and fisheries has been diverse and has included: a) guidance on methods for selection of IPCC scenarios for use in projections; b) techniques for downscaling IPCC scenarios to local regions, c) development of coupled ecosystem models for use in evaluating climate induced shifts in environmental conditions, d) literature documenting relationships between climate forcing and marine fish and shellfish distribution and production, and e) stock assessment techniques for evaluating management strategies to mitigate the impacts of change. A challenge facing ICES and PICES is the need to integrate all of this research to provide stakeholders with quantitative estimates of the potential impact of climate change on marine life throughout the world. This challenge calls for the establishment of an interdisciplinary research team composed of experts from around the world who will focus attention on the development of

common and standardized frameworks for forecasting climate change impacts on marine life with particular emphasis on commercially important fish and shellfish. ICES and PICES should act now to ensure that our research communities develop the capabilities to provide quantitative contributions to the next IPCC reports and to provide guidance for management under climate change scenarios.

Several case studies will be identified by the Steering Group based on their potential for contributing to methodological development and the opportunity for comparison of marine species and community responses to climate forcing in different ecosystems. Members of the working group will be responsible for encouraging the development of regional interdisciplinary teams responsible for the production of forecasts. Members of the working group will provide guidance to the regional teams by providing a framework for the development of the forecasts and communication of new advances in analytical tools. A major contribution of the working group's effort will be presentation and discussion of results at a science symposium in 2010 and publication of results in a peer reviewed journal by 2011. The timing for the publication is critical because the future IPCC AR5 report is slated for release in 2013.

Resource requirements:	No specific resource requirements beyond the need for members to prepare for and participate in the meeting.
Participants:	These would include climatologists, oceanographers, ecologists, stock assessment scientists, ecosystem modellers, fisheries managers and economists. Participation is sought from members of PICES and ICES as well as scientists from the southern hemisphere. Potential working group members: James Overland, USA (ESSAS, PICES POC), Shin-ichi Ito, Japan (ESSAS, PICES POC), Michael Foreman, Canada (PICES POC), Sang-Wook Yeh, Korea (PICES WG 20), Thomas Okey, Canada (PEW trust), Richard Beamish, Canada (NPAFC, PICES FIS), Daniel Duplisea, Canada (ICES), Jason Holt, United Kingdom (QUESTFISH, ICES), Keith Brander, Denmark (ICES, IPCC ecosystem writing team), Jürgen Alheit, Germany (ICES, GLOBEC SPACC), Ken Drinkwater, Norway (ESSAS; ICES)].
Secretariat facilities:	This group is likely to have high demand on the computing resources of the Secretariat, but no additional software/hardware is anticipated beyond that which is currently available.
Financial:	ICES invitational travel for 4 invited scientists, PICES invitational travel for 4 scientists.
Linkages to advisory committees:	An obvious very close link with the ICES Climate Change steering committee and the PICES FUTURE Scientific Steering Committee.
Linkages to other committees or groups:	Methodological issues are within the mandate of this Group but for the purpose of this meeting this issue is not on the agenda. Fish stock assessment methods for forecasting and conducting management strategy evaluations will be discussed, as will various ecosystem modelling approaches. Techniques for selecting and downscaling climate change scenarios for use in forecasts will also be discussed. Knowledge of the mechanisms underlying commercial and other species and community responses to shifts in oceanography will be critical to the formation of forecasts.
Linkages to other organizations:	ICES and PICES will seek widened participation for this group including contact with relevant academic and intergovernmental organisations including fisheries managers and FAO for this meeting.
Secretariat marginal cost share:	ICES 50%, PICES 50%.

2008/2/OCC11 **The Working Group on Operational oceanographic products for fisheries and environment [WGOOFE]** (Co-Chairs: Morten Skogen, Norway, Mark Dickey-Collas, the Netherlands), will meet for a demonstration workshop at FRS Aberdeen, 15-17 June 2009, and for a WG meeting at IMARES, IJmuiden 16-18 November 2009 to:

- a) prior to the meeting and workshops publicise the activities of the working group to attract potential members, with an emphasis on users;
- b) interessionally develop the first versions of web based products (either from institutes, projects or individuals) for testing in the workshops;
- c) arrange a demonstration workshop with users to get feedback on interim product list and operational services (Aberdeen June 2009);
- d) hold other workshops, including an evening at the ICES ASC to demonstrate and operate the first versions of products;
- e) refine and evaluate the operational products to the needs of the users, including format and timing (IJmuiden November 2009);
- f) identify gaps in the products available, and define new products from this.

WGOOFE will report by 10 December 2009 for the attention of the SCICOM.

Supporting Information

PRIORITY:	THERE IS AN URGENT NEED TO INCORPORATE THE FIELD OF OPERATIONAL OCEANOGRAPHIC PRODUCTS INTO ICES TO BE ABLE TO SUPPORT FISHERIES RESEARCH, ASSESSMENT AND MANAGEMENT ADVICE AND OTHER ECOSYSTEM APPROACH RELATED ACTIVITIES.
Scientific justification and relation to action plan:	<p>WGOOFE justification:</p> <p>a) To make the products of WGOOFE relevant and encourage them to be used within ICES, it is essential to engage users in the work of the WG, and not make the group a fora only for operational oceanographers.</p> <p>b) Available operational oceanographic products are to be used as initial products to initiate a dialogue with the users of their needs and possible use of the products.</p> <p>c) The dialogue will define improved products to better meet the user needs</p> <p>d) To ensure regularity of the products to be delivered WGOOFE will identify the producers</p> <p>e) Several large projects are running operational oceanographic services. To ensure the relevance of their works, WGOOFE will establish a close dialogue with these initiatives to stimulate for delivery of relevant (to ICES) products.</p>
Resource requirements:	No specific resource requirements beyond the need for members to prepare for and participate in the meeting, and preferably participation from ICES data centre
Participants:	The Group should have participants from organizations dealing with operational services and/or development of operational techniques, and participants that are identified of users of such products.

Secretariat facilities:	None.
Financial:	No financial implications.
Linkages to advisory committees:	An obvious very close link with ACOM activities.
Linkages to other committees or groups:	There would be a strong interaction with other experts groups within OCC such as WGZE, WGHABD, WGOH and WGRP, and modelling activities e.g. in WGPBI, PGNSP, NORSEPP, WGRED, REGNS. Later also with the ICES Advisory Programme.
Linkages to other organizations:	The WG must interact with IOC/JCOMM/GOOS/EuroGOOS/ArcticGOOS/ GMES/GEOSS. The group should also have a close relationship with MyOcean
