# ICES Annual Report

# for

# 2005

**International Council for the Exploration of the Sea**

**Conseil International pour l'Exploration de la Mer**

April 2006

**International Council for the Exploration of the Sea**
**Conseil International pour l'Exploration de la Mer**

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# Part I

## 2005 Annual Science Conference

## General Assembly

**Aberdeen Exhibition and Conference Centre, Scotland, UK**
**20 September 2005**

The Assembly was addressed by the **President of ICES, Michael Sissenwine**:

Distinguished guests, colleagues, local hosts, ladies and gentlemen, it is a pleasure to open the 2005 Annual Science Conference of the International Council for Exploration of the Sea. Some of you will note that I am not opening the 93rd Statutory Meeting of ICES. Until this year, opening ceremonies have been for both an Annual Science Conference and for a Statutory Meeting, or business meeting, of ICES. This year, the business meeting of ICES will occur separately from the Annual Science Conference, except for one important matter of business I will mention later. Separating the Annual Science Conference from the Statutory Meeting was a purposeful decision to highlight ICES science without the distraction of important, but more mundane, business. Science recommendations emerging from this year's Annual Science Conference will be acted on by the Council of Delegates at the 93rd Statutory Meeting in Copenhagen 19–20 October.

I am really looking forward to this year's Annual Science Conference, in part because there will be more time to participate in science sessions.

I am also looking forward to the Conference because we have an exciting programme, with a lot of emphasis on the interface between science and policy, and on operationalizing the application of science.

And of course, I am looking forward to our meeting here in Aberdeen, a place so rich in marine science and maritime heritage. A place that affords us a modern Conference Centre, as well as beautiful old granite buildings, and a wealth of Scottish culture, including whiskeys!

So, on behalf of the International Council for Exploration of the Sea, welcome to the 2005 Annual Science Conference here in Aberdeen.

Of course only someone from Aberdeen can properly welcome you to this wonderful place, and today, we are honoured to have with us **Anne Begg, MP for Aberdeen South of the Westminster Parliament**. Ann Begg has an active interest in all aspects of the marine industries, which are so important to Aberdeen and this region. I understand that from her seat in Parliament, she has been known to ask questions like: what difference will the enhanced cod recovery plan make to the sustainability of the Scottish fishing fleet? This is an appropriate question which I hope we shed light on during this Annual Science Conference.

I would now like to hand the microphone over to **Anne Begg, MP from Aberdeen South**:

Welcome to Aberdeen with some advice on understanding the local dialect, including the use of the phrase which will endear all delegates to the local population: "Let me buy you a drink".

The economy of Aberdeen has been dependent on the sea for centuries – first fishing, then offshore oil and gas. The sea will continue to play a part in the future through our use of tidal race and wave power to provide energy. We have harvested, and will continue to harvest, what is in the seas, what is under the sea floor, and in future we will harvest water power itself.

Torry Marine Lab played an important part in providing info on trawler movements when the government was trying to decide who should get payouts from the Cod War compensation fund. We are also aware of the annual argument when fishermen dispute ICES figures which

are used to decide quotas. It is therefore good that there will be a session bringing fishermen and scientists together. The future is dependent on the two working together.

However, the marine environment is a delicate eco-system and to achieve a long-term sustainable environment will require knowledge and science.

You are encouraged to have a great conference, to enjoy Aberdeen and Scotland.

The **President of ICES** resumed his speech.

Ann, thank you for your warm welcome and candid remarks.

While our primary reason for being here in Aberdeen is to exchange scientific information, it would be a shame if we missed the opportunity to experience the culture of Scotland. So just to make sure that even the least cultured among us receive some exposure, as has become a tradition at ICES, we now have the pleasure of musical interlude.

We are privileged to have **Katie Targett-Adams** here to perform for us. She is world renown as a singer and songwriter, and solo Celtic harpist. She was named 2003 Music and Culture Icon of Scotland. She has performed her unique brand of contemporary and Celtic music in the most beautiful castles in Scotland, including Edinburgh Castle, and aboard the Royal Yacht Britannia. She has toured throughout Europe, USA, Canada, and China. This year, she performed for the opening of the Scottish Parliament building at a ceremony attended by Her Majesty the Queen. With such an impressive resume, we are certainly fortunate to have Katie Targett-Adams here to today. Please welcome **Katie Targett-Adams**, and enjoy her music.

**Performance by Katie Targett-Adams**

The **President of ICES** resumed his speech.

Thank you, Katie Targett-Adams, for your wonderful performance.

I would now like to take this opportunity to tell you a little more about what's going on in ICES.

As already noted, we have an exciting science programme at this year's Annual Science Conference with a lot of emphasis on the interface between science and policy. For example, Theme Session V is on "Fishers' perceptions and Responses to Management Implementation", and Theme Session S is on "Oil Spills in Marine Ecosystems: Impacts and Remediation". The importance and relevance of the science of ICES is a major reason for the European Union Commissioner for Fisheries and Maritime Affairs to be here at the Annual Science Conference on Thursday.

Here in Aberdeen, we have a special opportunity to interact with people who have a real stake in marine science—the fishing industry, such as at Theme Session Y, "An Interactive Forum with the Fishing Industry."

An overarching theme of the entire Annual Science Conference is "the ecosystem approach and making it operational". Perhaps this theme is best exemplified by Theme Session BB on "Ecosystem Approaches – Worked Examples". I do not mean to give the impression that the only science welcome to the Annual Science Conference is science with an immediate payoff. It is critically important that the ICES science community continues to make strategic investments in science that will pay off in the medium and long term. I believe the strength of ICES is its tradition of science spanning from long-term advice to advice for immediate application. One of the great challenges is to conduct the science that is necessary to help the advisory framework to evolve so that even advice for immediate application is truly long term in nature. This will require a better understanding of the ecosystem function.

This Annual Science Conference, like last year's, is one of the largest ever, with about 700 participants pre-registered. In fact, registration had to be closed because capacity limits were reached. This is evidence of the quality of the programme and of ICES prestige. However, there is a challenge for ICES in the future, as we try to balance success as evidenced by growing interest in our meetings, with practicalities, including budgetary realities.

Of course, ICES science is not only about an Annual Science Conference. It is about publications, symposia, and as many as one hundred expert groups that meet throughout the year. I encourage you to network with your colleagues to help to organize the event you want to see happen. I believe that the first criteria for judging if ICES should have a symposium, or form an expert group, or include a theme session at its Annual Science Conference, is evidence that scientists want it, and are committed to participating. The bottom line is that the ICES scientific programme, here at the Annual Science Conference, and throughout the year, is what you make it.

Of course, ICES as an institution must have the capacity to facilitate all your good scientific ideas and desires for meetings and publications. That's the role of the Council of Delegates of ICES and the Secretariat that implement programmes of work. As noted, the Council's 93rd Statutory Meeting will take place in a few weeks in Copenhagen. However, I do want to inform you that the Council will conduct one very important item of business here in Aberdeen. It is time for the Council to appoint a General Secretary to follow David Griffith in the post he has held for nearly six years. David chose not to seek another term.

David has done an excellent job. With him at the helm, ICES has completed a Strategic Plan and Action Plan, reorganized the Secretariat to include a Data Centre and a Senior Office as a focal point for science, developed "programmatic budgeting," established ICES as an objective source of information for the media, and negotiated relocation of ICES to an outstanding

physical facility. David will be missed, but fortunately there are several truly outstanding candidates for the position. I expect the Council to decide on the next General Secretary this week so that the decision can be announced at our closing session.

In addition to selecting the next General Secretary, the Council has several other important issues to consider at the 93rd Statutory Meeting in Copenhagen. These include science quality assurance, openness of membership on expert groups, term of office of Committee chairs, recommendations to change the rules of procedure for some financial matters, the election of two Vice-Presidents to the Bureau and the appointment of the Chair of the Advisory Committee on Fisheries Management. So, Council members, enjoy this week's opportunity to participate in the science of ICES with less demands to do business than usual.

And for all of you, I hope this will be a productive and enjoyable Annual Science Conference here in wonderful Aberdeen.

You have heard enough from me. It is now time to introduce our featured speaker for the Open Lecture at this Annual Science Conference: **Dr Keith Sainsbury, from CSIRO, Hobart, Tasmania, Australia**. Keith is a long-time friend of mine and of many of us in ICES. We have enjoyed working with him around the world on several projects all aimed at advancing an ecosystem approach toward reality. Clearly, Dr Sainsbury is regarded worldwide as one of the people who has contributed most toward this effort, as indicated by being awarded the

**Dr Keith Sainsbury giving the Open Lecture.**

prestigious Japan Prize for Science. He has a diverse background leading up to his focus on "operationalizing the ecosystem approach", including the first, and perhaps only, application of truly adaptive management to fisheries. The application concerns fishing and habitat, long before most of us were aware of the importance of the effects of trawling on habitat.

Today's opening lecture by Dr Keith Sainsbury is titled "An Ecosystem Approach to Fisheries" which pretty much gives him a licence to talk about anything he wants to—and I am sure he will. Regardless, I am sure you will benefit from his ideas and experiences.

Dr Sainsbury's presentation can be found on ICES Website at:
http://www.ices.dk/iceswork/asc/2005/themesnew.asp

The President then thanked Keith Sainsbury for the Open Lecture.

Thank you, Keith. That was a truly thought-provoking lecture. I look forward to talking to you more about it during the week, as I expect about 700 other participants will do.

## Open Lecture on the Ecosystem Approach to Fisheries by Keith Sainsbury, Australia

20 September 2005

The last 100 years, and particularly the last 60 years, have seen a huge increase in the range and intensity of human use of ocean ecosystems. They include fishing, shipping, coastal development and infrastructure, oil and gas extraction, aquaculture, and disposal of land-sourced sediments, nutrients, and contaminants. And all in a context of climate variability and increasing climate change. As a result there is already evidence from many parts of the ocean of serious over-harvesting, habitat loss, pollution, introduced marine pest species, and changes in some fundamental biophysical processes. The ecological footprint of human development has now extended far out into marine ecosystems.

Our use of the oceans has contributed greatly to human development. And it can continue to contribute in future. But it is increasingly recognized that this will require a change in the way we manage our use of the oceans – including both management of individual uses, such as fisheries, and the integrated management of multiple uses of the same ecosystem. The need is to effectively apply management that can deliver the goals of Sustainable Development that were internationally identified more than 30 years ago.

In a fisheries context this has led to recent initiatives such as the Ecosystem Approach to Fisheries (EAF) and Ecosystem-Based Fisheries Management (EBFM). Both are intended to more effectively bring improved ecosystem considerations and sustainability into fishery management – EAF by starting with a fishery target species perspective and adding ecosystem considerations, and EBFM by starting with an ecosystem perspective and adding fishery considerations. Both have similar goals and initial steps, and recognize that implementation can and must begin in fisheries that differ widely in the risks faced and the amount of information available. While the differences of emphasis may be important in some contexts they should not stand in the way of getting on with practical implementation.

The challenge of how to make a start on practical implementation of EAF/EBFM is being addressed in many places. The general requirements are outlined, and illustrated at a practical and operational level by the approaches being used by the Australian federal government. These include the frameworks for fisheries management and integrated regional planning, identification of operational (measurable) objectives, use of ecological risk assessment to identify and prioritise research and management focus, and use of Management Strategy Evaluation to develop and agree risk management strategies. These are illustrated with a wide range of examples.

Keith Sainsbury's presentation can be found on the ICES Website:
http://www.ices.dk/iceswork/asc/2005/themesnew.asp

### Biography

Dr Keith Sainsbury has conducted research on the assessment, ecology, exploitation, and conservation of marine resources and ecosystems for more than 25 years. This has included fishery assessment of resources that range from abalone to tuna and from Sub-Antarctic toothfish to tropical snappers. It has also included identification of Marine Protected Areas, and modelling to test management strategies for fisheries and integrated management of regional marine ecosystems.

He provided scientific advice on the tropical trawl fisheries of northern Australia, and was responsible for one of the first applications of actively adaptive management to a large-scale trawl fishery. This demonstrated the effects of trawling on seabed habitats, and introduced

spatial zoning of trawling in the region. He led the research team providing scientific assessments and advice for Australia's large pelagic fish resources – the tunas, including Bluefin tuna, and billfish. And he led a major research programme that examined the ecological effects of developing fisheries in the Southern Ocean, including effects on foodwebs, seabed habitats, protected species, and target species.

More recently his focus has been on providing scientific support for multiple-use planning and management of marine ecosystems. He authored papers on the principles of multiple use management during development of Australia's National Oceans Policy, and oversaw several scientific projects that supported development of the first Regional Marine Plan under that policy. He led a research team that was responsible for the identification of a large Marine Protected Area around Macquarie Island and a sea mount off southern Tasmania, and for the ongoing identification of MPAs under the first Regional Marine Plan. And he led a research team to develop and test management strategies for multiple use management of Australia's North West Shelf – including oil and gas, fisheries, aquaculture, coastal development, and conservation.

Dr Sainsbury is a member of the Board of the Australian Fisheries Management Authority and of the Board of the Marine Stewardship Council, where he also chairs the Technical Advisory Board that sets the methods and standards for fishery assessments. He participated in the FAO expert consultancy that provided guidelines for the precautionary approach in fisheries, chaired the FAO expert consultancy that developed guidelines for the ecosystem approach to fisheries, chairs the scientific panel of the OECD Ministerial Task Force on IUU fishing, and is a member of the panel appointed by the Minister for the Environment to help establish Australia's National Representative system of Marine Protected Areas. He was a laureate of the 2004 Japan Prize for contributions to the understanding of shelf ecosystems and their sustainable utilization.

*Note added by ICES:* The prestigious Japan Prize is awarded to people from all parts of the world whose original and outstanding achievements in science and technology are recognized as having advanced the frontiers of knowledge and served the cause of peace and prosperity for mankind.

## Invited Lecture on Anticipating Fisher Response to Management: Can Economics Help?
## by Sean Pascoe and Simon Mardle, CEMARE, University of Portsmouth

22 September 2005

Although a key objective of fisheries management is to conserve the fisheries resource, management cannot directly influence the state of the resource. Instead, management can only influence the actions of those exploiting the resource. This may be through limiting catches, effort, area fished, or gear used. In each case, the response from the fisher may not be exactly as anticipated by management, as the fisher responds to the new set of economic incentives created by the change in management. In this paper, recent developments in modelling fisher response to changes in management are reviewed. The key areas examined in the paper are effort allocation, entry and exit behaviour, and compliance with fisheries regulations.

Sean Pascoe's presentation can be found on the ICES Website:
http://www.ices.dk/iceswork/asc/2005/pascoe%20presentation.pdf

**Sean Pascoe giving the Invited Lecture.**

### Biography

Sean Pascoe is Professor of Natural Resource Economics and the Director of CEMARE (the Centre for the Economics and Management of Aquatic Resources). Professor Pascoe has twenty years of international experience in the economic analysis of fisheries, including bio-economic modelling, evaluation of the economic status of fisheries, and the analysis of fisheries management options. He has been (and is) involved in many EU-funded projects, during which he has developed considerable experience in working in a multidisciplinary team with fisheries biologists. The results of his research have been published in a variety of international fisheries and economic journals. He has a Bachelor of Natural Resources (Honours) (B.Nat.Res) and a Master of Economics (M.Ec) degree from the University of New England, Australia, and a PhD in fisheries economics from the University of Portsmouth. Before joining CEMARE in 1994, he was Senior Economist with the Australian Bureau of Agricultural and Resource Economics, where he was involved in economic research on some of Australia's major fisheries.

## Invited Lecture on Climate Change and Human Impacts on the Marine Environment and Ecosystems of the Arctic Seas by Professor Graham Shimmield, FRSE Scottish Association for Marine Science

23 September 2005

For the first time in Earth's history, human activity and environmental feedbacks are conspiring to produce rapid climate change in the oceans and on the continents. Of the ocean basins, the Arctic is now experiencing some of the most significant changes, and is a possible harbinger of more widespread changes to the cryosphere-hydrosphere-atmosphere reorganization on the planet. The Arctic has been traditionally characterized as remote, climatically extreme, and practically pristine with respect to man's activity. In fact, these preconceptions are now known to be quite false, and instead we are increasingly aware of a unique marine environment surrounded by land masses undergoing significant changes. Arctic average temperatures have risen at almost twice the rate as the rest of the world in the past few decades. Indigenous peoples are under pressure, ecosystems are threatened by exploitation of keystone species or chronic environmental pollution, and the very physics of the ocean and sea ice is being modified by environmental change. However, such changes are also likely to open new sea routes across the top of Siberia, allow exploration for hydrocarbons, and perhaps even stimulate increased biomass growth in the tundra and in the Arctic shelf seas, in turn drawing down atmospheric $CO_2$ through photosynthesis and fixing large quantities of carbon in the process. This may lead to improved fisheries productivity. Some environmental effects may have quite rapid consequences such as increased UV radiation resulting from stratospheric ozone depletion. The current generation of indigenous people are estimated to receive a 30% lifetime increase in radiation compared with their parents.

These changes provide both a challenge and opportunity for marine science to lay foundations for improved understanding, and implementation of mitigation methods to sustain the health of the Arctic environment. The nature of the physiography of the Arctic basin, and its resulting oceanic circulation, coupled to atmospheric processes, allows us to determine some of the key processes responding to environmental change. In the Arctic shelf seas of Europe and Asia, and adjacent basins, the impact of circulation changes, increased summer melt of sea ice, increased discharge of anthropogenic contaminants *via* the huge Siberian rivers augmented by atmospheric transport of long-range pollutants, conspire to introduce significant environmental and ecosystem effects to the Eurasian Arctic. The nature of short food chains, and compressed growing seasons, ensure that exploitation of living marine resources (fish and shellfish) has a significant effect on the Arctic marine ecosystem. The scientific community has obtained intergovernmental support to declare 2007/8 as International Polar Year, in which the Arctic will, of course, feature strongly.

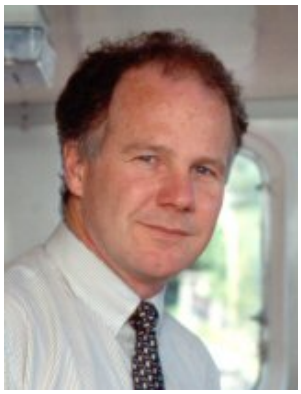
For the past four years, scientists at SAMS in close collaboration with colleagues from Norway, Sweden, Germany, France, and Spain have been undertaking marine expeditions to the European Arctic near the Fram Strait and Svalbard. The objectives of this work has been to study environmental change to ocean circulation and sea ice cover in their coastal and fjordic seas, including changes to the biogeochemistry and carbon cycle, the role of keystone benthic organisms in modifying the Arctic marine carbon cycle, the composition of the pelagic foodweb, and the origin and impact of anthropogenic contaminants (lead, mercury, and radionuclides).

This presentation will review the principal processes influencing change to the marine environment and ecosystems of the Arctic, describe the current long-term observational measurements operating from ships and the scientific research station at Ny Ålesund, Svalbard, and the very recent results from a SAMS research expedition on the RRS *James Clark Ross* in September 2005. The context for this synthesis will be the contribution that impact and change

in the European Arctic is having on the remaining Arctic basin, and the possible consequences for the adjacent seas of NW Europe.

Graham Shimmield's presentation can be found on the ICES Website:
http://www.ices.dk/iceswork/asc/2005/shimmield%20presentation2.pdf

## Biography



Graham Shimmield graduated from the University of Durham in Geology, followed by a Ph.D. in Marine Geochemistry from the University of Edinburgh in 1985 where he remained until 1996 as part of the academic staff. He then became the combined director of the Scottish Association of Marine Science (SAMS) and the NERC-funded Institute, within the Dunstaffnage Marine Laboratory (DML). Since 2001, the DML has been wholly owned and managed by SAMS (as a charity and CLG).

Graham's particular interest is in marine geochemistry, which includes the basic studies of geochemical processes operating in oceans through identifying indicators of ocean and climate change, and examining human impacts and contamination in coastal and deep seas.

In 2000, Graham was awarded the title of Honorary Professor at the University of St Andrews, and is also a Fellow of the Royal Society of Edinburgh, and the Institute of Biology. He has been president and is currently vice-president of the new European Federation of Marine Science and Technology Societies (EFMS). He continues his university work as a Chair of Research of the new UHI Millennium Institute (UHI) in the Highlands and Islands of Scotland.

Graham serves on several national and international committees, including the NERC science strategy board, and is currently Chair of the steering committee of the European Census of Marine Life project. He has published more than 65 scientific peer-reviewed articles.

## Invited Lecture on New Initiatives and Challenges in Fisheries Management
## by Joe Borg, European Commissioner for Fisheries and Maritime Affairs

22 September 2005

New initiatives and challenges in fisheries and maritime affairs which particularly impact on the scientific as well as the political sectors include European maritime policy, the Common Fisheries Policy, the Seventh Framework Programme, and the Data Collection Regulation. This overview will also cover the role of scientific advice, especially the need for active partnership between managers, stakeholders, and the scientific community such as ICES.

Mr Joe Borg's speech can be found on ICES Website:
http://www.ices.dk/aboutus/pressrelease/joeborgspeech.pdf

**Mr Joe Borg.**

### Biography

Born in Malta in 1952, Joe Borg is a lawyer by training (Doctor of Laws, University of Malta, 1975). From 1979 to 2004 he pursued an academic career as Senior Lecturer at the University of Malta in Company Law, Industrial Law, and European Law. From 1989 he was also a Director of the Malta International Business Authority before being appointed to the Board of Directors of the Central Bank of Malta in 1992. He relinquished the latter post in 1995 on being elected to Malta's House of Representatives, and became Minister of Foreign Affairs in 1999, a post he held until March 2004. During his term of office as Minister of Foreign Affairs he steered Malta's negotiations for membership to the European Union. He has been a member of the European Commission since May 2004.

## Speech by Mr Ross Finnie, Scottish Minister for Environment and Rural Development

22 September 2005

First, let me thank you for the invitation to speak to you today. I will take the opportunity of making just a few remarks, and I will not detain you from your coffee for too long.

To start, I would like to offer you a warm welcome to Scotland, on behalf of the Scottish Executive Ministers.

We are delighted that ICES has chosen to host the Annual Science Conference here in Aberdeen.

Aberdeen and the northeast of Scotland in general has a long and rich association with fishing. That close association is still very much alive today. There are communities all along this coast whose lifeblood remains the fishing industry. It is therefore no accident that your hosts, the Marine Laboratory of Scotland's Fisheries Research Services, FRS, are based here in Aberdeen.

I am also delighted to host this ICES conference because of the importance we attach to sound science. In Scotland, we enjoy a richness of expertise in marine science: in our universities and other educational institutes, we reveal our long history as a maritime nation.

Following Commissioner Borg's comments on the development of the CFP, I can welcome the development of a broad-based European Maritime Policy. In Scotland, we are committed to the Common Fisheries Policy. Fish do not respect international boundaries. We need overarching management regimes that respect the common nature of our biological resources. And they need to fit in with the broader marine management strategies such as that which we are now developing in Scotland.

But in Scotland we are particularly proud of the work that is conducted in our Marine Laboratory, by our fisheries management and other marine scientists. Their technical expertise is routinely acknowledged by you, their peers, and their measured input to fisheries management

**Mr Ross Finnie, Scottish Minister for Environment and Rural Development.**

decisions is acknowledged by me, their principal client, the Scottish Minister.

You will be aware of the difficult balance our scientists need to strike. They must maintain the confidence of not only fisheries managers but also of fishers, environmentalists, and other stakeholders.

FRS earns that confidence with their outward looking focus and their commitment to transparent processes: it is a model that I hope the wider scientific world also continues to adopt.

Governance of our fisheries requires scientists to adopt an outward focus: it is fishers, scientists, and managers together that make the decisions.

We Ministers are the ones who pass the regulations, but we base our decisions on your expertise, on your advice. But, we also need to work consensually with the fishing industry and with other stakeholders in the marine environment. Without their cooperation your advice is unlikely ever to be followed – no matter how effective are our national fisheries enforcement systems.

So, we Ministers are faced with the task of devising effective management regulations; and you scientists are faced with the task of providing advice that allows us to do so.

For our solutions to have any chance of success, we *both* need to be working in close cooperation with those that carry out our plans: the fishing industry. We both need to anticipate their behaviours.

And there is a further challenge for scientists: to measure accurately the impact of management measures already taken. For example in Scotland, we have committed to reducing our whitefish fishing effort by 65%. Our analysis of fishing vessel activity shows we have met – indeed, exceeded – that commitment.

If I am to be advised that fishing mortality has not reduced proportionately then I must ask you where the remaining mortality is coming from. Our vessels have reduced their effort and we are all aware that fishers retain a great deal of knowledge of what occurs in the sea. It can only benefit us if we can find better ways of bringing that knowledge into the scientific and management processes.

Routinely fishers and scientists reach different conclusions about what needs to be done, often for some of the hard-edged economic reasons outlined in the presentation given this morning.

But, just as often, fishers and marine scientists share the same goals: who ever yet met a fisher that did not want fish stocks at a high yield, in a healthy marine environment?

There may be some way yet to go before fishers' daily behaviour matches these shared aims, and I look forward to participating in the next session where you will further discuss – and I will learn more about – fishers' response to our management efforts: but I am, at least, optimistic that we have a shared platform on which to build, and the possibility of a healthy future for our fisheries.

The adversarial relationships that sometimes develop between fishers and scientists or between fishers and managers, or – less often – between managers and scientists, are usually the product of our each retreating into our own specialist boxes: when fishers can only see the volume of today's catch; when managers attempt to solve problems with the stroke of an official's pen; when scientists recommend perfectly sound, but impractical measures.

Our respective expertises need to be valued; our own decisions must be arrived at independently: but our way forward is, very clearly, in working together.

So, once again, I am delighted to be with you here in Aberdeen. I hope to learn from the sessions I will attend. And I hope that your necessary work will not also stop you from tasting the warm welcome for which this city is famed, even as you endure the chilly winds that form an equal part of its reputation.

Enjoy the rest of your time here and have a success conference.

## Theme Session K – Multidisciplinary Approaches to the Identification of Stock Structure of Small Pelagics: Implications for Assessment and Sustainable Management

Conveners: Emma Hatfield (UK) and Doug Hay (Canada)

### Background

The concept of the stock is basic to fisheries management and conservation biology. Identifying stocks, discriminating among them, and determining the stock composition of mixed stocks are integral elements of both assessment and management. Failure to recognize the existence of stock structure in exploited species can lead to overfishing and the depletion of less productive units.

The strongest inferences on stock structure are drawn from a suite of complementary techniques that cover multiple aspects of the biology of a fish species. This is partly because the definition of a stock, for management purposes, is not strictly a genetic construction, but refers to a semi-discrete group of fish with some definable attributes of interest to managers. A multidisciplinary approach to fish stock identification appears particularly pertinent for those species with complex, and frequently subtle, stock identities.

In the Atlantic, some of the earliest questions about stock structure and identification began with stock concept issues formed in the late nineteenth century, on herring. Some key issues still remain unresolved. In the Pacific, issues about stock identification have developed in recent decades with herring and some other small pelagic species such as anchovy, sardine, and smelt. Pelagic species continue to provide a challenge to both biologists and fisheries managers, owing to their highly variable life history traits, variable population size and, commonly, strong schooling habit. Many species straddle several management areas, but may comprise one, or more, stocks that may not match the imposed political stock boundaries. Additionally many species are seasonally migratory. These species, therefore, are primary candidates for a multidisciplinary approach, with a suite of methods giving a higher chance of detecting structure.

The Theme Session was jointly sponsored by ICES and PICES, providing a conduit for exchange of information between these communities. Contributions were therefore invited on the individual methods performed within a multidisciplinary structure, such as life history comparisons between stocks, morphometrics and meristics, parasites as biological tags, tagging studies, otolith techniques (microstructure or microchemistry), genetic techniques; as well as the combined analyses resulting from these methods, such as mixed stock analyses, temporal stability of traits, threshold decisions for meaningful stock separation, and ultimately the implications for assessment and sustainable management.

This session provided a forum for the presentation of results of individual stock identification methods as components of multidisciplinary studies, as well as those employing a combination of different methods. The goal was to develop methodological guidelines of particular utility for discrimination of small pelagic stocks. Recommendations on the appropriate incorporation of stock identification data into the assessment and management process were illustrated through relevant case studies.

### Summary of Presentations

The session consisted of two keynote addresses, nineteen presentations, and two posters. A diversity of small pelagic species were represented in the session, dominated by ten presentations on Atlantic herring, but also including three on horse mackerel, two on Pacific herring, and presentations on Atlantic mackerel, Pacific sardine, eulachon, and even a presentation on

cod (as a cautionary tale for the study of morphometrics). Geographic coverage was wide, with thirteen presentations from the Northeast Atlantic, four from the northeast Pacific, two from the Northwest Atlantic, and one from the western Pacific. The range of methodological topics was balanced, including five presentations on genetics, five on parasites, three on otoliths, two on morphometrics, one on tagging, and seven that considered information from multiple approaches. Several case studies were presented as a component of a larger multidisciplinary project: four from HERGEN, three from HOMSIR, and two from WESTHER.

The first keynote address, by Robin Waples (Doc. K:21), reviewed the various approaches to stock identification as a hierarchy of methods with varying sensitivity to genetic and environmental effects. The appropriateness of each method depends on the technical objective and the "stock" definition of interest (i.e. genetic stock, phenotypic stock, fishery stock, or contingent; Figure K1). He advised on striving for more data (large sample sizes and many characters), sampling protocols, and a search for patterns beyond statistical hypothesis testing.

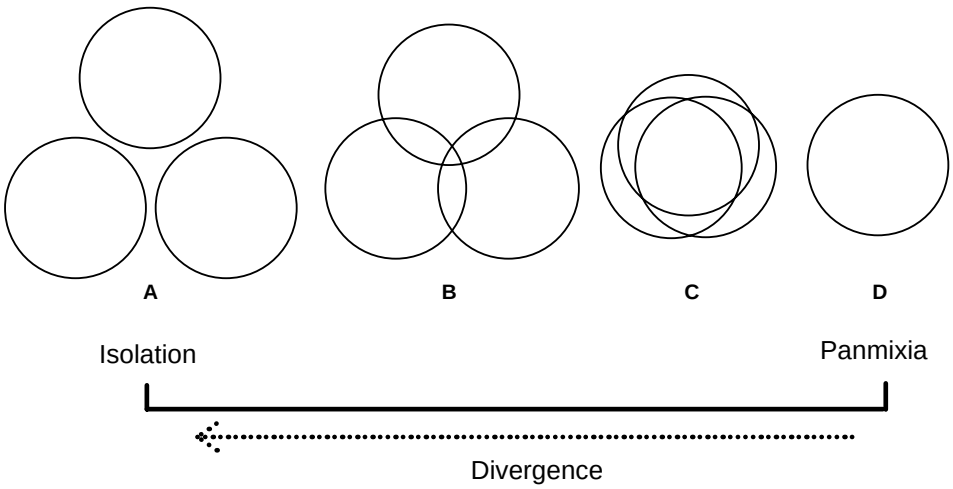



**Figure K1. Schematic to show that population differentiation occurs along a continuum.**

The second invited keynote presentation was by Lorenz Hauser (Doc. K:06), who focused on particular challenges for stock identification of small pelagics. Typical patterns of population structuring were illustrated as the result of migration rate and effective population size, some of which produce challenges for random sampling. The processes involved in population structuring were depicted as overlapping phenomena in broad scales of space and time (Figure K2). These phenomena, at all spatial and temporal scales, e.g. evolutionary history, adaptation, and small-scale behavioural processes, need to be considered when devising the appropriate protocols to determine stock structuring of small pelagic fish. He concluded that the separation of such additional factors from demographic exchange among populations of small pelagics require multidisciplinary approaches.

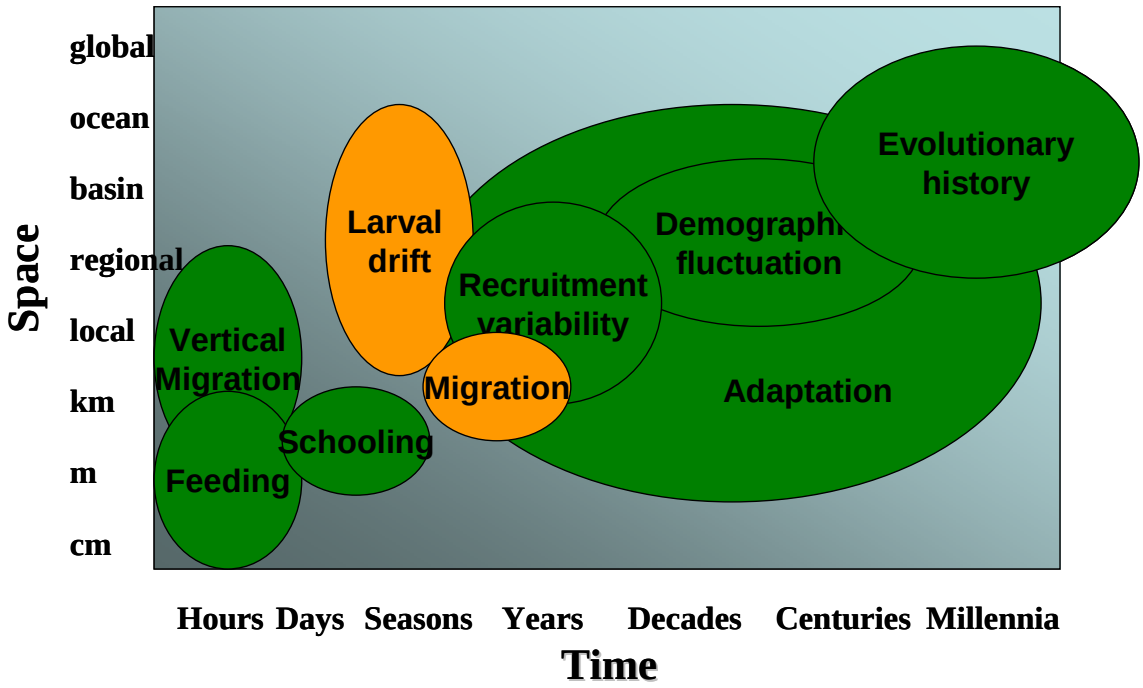



**Figure K2. Factors affecting genetic differentiation among populations of small pelagics. Although the primary interest is in demographic exchange other factors need to be considered, preferably by multidisciplinary approaches.**

All presentations had valuable information for stock identification and readers are referred to abstracts and full papers associated with this session (ICES CM 2005/K). Toward the objective of providing "methodological guidelines of particular utility for discrimination of small pelagic stocks" a non-comprehensive list of guidelines that were included in presentations was compiled (ordered by topic, not importance):

- The disparate objectives of fishery management and conserving threatened populations should be recognized, and results from various disciplines should be interpreted accordingly (Doc. K:03);
- Multidisciplinary stock identification information should be considered in the development of sampling strategy, analytical design, and interpretation of single-approach studies (Doc. K:09);
- Always sample over multiple years to assess temporal stability (Docs. K:02 and K:11, and an unpublished presentation by N. Campbell on parasites of horse mackerel);
- Given accurate stock identifiers, stock composition analysis of mixed fisheries requires only modest sampling intensity (Doc. K:05);
- Samples should be processed in a randomized sequence, rather than ordered by putative stock area, so that machine error or methodological creep is not confounded with geographic variation (Doc. K:14). This is especially important in micro-constituent analysis;
- Simulation of multidisciplinary data may help to decide what characters to include in stock composition analysis (Doc. K:08);
- Analysing different types of genetic characters is more likely to successfully determine stock composition of mixed-stock fisheries (Doc. K:20);

- Compromises in protocols are inevitable for multidisciplinary studies and should be recognized (e.g. preservation of parasites vs. genetic material; Doc. K:17);
- Heterogeneity within source samples of putative stocks should be investigated before testing for geographic differences; unanticipated structure within areas may be important for resource and management and can confound classification analyses (Doc. K:18);
- A functional understanding of genetic characters helps to understand their relative sensitivities and application to various stock identification objectives (Doc. K:16 – Figure K3).

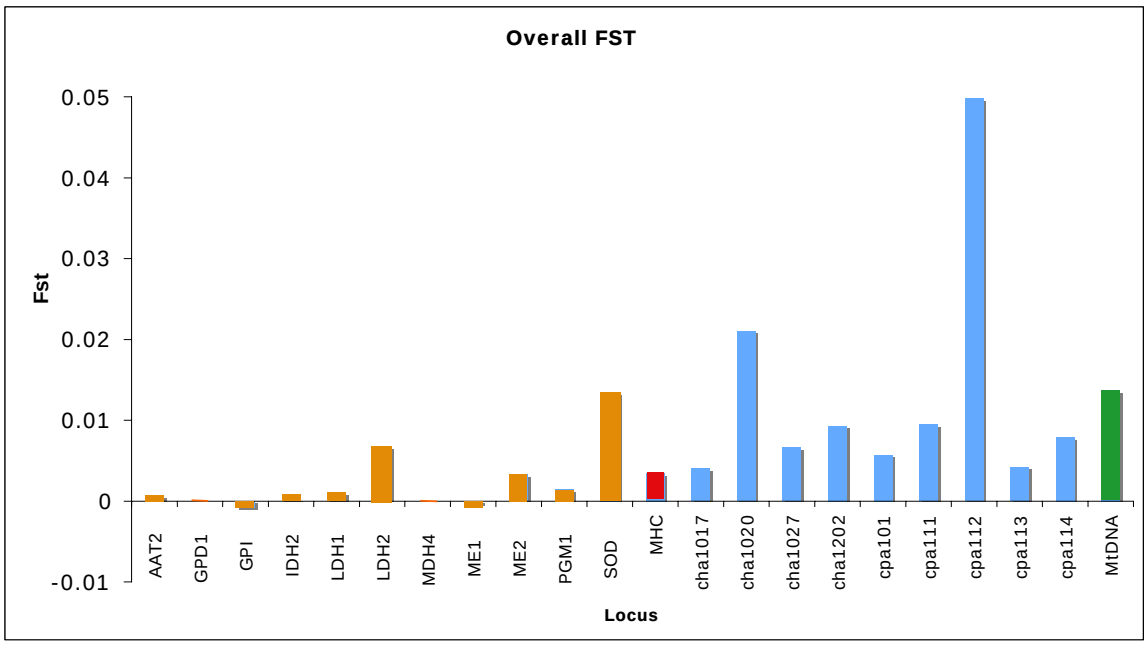



**Figure K3. The general relationship between alleles and Fst.**

- Discriminating variables from different approaches can be combined in a single, synthetic, multivariate analysis (K: 01);
- Morphometric similarity may result from genetic variation through countergradient variation (K:10);
- Comparing geographic variation of several species in a region may suggest mechanisms of population structuring for the species of interest (K:08 – Figure K4);
- In lieu of stock composition analysis, management decisions are often arbitrary and risk depletion of stock components (K: 12).

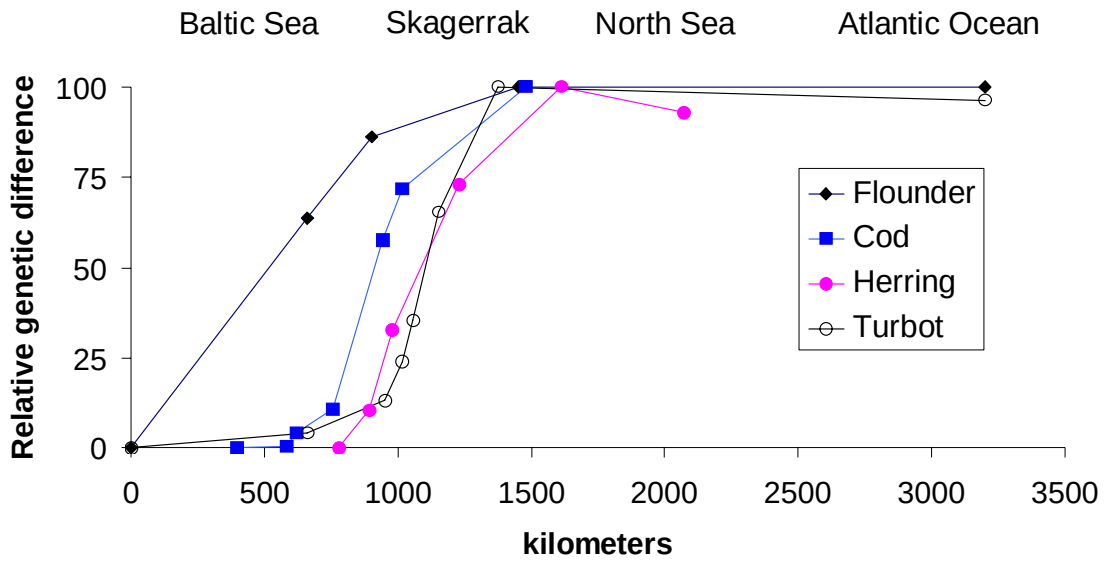



**Figure K4. Graph to show the effect of geographic distance on genetic difference from the Baltic Sea to the open Atlantic Ocean, for a number of marine fish species.**

## Discussion

Two upcoming meetings were announced that are relevant to the theme of stock identification of small pelagics:

- The Fisheries Society of the British Isles Conference, July 2006, in Aberdeen: Fish Population Structure: Implications to Conservation (November 30 deadline for abstracts). Website: http://www.fsbi2006.org.uk/
- ICES Symposium, summer 2008, Galway, Ireland: Herring: Linking its biology, ecology, and status of fisheries in a changing ecosystem.

Conveners invited Tore Jacobsen, scientific officer responsible for the stock ID projects funded by the EC to address the Theme Session with respect to the prospect of future support for multidisciplinary stock identification projects. He reported that the new funding framework (FP7) is focused on policy support, but the topic may be interpreted to include stock identification. Participants also noted the need to develop cooperative projects with US and Canada to address some stock identification questions.

Conveners also asked keynote speakers and session participants to comment on the future of multidisciplinary stock identification and what research is needed to advance the field. The prospect of developing a systematic sampling protocol for stock identification studies was discussed. Some hard parts are regularly sampled and archived for age determination, and archived samples have been extremely valuable for stock identification, through morphometric or micro-constituent analyses. The group felt that routine collection and archival of tissue samples will provide a time-series of samples for analysis of new genetic characters and application of new methods as they develop. Such sampling would have to consider a spatio-temporal sampling grid. The 'barcode of life' project is developing archives of tissue samples and may be a model for sampling fishery resources.

Similarly, the group felt that standard databases are also needed to retain data over time, to facilitate quality control among labs. One example of a standardized database is the herring

data from the EC-funded project HERGEN, which is stored in a single format, using the same genetic markers. This may be an issue for ICES working groups or committees.

The group recognized a need to transition from multidisciplinary sampling to interdisciplinary analyses and conclusions. Despite the solicitation for multidisciplinary papers, most presentations in the session were from a single discipline. For several projects, sampling is multidisciplinary, but analyses and interpretations are still one-dimensional. It appears that the necessary analytical protocols have not been developed, and conventions for interpretation have not been formed. Finally, a comment was made that we need to consider information from all disciplines to advance from merely identifying stocks to forming a biological understanding of the processes producing stock structure.

## Theme Session L – The Spatial Dimension of Ecosystem Structure and Dynamics

Conveners: Maria Borges (Portugal), Jason Link (USA), and Einar Svendsen (Norway)

To make progress on addressing anthropogenic impacts via ecosystem-based approaches, we need to recognize that ecosystem processes occur at multiple scales. Therefore, it is essential to ecosystem-based approaches to examine the multiple spatial and temporal dimensions on which abiotic, biotic, and human processes occur. Key developments in coupled physical-biological numerical models still need to be applied more broadly. Defining habitat across a suite of variables also poses several challenges, particularly for fisheries issues at appropriately resolved spatial scales. Recognizing that ecosystem processes operate at multiple temporal and spatial scales is critical, but incorporating spatial explicitness into ecosystem and population models remains a key challenge.

Questions to address:

1) Spatial scales of the ecosystem: downscaling global-atmospheric interactions to basin and local habitat scales;
2) Putting spatial patterns into population and ecosystem models;
3) Spatial relationships among biotic communities and their habitat;
4) The spatial aspects of human activities.

We separated the presentations and posters in the session into thematic groups to address each of the major considerations noted above.

The first theme focused on scales. The first three talks (Doc. L:26 [Bertand *et al.*], Doc. L:01 [Methratta and Link], Doc. L:22 [Overland and Bond]) had as a major point that various processes occur at multiple spatial and temporal scales; therefore, to fully elucidate ecosystem structure and dynamics a multi-scalar approach is required.

In particular, Doc. L:22 showed four earth global winds and energy patterns and the upscaling of mapping climate scale to the ecosystem parameters of regional interest.

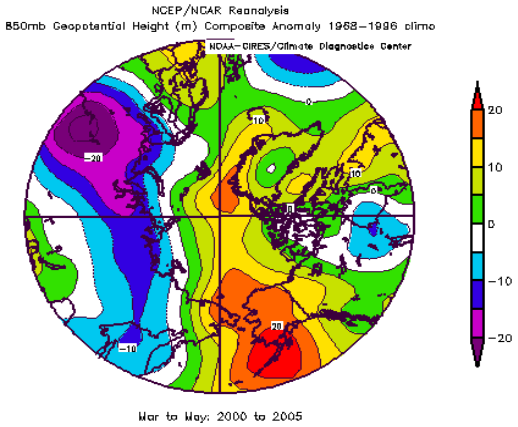



**Figure 1. This figure shows the various atmospheric anomalies for the major climate region in the northern hemisphere (from L:22). The graph clearly shows that multiple processes occur at multiple scales. These abiotic factors have substantial implications for biological components of marine ecosystems.**

The second theme was abiotic factors and habitat. Doc. L:08 (Kostylev and Hannah), Doc. L:25 (Sinclair *et al.*) and posters L:27 (Ojaveer and Kalejs), L:29 (Shtrik), and L:39 (Harris and Stokesbury) all explored the role of abiotic factors, habitat mapping, and lower trophic levels as they influence other biota. Novel technologies were discussed regarding how one might wish to map habitats. Collectively these presentations noted different relative importance for each abiotic or lower trophic level consideration, generally depending on the type of ecosystem.

In particular, Doc. L:08 explicitly considered temporal persistence of habitats and life history traits using a new tool designed by *Habitat Template* developed for the Scotian Shelf.

Figure 2 illustrates this example.

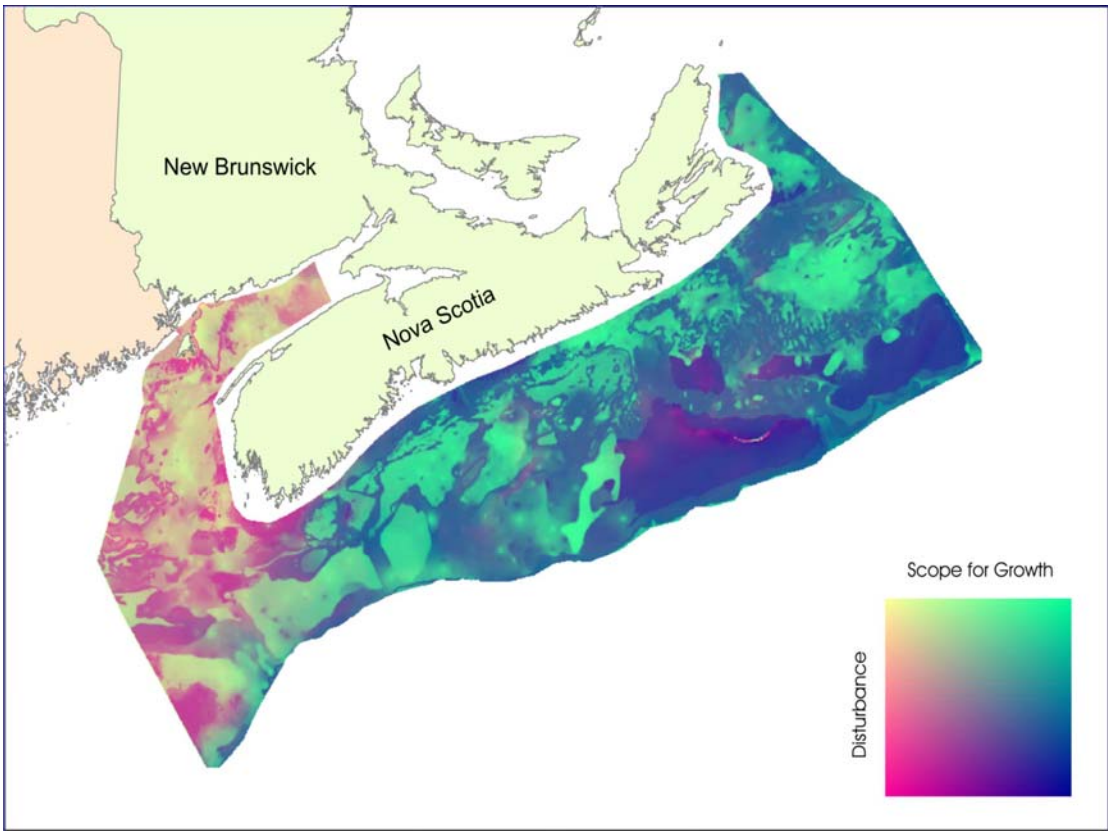



**Figure 2. Represents a habitat template as mapped onto the Scotian Shelf (from Kostylev and Hannah). The template demonstrates a continuous version of a simpler 2-way contingency table contrasting growth and perturbation. A major utility of this model is that it allows one to explore a wide range of issues associated with habitat without necessarily needing to sample a broad range of variables associated with the entire ocean floor and its biota.**

By far the largest group of presentations in this session explored the spatio-temporal distribution of marine organisms and potential causal factors thereto. The Docs. L:04 (Irigoien *et al.*), L:16 (Woillez *et al.*), and L:13 (Belier *et al.*) all focused on the Bay of Biscay, combined providing a detailed look at that particular marine ecosystem. Two additional Docs. L:24 (Olsen *et al.*) and L:03 (Slotte *et al.*) did the same for Norwegian Sea organisms, emphasizing trophic ecology and its linkage to explicit climate physical factors. Posters L:20 (Mendes), L:31 (Marino and Stokesbury), L:35 (Luque *et al.*), and L:38 (Linden) also explored this topic. Docs. L:21 (Vaz *et al.*) and L:05 (Johannessen *et al.*) also explored the distribution of fish from various geographies. Doc. L:05 in particular described a geographically referenced ecosystem designated as MARE MINIMUM to conduct process-oriented studies. Many of the examined organisms could be loosely classified as small pelagic fish, a group of organisms highly susceptible to a wide range of abiotic and biotic influences. Poster L:37 (Cardador *et al.*) in par-

ticular examined the climatic influence on the pelagic phases of a demersal species and spawner productivity variability in a dynamic upwelling system.

The next theme focused on models. Docs. L:10 (Side and Jowitt), L:23 (Petitgas and Vaz), and L:02 (Link *et al.*) all examined the consequences of incorporating spatial differences into various population and ecosystem models, as did poster L:30 (Lordan *et al.*). The main point of these talks is that aggregate, broad-scale views of fishery systems are distinct from those with more spatial explicitness. Doc. L:02 in particular overviewed the northeast US food web ecological network EMAX which allows the evaluation of holistic, interdisciplinary, systemic trade-offs.

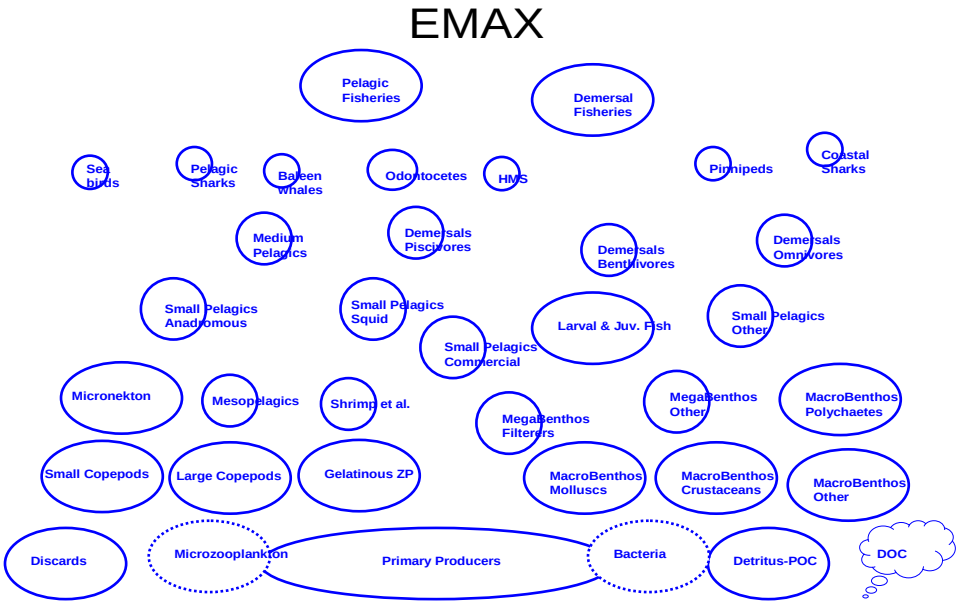



**Figure 3. The network nodes for the EMAX project in the northeast U. S. continental shelf. This "Energy Modelling and Analysis eXercise" delineated and explored the major biomass/energy flows among the main elements of the food web.**

Model comparisons concluded that overall, there was minimal difference between Ecopath and EcoNetwork.

The final theme dealt with fishing, people, and fisheries management. The Doc. L:07 (Nogueira and Stokesbury) explored the implications of an MPA. Docs. L:11 (Pranovi) and L:17 (Robinson *et al.*) and poster L:28 (Campos *et al.*) explored the effects of fishing. Docs. L:09 (Rogers *et al.*) and L:06 (Truong *et al.*) explored spatial fisheries management tools. All emphasized spatial explicitness.

From the 21 oral presentations and 12 poster presentations, Question 3 was the most well addressed one. Question 1 merits further consideration, but also overlaps to some degree with other theme sessions. Question 2 was explored, but there remains much more to be done in spatially explicit modelling. A future theme session on this topic would be timely and of great interest. Question 4 was also briefly explored, but a more rigorous and formal session focusing on spatial management (especially fisheries) tools would better address this issue. It was clear that to do ecosystem approaches, we need to examine multiple yet germane spatio-temporal scales. No talks save two integrated such information into an ecosystem perspective *per se*, and doing such an integration would also be worth attempting in future sessions.

## Theme Session M – The Impact of External Forcing on Flows in Marine Trophic Networks

Conveners: Bärbel Müller-Karulis (Latvia), Villy Christensen (Canada), and Arturas Razinkovas (Lithuania)

### Background

The Theme Session, initiated by the Baltic Sea Regional Project, discussed the response of marine trophic networks to external forcing. Marine ecosystems are impacted by anthropogenic as well as environmental forcing factors, and a scientific debate has continued for most of a century on the relative role of such impacts in exploited ecosystems. Marine ecosystems are under considerable and increasing pressure worldwide, be it through overfishing, Eutrophication, pollution, climate change, or fluctuating environmental conditions. At the same time, ecosystem-based management calls for management actions based on knowledge of the ecosystem and its dynamics. It is, therefore, of concern to be able to evaluate the role of external forcing on all ecosystem compartments, based on sound understanding of the processes that control biological production in ecosystems.

To address this objective it is imperative that time-trends from monitoring of marine resources and their interactions at all trophic levels, e.g. from phytoplankton, zooplankton, benthos, fish, marine mammals, and fisheries as well as time-trends for environmental and physical forcing factors are evaluated in an ecosystem context. Therefore, the Theme Session invited contributions from marine ecosystems globally as well as from methodological and case studies.

### Presentations

The session comprised 20 oral presentations and two posters. The session was well attended, with around 30 listeners on Friday and 50–70 on Saturday. Contributions covered a wide range of anthropogenic and natural impacts on marine ecosystems, especially climate change and fishing, but also Eutrophication, introduction of alien species, harmful algae, and aquaculture. Presentations came from a large geographical area, including the Baltic Sea, North Sea, the US/Canadian continental shelf, the Chilean upwelling area, the Bering Sea, and a tropical lagoon.

#### External forcing – natural and anthropogenic impacts

- Alien species

If there is a surplus of food, the introduction of alien species has only little impact on coastal foodwebs. In this situation, the newcomers do not act as significant competitors, as was shown in the example of benthic ponto-caspian crustaceans in the Curonian Lagoon (Doc. M:20). Alien species can, however, be better adapted to the ecosystem they invade than ecologically related native species and in the Baltic Sea, the introduced cladoceran *Cercopagis pengoi* appears a more efficient predator than the native macrozooplankton species *Mysis mixta.* Both species significantly overlap with respect to their prey and their predators (Doc. M:06).

- Harmful algae

Harmful algal blooms have the potential to change marine foodwebs. As was demonstrated for the Gulf of Finland, harmful algae – in this case toxic cyanobacteria blooms – can significantly depress zooplankton feeding and copepod egg production (Doc. M:27).

- Eutrophication

Presentations from coastal areas in the Baltic Sea (Docs. M:01 and M:13) suggested that the water exchange between coastal and open areas plays an important role in determining the response to nutrient loading (Doc. M:13). The water residence time also regulated the amount of carbon that was channelled into pelagic and benthic foodwebs, with systems with high water retention time having larger secondary production (Doc. M:01). The potential of coupling a water quality model, addressing changes in productivity owing to different nutrient inputs, and a fisheries ecosystem model was demonstrated for Chesapeake Bay. Chlorophyll *a* dynamics provide the link between both models (Doc. M:17).

- Aquaculture

Aquaculture can have significant impacts on marine foodwebs. Fast changes in the management regime have the potential to exceed ecosystem resilience, as was shown for a tropical lagoon with heavy algal blooms after the removal of oyster pens (Doc. M:09).

- Fisheries and Climate Change

Presentations showed that fisheries and climate change impact marine ecosystems simultaneously. Climatic variability affects ecosystems through changes in currents that modify primary production, and through habitat change. Ecosystem response to changes in climate, circulation, and fishing occurs on time scales characteristic for each ecosystem compartment. Regime shifts may lead to modifications in community structure that cause hysteresis effects in ecosystem response to forcing (Doc. M:16). Climatic variability plays an especially large role in upwelling systems, and its effect channels through the entire food web (Doc. M:04). The role of simultaneous changes in the current regime, leading to fluctuations in primary production, and fishing pressure, was also pointed out in budget models for the Georges Bank ecosystem. Despite the decline in commercial fish species, non-commercial species had increased the total food demand and response to changes in primary production was more pronounced for pelagic fish, whereas demersal species were more susceptible to fishing (Doc. M:08). Long-term ecosystem changes were also evaluated in a bioenergetic model of the North Sea foodweb, which demonstrated evidence of "fishing down the foodweb". According to the model, the overall demand for secondary production in the North Sea had declined as the result of a shift to planktivorous fish species, increasing the carbon efficiency, but reducing the economic efficiency of the system (Doc. M:15). A statistic approach was used to explore predator-prey relations in the North Atlantic. Correlations between time-series of phytoplankton, zooplankton, and fish catches from the CPR survey database indicated top-down forcing of planktivorous fish on their zooplankton prey (Doc. M:03). To identify the predominant type of forcing, models can be used to indicate the type of environmental variation that reproduces that data best. This approach was demonstrated in ECOSIM simulations of Steller Sea lion biomass in the Gulf of Alaska (Doc. M:22).

*Assessment and management approaches*

Several contributions presented indicators of ecosystem state and pressures acting on ecosystems and addressed both the design of individual indicators and the need for combining indicators for assessment and management. The concept of resource sustainability in Large Marine Ecosystems (LMEs) has to address the sustainability of the fishery, the fishing industry, and the ecosystem simultaneously. A five-module approach, consisting of productivity, fish and fisheries, pollution and ecosystem health, socio-economic, and governance indicators, is currently implemented in GEF-funded Large Marine Ecosystem projects worldwide. These indicators are a useful tool to demonstrate the main driving forces in different LMEs (Doc. M:07). Focusing on addressing ecosystem state, the use of multiple indicators was crucial to detect ecosystem shifts in the Bering Sea, where atmospheric, oceanic, and climatic index variables showed no consistent pattern, but biological and fishery variables indicated signifi-

cant ecosystem changes (Doc. M:21). As an improved indicator of overfishing, the loss of secondary production in a linearized food chain was suggested, addressing production losses when fishing changes to lower trophic levels (Doc. M:23).

Many presentations demonstrated the usefulness of modelling approaches in assessing ecosystem response to external forcing and in the design of management options. Hypothesis for the collapse of the cod fisheries on the eastern Scotian shelf were explored in ECOSIM simulations based on different assumptions for changes in primary production and fishing pressure (Doc. M:11). Monte Carlo simulations using different climate and fisheries management scenarios to drive ECOSIM models explored the risk of extirpation, stock depletion, and biodiversity reductions in several ecosystems. Management scenarios were evaluated based on their impact on a weighted sum of economic effects, impacts on employment, and ecological criteria (Doc. M:24). A similar approach was used to explore management options for the Norwegian spring-spawning herring. Model results predicted both ecosystem and economic effects of catch reductions, suggesting an increase in the biomass of long-lived species and more stabile fish stocks. Both effects might partially compensate the direct economic effects of catch reductions (Doc. M:12).

Results of simulation models tend to converge with the output from traditional fishery models like VPA and especially MVPA. Simulation models allow estimating forcing functions and permit the exploration of different forcing and management scenarios. Inclusion of economic considerations can help to overcome the lack of strategic decisions in fisheries management (Doc. M:19). However, the potential of models to address ecosystem management questions depend both on knowledge of the ecosystem, presence of non-linear and irreversible processes, and the availability of long-term data (Table 1).

**Table 1. A report card for using models to address ecosystem management questions (Doc. M:19)**

| CONCERN | GRADE | COMMENT |
|---|---|---|
| Bycatch impacts | A- | Prediction capabilities for direct effect of fishing in general is quite good |
| Top-down effects, (e.g. of predator culling or protection) | C | Trophic effects of fishing can be classified as 'top-down' or 'bottom-up' with respect to where management controls are exerted |
| • on valued prey | B | Changes in M for prey species already subject to assessment can be handled quite well |
| • on 'rare' prey | F | Prediction capabilities of outbreaks of previously rare species is wanting |
| Bottom-up effects, (e.g. effects of prey harvesting on predator stocks) | C | Uncertainty about flexibility of predators to find alternative food sources when prey are fished |
| Multiple stable states | B | 'Cultivation-depensation' mechanisms (Walters and Kitchell, 2001) may be main cause of 'flips' |
| Habitat damage | D | Lack of understanding about real habitat dependencies, bottlenecks |
| Selective fishing practices/policies | F | Lack of experience in this area |
| Production regime changes | B | Models look good when fitted to data, but have not stood the test of time |
| Regime shifts | C | Appropriate policy adjustments in response to ecosystem-scale productivity change is unclear |

## Conclusions

This Theme Session was useful in providing examples for the response of a wide variety of ecosystems to external forcing. Climate change, through modification in current patterns and resulting changes in primary production, and fishing both act simultaneously, with upwelling systems being most susceptible to climate fluctuations. Eutrophication affected mainly coastal or semi-enclosed areas. A variety of models – simulation models, budget models, bioenergetic models, statistical and time-series analysis – provide insight in the driving factors for ecosystem change. Simulation models as both diagnostic and prognostic tools can be used to explore ecosystem response to different management scenarios. It was felt by presenters and audience alike that simulation models, though perhaps not able to predict ecosystem change quantitatively, are well capable of revealing the direction and nature of ecosystem change and can be used to explore trade-offs between different management options.

## Theme Session N – Elasmobranch Fisheries Science

Conveners: Maurice Clarke (Ireland), Henk Heessen (the Netherlands), and Jim Ellis (UK)

Elasmobranchs comprise a group of fish having cartilaginous skeletons, internal fertilization, and a range of reproductive modes ranging from oviparity to viviparity. In total, about 800 species of sharks and rays (or skates) exist, with around 100 present in the ICES area. These fish are usually characterized as being vulnerable to fishing pressure. Despite their being widespread in most of the world's seas, they are poorly understood. Even the most basic data for quantitative studies of stock status are lacking for most species. This is particularly true of the ICES area (NE Atlantic or FAO Area 27). Yet available data shows that many ICES elasmobranchs are depleted.

Elasmobranchs are exploited for commercial fisheries (meat, livers, fins, teeth, jaws, aquarium trade), recreational fisheries, and ecotourism ventures. Some elasmobranchs are highly valuable, others are a low value bycatch or discard in commercial fisheries. Catch and landings data are typically of poor quality, even in the ICES area (FAO area 27). Although general biological parameters are available for some species in particular areas, most elasmobranch stocks are poorly studied. Stock assessments are often hampered by this lack of data. Nevertheless, methodologies suitable for these species have been well developed. Basic growth, reproduction and mortality data can be used in powerful demographic type analyses. Another useful, though under-utilized source of information is fishery-independent surveys.

ICES work on elasmobranchs is to develop scientific knowledge of these fish, and also provide the management advice that has been sought by clients and stakeholders. This Theme Session was timely, because 2005 is the first year that ICES has been asked to provide formal advice on elasmobranch stocks. The ICES Working Group on Elasmobranch Fishes (WGEF) has produced a series of reports that have improved our knowledge of these species in the ICES area. The more recent studies of WGEF were facilitated by the EU-funded DELASS project (2000–2002). Additional information was brought forward by the ICES-NAFO-CSIRO (Australia) Elasmobranch Symposium in 2001.

This Theme Session was the first elasmobranch theme session ever held by ICES, and filled important gaps in our knowledge. It attracted a wide participation, from within the ICES member states, but also from the Northwest Atlantic, Mediterranean, South Atlantic, Pacific, and Indian Oceans. In total 25 papers and 4 posters representing studies from 16 countries were presented, spanning one and a half days of the ICES Annual Science Conference.

For the purposes of fisheries management, we can consider four broad categories of elasmobranchs.

1) Demersal elasmobranchs, including rays (and/or) skates, small dogfish and demersal sharks that are caught in mixed fisheries in most parts of the ICES area, though also in small-scale targeted fisheries, often using gillnets.

Pelagic sharks, such as blue shark, shortfin mako and thresher shark, which are caught in tuna/billfish fisheries or in small-scale directed fisheries.

Spurdog, which is a small widely ranging dogfish and is targeted in directed longline and gillnet fisheries, and also taken in mixed demersal fisheries.

Deepwater elasmobranchs, mainly squaliform sharks, that are caught in trawl, longline and gillnet fisheries that have developed since the early 1990s.

This Theme Session contained papers from all four groups. The following thematic areas were covered:

- Basic life history studies (age, growth, maturity, fecundity, and mortality) that have been or can be incorporated into population assessments;

- Survey abundance and biomass indices;
- Basic biological studies of spatial and bathymetric distributions, feeding ecology, and morphometric studies;
- Fisheries descriptions and incorporation of fisheries-dependent data;
- Population assessment techniques;
- Possible management strategies;
- Policy framework for fisheries management.

The following report aims to summarize and provide a synthesis of the work that was presented, and to provide an overview of how ICES' goals in elasmobranch research have been advanced. In the report, shark names are given as common names, while rays and skates are given their scientific names, because common names often differ between countries.

## Demersal species

Several papers were presented on demersal elasmobranchs, particularly rays, in different parts of the world. Age, growth, maturity, feeding ecology, and trends in biomass and abundance were reported on for a number of species, with detailed studies of the ray assemblages in Portugal, Barents Sea, North Sea, Tyrrhenian Sea, Falkland Islands, and Gulf of St. Laurence emerging from the Theme Session.

In Portugal, as in most European countries, rays are an important component of the demersal mixed fishery. The four main species in landings are *Raja clavata, R. brachyura, R. montagui*, and *Leucoraja naevus*. The metiers in which the species were caught was also described, and it was shown that *R. brachyura* was the major catch in gillnets, while *R. montagui* was caught mainly by longline (Doc. N:18). The feeding ecology of these species was described, with decapods and bony fish the main prey items (Doc. N:28). Similar studies of the composition of landings of rays in other ICES Subareas are required.

In the Barents Sea, the ray assemblage is composed of seven species, but *Amblyraya radiata*, *A. hyperborea, Rajella fyllae, Dipturus batis*, and *Bathyraja spinicauda* are the most abundant (Doc. N:11). Most of these are discarded, with only a small proportion landed, and very large reported landings in the late 1980s are considered to have been for reduction to fishmeal. *A. radiata* is the most abundant species, and it was concluded that fishing mortality is lower than natural mortality at the current levels of exploitation.

In the Falklands Islands, the ray fishery catches *Bathyraja brachyurops, B. griseocauda, B. albomaculata*, and *B. scaphiops*. These papers covered age, growth, and reproductive parameters. Such data have been used in the assessment and management of this fishery. The largest, slowest growing, and latest maturing species, *Bathyraja griseocauda* has been depleted and the area in which it dominates catches has been closed since 1996. These trends are comparable to those described for North Sea rays, revealing temporal variations in the relative status of the species along a gradient of increased vulnerability (Docs. N:02 and N:21) within the species assemblage.

Several rays occur in the Gulf of St. Lawrence, Canada (NAFO area), including *Amblyraja radiata*, *Leucoraja ocellata*, and *Malacoraja senta* (Doc. N:13). Information from trawl surveys indicate that the biomass and abundance of mature rays has declined since 1971, though the trend for immature rays suggested an increase from the mid-1980s to the mid-1990s. This was accompanied by a collapse in the biomass of large-bodied demersal teleosts, a decline in fishing effort, an increase in the seal population, and a cooling of bottom waters in the southern Gulf.

The demersal elasmobranch assemblage in the Tyrrhenian Sea, west of Italy, was described in several papers. The spatial and bathymetric distributions were described. Abundance and bio-

mass trends, over a period from the 1890s to the present, were modelled using GLM (Doc. N:25). *Raja polystigma*, the smallest species, displayed a clear increasing trend in biomass and abundance (Doc. N:20). In contrast, several large, coastal, late maturing species are reported to have disappeared from the study area, such as the large rays, *Dipturus batis* and *Rostroraja alba*. Abundance of *Raja asterias* appears stationary, and this may be explained by its small size and early age-at-maturity, and generally more productive life history strategy (Doc. N:12). Exploration of the linkages between this and adjoining areas may explain some of these trends, and it is hoped that studies in adjoining waters and other areas of the Mediterranean, such as those conducted in the Tyrrhenian Sea will continue.

Several studies of age in rays using the caudal thorn method were presented. Thorns provided more precise age estimation for *Raja clavata* in Portugal than did vertebrae (Doc. N:17), though thorn and vertebral age estimates did not produce differing perceptions of growth in two ray species from the Falkland Islands (Doc. N:02). For *Bathyraja griseocauda* in the Falkland Islands, thorns produced growth parameters that were in good agreement with the maximum observed weight (Doc. N:14), though not with length (Docs. N:14 and N:21). It will be necessary to convene a worldwide workshop to deal with ageing of rays using caudal thorns, as this new technique is enjoying a wide and increasing usage. The technique is non-destructive and does not require the dissection of landed carcasses. In addition it is hoped that further validation studies of this technique will be conducted.

### Pelagic species

The blue shark is one of the most widespread elasmobranchs in the world, including the ICES area. Several papers on aspects of its biology were presented at this meeting. A study of the blue shark from the eastern Mediterranean showed lower maximum size and size-at-maturity than displayed in the Atlantic (Doc. N:09) and supports the decision taken in ICCAT and ICES to consider blue sharks in the Mediterranean as a separate stock. A strong predominance of males in the eastern Mediterranean was also noted. A study of west African blue sharks (Doc. N:27) demonstrated the changes that occur in tooth morphometry, highlighting the need for awareness of such ontogenetic changes and sexual dimorphism when considering stock identity as well as and systematics and taxonomic studies of elasmobranchs.

### Deepwater species

Studies of the ecology of elasmobranchs from diverse areas were presented, particularly the poorly understood deepwater species. These studies covered littoral to deep-sea areas off Guinea and Sierra Leone (Doc. N:26); the Azorean sector of the Mid-Atlantic Ridge (Doc. N:31) and mainland Portugal (Doc. N:30) adding to available information on these areas. The biology and ecology of the gulper shark was described from the eastern Mediterranean (Doc. N:29), agreeing with previous studies that this is one of the least productive of all sharks, with a fecundity of one and an unknown gestation period. In a multidisciplinary study, Pacific sleeper shark was shown to prey mainly on planktivores, and pinnipeds were shown not to be important items in their diet (Doc. N:05). Results from this study are in accordance with others, namely that deepwater squalid sharks scavenge on dead cetaceans.

Preliminary investigations on the relative abundance of deepwater sharks in ICES Subarea VI were undertaken using Scottish trawl surveys (1998–2004). This is the only series of fishery-independent, deepwater trawl surveys that is still continuing in this area (Doc. N:16). The surveys showed strong declines in the deepwater sharks, particularly Portuguese dogfish, where CPUE has decreased to about one fish per haul. This confirms data presented at WGEF for this species, and highlights the importance of such surveys.

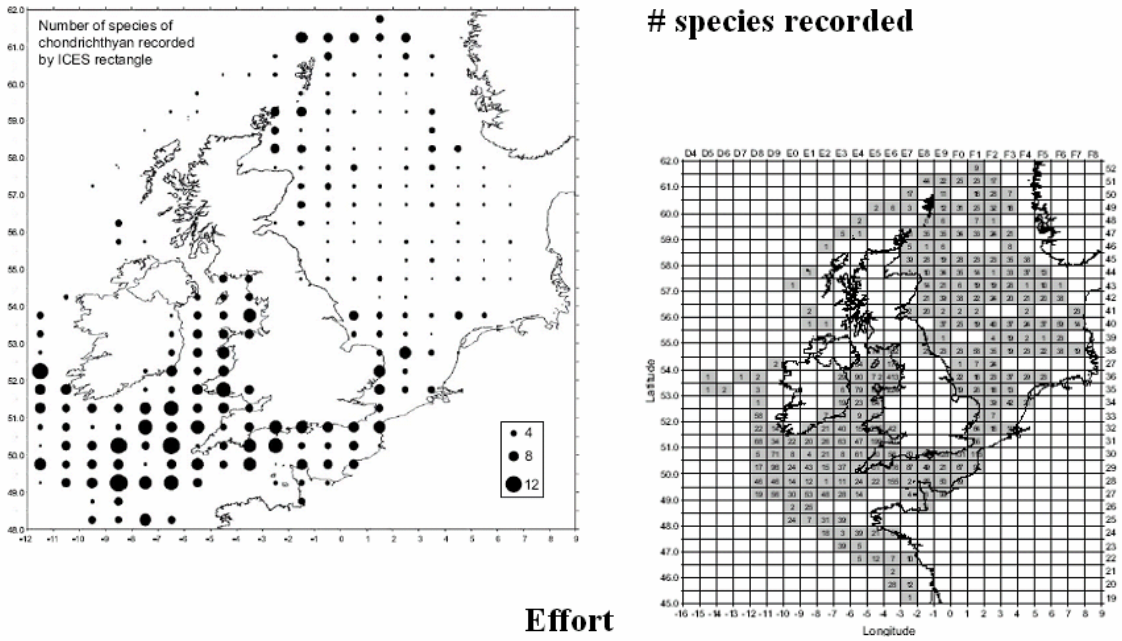



**Figure 1. Utility of survey data for assessment of elasmobranch stocks. Comparison of number of species recorded and trawl survey effort (N:06).**

## Fisheries-independent surveys

Surveys have been identified as one of the few sources of information available with which to assess elasmobranch stock status. Such data have been used in the North Sea area (Figure 1) and are now being used elsewhere. A particular success of this Theme Session was the inclusion of eight papers on the use of fisheries-independent surveys to assess status of elasmobranch stocks. In particular, the inclusion of French and Russian survey data was welcomed, filling gaps in our knowledge of species composition and stock abundance in these ICES areas.

Scottish survey cpue data were standardized using GLM to generate an abundance index for spurdog (Doc. N:01). Results of this study supported conclusions of ICES WGEF that the stock is depleted. This was further supported by analyses of the IBTS North Sea survey (Doc. N:06). These IBTS analyses support earlier work on declines in larger rays, and show new information that smooth-hounds may well be increasing in relative abundance.

Studies of French survey data from Bay of Biscay and Celtic Sea (Doc. N:04) show increasing trends in the relative abundance of lesser-spotted dogfish, blackmouth dogfish, and *Leucoraja naevus.* However, the downward trend in spurdog was also confirmed in this area. Interestingly, there appears to be an upward trend in abundance of the starry smooth-hound, similar to that described in the North Sea (Doc. N:06).

English and French survey data from the eastern English Channel were used to describe essential fish habitats for *Raja clavata* and lesser-spotted dogfish, and elucidate migratory patterns related to spawning and nursery areas (Doc. N:23). An apparent trend for lesser-spotted dogfish distribution to be increasing towards the Straits of Dover and into the North Sea was evident in 1990–2004. It is also apparent that the SE English coast is an important habitat for *Raja clavata*.

As an alternative means of population studies, cameras and baited traps have been receiving increased attention in recent years. The use of baited cameras was shown to provide a low-cost, non-destructive means to assess shark abundance of sharks on tropical reefs (N:03).

Low-cost disposable cameras have been used to collect observation data in these reefs. Future work will focus on using the data to assess stock abundance.

## Elasmobranch fisheries

Catch data for elasmobranchs in the ICES area are poor, and there are several reasons for this. Landings data are not indicative of catch levels because of the high discarding of some species (Figure 2). Even the available landings data for elasmobranchs are unreliable. Elasmobranchs are often not considered of high commercial importance, and consequently not always recorded in official records (Doc. N:11), many fisheries are unregulated (Doc. N:07), some commercial species may be misreported as elasmobranchs (Doc. N:22), and the use of the more inappropriate, generic reporting categories hampers analyses (Docs. N:18; N:22; and N:28).

Methods to estimate elasmobranch catch data included sampling of mixed landings (Docs. N:12 and N:18); establishing ratios of elasmobranch to target species, based on observer data (Doc. N:11), interviews with fishers, processors, and/or gear manufacturers (Docs. N:07 and N:12); and correlating generic landings data with indicator species in official data (Doc. N:22).

To assess stock status in ICES areas, it is necessary to have better landings statistics. The process of collating these data only began in ICES in 2003, and continues. Available data show striking downward trends in several cases. Best estimates of the main elasmobranch stocks in ICES areas were presented (Doc. N:22). A particular problem is the use, by many countries, of generic categories such as "cartilaginous fish not elsewhere identified". The number of such reporting categories has risen. A portion of these generic landings was allocated to ICES estimates for deepwater sharks, spurdogs, or porbeagle. Of the remainder, it was shown that a large component of Spanish landings were positively correlated with tuna-like fish, indicating that they represent pelagic species such as blue and shortfin mako shark. Future work will focus on these species, as currently available data are considered underestimates of real catches.

A study of gillnet fishing for deepwater sharks off the British Isles, based on collected information from the industry, sightings and boardings by naval vessels, and anecdotal information was presented (Doc. N:07). This study showed alarming levels of ghost fishing, long soak times, and high rates of discarding of rotten shark carcasses. This study has stimulated the EU to introduce emergency measures to regulate this fishery, including a proposed ban on gillnetting in waters deeper than 200 m. This report allowed for the first description of a fishery that has been in operation since about 1992, with almost no information being available on catch, effort, or fleet activity. Gillnet, trawl, and longline fisheries have depleted these deepwater sharks in the ICES area.

## Stock assessment and management

Many approaches to elasmobranch stock assessment have been used, and several varying methods were presented here, including demographic analyses (Doc. N:19), GLM standardization of cpue series (Docs. N:01; N:16, and N:25), relating known species biomass (cod) using catch efficiency ratios (Doc. N:11), estimation of F from ratio of average catch to stock biomass (Doc. N:11), and simulations of populations under different selection patterns (Doc. N:24).

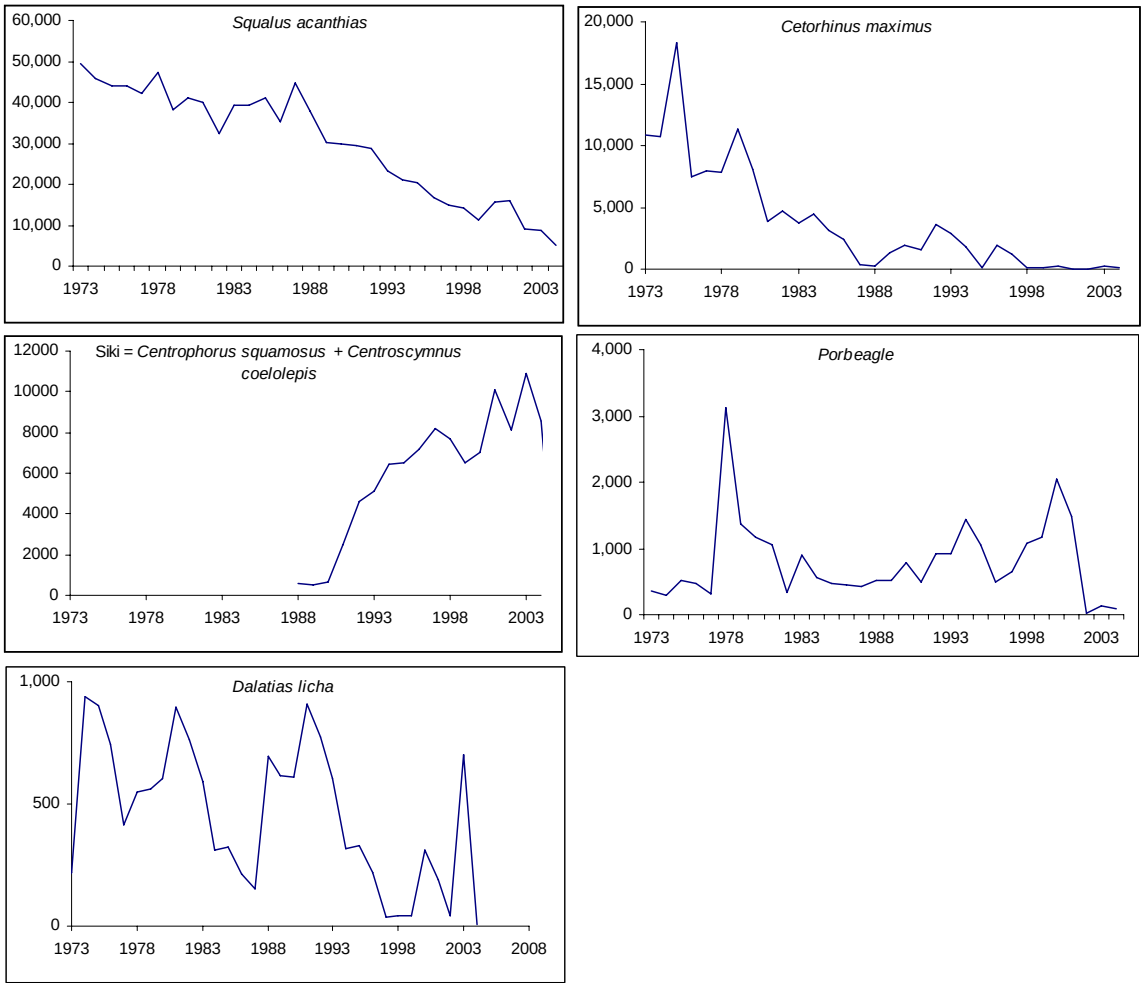



**Figure 2. Best estimates of landings of the main shark species (*Squalus acanthias* or spurdog; *Cetorhinus maximus* or basking shark; deepwater siki sharks; *Lamna nasus* or porbeagle; and *Dalatias licha* or kitefin shark) in the ICES area (N:22).**

The simulation approach taken in Doc. N:24 compared theoretical populations of a long lived shark stock (K-strategist) and a short-lived teleosts (r-strategist). Simulations suggested that higher fishing mortality was attainable for the shark by targeting juveniles only and that sustainable harvesting was unattainable if the mature component was targeted. This agrees with simulations in WGEF that a maximum landing size for spurdog is a possible means to manage fishing mortality. Interestingly, yield was not greatly different whether targeting juveniles or adults.

A good example of a demographic analysis, using available biological data, was shown for *Dipturus chilensis* in Chile (Doc. N:19). Changes in population dynamics were described under three scenarios of fishing mortality. It was demonstrated that juveniles contributed most to population growth rate variations, agreeing with results of Doc. N:24, and suggesting that protecting larger females is a valid management strategy for elasmobranch stocks. This can be achieved by maximum landing sizes, and closed areas or seasons. The applicability of such measures depends on a number of factors including survivorship of discards, and whether adult females are spatially or temporally discrete from the rest of the stock. It should also be noted that harvest strategies that aim to protect the mature female component of the stock are widely used for the management of exploited terrestrial mammals. In 2004, ICES was asked to comment on proposals for conservation measures for porbeagle and spurdog, and this is a growing area of work. Representatives from the non-governmental organization sector described alternative approaches to management (Doc. N:08). The International Union for the Conservation of Nature (IUCN) Red List, provides a forum to cite species according to their

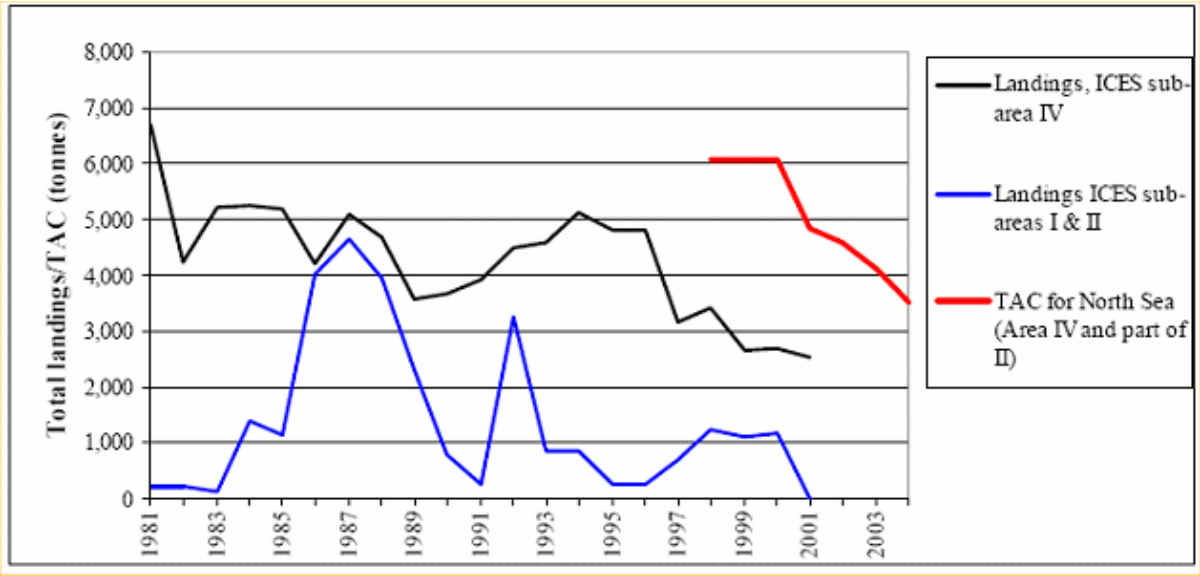



**Figure 3. Comparison of skate and ray TAC and landings in the North Sea. Data after 200 are preliminary (N:08).**

conservation status. Red lists for elasmobranchs in various parts of the world, though not as yet the ICES area, have been drawn up and are subject to periodic review. Listing of elasmobranch species on CITES, an international convention regulating trade of endangered species, was cited as another possible option. The global trade in shark fins and frozen shark products was shown to be increasing. In view of the depleted nature of many high value elasmobranch stocks, managers should be aware of the options available outside the traditional fisheries management regime. In any case, the current elasmobranch TACs in Europe do not cover all species, nor do they correspond to the distribution areas of the stocks to which they apply (Figure 3).

## Summary discussions

The Theme Session was summarized and discussions ensued. Participants made a number of recommendations:

- Photographic material needs to be better utilized as a resource in species identification and maturity manuals. Many instances of species misidentification were noted in the session. This should also apply to the egg cases of rays and dogfish.
- An international ageing workshop should be convened, particularly to deal with the new thorn method for rays. The best forum for this may be the American Elasmobranch Society that is having a ray symposium in 2006.
- For assessment of stock status using survey data, it is often the case that data are noisy with contagious distributions. Methods need to be developed to deal with such noisy data, particularly for aggregating species such as spurdog and species that are recorded only occasionally in surveys.
- Visual census methods should be explored as a means of estimating population abundance for certain species or habitats.
- ICES trawl survey data have been used for many areas. Areas where such analyses still need to be conducted are: Spanish coast, west of Ireland, Porcupine Bank, Faroe Plateau, Iceland, east Greenland, and Norwegian coast.
- The approach taken to describe the demersal elasmobranch status in the Tyrrhenian Sea should be applied to other areas of the Mediterranean. The MEDITS survey is a valuable source of data in this regard.

The material and methodologies presented in this Theme Session will be a valuable addition to our knowledge of elasmobranchs. In particular it will reinforce the work of ICES WGEF. It is intended to publish the work of WGEF and this Theme Session as an *ICES Cooperative Research Report* on the status of elasmobranchs. The first step is to fill in the gaps that exist in particular parts of the ICES area. This Theme Session has helped to fill these gaps. ICES has much to learn from workers in other regions and it is hoped that future cooperation between elasmobranch biologists around the world can be facilitated by ICES and other organizations.

## Theme Session O – Connecting Physical-Biological Interactions to Recruitment Variability, Ecosystem Dynamics, and the Management of Exploited Stocks

Conveners: Elizabeth North (USA), Alejandro Gallego (UK), and Michael St. John (Germany)

### Objectives

We convened the Theme Session on "Connecting Physical-Biological Interactions to Recruitment Variability, Ecosystem Dynamics, and the Management of Exploited Stocks" (O) to bring to the ICES community recent findings from laboratory, field, and modelling approaches aimed at identifying and advancing our understanding of the interactions between physical and biological processes in marine ecosystems. These interactions occur at many scales, from fish egg sinking, to zooplankton aggregations at hydrographic fronts, to basin scale changes in temperature that influence ecosystem production. Advances in this field will improve our ability to predict fish recruitment, help us understand and mitigate the impacts of climate change, and support ecosystem-based fisheries management. Our goal was to survey recent findings, assess the state-of-the art, and discuss knowledge gaps that must be filled to advance toward a better understanding of ecosystem processes and enhanced predictive ability in support of ecosystem-based fisheries management.

### Participation

Participation in Theme Session O was outstanding. In all, 37 papers and six posters were presented. Audience attendance was greater than expected at all six sections of the two and a half day Theme Session, including the open discussion on Thursday afternoon. In addition, both presentations that received ICES ASC awards were given in Theme Session O. Best Paper was awarded to Beth Scott of University of Aberdeen (UK) for "Hotspots: Marine top predator foraging habitat predicted from a detailed understanding of temporal and spatial oceanographic processes" (Doc. O:39). Best Newcomer was awarded to Ute Hochbaum of University of Hamburg (Germany) for "Simulating the influence of climate variability on larval fish survival: An example using sprat (*Sprattus sprattus*) in the southern North Sea" (Doc. O:18).

### Research overview and highlights

Contributions to Theme Session O included laboratory, field, and modelling approaches, often in combination. They spanned small to large scales, and focused on a suite of species and their prey ranging from finfish (e.g. anchovy, herring, cod, mackerel, swordfish, tuna), to crustaceans (e.g. copepods, lobsters, snow crab), to molluscs (e.g. squid, oysters, scallop).

Small-scale studies related to turbulence and larval fish feeding were presented. Laboratory experiments with bluefin tuna larvae showed a dome-shaped relationship between their survival and turbulence (Doc. O:15). In addition, field observations in low stratification, low wind, and low tidal current conditions indicated that swells may be an additional source of turbulence that may affect larval fish feeding success (Doc. O:26). Finally, a coupled field and modelling study of cod on Georges Bank indicated that prey preference is an important component of larval fish feeding that depends on the copepod species characteristics such as visibility and catchability, not just on prey length (Doc. O:19).

Several presentations demonstrated that distributional patterns of a suite of zooplankton and larval fish were clearly related to mesoscale features such as the hydrographic properties of fronts in the North Sea (Doc. O:30), the seasonal thermocline and permanent halocline in the Baltic Sea (Doc. O:22), and coastal upwelling, eddies, and hydrographic fronts off the Northwest African coast (Doc. O:35). Two promising approaches were presented for reconstructing time-series of the location and strength of mesoscale features; one based on satellite altimetry

data (Doc. O:36) and one with output from 3D numerical models (Doc. O:17). Although it was noted that computational artefacts may create artificial patterns in results, further developments of these techniques will be important for identifying time-series of environmental conditions at the mesoscale that influence fish recruitment.

Scott *et al*. (Doc. O:39) identified another type of physical feature that can structure ecosystem dynamics: the persistent mixing zones created by interaction of tides and bathymetry. These zones, or 'hotspots of production', were associated with localized peaks in chlorophyll as well as increases in the number of seabirds and marine mammals engaging in active foraging behaviour (Figure 1).

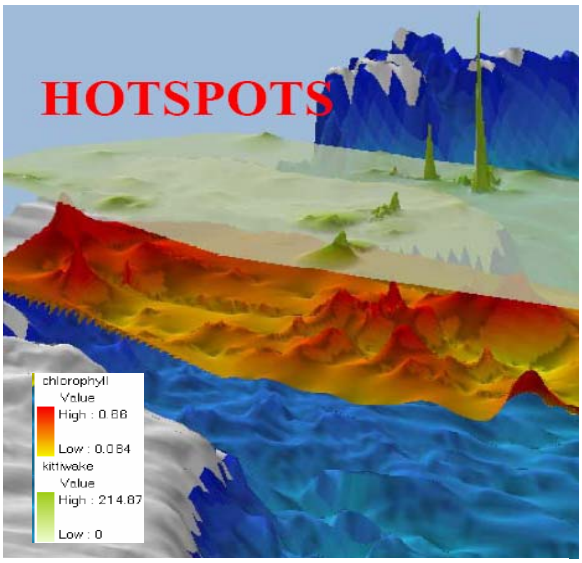



**Figure 1. Bottom topography of the Firth of Forth, Scotland (blue contors), the maximum level of chlorophyll (fluorescence voltage) found within the water column (red/orange contours) and the number of kittiwake seabirds (Rissa tridactyla) seen foraging (green contours). (Scott *et al.,* O:39 )**

Numerical modelling studies, coupled with field observations, also provided information on factors that influence zooplankton production and distribution. Physical parameters such as the depth of the thermocline, turbulence, and nutrient transports were hydrodynamic indicators for ecosystem variability and zooplankton production in the North Sea (Doc. O:28). The different vertical migratory behaviours of two copepod species lead to good agreement between modelled and observed distributions in the Baltic Sea. This result was obtained by explicitly modelling migratory behaviour in an Eulerian framework using a computationally efficient evaluation function (Doc. O:10).

One of the strengths of the session was the large number of papers on numerical modelling approaches applied to the early-life history of fish. Several papers were aimed at identifying and linking spawning and nursery grounds and understanding important processes that affect larval transport and survival. For example, it was demonstrated that jack mackerel larvae found in one nursery area were likely spawned at different locations at different times owing to changes in transport patterns of the Kuroshio current as well as temperature-dependent effects on survival (Doc. O:14). In another study in Chesapeake Bay, settlement success and spatial patterns in settlement of oyster larvae was influenced by physical conditions (wind and freshwater input) and the vertical behaviour of larvae (Doc. O:01). Similarly, Arcto-Norwegian larval cod transport and growth appeared very sensitive to vertical migration behaviour as well as to the spawning behaviour of the adults (i.e. choice of location) (Doc. O:27). An important consideration in this study was the difference in transport results from using on-line and off-line tracking. Resolution of this issue will benefit the particle trajectory modelling community.

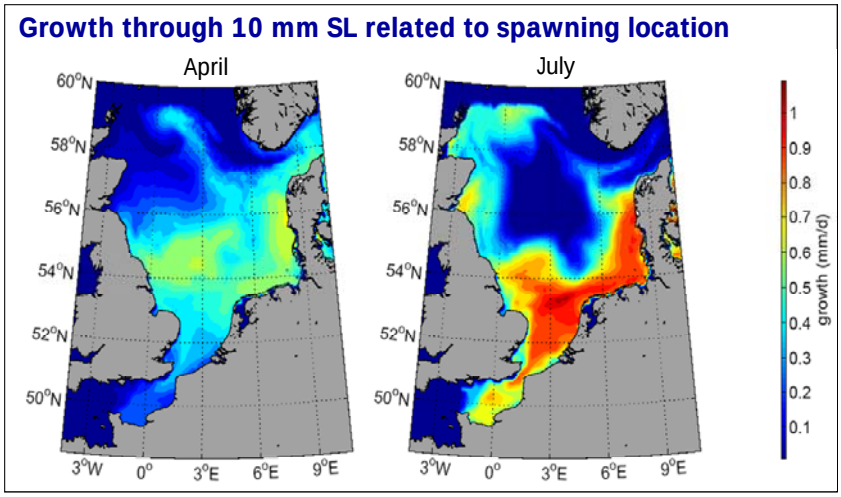



**Figure 2. Growth rates of simulated larval sprat (*Sprattus sprattus*) in the North Sea in 1993 based on predictions of an individually-based model linked to circulation, particle trajectory, and ecosystem models (Hochbaum *et al.*, O:18).**

Another set of modelling studies focused on simulating the direct and indirect effects of environmental variability on larval fish growth and survival. A notable example was presented by U. Hochbaum. Growth rates of simulated larval sprat in the North Sea, based on a larval IBM coupled to circulation, particle trajectory, and ecosystem models, were found to vary in time and space (Figure 2) within the range of observations derived from field data. Results indicated that growth rates in spring were controlled by both temperature and prey concentrations whereas growth rates during summer were controlled by prey limitation. Large differences in survival between years were related to the timing of peak prey abundances (Doc. O:18).

Another study indicated that simulating prey concentrations may not be necessary to accurately predict growth for larval sandeel in the North Sea. Analysis of modelled temperature and observed prey fields that larvae experience using a larval trajectory model indicated that there was a strong correlation between temperature and zooplankton concentrations. GAM models with explicit temperature and food terms explained only slightly more variability in the data than simpler models with single food or temperature terms (Doc. O:04).

Several studies combined particle trajectory modelling with intensive field observations of

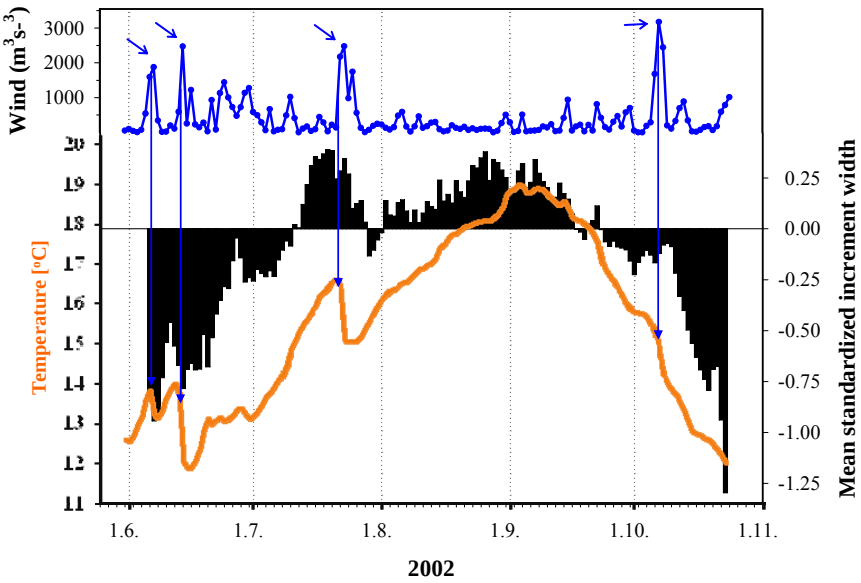



**Figure 3. Mean standardized otolith increment width (black bars) of sprat YOY, modeled Baltic Sea temperature (orange line), and wind energy (blue line). Arrows indicate wind events that correspond to changes in temperature and YOY growth (Hinrichsen and Baumann, O:05).**

otolith-based estimates of larval growth. Using this approach, anchovy growth was found to be a function of age, temperature, stratification index, and mixing depth (Doc. O:34), and regional differences in growth rates between northern and southern regions of the Bay of Biscay (Doc. O:21) were identified. In the Baltic Sea, abrupt environmental changes simulated by a numerical model forced with high-resolution wind data were detected in otolith increment widths (Figure 3). Model results indicated that higher temperatures led to significantly faster growth throughout the entire age-range of YoY sprat (Doc. O:05). In other studies, wind events were also associated with high mortality rates of sprat eggs (Doc. O:29) as well as the distribution/aggregation of cod larvae (Doc. O:44).

Another strength of the session was the suite of papers that used statistical approaches to investigate the link between climate variability and fisheries production, catch, and habitat. For example, regression models for Northeast Arctic cod, Norwegian spring-spawning herring, and Barents Sea capelin were able to describe 65–85% of the variance in the recruitment data with the incorporation of environmental factors (Doc. O:25). Variations in the extent and direction of Norwegian spring-spawning herring migrations were connected with both environment temperature conditions and the structure of herring populations (Doc. O:32). Sea surface temperature was found to influence both squid and Icelandic scallop abundance (Doc. O:16 and O:24). In addition, regression equations predicting catch rates were improved by incorporation of environmental variables like sea surface temperature and windspeed (Docs. O:33, O:02, and O:12). Environmental parameters (temperature, salinity, bottom type) were applied to predict potential habitat of a suite of fish species in the English Channel (Docs. O:23 and Doc. O:46). Finally, the regime shift in the North Sea around 1987/88 may have influenced the diets of a suite of species with important implications for MSVPA predictions (Doc. O:41). Although results of these studies help move us toward identifying mechanisms that control fish populations and catch variability, several researchers made a cautionary note about using statistical relationships because they can break down and no longer be predictive if regime shifts occur.

Although most papers noted the important influence of environmental conditions, other processes were found to be significant as well. For example, interactions between size-selective mortality and timing of spawning were also important for Norwegian herring larvae (Doc. O:08). In addition, the abundance of year classes largely depends on the size and structure of the Northeast Arctic haddock spawning stock (Doc. O:03). Finally, eutrophication was found to be an important factor influencing a suite of fish stocks in the Baltic Sea (Doc. O:13).

New quantitative approaches were put forward. The empirical traffic light procedure appears a good way to communicate to managers and stakeholders, although work will need to be done to incorporate the non-linear aspects of population dynamics (Doc. O:38). A birth-death model for estimating stage-dependent mortality of mackerel eggs was presented (Doc. O:09). Although promising, the effects of advection on mortality rates should be incorporated into the approach.

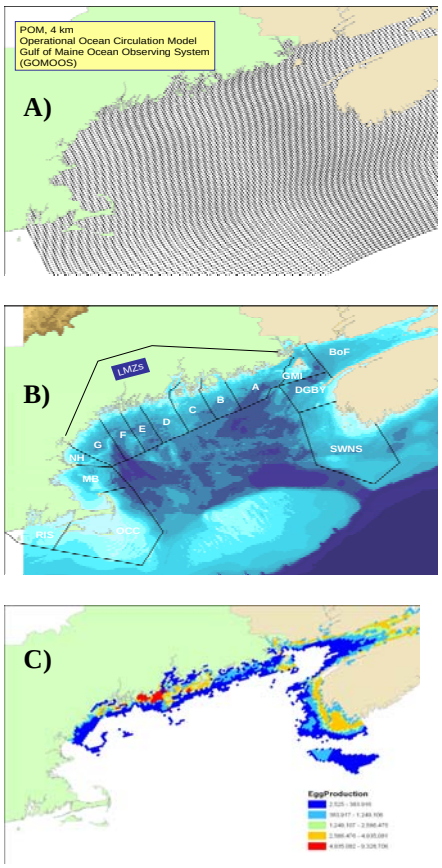



**Figure 4. Multiple-grid scale model for lobster (*Homarus americanus*) in the Gulf of Maine. A) Egg production and larval transport grid. B) Juvenile and adult population dynamics grid. C) Example of egg production results. (Incze *et al.*, O:20).**

Of the 47 contributions to this session, only one linked transport processes that occur during early life to a population dynamics model capable of providing population estimates at a scale useful for fisheries and fisheries management. This was achieved by linking two models with different grid resolution; a spatially-explicit circulation/particle tracking model for egg production, larval drift, mortality, and dispersion and a coarser-grid model for settlement and post-settlement population dynamics of American lobster (*Homarus americanus*) (Figure 4). The linked models were able to identify management zones in which a large proportion of post-larval production was produced from local spawning populations (Doc. O:20).

## Summary of Open Discussion

A lively and wide-ranging discussion was held. It began with a treatment of the merits of Individual-Based Models (IBM). It was noted that these models do not yet incorporate density-dependent population processes that are critical components of population dynamics, especially the non-linear processes that compensate for growth. Also, at the outset, IBMs often appear academic exercises. Yet, it was recognized that IBMs are useful tools for advancing a mechanistic understanding of processes that affect population variability, and that this understanding is important for making predictions necessary for ecosystem-based fisheries management. After some discussion, participants concluded that the complexity and structure of IBMs must depend on the species, system, and research objectives in question.

The problem of predation mortality was also a subject of discussion. Participants agreed that predation mortality is challenging to measure and difficult to parameterize in models, yet has a huge influence on ecosystem and population dynamics, and on model predictions. Although critical, there have not been recent advances in theoretical descriptions of predation mortality, or even in the ability to distinguish between Type II and Type III functional responses. It was noted that advances in our understanding of predation may result from improvements in the individual-based modelling approach for handling predation mortality. In the field, identifying the characteristics of the surviving cohorts may also advance our understanding.

The effect of infrequent yet reoccurring episodic events (e.g. typhoons, hurricanes, peaks in freshwater flow and saltwater intrusion events) present another challenge for understanding and predicting ecosystem and population dynamics. Often, event-scale forcing is not included in ecosystem, population, or individual-based models. Advances may lie in further explorations of extreme events, extreme year classes, and on better descriptions of the 'tails' of probability density distributions.

The discussion closed with the assertion that we need to understand recruitment processes on the space and time scale of the individual larvae. Although comprehensive databases exist (i.e. GLOBEC programmes), further advances in technology will be needed to make observations at the scale of fish larvae, the scale critical for understanding predation processes as well as for validating IBMs.

## Conclusions

Theme Session O provided a forum to share research findings on physical-biological interactions that occur at multiple scales using diverse scientific approaches for a suite of exploited species and their prey. The novel research findings and techniques that were presented, coupled with the outstanding participation in Theme Session O, are a testament to the importance of biological-physical interactions in understanding the dynamics of ecosystems and exploited populations. The success of the research and the interest of the community is likely an outcome of GLOBEC and ICES Cod and Climate programmes that highlight the interrelationships between cod population variability and the physical environment. Research presented in Theme Session O demonstrated that knowledge of the physical environment is emerging as a critical factor for understanding marine ecosystem dynamics and population variability of di-

verse species. We recommend that the Consultative Committee ensure that future theme sessions provide forums for researchers to present findings on physical-biological interactions for multiple species (in addition to cod) and on physical oceanographic processes that are important for biology (e.g. turbulence, climate-related changes in current systems, etc.). Although few presenters were able to link research findings directly to fisheries management recommendations, we are encouraged by the intent and progress that the research community is making toward this end.

## Theme Session P – Regional Ecosystem Pilot Projects, Ecosystem Forecasting, and Operational Oceanography: Comparing and Contrasting Scientific Tools, Strategies, Outputs, and Applications

Convened by Glen Harrison (Canada), Wulf Greve (Germany), and Skip McKinnell (PICES)

The conveners had solicited papers on plans, experience, and outcomes of linking ecosystem approaches to reality.

The first presentations in the session, Docs. P:04 (Rice), P:06 (Arbour), and P:07 (Robinson *et al.*), described various aspects of the legislative and regulatory mandates that have been established recently by governments and that ultimately provide the context for new developments in ecosystem approaches to the management of human activities in the ocean. A key element of these presentations was the description of various approaches to meeting high level ecosystem objectives through down-scaling, identifying mechanisms of pressure on marine ecosystems, and developing sub-objectives to be achieved within a framework that includes indicators to measure performance and/or outcomes against these sub-objectives.

These papers were followed by examples of pilot projects that various groups in the northern hemisphere have undertaken. PICES (the North Pacific Marine Science Organization) recently completed a pilot project to compare and contrast, for the first time, the major marine ecosystems of the North Pacific Ocean. The primary objective of the report was to describe the status and trends in marine ecosystems throughout the Pacific and to identify issues and major causes of change in each region. One of the European pilot projects involved detailed, integrated sampling of a portion of the Cantabrian Shelf off northern Spain.

Docs P:10 (Mountain *et al.*) and P:12 (Incze *et al.*), both based at labs in the northeastern United States reported on developments to provide an integrated observation and reporting system for marine data in the Gulf of Maine. These are cooperative activities of the NE Fisheries Science Center in the US and the Bedford Institute of Oceanography in Canada. Cooperative ocean observing is well-established in this region and the goals are now to make data available to a broader community.

Doc. P:03 (Kenny) described the design of a conceptual organizational framework for the integrated monitoring and adaptive management of marine ecosystems based on the North Sea REGNS study; the aggregation of information and the integrated control of data were exemplified. Doc. P:02 (Greve) emphasized the need to pay greater attention to phenology as an indicator of temperature-mediated ecosystem responses. His example of a North Sea operative prognostic online service for the phenology of zooplankton including fish larvae, and suggested expanding a volunteer-supported biometeorological observation system (Figure 1).

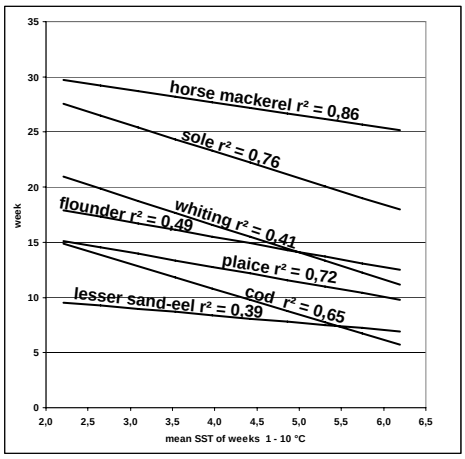



**Figure 1. Phenology of North Sea ichthyoplankton; relationship between appearance of larvae and mean SST from weeks 1–10.**

Doc. P:08 (Bode *et al.*) presented a five-year study of phytoplankton dynamics and environmental parameters off La Coruna (NW Spain), which sampled at various frequencies and tested for the recognition of the functionality, and thereby predictability, of the ecosystem. The findings of the Spanish monitoring study RADIALES support the necessity of high frequency sampling for the understanding and prognoses of marine ecosystems. The first promising results of new techniques to perceive the zooplankton

community structure with the help of a laser optical plankton counter were presented by Dupont. The techniques are designed to provide integrated automated monitoring in combination with further tools for the continuous perception and management support in the ecosystem of the Bay of Biscay.

By the end of the day the contributions to Session P had shifted regionally from the North Sea to the Bay of Biscay and thematically from volunteer-based high frequency observation to testing the importance of frequent sampling to continuous measuring methodology. This related the Bay of Biscay studies back to the REGNS programme and its approaches towards adaptive marine ecosystem management. To the three main areas of interest to the convenors (pilot projects, ecosystem forecasting, and operational oceanography), presenters added ecosystem policy and practice. Of these, only ecosystem forecasting was rather weakly addressed, but this may simply reflect the state of that aspect of marine science.

## Theme Session Q – Advances in Reproductive Biology: Methodology and Applications for Fisheries Science

Conveners: Olav Sigurd Kjesbu (Norway), Gudrun Marteinsdottir (Iceland), Joanna Tomkiewicz (Denmark), and Peter R. Witthames (UK)

To our knowledge this is the first time that ICES has arranged a theme session on this topic. Its inclusion in the ASC programme was supported by the fact that several laboratories during the past decade or so have significantly strengthened their efforts into various studies on Stock Reproductive Potential and/or Egg Production Methods. In addition, many relevant ongoing EU projects are now in their summary phase, so a forum for discussion was clearly needed.

Topics addressed were:

- Experimental biology, with the aim of determining the viable egg production in the field;
- Advances in methodology, both in the field and in the laboratory;
- Reproductive potential in response to changes in the environment, stock size, and structure;
- Status and further developments of Egg Production Methods (to estimate spawning-stock biomass, SSB);
- Modelling approaches to incorporate biologically relevant data into forecasting population dynamics and biological reference points.

The Theme Session covered a full day and included 31 contributions: 23 oral presentations and eight posters. Of the 23 oral presentations, students or junior scientists gave six. About 100 people listened to the various presentations.

The Theme Session was divided into 4 sub-sessions, each chaired by two conveners:

- *Fecundity regulation and methodology*
- *Reproductive strategies*
- *Egg production methods*
- *Stock reproductive potential*

The contributions were dominated by fish studies; only two were on shellfish (posters) and one on squid (oral).

The quality of oral presentations and posters was generally very high.

### Fecundity regulation and methodology

Correct estimation of potential fecundity is a prerequisite for the estimation of reproductive potential. As presented in Doc. Q:12, new and faster methods for the estimation of potential fecundity have been developed. As an example, the *Autodiametric Method* uses an image analyser to estimate the size of the oocytes. Based on the total weight of the ovary, these sizes can be transferred into egg numbers using an equation that appears to give similar results for a number of different species. Doc. Q:12 also reviewed different methods used to estimate the number of atretic oocytes (Figure 1) in the ovaries, thus providing a concise summary on methods for the estimation of fecundity and loss of potential fecundity through atresia. These methods provide a realistic basis for routine assessment of potential and realized fecundity of species managed by marine research institutes throughout the North Atlantic area.

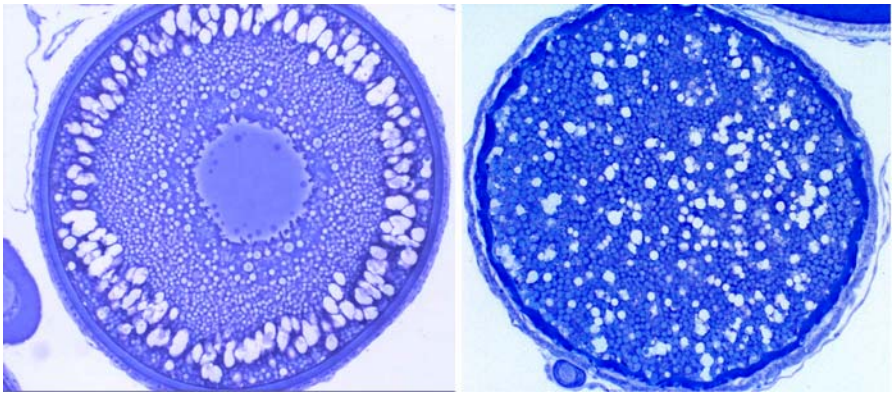


**Figure 1. Normal (left) and atretic (right) oocytes (in an early phase) as observed in Atlantic cod. Note the breaks in the eggshell (chorion) in the atretic cell. During further degeneration, the cell content will be reabsorbed. Photo: Anders Thorsen, Institute of Marine Research, Bergen.**

The importance of condition and the influence of environmental factors on fish potential fecundity were described in several documents (Docs. Q:08, 16, 19). A study on the common squid (Doc. Q:18) did, however, show a relatively weak relationship with environmental parameters, including NAO and temperature.

Doc. Q:14 demonstrated that decisions regarding reproductive potential in cod are being made 3–4 months before spawning. Studies on the effects of environmental factors and female condition on reproductive potential should therefore focus on time periods of early vitellogenesis.

## Reproductive strategies

The conclusions of the documents in this sub-session fell into two groups: 1) response and resilience to climatic change (Docs. Q: 01, 06, 09), and 2) response to size-selective fishing mortality or properties of reproductive strategy that should be considered when developing fisheries policy (Docs. Q:07, 11, 21, 17, and 23). The first group of presentations implied that climatic change could be compensated for by plasticity in reproductive strategy and that would help survive climate change under fishing pressure. In the second group of presentations evidence was presented to show that size-selective fishing mortality had affected the reproductive potential of cod stocks and that the change could have a genetic basis. Also included in this group was the notion that the onset of maturity was not a step change and a previously mature cohort may skip spawning if conditions were unfavourable.

## Egg production methods

The ICES Triennial Egg Survey is dedicated to estimate spawning stock size or status of mackerel and horse mackerel. However, several other types of eggs are found during the survey. Results and arguments (Doc. Q:15) were presented to expand the survey to also include studies on hake (the Bay of Biscay). This would give an extra, valuable output from the survey provided some adjustments are taken during the planning of the cruises, especially in terms of spatial coverage, adult hake sampling, and a greater volume of water sampled (results in larger planktonic samples).

Observations of newly formed post-ovulatory follicles (POF) are used to indicate the spawning fraction in the Daily Egg Production Method. In this method, the SSB is estimated from the daily planktonic egg production divided by the batch fecundity and the spawning fraction. The process of degeneration of POFs was addressed for the Bay of Biscay anchovy (Doc. Q:25), indicating that this might be faster than currently believed. More research is under way.

The estimation of fecundity in horse mackerel is beset with significant problems, both technically (inter-calibrations between labs.) and owing to lack of knowledge of basic biology (Doc. Q: 03). Several routes will be taken to attempt to solve problems.

## Stock reproductive potential

Time-series of egg production were presented and related to recruitment as alternatives to the standard application of SSB (Docs. Q:04, 05, 22). Application of the estimated total egg production by the female SSB instead of spawning-stock biomass in cod and herring stocks significantly improved the stock-recruitment relationships. The examples clearly showed that using the combined female and male SSB as an index of the egg production caused bias in the stock-recruitment relationships. The bias resulted from 1) size and age at sexual maturation being substantially lower for males than for females, which causes a skewed sex ratio in the SSB with a dominance of males; and 2) the average fecundity varies considerably within stocks and between years, as well as among stocks of the same species, e.g. among other factors being dependent on the average fish condition in the stock. The interpretation of the recruitment response owing to reductions in spawning stock size may also change when using the total egg production instead of SSB in stock-recruitment relationships. Biological reference points estimated for different stock-recruitment relationships showed that total egg production fell below the reference point more frequently than when using SSB. The presentations also emphasized the role of the larger females in the viable egg production with repeat spawners potentially being essential to the production of large year classes when conditions are favourable.

The role of males as a limiting factor for the offspring production in Northeast Arctic cod was raised (Doc. Q:10). The total sperm production varies with male SSB, but also individual sperm quality can vary owing to fish condition, thereby affecting the fertilization success. In addition, major changes in relative size between sexually mature males and females, and in sex ratio (Figure 2) were demonstrated. Likewise, there was a general decrease in mean length and a corresponding increase in condition over time, which could have implications for mating and fertilization success.

A comprehensive meta-analysis on fecundity of Atlantic cod found large variations between stocks and years (Doc. Q:13). Further analyses are underway to relate these patterns to environmental, including condition, effects.

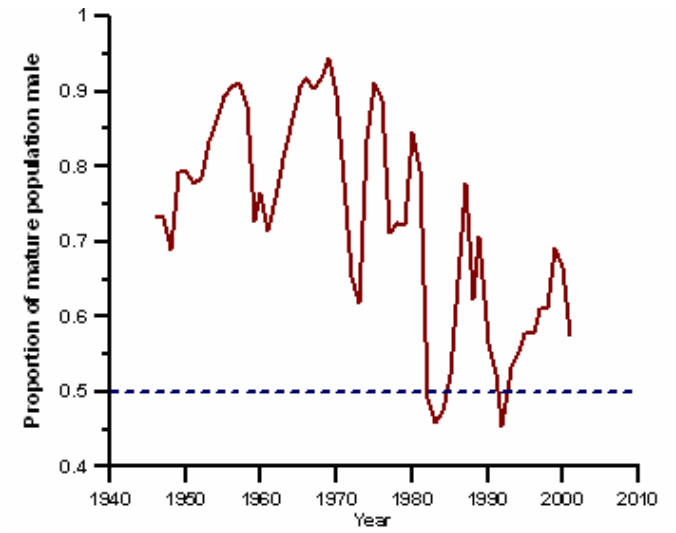



**Figure 2. Variability in male:female sex ratio in the mature Northeast Arctic cod population (Doc. Q:10, Nash *et al.*)**

## General discussion

The 30-minute plenary discussion focused primarily on the last sub-session. Namely, the background for noted differences in recruitment curves using either SSB or total egg production on the x-axis. The latter demonstrates a larger dynamic range; SSB tends to overestimate the Stock Reproductive Potential at low stock size. Males are basically ignored in these respects, but it became clear that more research is needed. For instance, several important relationships have not been fully parameterised such as fertilization rate versus male condition, size, or sex ratio.

## Conclusion

The research clearly indicates that failing to account for important biological and demographic aspects of spawning stock, e.g. sex ratios, condition, size- or age-dependency of egg quality, causes conventional estimates of spawner biomass to overestimate Stock Reproductive Potential (SRP). For several well-studied stocks this knowledge is sufficiently developed for incorporation into conventional stock management including the calculation of reference points and medium-term projections of SRP. Furthermore, the functional linkages between the environment (feeding conditions and temperature) and different aspects of reproductive potential (condition and fecundity) provide an opportunity to make predictions that are responsive to changes in ecosystem structure and functioning. Adapting this knowledge base for incorporation into ecosystem-based fisheries management will require a higher degree of collaboration between assessment scientists and biologists than is currently the case. Both ACFM and the Living Resources Committee should consider mechanisms that could facilitate this interaction.

A similar type of theme session should be arranged in a few years time when further progress has been made in implementing studies on SRP in assessment and a series of new studies are considering how to include stock structural characteristics, e.g. SRP into recovery plans, and, likewise, when new methodological improvements have been made within Egg Production Methods.

## Theme Session R – Marine Mammals: Monitoring Techniques, Abundance Estimation, and Interactions with Fisheries

Conveners: Mike Hammill (Canada), Tero Härkönen (Sweden), and Philip Hammond (UK)

Marine mammals interact with fisheries in many ways. Direct interactions include competition with commercial fisheries for the same target species, bycatch in a variety of fishing gears, and damage to fishing gear and fish catch. Indirect interactions involve consumption of prey that are also consumed by commercially important species, resulting in reduced fisheries yields and, conversely, the impact of reduced fish stocks resulting from overfishing on marine mammal populations.

Quantifying interactions between marine mammals and fisheries is a complex issue. First, data on prey consumption or prey requirements by marine mammals are needed. Then, to evaluate impact, this consumption must be placed within the context of other sources of mortality to which commercial fish are exposed. To develop predictive capabilities, information concerning the functional relationship between marine mammal predation rates and prey availability is needed.

The initial step is to quantify consumption by marine mammals, for which data on abundance, energy requirements, spatial distribution, and seasonal changes in diet composition are needed. For many species, even some of this basic information is lacking and will be difficult to obtain because of the logistical, financial, or ethical considerations. Cetacean abundance is typically estimated using line transect sampling techniques via shipboard and/or aerial surveys. These surveys also provide synoptic views of distribution over large areas; other techniques, such as satellite telemetry, can provide larger temporal views and spatial coverage of individuals. Seal abundance is usually estimated by extrapolating from pup counts. However, counts of the hauled out population size during moult has proved to be more feasible for some species such as ringed seals, harbour seals, and Baltic grey seals. In isolated cases other techniques such as photo-id have been used. For most seal species and some species of cetaceans, there is information on trends in abundance. Diet composition has been determined primarily through the reconstruction of digestive tract or scat contents, although analyses of fatty acid profiles have been tested with varying success. New promising techniques include analyses of the genetic composition of scats. Some previous attempts to estimate consumption have assumed that diet is unchanging. This is not expected to reflect reality under changing scales of prey abundance.

Attempts have been made to explore relationships between prey abundance as determined from commercial fish surveys and contribution to the diet. Strong relationships have been difficult to quantify, possibly because of different measurement scales; trawl surveys are conducted at relatively coarse temporal and spatial scales compared with the finer scale of marine mammal predation. Most attempts to explore functional relationships have focused on single prey species but marine mammal diets are often varied, and preliminary work investigating multispecies functional responses is promising.

It was evident from the session that considerable effort is being expended to improve estimates of abundance, distribution, and diet composition. In addition, in some cases, research has moved beyond simple estimates of diet composition to estimate exploration of the relationships between diet composition, prey distribution, and prey abundance. This research will lead to important improvements in our estimates of prey consumption by marine mammal predators, but lack of information on fish stocks at appropriate spatial and temporal scales is expected to hamper many attempts to assess impact.

Moving from estimates of consumption to assessment of the impact of marine mammals on commercial fish prey remains a significant challenge. Simple comparisons of diet composition

and fish stock size or catch provide, at best, only a crude indication of the extent of an interaction. Developments to parameterise functional responses are in the early stages and progress will neither be rapid nor provide results that can easily be incorporated into fisheries advice. However, it seems clear that progress will be greatly facilitated by close collaboration between experts within the marine mammal and fish/fisheries fields. Estimates of consumption by grey seals in the North Sea have been incorporated into ICES multispecies modelling and this collaboration could be expanded to include data for more marine mammal species. It would also be informative to consider data on marine mammal predation rates in other ICES assessments.

A possible mechanism to move forward in this area could involve putting together a study group that would formally include marine mammals in the multispecies modelling process.

## Theme Session S – Oil Spills in Marine Ecosystems: Impacts and Remediation

Conveners: Joan Albaigés (Spain) and Kenneth Lee (Canada)

The recent spill of oil from the tanker *Prestige* off the coast of Spain (Galicia) in November 2002 has renewed global interest on the impact and remediation of oil spills in the marine environment. Although this conference session was largely formulated to highlight the results of recent investigations following the *Prestige* oil spill incident, it also provided a forum for the discussion of other spill-of-opportunity and experimental studies conducted in other countries, including Belgium, Canada, Finland, France, Japan, Norway, the United Kingdom, and the United States.

From time to time (5–7 years), large oil spills from accidental discharges have impacted the coastal and offshore waters of the ICES area. Assessment of their impacts are often limited by the fact that the spilled oil is often superimposed onto the chronic release of hydrocarbons into the sea from many sources, including operational waste discharges from offshore oil and gas platforms. Therefore, there is a need for continuous up-dating of knowledge and development of new concepts and tools to identify the source of oil spills and to understand its fate in the marine environment. This conceptual knowledge will improve our ability to predict the long-term impacts and provide guidance towards the development of improved remedial operations such as bioremediation.

The 36 oral and poster presentations provided a wide coverage of the theme, as summarized below:

A large effort has been made in Spain, after the *Prestige* accident, to monitor the spatial and temporal distribution of hydrocarbons in the different marine biotic and abiotic compartments, along the Northern Spanish coast. Sampling surveys were conducted between December 2002 and September 2004 for water, sediments, mussels, and fish (Docs. S:10, S:21, S:26, S:28, S:32, S:33, S:34, and S:42). Moreover, the impact on biota has been studied at the level of biomarker responses (Doc. S:06), bacterioplankton (Doc. S:29), some intertidal organisms (S:31), as well as different shelf communities and their trophic structure (Docs. S:03, S:05, and S:25). The oil consequences on fishing effort, catch composition, and exploitation pattern of the main industrial fisheries were also described (Docs. S:11 and S:22). Finally, the application of operational oceanography to guide oil recovery at sea by the Basque fishing fleet (Doc. S:20) showed that the overall recovery by the fishing vessels represented 63% of the total oil recovered, compared with the 37% recovered by the specialized "counter-pollution" vessels, resulting from the particular characteristics of the spilled product (a heavy residue).

A general conclusion to be drawn from the scientific studies following the *Prestige* spill is that, except for the coastal areas directly oiled by the spill, it is difficult to identify major physical (e.g. sediment contamination) and toxicological (e.g. PAH bioaccumulation) impacts in the subtidal zone and the continental shelf. This may be attributed to the physical characteristics of the oil. Other than the most affected area (Costa da Morte), the PAH profiles were similar to those generally found in coastal areas influenced by urban/industrial run-off. However, even in that area, PAHs in wild mussels declined to background levels, about six months after the spill. Populations of benthic species in Costa da Morte (e.g. megrim, lobster, and shrimp) decreased in 2003 but recovered in 2004, whereas no significant effects were detected in demersal communities even though recruits were bound to the same drift of the oil. Overall, conclusions could be drawn in this test case as the final assessment was supported by the availability of pre-spill data in several areas, e.g. PAH concentrations in biota, bacterioplankton activity, abundance and distribution of fish resources and fishing activity.

The determination of the spatial distribution of hydrocarbons in sediments continues to be a suitable procedure for assessing chronic inputs. New data has been reported for the Cantabrian continental shelf (Doc. S:42) and for the East Shetland Basin (Doc. S:35) and the Fladen Ground (Doc. S:40), both in the North Sea area. The levels found in the Cantabrian shelf are mainly associated to coastal hot spots, whereas the incidence of oil production activities in the North Sea seems to be decreasing. The use of molecular markers or specific molecular ratios is highly recommended for a better assessment of hydrocarbon sources.

Examinations of recent oil spill incidents in Europe (Doc. S:13) and the *Exxon Valdez* spill in North America (Doc. S:8) have stressed the importance of extending the conduct of environmental impact assessments beyond the traditionally accepted period of a few years after the spill event. It was noted that assessments of short- and long-term impacts are frequently hampered by a lack of pre-spill baseline data on resources and hydrocarbon levels in the marine compartments. Often, interpretations of risk assessments of long-term impacts are also compromised by the presence of the spilled oil with other hydrocarbons and/or PAHs from local sources or chronic inputs. Nevertheless, by using a detailed field sampling programme with rigorous chemical and statistical analysis researchers have been able to demonstrate the environmental persistence and long-term (>12 years) impact of oil from the *Exxon Valdez* spill on marine mammals and seabirds (Doc. S:8). Furthermore, a predictive model using data from laboratory and field studies indicated that chronic PAH contamination of natal pink salmon habitats by anthropogenic sources may have the potential to reduce overall population size (Doc. S:7).

To protect commercial fisheries from waste discharges from offshore oil and gas facilities and oil spills, it is necessary to ensure that contaminated products do not reach the market. Sensory assessment can be used to detect petrogenic taint in fish and shellfish from PAH exposure. To reduce variance in the results of analysis, standardized training methods utilizing reference standards and scoring systems are being developed (Doc. S:39). A recent environmental effects monitoring programme in the North Sea reported no evidence of taint in fish and shellfish (Doc. S:38), results which are consistent with detailed chemical studies (Doc. S:35 and S:40). With advances in biotechnology, research is now being conducted to evaluate the potential use of microbial biosensors for rapid and low-cost detection of selected PAHs (naphthalenes) in a variety of fish tissues (Doc. S:24).

Despite advances in technology, risk analysis suggests that the probability of future spills may increase along some coastal areas with anticipated increases in marine traffic and offshore oil and gas facilities (Doc. S:2, S:12, and S:23). There is need for further development of environmentally safe and effective oil spill countermeasures that are an alternative to physical recovery methods based on the use of booms and skimmers, which have operational constraints. These include the use of chemical oil dispersants which were effectively deployed following the 1996 *Sea Empress* spill in the UK (Doc. S:1) with minimal damage to aquatic resources. Many studies have been focused on the significance of microbial degradation on the environmental persistence of residual oil from spills (Doc. S:9 and S:23), including that of the heavy oil associated with the *Prestige* spill (Docs. S:12 and S:15). These improved methods to monitor oil biodegradation are essential to the provision of data for use in predictive oil spill risk assessment models. Laboratory and field studies have evaluated the feasibility of nutrient enrichment as a means to enhance oil degradation for various types of crude oil (Docs. S:9, S:12, S:15, and S:17). To address the controversy on the overall effectiveness of this technique and concerns of secondary detrimental effects, operational guidelines are being developed for its application (Docs. S:9 and S:17). It is clearly evident that a multitude of oil spill clean-up strategies are now available. The timing and site selection for clean-up operations on specific sites should be based on probabilistic accident risk and net-benefit model analysis (i.e. integration of biological and socio-economic factors) and the formulation of pre-approved command and control management procedures for response operations.

This Session provided examples of current investigative techniques used in oil spill impact assessments. Dissimilarity in the observed level of impacts between the case studies from different geographical regions were attributed to region-specific differences in physical (e.g. current transport), chemical (e.g. type of oil), and biological (e.g. species composition) factors. Our understanding of the chronic, delayed, and indirect long-term risks and impacts of oil spills, as well as subsequent habitat recovery, will be greatly enhanced by the application of a holistic ecosystem-based assessment approach. Protocols for environmental effects monitoring and risk analysis should be incorporated into contingency plans. However, the methods and biological targets differ from one incident to another, depending on the local interest for a given environmental issue, the availability of scientific knowledge, etc. (Doc. S:19). To optimize the interpretation of future studies following spill incidents, it is recommended that a standardized framework should be developed that outlines key considerations for the selection of appropriate methodologies to allow monitoring of the most vulnerable and sensitive components of the ecosystem and the food chain within the area of concern.

## Theme Session T – Integrating/Implicating Genetics into Fisheries Management

Conveners: Filip Volckaert (Belgium) and Ellen Kenchington (Canada)

The Session was sponsored by Marine Genomics Europe (http://www.marine-genomics-europe.org).

Effective fisheries management relies on the integration of diverse approaches such as biological sciences, oceanography, climatology, and information technology. Foremost among developments have been technological and conceptual advances in genetics, affording new insights into stock discrimination, population structure, ecosystem functioning, selective fishing, exotic species, food tracing, conservation, and impacts of climatic fluctuations. In addition, progress in genomics is poised to advance our understanding of natural marine resources further. This Session focused on how recent developments in genetics can contribute to key challenges in fisheries management, with an emphasis on the ***practical*** implementation.

Five eminent fisheries geneticists and one fisheries oceanographer were invited to participate in the Session through sponsorship from Marine Genomics Europe (http://www.marine-genomics-europe.org), with additional speakers chosen from submissions to compliment the theme. The Session opened with a keynote address by Professor G. Carvalho (UK) who identified some of the key changes to our understanding of genetic structuring in marine fish, and provided a personal account of those advances in technology and theory that are likely to impact significantly on the translation of genetic data into tangible fisheries management.

Although the application of genetics to fisheries management has had a long history, stretching back to the application of blood pigments and proteins in the late 1950s and early 1960s, much of the focus until recent years has been on the analysis of stock structure. Although useful data has been incorporated into fisheries management to examine the dynamics of stock structure, especially in salmonids, it has been difficult until recent years to provide objective and quantitative data for marine fish populations. Limitations have been imposed by the generally small levels of genetic divergence that has been found among many fish species.

The classical notion of marine fish is that they typically have infinite population sizes, weak population structuring, and high levels of dispersal resulting from an apparent lack of barriers in the marine environment. This has led to the notion of large populations experiencing relatively slow levels of genetic change. Recent data have, however, indicated that in several exploited marine fish, including representatives from clupeids and white fish (including cod), population structuring may be evident at far smaller geographic scales. Also effective population size (the number of reproductively active individuals) may be several orders of magnitude smaller than the census population size, and small $F_{ST}$ values must be interpreted with caution. Doc. T:10 (Taggart *et al.*) provided examples of genetic variation observed in cod and herring that are consistent with appropriately analysed tagging studies that focus on spawners. The author addressed large- and fine-scale geographic and temporal variation in herring via comparisons with what has been learned from cod, each of which were hitherto thought to have little population structure. In herring, genetic markers were able to reveal population structure not much different from that which is well documented for cod, as well as indications that such structure can be observed at the level of herring spawning waves on the same grounds. When genetic population structuring in herring is considered in the light of spawning-time variation and other stock metrics among stocks, the author stepped out on a limb and predicted that if and when concomitant genetic and tagging studies are initiated on the same individual spawning herring in Icelandic (summer spawners) and in Scotia-Fundy (summer and autumn spawners), the results will show multiple and distinct components in Scotia-Fundy and only one component in Iceland. Similar evidence was produced for significant structures in marine

fish (North Sea herring and Icelandic redfish) in contributed papers, with redfish appearing to show isolation-by-depth. Doc. T:02 (Volckaert *et al.*) provided an interesting contrast to the marine fish examples by highlighting recent progress on the European eel. The life cycle of this species is intimately linked with the North-Atlantic gyre and eel populations of the European continent represent a single panmictic unit. However, even in this species, a pattern of isolation-by-time, imposed by some temporal segregation of spawning groups in the Sargasso Sea and resulting in variability in the timing of arrival of the glass eels to continental rivers, was proposed. So far, no genetic evidence for the collapse of the eel recruitment has been noticed, although such an effect might be expected soon.

Doc. T:04 (Carvalho) noted that the fisheries implications of such findings means that we can no longer assume that most marine fish populations have an infinite population size with high levels of gene flow and that they experience slow genetic change. Population pressures may indeed pose a threat to levels of genetic diversity, and with even small, but significant levels of population structuring, depleted stocks may not necessarily be replaced rapidly. Moreover, the higher-than-previously detected incidence of subtle genetic differentiation provides an opportunity for the evolution of local adaptation. Recent work on cod, for example, has indicated rapid genetic change, both at the genetic level and also in life history characters such as age-at-maturity.

Doc. T:07 (Eg Nielsen and Møller Hansen) demonstrated how knowledge of genetic structuring of cod stocks can be used to support the management of this species through mixed stock analyses and forensic identification. He reviewed the principle of the so-called "assignment tests" where the stock of origin of individual cod can be determined, and demonstrated that individual cod from the North Sea, Baltic Sea, and Northeast Arctic cod can be assigned almost unambiguously to their original stock (Figure 1) and how this has been used in fisheries control to verify/dismiss poaching and to trace the origin of cod and cod products in fish shops.

With continuing threats posed by climate change, overfishing, and changes to ecosystem function, there is an urgent need to monitor and enhance population resilience. Recent technical advances, outlined by Doc. T:04 (Carvalho), including the advent of the polymerase chain

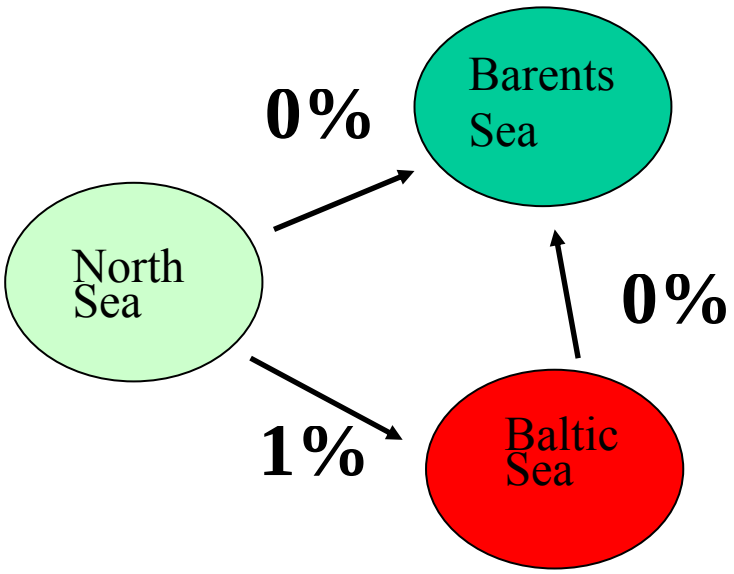



**Figure 1. Percentage misidentification of cod from each of three geographic areas based on individual-based assignment. Each individual of unknown origin are assigned probabilistically to a number of known baseline populations (courtesy E. Nielsen).**

reaction, use of archived samples, the utilization of hypervariable DNA, and increased automation, have provided a much more robust and sensitive suite of markers to examine a range of problems in fisheries biology. In parallel with the technical advances there have been various theoretical developments, including the development of ecosystem-based approaches, individual-based analyses, and a demonstration that rapid genetic change experienced in exploited fish populations may take considerably longer for recovery than hitherto thought. Doc. T:06 (Kenchington) described how genetic markers were used to assess the impacts of bottom fishing on genetic diversity in clonal organisms. Fishing with trawls, drags, and dredges has been shown to cause damage and death to non-target benthic organisms which encounter these gears. Sessile, emergent, and fragile species are particularly vulnerable as they are susceptible to breakage, wounding, and/or displacement. Many turf-forming species such as hydrozoans and bryozoans which form biogenic habitats are also vulnerable. Most of these species have the ability to reproduce asexually, as well as sexually, and the author gave examples of both scenarios with predictions for long-term population impacts. Disturbance promoted sexual reproduction in a soft coral, *Gersemia*, and asexual reproduction in a hydroid, *Sertularia*. A call was made for more research on this little-studied aspect of fishing impacts on the benthos.

Major areas that the recent advances in genetics and theory are likely to impact include: the provision of objective and quantitative assessment of population structuring, including individual-based assignment and mixed stock analysis; the use of molecular identification in such practices as DNA bar coding for species identification, and parallel technologies for identifying fish eggs and larvae; and the use of landscape genetics to generate hypotheses on the adaptive significance of genetic differentiation using molecular markers. Doc. T:03 (Davidson and Koop) discussed one of the exciting new developments in the field, that is, the potential for genomics research to advance questions of fisheries management. Genomics has the potential to significantly enhance our ability to study adaptive variation by focusing on genetic markers which are associated with genes and to which a function can be assigned. These markers can provide a better understanding of how fish respond to the environment and, by extension, how they might respond to environmental change. Several countries and multinational organizations have funded genomics projects for fish of economic importance. The author raised great excitement when he explained the public nature of this data from the Genome Canada project in which he is involved on Atlantic salmon (http://web.uvic.ca/cbr/grasp).

With the recent advances and increasing breadth of applications of genetics in fisheries management, there still remains a need to enhance integration. Improved communication between fisheries biologists and ecologists on one side and fisheries geneticists on the other side remains crucial, so that meaningful questions can be tackled by appropriate methodologies and analysis. Moreover, to enhance applications, there is an urgent need to strengthen the integration of such approaches with socio-economic research so that any recommendations arising are considered fully by appropriate engagement of politicians, scientists, and representatives of the fishing industry. Coordination of international programmes would also facilitate this objective.

In conclusion, the urgency of scientific drivers together with the broader range of applications based on quantitative and objective output, provides a realistic opportunity for effective partnership between fisheries biologists and geneticists. The major contributions will continue to be both **conceptual** (in relation to the distribution and levels of genetic diversity and implications for adaptation) **and practical** (tools for direct assessment of resources). The Session concluded with a member of the audience pronouncing that "anyone who was not at this Session really missed out". We feel the same.

# Theme Session U – Acoustic Techniques for Three-dimensional Characterization and Classification of the Pelagic Ecosystem

Conveners: Arnaud Bertrand (France) and Rolf Korneliussen (Norway)

## Background

Comprehension of the three-dimensional and dynamic features of pelagic marine ecosystems is important for developing effective methodology to support ecosystem-based management of marine resources. To achieve this goal, there is an increasing need for efficient tools to conserve the ecosystem integrity when studying fish populations. Acoustic techniques are non-intrusive, and may be used to look at aquatic ecosystems over a broad range of spatial and temporal scales. Powerful 3D visualization systems can be applied on 2D and 3D acoustic devices to observe marine ecosystems with a new perspective.

The three-dimensional scales of aquatic ecosystems range from the smallest (centimetres) to the widest areas (hundreds of nautical miles). Physical, chemical, and biological properties show strong gradients (e.g. coast/offshore, north/south, high/low temperature) and complex structures (e.g. fronts, eddies) along the vertical and the horizontal planes, forming specific habitats for pelagic organisms. The improved understanding of the relation between the environmental characteristics and the organisms, as well as their intra- and interspecific interactions, and preserving the three-dimensional context where these interactions take place is important. New technologies and approaches to efficiently collect, compute, display, and validate three-dimensional multivariate data on aquatic ecosystems are now available. This session aims at presenting the current state of methodology for characterization and visualization of spatial and temporal dynamics in marine pelagic ecosystems while preserving the 3D spatial context. Case study presenting applications and future potentials of these methodologies would also be strongly appreciated in this session.

## Introduction

It was noted at the start of Session U that we should not fail when trying to use an ecosystem approach to manage marine resources. Acoustics is one powerful way to investigate ecosystems structure and functioning. Acoustics gives the possibility for remote sensing of marine ecosystems at a relatively long range. Evolution of acoustic equipment allows for a higher data richness and spatial resolution than previously, and new tools allow for visualization of these data in three dimensions. The need for an ecosystem approach inherently brings the attention to the need for collecting environmental data simultaneously to acoustic data.

## Summary of the talks

The scientific level of the talks and the presentation of the talks in Theme Session U were in general very good. The content of the papers met with the announcement. Some talks were mainly methods and techniques, but most of the talks were presentations of applications, although some papers were a mixture of methods, techniques, and applications. The applications could further be divided into 1) Use of data from commercial fishing vessels, 2) Applying methods on scientific data, and 3) Applications on multi-frequency data. The applications of different 3D techniques covered resolutions from cm to km.

## Synthesis of papers with major focus on methods and techniques

One presentation described the whole acoustic measurement system by modelling and visualising generation of sound and the backscatter from fish in 3D. The behaviour of fish in assembles were visualised, and gave a good impression of how such assembles may appear in the measurement system as shown in Figure 1. Thus, a relatively complex system where different objects interacted, a small ecosystem so to say, were visualised in such a way that the behaviour and spatial distribution were accessible and intuitive to a large audience. There were also presented papers that illustrated the need for collecting data with high quality, methods to calibrate wideband systems, and methods to correct high quality acoustic data for optimal comparison between multiple frequencies. Multi-frequency data were used as input to identify spatial distribution of the different elements of the ecosystem. Multi-frequency acoustic data are now used quite routinely by some institutions.

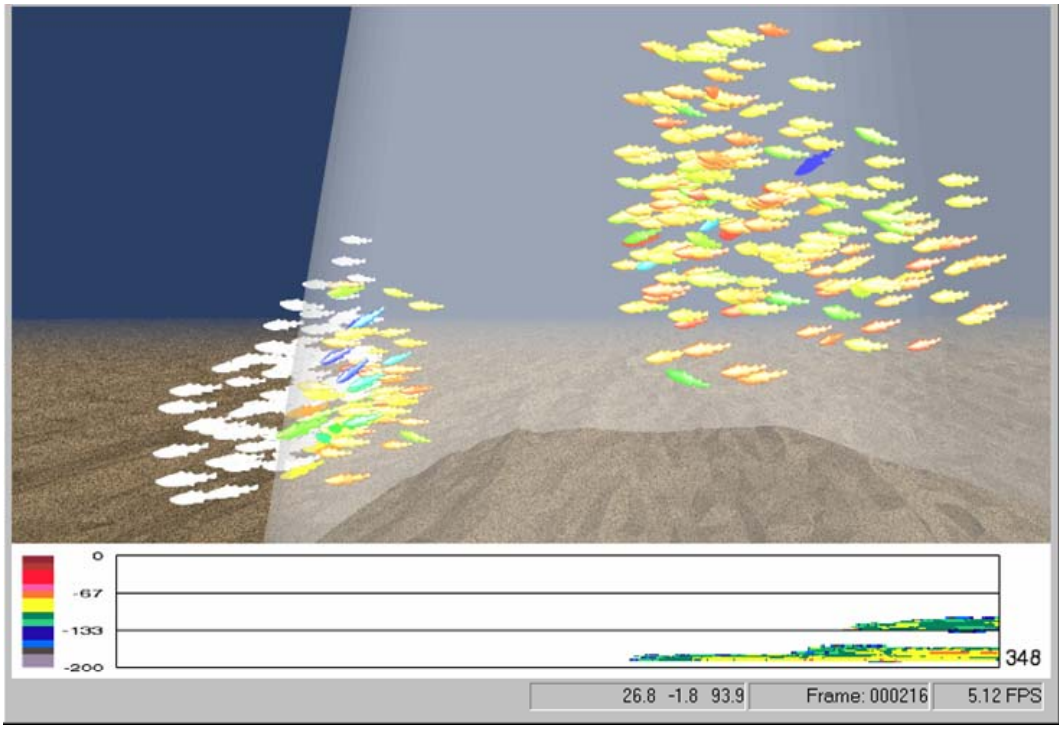



**Figure 1. 3D visualization of modelled juvenile walleye pollock schools at 120 kHz. The colour of each fish depends on its target strength; white fish are outside the beam. The lower part of the figure is an echogram reconstruction based on insonified fish (from ICES 2005 CM/U:07, J. K. Horne: Seeing sound: visualizing acoustic backscatter from fish).**

## Synthesis of papers with major focus on applications

Examples of application during the session concerned a large variety of geographical zones, ecosystems, and species: inshore, offshore, pelagic, demersal, Arctic, tempered, tropical, zooplankton, mesopelagic fish, demersal communities, small and large pelagic fish.

Several works were based on information collected during commercial fishing trips. Modern equipment onboard fishing vessels allows for continuously collecting a huge amount of data concerning the distribution of resources and associated communities (e.g. plankton) at various scales and over longer periods than the scientific acoustic surveys. Also, commercial vessels are now commonly equipped with a Vessel Monitoring System giving the precise position of all the boats of a fishing fleet at very short intervals (15 min–1 h). Additionally, embarked observers can provide precise information about the targeted fish structure. This in-

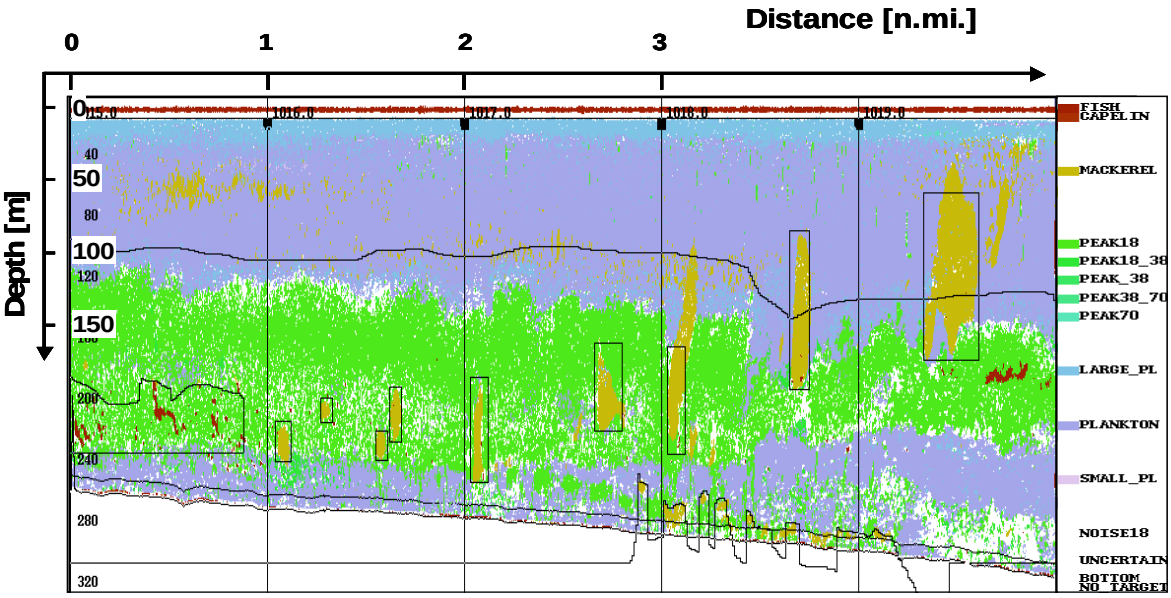



**Figure 2. Spatial distribution of acoustic categories in the North Sea visualized in a synthetic echogram generated by the use of multi-frequency data. PEAK_18 means resonant at a18 kHz, LARGE_PL, PLANKTON and SMALL_PL are fluid-like zooplankton. (From ICES 2005 CM/U:17. Korneliussen and Ona: Detection of spatial distribution of acoustic categories)**

formation allows for better understanding of large-scale occupation of fish (Doc. U:01), the effect of fishing in specific areas (local depletion, U:01), the horizontal and vertical diel migrations, but also the impact of fish schooling patterns on the cpue (e.g. Doc. U:21).

The recent development of multi-frequency analysis (Docs. U:04, U:10, U:17, U:18, and U:22) and multibeam sonars (Docs. U:02, U:09, U:10, and U:19) allows for observing simultaneously the main communities in the ecosystem (Figure 2). We are thus able to provide quantitative and qualitative (e.g. echo trace classification, Docs. U:06, U:11, U:14, and U:17) information on organisms from plankton to large predators, and even on physical structures, e.g. internal waves and oxycline. This opens important perspectives to improve our knowledge of ecosystem functioning (e.g. predator-prey relationships) and to provide very accurate data to model ecosystem trophic flows or functioning within an Ecosystem Approach to Fisheries Management.

Using acoustic data and ancillary information many studies (Docs. U:02, U:04, U:05, U:06, U:10, U:11, U:12, U:18, U:20, U:22, and U:25) related fish distribution to the characteristics of the environment including depth, sediment, temperature, salinity, oxygen, chlorophyll, submesoscale oceanographic features (eddies, internal waves, upwelling plumes, frontal zones), prey, competitors, predators, and exploitation. These applications concerned a large range of spatial (e.g. individual fish-0.1s m, school-1s m, cluster-$10^3$s m, stock-$10^5$s m) and temporal (e.g. diel cycle, intra- and interannual dynamics) scales. New insights were provided on the effect of the physical forcing on the distribution of organisms. Examples of links between different levels of fish organization (scattered, ‘filament’, shoal, school, cluster, stock) to oceanographic and biological features (predators attacks, upwelling plume, plankton patches, water masses fronts, seamounts, currents and others), varying in space and in time (diel cycle) were provided.

Several talks provided new understanding on fish behaviour. For instance analysing fish reaction to sea lion attacks allowed measuring the speed of the “waves of agitation”, i.e. the speed of the transfer of information between fish (Doc. U:02). Another innovative result was the demonstration that the presence of competitors (a pelagic decapod in this case) can inhibit school formation for fish (anchovy). Indeed in addition to the competition for food, competition for space can affect the fish 3D structures (Doc. U:22). Also new elements were provided

to understand the role of behavioural vs. environmental forcing in the fish 3D structures from the scale of individuals to the one of population (Docs. U:02, U:10). One example of the impact of fish spatial structure on catchability was also provided (Doc. U:21).

## Discussion

Session U showed that acoustics is obviously a central tool to get an overview and investigate ecosystems, especially when combined with other observation tools (e.g. fishing, sampling of oceanographic parameters). Although acoustics is a scientific field in itself, it is within the field of fisheries and plankton mainly a tool to do measurements, while the real science lies in the use of the measurements. Modellers should be notified about the availability of high quality acoustic data and simultaneous biological data, and should also be encouraged to use these data.

The audience at Session U from scientific fields other than those connected to acoustics was limited, possibly because of the term "Acoustic technique" in the title of the Theme Session. It was suggested that maybe the use of “Key Note” speakers common to all theme sessions at the beginning of each day could make it possible to reach a broader audience. It was also suggested to have sessions with more mixed topics at future ICES conferences.

A conclusion from Session U is that the use of 3D techniques to visualize and process acoustic data will be used increasingly in the near future as equipment and software programs are becoming more generally available.

## Theme Session V – Fishers' Perceptions and Responses in Fisheries Management

Conveners: Sakari Kuikka (Finland), Poul Degnpol (Denmark), and Svein Jentoft (Norway)

### Background

In the open lecture, as in some other presentations, the audience was reminded that fisheries managers are managing humans, not fish, and that it is through intervention into fishing behaviour that fisheries become sustainable.

Therefore, the expected response of the fleet, given a suggested management option, may be considered to be an important element of the advice given by the research community to fisheries managers. In ICES context, this naturally holds true only to the extent where science can help in evaluating the likely responses. However, in the same way as e.g. natural mortality is usually evaluated by expert knowledge, the advisory body may need to assume e.g. that fishers are profit maximizers (i.e. to use economic theory to predict behaviour) or, alternatively, use empirical observations and the help of social scientists in the evaluation of likely responses. In both cases a good understanding of fishers' perceptions is important because any decision by fishers will be based on their perception of the resources.

Furthermore, there is an increasing expectation that fisheries management decisions should be based on participatory processes and on transparent knowledge and decision criteria. Fishers' perceptions are important within a participatory and transparent framework both because a gross mismatch between these perceptions and decisions made will lead to loss of legitimacy of management, and also because fishers' perceptions can contribute to the knowledge base for management decisions.

In managing the fishing behaviour, the tools are chosen based on the objectives society has given, as well as based on the features of the fisheries system. The fishers' response has an impact on the implementation success of the management, and it can be argued that this response must be taken into account when considering e.g. the magnitude/strength of the suggested management action. However, the reference points ICES is applying and the *ICES advice* do not consider possible adaptations in fishers' behaviour.

The fleet reactions will play an important role in the development and implementation of harvest control rules. When the ICES community is facing this new challenge, input from economists and other social scientists is needed. The aim of the Session was to shed light on these issues and to evaluate what types of research activities are going on in this field in the ICES area and lessons to learn from research elsewhere.

### Presentations

The Theme Session papers were divided into three groups: a) Description of the system, b) Modelling of the system, and c) Management.

#### Description of the system

Docs. V:28 and V:08 described fishers' perceptions of the management system and their motivations to stay in or to leave the fishery. The freedom and independence of the profession were the strongest motivations in both cases. Interestingly, in the Archipelago of Finland the fishers were not willing to leave their home area even in the case of extreme negative change in fisheries, whereas in the Portuguese case fishers were more willing to change their living area than to leave their profession. This may be explained by the fact that in the Archipelago Sea in Finland, the fishers have a combination of incomes, which provides them with more

flexibility than when having fishing as the only profession. It can also be concluded that the general view of fishers regarding the content of science was not very positive.

Doc. V:04 gave an interesting example of mind-mapping techniques used to analyse the causal beliefs of fishers. Mapping was used as a systematic discussion tool to collect the different views and concerns. The fishers' perceptions were also modeled in a quantitative way in Doc. V:07 (see Figure 1), where a combination of questionnaires and interviews were used to estimate probabilistic dependencies of a social system.

Doc. V:12 was focused especially on one major concern in Baltic Sea: the impact of cyanobacteria bloom in fisheries. The results suggest that blooms are potentially harmful for fisheries, but the demand for fish remains unaffected by cyanobacteria news in the media.

The empirical analysis of technical creeping in fisheries (Doc. V:10) concluded that the economic interest to improve the performance of the fishing vessel is a driving force in fleet development. It has both an impact on the interpretation of cpue data, as well as on the allowed fishing effort in an effort-based management system.

The fishers' views about research needs were highlighted in Doc. V:23. All fishers are clearly not willing to participate in meetings, and there was evidence that the determined individuals in public forums do not necessarily reflect the view of the majority.

Critical views about research were common among fishers (Docs. V:23, V:28, and V:29) and in some papers (Doc. V:23) science was blamed for stock collapse. Sceptical views were expressed especially about modelling. It is noteworthy that in other sessions it was mentioned that ecosystem models were better understood and accepted than age-structured models (Doc. BB:06). This may reflect a common type of argumentation among fishers, where species interactions are easily seen as a reason for change. In addition to research, the managers did also not receive very high credits (Doc. V:29).

Methodological interviews and questionnaires dominated in this group.

### Modelling of the system

The modelling studies covered a wide range of topics and methods. Doc. V:27 demonstrated a way to combine the outcomes of biological assessment models to the behavioural models of the social scientists. Doc. V:31 made important comments on the different traditions of social and biological sciences in dealing with modelling and data analysis. These types of philosophical differences seem to create time-demanding discussions in multidisciplinary projects.

Foraging theory (adapted from behavioural biology) was applied successfully to the behaviour of fishers (Doc. V:01). The impact of bycatch on reference points and implementation was analysed (Doc. V:14) and it was concluded that the timing of possible density-dependent processes (in which age group they occur) plays an important role in the impacting of bycatches.

Two economics papers focused on the impacts of marine protected areas (Docs. V:30 and V:13). It has been generally argued that the closed areas would have a negative impact on the economics of the fisheries. The modelling was done technically in a different way in these two papers, but they both suggest that the above-mentioned belief is not true, even though there is no remarkable economic gain either. As a comment it can be stated that as one of the interests in using MPA is to have a reserve against uncertainty, the risk averse side of the probability distributions may be one justifiable way of analysing the results.

### Management

The management-related papers were also of high diversity. An analysis of the negotiation process of a management committee was presented (Doc. V:26), revealing that negotiation results are easier to achieve during the increasing biomasses of the stocks. Doc. V:06 presented the use of gear information obtained from fishers and concluded that this type of additional information is useful when evaluating the changes in the selectivity properties of the fleets. ITQ systems are currently studied intensely in bio-economics and they are suggested as possible tools to increase the interest in long-term management. Doc. V:22 demonstrated that when looking at different actors in a partly ITQ-covered system, non-quota holders would like to have a smaller biomass than quota holders; the managers may thus meet conflicts, if all fishing rights are not based on ownership. In an interview carried out in North Sea fisheries, fishers favoured technical measures as the way to manage fisheries, and also effort control and marine protected areas were viewed more favourably than quotas (Doc. V:32). Discarding was considered to threaten the ecosystem. In New Zealand, the ITQ system has led to a situation where industry pays most of the research costs (Doc. V:05). Industry claims ownership of the results, which is likely based on the type of ownership of resource created by the ITQ system. Three Swedish case studies suggested that local co-management solutions may be success in small-scale fisheries (Doc. V:17), and that fishers have a strong interest in looking after their local environment.

In earlier ICES papers it has been suggested that the real error rates of the predictions would be estimated by comparing the prediction to the realized biomass. This may be a justified way, and the current analysis (Doc. V:20) demonstrates that the human element may be important in the errors. Results show that the bias is inversely related to biomass, i.e. that small biomasses are overestimated and large biomasses are underestimated. Deriving safety limits to reference points by this type of approach may increase the interest in as unbiased estimates as possible.

Doc. V:19 was one of the few papers focusing directly on the Theme Session topic, by demonstrating a systematic, semi-quantitative way of collecting information from fishers. The different fisher groups had different types of knowledge, depending on the type of gear they used.

The Fisheries Minister of Scotland, Mr Finnie gave a talk in the Theme Session entitled "Experiences in managing fisheries". He discussed the problem of the cod fishery, where the good year classes of other species would have allowed higher effort, but the poor state of the cod stocks did not allow this. He highlighted the need to offer options for managers, which could then be discussed by managers and the industry. He also highlighted the need for solid science in solving the complicated management problems, and the use of fishers' knowledge in fisheries analysis. In the questions to the Minister, it was asked whether the economic analysis could be included in the fisheries advice to help the industry to understand the overall impacts of management actions. The Minister supported this view.

In the invited lecture, Sean Pascoe presented the possible ways to utilize economic data and economic theory in predicting fishers' responses. He underlined the use of incentives in directing the behaviour. The exit and entrance to fisheries are among the most important issues in management, but the current available data sets do not allow appropriate parameterization of economic models to analyse this behaviour. The modelling of compliance may need to include both economic and social factors.

## Conclusion

As is sometimes the case in ICES theme sessions, some of the papers were somewhat out of the scope of the Session. However, there were some excellent and very topic relevant papers,

which shows the usefulness of sessions of this nature within the ICES framework and science conferences, which ICES should be able to draw on in its work.

The Theme Session was much attended, even though the theme overlapped with Session Y "Interactive Forum with the Fishing Industry". Moreover, even though it has been anticipated that ICES should consider human dimensions in evaluating the likely success of given advice, it is likely that scientists are still mostly interested in topics with which they are familiar.

One of the current main thrusts of *ICES advice* is to develop and present options for long-term strategies for marine management, including evaluations of possible outcomes and trade-offs for the various strategy options. Based on the presentations in this Theme Session it can be concluded that the inclusion of considerations of fishers' perceptions and adaptations are crucial for such evaluations to be realistic and that active actions are needed to involve social and economic sciences in management strategy evaluations. Also, a good understanding of fishers' perceptions is a requirement if scientists involved in the production of management advice are to have a constructive dialogue with stakeholders in a participatory and transparent management framework. The opinion of the Theme Session conveners is that this widening of the scope to a multidisciplinary approach would be not just an important, but a necessary move for ICES if ICES is to pursue the provision of advice on management strategies further and to continue developing the dialogue with stakeholders.

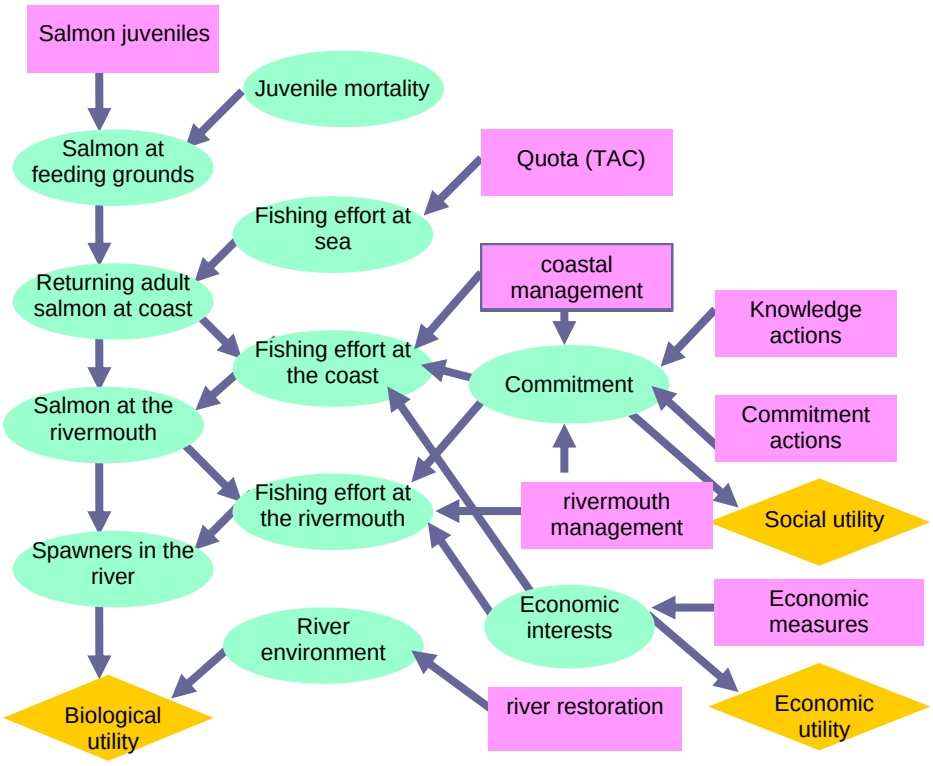



**Figure 1. The probabilistic model structure from paper V:07, where the probabilistic biological model (estimated by tagging data) was combined to human behaviour model (estimated by questionnaire and interview data). The squares describe potential management variables and the ovals describe probabilistic variables.**

## Theme Session W – Rebuilding Programmes for Threatened Fish Populations

Conveners: Ted Potter (UK) and Russell Poole (Ireland)
Rapporteur: Peter Hutchinson (NASCO)

### Background

The decline of many fish stocks in recent years, and the particular problems faced by diadromous species, have been well documented (Figure 1). The short-term management response to such problems is frequently to reduce or eliminate exploitation. For many fish stocks, however, this will address only part of the problem, and there will be a need to address a wider range of issues to protect and restore the stock in the longer term. This is particularly true for diadromous species which may be affected by a range of human activities in both the freshwater and marine environments during their life cycles. When stocks fall below satisfactory levels, it is therefore desirable to develop comprehensive stock rebuilding programmes (SRPs), which may include: the evaluation of stock status; identification of natural and anthropogenic factors affecting the stock; development of priorities for management actions; identification of research needs; instigation of interim measures to safeguard the stock (e.g. gene banks); assessment of social and economic factors; engagement of stakeholder groups; and evaluation and review procedures.

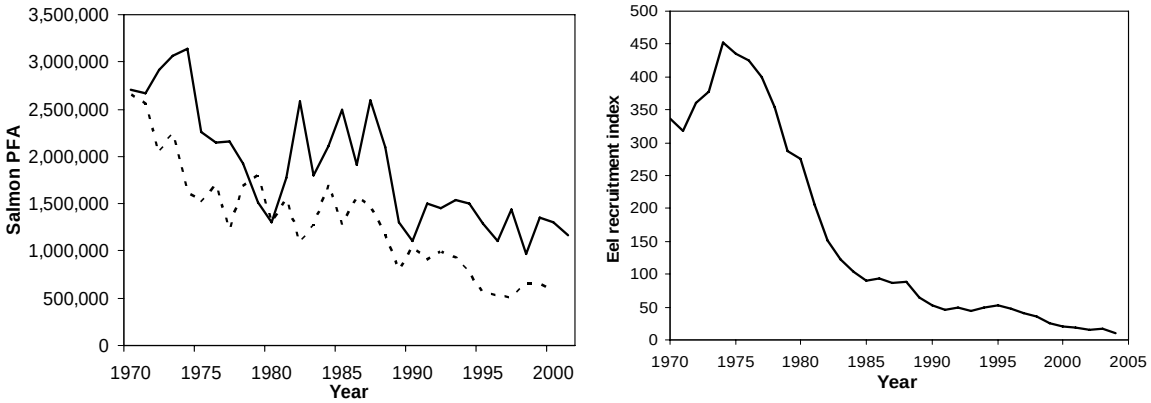



**Figure 1. Left panel: Pre-fishery abundance (PFA) of maturing (solid line) and non-maturing (dotted line) one-sea winter salmon from Southern Europe, 1970–2004 (ICES Working Group on North Atlantic Salmon, 2005) Right panel: Index of recruitment of European eel, 1970–2004 (ICES/EIFAC Working Group on Eel, 2005).**

Although the status of high profile and highly valued species such as Atlantic salmon receives considerable attention, less interest has been paid to some other species that are nonetheless important from a conservation perspective. Furthermore, the management of many rare and endangered species is often constrained by the lack of data. The objective of this Theme Session was therefore to compare approaches and share best practice for the development and implementation of SRPs for threatened fish populations.

### Presentations

Thirteen papers and one poster were presented at the session, Docs. W:09 and W:12 being withdrawn from the published programme. The presentations addressed stock rebuilding for both diadromous species, including Atlantic salmon, sea trout, sturgeon, and lamprey, and marine species, including, cod, hake, ling, and herring. They also dealt with a wide range of issues relating to stock rebuilding, including: the content of rebuilding programmes; the establishment of reference points; the determination of baseline stock levels; the prioritisation of

stocks for conservation action; the use of genetic studies to determine stock structure; the use of marine protected areas; and the evaluation of specific management programmes.

The presentations and the subsequent discussions highlighted the serious plight of many marine and diadromous fish stocks and the urgent need for SRPs to address the situation. Nevertheless, it is gratifying that lessons have been learnt from past mistakes, and managers are now frequently taking a more precautionary approach. An important consideration in implementing SRPs is to determine the appropriate baseline data for establishing reference points for rebuilding. Some SRPs might suffer from "historical myopia", basing the target on relatively recent data, but much longer-term historical data may not be appropriate if there have been significant changes to the environment or ecosystems. The World Summit on Sustainable Development has called for depleted marine fish stocks to be restored to MSY on an urgent basis and where possible by 2015. However, a number of different management objectives are being proposed for different fisheries, including using MSY as a target or a threshold, and profit maximization.

With so many stocks requiring rebuilding efforts, there are clear difficulties in prioritising the allocation of limited resources. Species such as Atlantic salmon attract considerable public attention, but many other, rarer species are easily ignored because they have little economic value. In some situations, consideration may need to be given to abandoning rebuilding initiatives, and genetic and other advice will be important to inform these decisions. However, although rare fish species may have very little commercial value, they may have considerable biodiversity value, and efforts should be made to increase awareness of this.

Stakeholder involvement in SRPs is essential and there will be a need to consider appropriate mechanisms to facilitate effective cooperation among different groups. Approaches to assess stakeholder commitment have been developed, but their applicability to species other than salmon needs to be tested. Stakeholder commitment may be greater where there is institutional memory of previous stock depletion and recovery efforts.

## Conclusions

There are often particular difficulties in applying SRPs to rare species because of lack of data and limited public and political interest. However, prioritisation of rebuilding work should not be based on user values alone, and if there are limited data to inform SRPs, the Precautionary Approach should apply. Nevertheless, it will be a challenge to maintain support for SRPs for species which have little appeal or where the trajectories for stock rebuilding are likely to be long term. There are therefore clear benefits to be gained from sharing experience of the methods employed to inform and implement SRPs for different species. This Theme Session was a first step in this process which will hopefully be continued and enhanced in the future.

# Theme Session X – Mitigation Methods for Reduction of Marine Mammal and Sea Turtle Bycatch in Fisheries

## The development of effective and acceptable gear modifications and alternative fishing tactics to reduce the bycatch and mortality of cetaceans, pinnipeds, and sea turtles in trawl and static gear fisheries

Conveners: Norman Graham (Norway), Dominic Rihan (Ireland), and Simon Northridge (UK)

### Overview

The incidental bycatch of cetaceans, pinnipeds, and sea turtles associated with commercial fishing operations is an issue of global concern. Fisheries managers are under increasing pressure from governments, NGOs and the general public to protect marine mammals and turtles from fishing activities. There are a number of high profile fisheries where, from an ethical and/or biological perspective, such bycatches are unacceptable. Some examples include the capture of dolphins during pelagic trawling, the entanglement of whales in marker ropes, and the bycatch of turtles in both longline and tropical shrimp trawl fisheries. In some instances, managers have closed viable fisheries owing to marine mammal bycatches and some fisheries have suffered economic downturn resulting from consumer boycotts, for example the Eastern Pacific tuna purse-seine fishery that resulted in the concept of 'dolphin-friendly' tuna. However, modifications to fishing gear and/or fishing practices can, in many instances, provide practical and workable alternatives for fisheries managers, allowing the continuation of fishing activities while preventing the unnecessary capture of cetaceans, turtles, and other marine wildlife. Worldwide, there are a number of success examples where technical conservation measures have greatly reduced fisheries impacts. The use of turtle excluder devices (TEDs) in many tropical shrimp fisheries has reduced the mortality rates of several turtle species, while modification of hook shape has reduced turtle bycatches associated with longline fisheries. Considerable research has focused on technical modifications to fishing gears, the development of acoustic deterrents, and operational changes, all with the aim of minimising such bycatch. This Theme Session was intended to provide scientists the opportunity to present their research into mitigation measures to reduce bycatch; to provide examples where such measures have been applied; and to produce a summary review.

Contributions to the Session were therefore requested to address any of the following themes:

- Current management practices for reducing marine mammal bycatch.
- Behavioural studies and observations on the interaction of marine mammals with fishing gear.
- The development of gear modifications, acoustic deterrent devices, and alternative fishing tactics to reduce bycatch.
- Predicted impacts of gear modifications and operational changes on populations of cetaceans, pinnipeds, and sea turtles.
- The effectiveness of mitigation measures in terms of acceptability to the fishing industry, costs including enforcement and predicted benefits to marine mammal stocks.
- Identification of potential solutions in other fisheries to reducing bycatch by employing similar technologies or methods.

## Contributions

The Session was well attended. Overall the conveners were satisfied with the quality of the papers submitted, although there were fewer papers than envisaged that dealt solely with the development and testing of mitigation measures. The majority reported on interactions of marine mammals with fishing gear and provided only summary information on possible mitigation measures. Several papers also dealt with the effect marine mammals have on fish stocks or on the income of fishers. Thus it was difficult to draw up firm conclusions on the effectiveness of mitigation measures already developed, which was the overriding objective of the Theme Session. Given, however, the current deficient research into this topic, it would seem an opportune moment to encourage research projects to build upon some of the preliminary and continuing trials described during the Theme Session.

## Session One

The first Session included three papers (Docs. X:03, X:06, and X:09) dealing specifically with the development of cetacean bycatch mitigation measures. A further paper (Doc. X:02) was withdrawn. Two of these papers (and one poster Doc. X:20) provided an overview of continuing work into the development of acoustic deterrent devices (ADDs) in both static gears and pelagic trawl fisheries. All the presented work indicated that, although acoustic devices were a feasible solution more work is required to develop such devices into practical units for widespread deployment on commercial fishing gear. The use of ADDs on static gears can cause handling problems (snagging) while deploying and retrieving gear, slowing the process considerably. Cost implications associated with the introduction of regulations requiring the use of ADDs, particularly for small-scale fisheries in developing countries need to be addressed. Financial assistance for fishers to offset the costs of purchasing such devices and to provide an incentive for fishers to use such devices was also discussed. There also seems only limited knowledge of the behaviour of marine mammals around fishing gear and this has hindered development of acceptable solutions. Some presentations suggested a high level of gear/cetacean interactions, but with comparatively low bycatch rates. This suggests that cetaceans are generally aware of the presence of nets, and may actively use them during foraging. More studies on the frequency of encounter and on the process of entanglement are needed to provide appropriate direction for mitigation studies.

A fifth paper (Doc. X:08) in this Session, along with two further posters (Docs. X:17 and X:19) looked at the use of gear modifications to reduce bycatch of both cetaceans and sea turtles in different fisheries. The paper outlined the approach to assessing and reducing bycatch in commercial fisheries being taken in several US fisheries and stressed the need for extensive data collection to assess the nature and level of bycatch. The spatial analysis of bycatch data, as well as the need for gear research into mitigation measures was also discussed. The two posters provided information on research being carried out as part of a continuing EU-funded project, specifically dealing with gear modifications to reduce bycatch of cetaceans in pelagic trawl fisheries. The use of rigid grids and rope barriers were illustrated and some preliminary results show that such devices could be effective.

## Session Two

The second Session dealt specifically with the interactions of seals with static gear fisheries in the Baltic and their impact on these fisheries in terms of catch predation by seals. Various mitigation measures that are currently being tested in these fisheries were described. In all, six papers were presented (Docs. X:05, X:12, X:13, X:14, X:15, and X:16). All the papers clearly demonstrated the serious problems of seal depredation in these fisheries and indicated that, owing to the high economic losses being experienced, the future of these fisheries was at stake. Several comments also pointed out that the corollary of such interactions was an increase in seal mortality through bycatch and illegal shooting. The papers also stressed the dif-

ficulties in assessing seal-induced losses resulting from hidden losses when fish are wholly removed from fishing gear. The traditional methods of assessing losses by counting fish remains were significantly underestimating losses. Several different solutions were presented, including the use of Acoustic Harassment Devices (AHD) and simple gear modifications to salmon trapnets to prevent seal predation on catch, and the relative success of these measures was reported on. Gear modifications showed considerable promise, although it was concluded that more work is required to find effective and practical mitigation measures that do not result in reductions in commercial catch. The trials with AHDs seemed less promising, as after some initial positive results it was noted that seals seemed to adapt to the acoustic signals transmitted by the devices.

## Session Three

The five papers (Docs. X:01, X:04, X:07, X:10, and X:11) presented in the third Session dealt with the interactions of marine mammals with fishing gear in many diverse fisheries and reported on the nature and magnitude of incidental bycatch in these fisheries. Doc. X:04 described various means of measuring interactions between seals and fisheries in the Baltic, through observer schemes, interviews with fishers, and voluntary logbooks to assess bycatch and fishery damage. Doc. X:11 discussed the problems of entanglement of endangered northern right whales in different types of fishing gear in the Scotia Region of the Northwest Atlantic, and the authors highlighted the importance of gathering both whale sightings data and relating this to spatial fishing effort patterns to assess if closed areas or corridors could be identified to minimize the probability of entanglement. Interactions between bottlenose dolphins and small-scale trammel-nets and fish farms in Sardinia in the Mediterranean were described in Docs. X:01 and X:10; and finally a description of the nature and magnitude of incidental marine mammal bycatch in a range of artisanal fisheries in the Sabah and Sarawak waters in East Malaysia were described in Doc. X:07. All the papers indicated that marine mammal bycatch is sporadic, making it difficult to assess the true nature and extent of the problem, particularly in artisanal fisheries where the number of boats and types of gear used are many. The paper looking at fisheries in Sabah and Sarawak also showed that when marine mammal bycatch has an economic value, it is difficult to persuade fishers to consider mitigation measures. The need for a continued monitoring and educational programme together with the establishment of Marine Protected Areas is paramount to minimize the threat of bycatch.

## Conclusions

The overall conclusions from the Theme Session can be summarized as follows:

- The sporadic nature of bycatch makes accurate assessment of the nature and extent of bycatch as well as the development of solutions problematic.
- A better understanding of the behavioural interactions of marine mammals with fishing gears is needed.
- Cost implications of Bycatch Reduction Technology needs to be fully assessed before introduction into legislation. This will be a major issue for developing countries.
- Acoustic solutions such as the use of “pingers” are still in their infancy. More consideration of the construction, practical handling, and deployment of such devices is required.
- Simple changes in fishing tactics may provide simpler solutions. For example simple modifications to gillnets such as thinner netting twines or staples may allow animals to break free.
- Unaccounted mortality and damage needs further investigation. In this respect seal predation on fishing gear seems to be a particular problem.
- Solutions are needed at a métier level – the “one solution fits all” approach will not work.

- In certain fisheries, fishing gear may act as a mammal attractor and thus there is a high likelihood of interactions. This behaviour needs to be understood and taken into account when designing mitigation measures.
- The use of acoustic sonar could provide large time frame observations of marine mammal behaviour near fishing gear.
- Rising fuel prices may encourage greater use of static gears. Given that these gears seem to give the highest bycatch rates, this may lead to increased bycatch levels in the future.

## Theme Session Y – An Interactive Forum with the Fishing Industry

Convener: Anthony D. Hawkins (UK)

### Panel list

Barrie Deas, National Federation of Fishermen's Organisations, UK

Poul Degnbol, ICES and Institute of Fisheries Management, Hirtshals, Denmark

Olle Hagström, European Commission

Svein Jentoft, University of Tromsø, Norway

Hans Lassen, ICES

Jean-Jaques Maguire, independent scientist, Quebec, Canada

Keith Sainsbury, **C**ommonwealth **S**cientific and **I**ndustrial **R**esearch **O**rganisation, Australia

David Symes, University of Hull, UK

Alex West, Scottish Fishermen's Federation, UK

Michael Andersen, Danish Fishermen's Federation

## Introduction: the forum

The interactive forum with fishers, scientists, and fisheries managers, convened by Tony Hawkins, was a success and well attended session at this year's ICES conference. As Tony Hawkins reminded the audience, this was the first ICES interactive session between fishers, other stakeholders, and scientists. He noted that until recently 'science' had only involved scientists. Fishers were considered to be part of the problem associated with fisheries management, when perhaps they should be seen as part of the solution. He outlined key themes which were to be addressed during the rest of the day, in what proved to be frank and open discussions about how much fishers can, and should, be involved in fisheries management and science, and where best they might participate in the processes.

The first part of the day involved speakers drawn from academia, fisheries science, and the industry, each giving brief presentations on the benefits and current status of more participatory management, and on future scenarios for participation. These presentations were followed by open discussion on some of the themes outlined.

The last part of the day involved presentations on four real examples of cooperation between fishers and managers in Europe and North America.

***Discussions on the main themes to emerge are outlined below:***

## Why involve fishers in fisheries assessment and management?

According to Svein Jentoft, all people have a basic right to participate in political structures, and fisheries management is no exception. No stakeholder should have a monopoly on knowledge, added Barrie Deas. Tony Hawkins argued that there was of course a major role for 'specialists', but that because scientific advice was fallible (he mentioned BSE and foot and mouth disease as examples from the UK), scientists should not be the only ones to give advice. We should be continually asking if it was legitimate to involve lay people in science.

In fact, as Joe Horwood from CEFAS emphasized, there already has been significant interaction between scientists and industry. Fishers' participation in science assessment and advice is essential, according to one scientist, because it builds trust and transparency. It also gives fishers some ownership over the advice, improving compliance on their part, according to Barrie Deas. Svein Jentoft proposed that the question was not ***whether*** fishers should be involved, but ***how.***

A fisher from the audience argued that fisher participation in management was necessary to help avoid what he called 'scientific bolts out of the blue'; for example sudden large cuts in Total Allowable Catches. Michael Andersen elaborated on this problem: fishers have to reconcile the need for long-term economic investment, e.g. in vessels, with short-term fluctuations in such factors as quota restrictions. In order for this to happen they must be involved in drawing up appropriate strategies. According to one scientist the problems did not so much lie with science, but were, rather, the result of short-term approaches to management. Echoing this, participants repeatedly argued for greater stability in fisheries management.

A poor relationship between the industry and scientists has been cited as a reason for lack of progress on sustainability, and in 2001 there was a complete breakdown between fishers and scientists, according to Barrie Deas. However, many, like Alex West, considered that the most effective way to achieve sustainability was through applying the best science possible. This, West said, meant greater involvement of fishers in the science.

David Symes noted that there had been moves away from management systems that facilitated ***information exchange***, e.g. the North Sea Commission Fisheries Partnership, to models where fishers could give actual ***policy guidance***, for example in the new EU Regional Advisory Councils (RACs). This trend could eventually include a genuinely devolved management system that allowed fishers to become involved in ***policy formation***.

Several participants made the point that fishers could be particularly useful in giving advice on technical issues, for they had unparalleled knowledge of fishing gear and of how fleets operate. They could also give up-to-date advice on fish behaviour, added one fisher.

## What are the problems of involving fishers in fisheries assessment and management?

Alex West acknowledged that relations between the industry and science had been problematic in the past, and that fishers were at least partly responsible. However, this could be explained by their feelings of vulnerability. For instance they were worried that their knowledge might be used against them, in the context of a harsh quota regime and mounting criticisms from the green lobby. Fishers wanted to resist what they perceived as increasing bureaucracy and form-filling. However, relationships between the industry, scientists, and the civil service managers were improving. A scientist said that the fishing industry was not yet united, and working with fishers could be difficult, although one participant made the point that the RACs could help to create a more unified industry and stakeholder view.

David Symes argued that, although significant progress had been made, ***genuine*** participation of fishers in management had yet to be seen. We need to reflect on how much the views of fishers were reflected in ***actual*** decisions. He outlined some potential problems arising from greater participation, arguing that as we moved away from centralised, top-down, exclusionary management towards a more devolved and participatory model, the system could become more complex. He warned that the so-called 'scientific and technological' approach to management, involving information exchange with a limited number of stakeholders, was relatively simple: however, the new ecosystem-based approach, involving a broader range of stakeholders, could become increasingly complicated. In discussion, one scientist warned that there might also be problems with too much 'talk', and that stakeholders should also learn to listen. Early in the discussion, a distinction was drawn between issues of ***collaboration,*** in-

volving fishers and scientists in stock assessment work, and ***representation*** of stakeholders in the wider policy process.

These developments could present us with new dangers, which should be guarded against. There were concerns about:

i ) equity; for instance, some stakeholders might have more power and resources than others;
ii ) lack of transparency;
iii ) the game becoming increasingly political, with government retaining control over the final decisions;
iv ) too many compromises, with appeasement and weak decision making.

In respect of (iii), an ICES scientist remarked that the potential problem with involving the industry in scientific institutions like ICES was that the latter could become too political. The accepted role of ICES was to provide independent advice, so that it could work outside national and political interests. A delegate from the Commission confirmed that they were aware of the danger of ICES objectivity becoming compromised.

This problem of 'politicisation' of advice was compounded because stakeholders might also find it difficult to give unbiased advice, according to one fisher representative. Stakeholders always brought their own interests to any participative forum. One scientist doubted that stakeholders could be relied upon to give reliable and honest advice.

It was emphasized by others that there were solid benefits to be gained from involving fishers in the preparation of scientific advice. First, greater transparency itself brought benefits in terms of the advice being ***seen*** to be unbiased, not neglecting important factors. Second, fishers themselves were able to bring important facts and observations to the attention of scientists and could correct deficiencies in the data being analysed.

Several scientists and fishers raised the problem of structural constraints that might operate against more participatory management, particularly with a bottom-up approach. For example:

i ) some stakeholders had limited time and resources, especially in today's consultation culture, where they were asked to participate in a variety of fora;
ii ) stakeholders might also have more pressing matters to attend to (e.g. coping with rising fuel costs);
iii ) marine space is over-crowded and shared by many different nations, which might make collaboration even more difficult.

According to one panellist, representation had become an increasingly contested issue which we should approach critically, especially since there are disparities in the way that different parts of the industry are represented. Svein Jentoft argued that if groups of fishers were asked to participate, we had to ask whether these groups were truly representative of the whole industry. If they were not, then in the attempt to achieve greater democracy we might have substituted one set of problems for another. However, Mike Park, from the Scottish fishing industry, considered that the fishing federations were more representative of the whole spectrum of fishing interests than they had ever been. One scientist also reminded the audience that those asked to represent the industry could themselves be trained scientists.

Notwithstanding the concerns expressed about some aspects of fisher participation in assessment and management and a degree of scepticism about the likely outcome, there was overwhelming support for extending the collaboration between scientists and fishers.

## What are the most effective ways to involve fishers and utilize their knowledge?

Tony Hawkins thought that it might be easiest to involve fishers in the science at local or regional scales of management. A scientist considered that fishers ought to be engaged in the science from the ground up. One fisher representative declared that it might be difficult to build trust between fishers and scientific institutions at an international scale, and suggested that this might be better achieved nationally. It was also maintained that if the management system were to be devolved, then advice might need to be rescaled also. Another scientist added that perhaps we should not concentrate on fishers' involvement in ICES *per se*, but on their involvement in particular national contexts and issues.

One fisher thought that if fishers were to have a meaningful role in management, then the science should be transparent, so that it was accessible and open to questioning by stakeholders. Another voiced the often-heard view that the political decision-making system rendered scientific ***theory*** about stocks into scientific ***fact***. In this context, and most importantly, the science should also be transparent about uncertainties, said a third fisher representative.

Another participant raised the need to use different methods to gather fishers' knowledge. There should be greater 'crossover' between scientists and fishers. For instance, scientists should be invited on board fishing boats as well as fishers going aboard scientific research vessels. Also, fishers should be involved in assessment and advice processes as early as possible.

## How may the role of scientists and science institutions be enhanced?

A further potential constraint on involving fishers in science was the nature of ICES itself: it covers the whole of the North East Atlantic and does not lend itself naturally to devolved management structures. Tony Hawkins reminded the forum that although ICES was wider than the EU, ICES was being commissioned by the European Union to provide specific advice on its fisheries. Other participants in ICES were fortunate to have their own national systems for producing scientific advice. Necessary reforms to the system for providing advice to the European Union should not be blocked by other ICES nations.

Speakers repeatedly underlined the need for ICES to be modernised, and Robin Cook of FRS prompted the audience to consider how ICES could be opened up to greater scrutiny and participation. He encouraged them to think about (i.) which stakeholders might participate in ICES, (ii.) in which part of the process of gathering and developing scientific advice they should be involved, and (iii.) ICES role in relation to other new institutions, like RACs. One suggestion was that in the organization of its advisory function ICES might need to consider operating on a regional basis and incorporate a broader range of ecological and socio-economic advice.

David Symes pointed out that no matter how participative the science was, it should be remembered that the science would always be ***interpreted*** at a later stage by policy makers.

## What does co-management and science-fisher collaboration mean in practice? Examples

In discussion, the audience was reminded that they should be clear about whether they were talking about participation in ***decision-making*** generally, or only in the formulation of scientific assessments and advice.

A CEFAS representative argued that for fishers' participation in science to be meaningful, we might need to question the whole basis on which science is conducted and data collected. This

could involve evaluation of what gear was used to collect data, and whether surveys were done on soft or hard substrates, for example.

If scientific management was to be rescaled, it might be that a strong central body was still required, as in Canadian fisheries management, to ensure common standards, to protect regional processes from becoming too political, and to facilitate the spread of good practice.

Keith Sainsbury from CSIRO told the audience that the Australian management system had allowed stakeholders to be fully involved in stock assessments and advisory committees. He also cited 'habitat mapping' as an example of successful collaboration between fishers and scientists, drawing on fishers' knowledge.

Another scientist pointed out that the successes in the Australian management system were linked to the clear separation between the scientific and political processes.

An ICES scientist noted that the USA had successfully included fishers in the scientific process; their system was more open and stakeholders were actively encouraged and invited to participate. There, fishers had the role of observers to help ensure transparency, and they had an 'explanation' role, where they were invited to act as 'experts' in their field.

The North Sea Commission Fisheries Partnership had represented a breakthrough in establishing dialogue between scientists and fishers, according to Barrie Deas. He noted that the fishers now had a deeper understanding of stock assessments and their shortcomings. The fisheries surveys that emerged out of the Partnership were successful in systematising fishers' knowledge. However, it was often difficult to get fishers to fill in 'yet another form'.

The UK's Fisheries-Science Partnership had also helped to identify holes in the orthodox scientific advice, and had played a role in the December Council. But the Partnership had been more significant in building confidence within the industry. It was difficult to overstate how successful the Partnership had been in transforming relationships between science and the industry into something approaching collaboration.

While the examples cited above, and the end of session papers, provided useful evidence of science-industry collaboration, one scientist felt that caution should be exercised in drawing comparisons between complex multi-jurisdictional regimes like the North Sea, and less complex ones. In a similar vein Svein Jentoft cautioned participants that while they could learn from other international examples, national contexts were also unique.

## Conclusion: The future

The general consensus was that fishers should be more involved in the science of fisheries management, while acknowledging that, as Svein Jentoft pointed out, management issues are not all scientific. It might be that scientific reform alone is not enough; modernisation of the whole management structure may be needed.

One fisheries representative argued that improving profitability of the industry was more important than the science, because the systemic problem of low TACs had led to non-compliance and misreporting, which had, of course, affected the scientific assessments leading to lower TACs. This represented a vicious cycle, which would best be broken by setting TACs at a level which would promote profitability. Other stakeholders made similar points about the importance of socio-economic expertise in fisheries decision-making. However, ICES could not provide advice in this area.

Involving stakeholders in science would require significant funding resources; any commitments had to be made with this in mind.

### The role of RACs

RACs, according to Barrie Deas, could make a significant contribution to long-term management of fisheries. RACs could take the lead in facilitating fisher-science collaboration. The North Sea RAC was already collecting data from fishers for use in scientific assessments.

Several participants stressed that the RACs needed stronger scientific support, to help them evaluate different management options. Perhaps the RACs should be provided with resources sufficient for them to produce their 'own', tailor-made, science? Alternatively we might think about how national research institutions might contribute to providing science at this regional, shared-seas level.

### Some action points:

- There is a need to consider how scientists can get better information about landings and discards from the industry.
- Further pilot studies, supported by Commission funding, are required to explore the extent of fisheries-science collaboration.
- Work is needed, perhaps through a focus group, on how ICES working groups and ACFM can better engage with the RACs.
- There is a need to consider how advice might be tailored to consider the whole ecosystem, and could be produced in a more devolved, flexible, and responsive way.

In summary, the Session showed how important it is to reform the scientific assessment and advice procedures in fisheries management, and that stakeholders should be more involved in this process. There was, however, some divergence on when, how, and where stakeholders were to be involved. There was general agreement on the need for greater transparency, for better information to come forward from fishers on catches and industry fishing practices, and for greater dialogue between fishers and scientists through joint surveys and research projects. All this would help to build trust in an environment where it has previously been lacking. Fishers should be commended and thanked, said Tony Hawkins, for taking part in this forum. Those scientists, who had taken the initiative to involve fishers in their work, should also be commended.

## Theme Session Z – How to Improve Environmental Monitoring and Biological Studies – Integrating Ecology and Statistics

Conveners: Rob Fryer (UK) and Johan Craeymeersch (the Netherlands)

### Background

The purpose of the Session was to:

> … solicit papers dealing with environmental monitoring, environmental impact, and other biological studies using statistics such as:
>
> - the probability of detecting environmental impacts and biological effects;
> - methods for spatial and temporal trend studies;
> - the probability of detecting point sources or episodic events;
> - cost-effective sampling design using statistics.

The Session was to document the essential use of a statistical approach to the design and assessment of environmental monitoring. Papers were solicited that demonstrate the effective use of power analyses for sampling design to insure cost effectiveness while achieving the desired level of probability of detecting an impact. The aim of this Session was to provide practical examples of how statistics can be implemented in planning and assessing the results of monitoring programmes.

Eight papers and three posters were presented. All described statistical or mathematical modelling techniques for use in the design of monitoring programmes or the analysis of monitoring data. The applications were diverse, including environmental monitoring programmes, environment impact studies, fish stock surveys, and fish tagging programmes.

The papers were grouped into those on design and those on analysis, although they were inevitably linked since design requires some analysis, and analysis informs future design. The design papers included two examples of power studies, for detecting temporal trends in contaminant concentrations in sediments, and for investigating time-trends and environmental impacts using fish catch per unit effort data. Both emphasized the importance of building on the experiences of previous studies when designing new monitoring programmes. The other design papers described how particle tracking methods might help locate monitoring stations, and how diagnostic tools can identify weaknesses or inefficiency in monitoring designs. The analysis papers considered methods for contaminant monitoring programmes in sediment, reducing variability in survey indices due to changes in survey design and (consequently) wind condition, modelling size-spectra in fish survey data to investigate biodiversity, and modelling the movements of cod using tagging data.

The Session probably does not contribute much to the ICES Science or Advisory function, other than to emphasize, once again, the importance of design to any study, and the benefits of providing adequate resource to the analysis of data. The Session was certainly a useful place to gather together a wide range of talks with statistics at their core.

## Theme Session AA – Cod in a Changing Climate

Conveners: Keith Brander (ICES/GLOBEC, Denmark) and Ken Drinkwater (Norway)

### Introduction

The first two sessions of this Theme Session presented twelve chapters of the forthcoming book "Cod in a Changing Climate" and the final session included eight papers, which dealt with closely related topics. The book is part of the syntheses being undertaken by the ICES/GLOBEC Cod and Climate Change (CCC) programme. The commercial importance of North Atlantic cod has resulted in a long history of research, including the CCC programme over more than a decade. Much has been learned about the biological and life history processes underlying climate-driven changes for this species and about their interaction with each other and with predators, the food chain, and other components of the marine ecosystem. Cod is probably the most comprehensively studied marine fish species, occupying a key role in several North Atlantic ecosystems. An understanding of its dynamics is of direct and indirect relevance to other species and to gaining general insights into the response of the marine ecosystem to climate change and variability.

The successive chapters, which were presented, included:

1) History of cod and climate research in the North Atlantic: past, present, and future
2) History of the North Atlantic cod stocks
3) Physical oceanography of Atlantic cod habitats
4) A review of the biological oceanography of cod early life stages
5) Growth, condition, and production of cod in a changing climate
6) An overview of the state of knowledge of the transport of cod eggs and larvae
7) Cod recruitment and climate change – a comparative approach
8) The impact of climate on distribution and migration of Atlantic cod
9) The role of cod in the ecosystem
10) The response of Atlantic cod to future climate change
11) The human dimensions: demographic impacts of fisheries decline
12) Relevance of the programme to the assessment and management of cod stocks

### Historic overview

The CCC programme developed from longstanding concerns about the "recruitment problem" and about the relationship between the effects of fisheries and environment on the observed variability in fish stocks. The analysis of these issues, which was articulated over many years, is still valid, although considerable progress has been made. Cod was chosen as a means to focus effort onto an intensely studied species that occurred throughout most of the ICES region. The guiding principles have included (i.) emphasis on processes rather than correlative analysis, (ii.) encouragement of coupled physical-biological partnerships, (iii.) deployment of advances in population genetics and biotechnology, (iv.) development and utilization of advanced sampling technology, and (v) application of the comparative approach. The areas for investigation included (i.) linkages between different temporal and spatial scales, (ii.) dynamics of individual organisms, (iii.) key physical processes, (iv.) ecological mechanisms for population persistence, and (v.) theory and modelling.

Almost all cod stocks in the North Atlantic have declined over the past three decades, with total catches falling from around $4\times10^6$ tonnes to under $1\times10^6$ tonnes. This is primarily a consequence of intensive fishing, but adverse changes in their environment have also played a part. Our knowledge of the structure of stocks and of the levels of genetic separation, which

exist both between and within current stock boundaries, has improved as new molecular techniques have become available and affordable. Continuing high levels of fishing give rise to concerns about possible selective changes and loss of genetic diversity.

## The physical and biological background

Cod occupy a temperature range from close to 0°C to as high as 20°C, but they occur at annual mean temperatures of about 1–12°C. They also occur in a range of salinities from around 35 to less than 10 (in the Baltic).

The food environment of cod larvae is critical to their growth and survival. The copepods *Calanus finmarchicus* and *Para/Pseudocalanus* are an important part of their diet in all areas. Other suitable-sized, abundant zooplankton species are not found in the stomachs of cod larvae, either because they occur at the wrong season (e.g. *C. helgolandicus*) or because cod larvae appear to reject them (*Acartia, Limacina, Oithona*). The boundary between the cold areas occupied by *C. finmarchicus* and the warm areas occupied by *Para/Pseudocalanus* shifted northward between the late 1970s and the 1990s, but it is not yet clear whether this had consequences for zooplankton production in general and cod in particular.

## Life history and ecosystem processes

Substantial progress has been made in understanding and modelling growth processes of cod, from hatching through to adult life. It has become apparent that variability in growth is a much more important factor in generating fluctuations in cod stocks than had been thought at the start of the CCC programme. Very large changes in weight-at-age have been observed in many stocks and all major stock collapses were accompanied by (or preceded by) a decline in growth. Changes in condition also have a major impact on reproductive output, with cod in poor condition (<5% liver weight) producing few or no viable eggs.

Most cod larvae and juveniles in the wild grow at rates close to their maximum (i.e. for the temperature at which they occur and with unlimited food). Cod larvae have no food reserves (liver or lipids) and those that grow slower than maximum may not survive. The temperature for optimal, food-unlimited, growth decreases with the size of the fish and is probably in the range of 8–10°C for cod weighing over 1 kg. Because of the ontogenetic change in the effect of temperature on growth, the seasonal variability in temperature, and the effects of food availability, it is not easy to predict the consequences of climate change on growth.

Improved understanding of the causes of recruitment variability in fish was a major motivation for the GLOBEC programme, but it remains elusive. New information on the spatial and temporal dynamics of plankton production indicates that there is no simple, universal relationship determining survival of cod during early life. Indeed, the “critical period” governing recruitment may occur at different times in the life history in success years, depending on the prevailing physical and biological conditions.

Sophisticated coupled physical-biological models have been developed for a number of cod stocks to reproduce the observed transport and dispersion of cod eggs and larvae and to explore the causes and consequences of variability in their geographic fate. Some interesting paradoxes emerge. Transport over long distances (away from their origin) might be expected to result in mixing between stocks, yet even geographically proximate stocks frequently show a degree of genetic isolation. There is some evidence that transport affects survival of larvae, but the sign of the effect can be positive or negative, depending on the food environment they encounter. Long transport pathways (e.g. around Iceland and across to Greenland) do not entail high variability in subsequent recruitment, but are always followed by homing of most (perhaps all) of the maturing fish to their original spawning site.

Recent studies using acoustics, midwater and bottom trawling, and data storage tags have shown that cod are capable of significant behavioural thermoregulation at diel and seasonal scales. In many areas (e.g. Gulf of St Lawrence, Norwegian Sea) the ambient temperature for cod is lower in summer than in winter, due to their horizontal and vertical movements. There may also be density-dependent components of these migrations.

With the decline of cod populations throughout the North Atlantic due to fishing and in some cases additional detrimental environmental effects, the ecological role of the species has also diminished. It is not clear how continuing climate change will further alter the ecological balance, but depensatory effects are possible and may already be at work. This would reduce the resilience of the species and slow down or halt stock recovery, even if fishing mortality is kept very low. Cod are highly plastic and opportunist in their feeding habits and this is unlikely to alter as a result of climate change; however, the high productivity of the stocks at the cold end of the range is probably quite dependent on the availability of particularly suitable forage species as prey, in particular capelin.

## Climate change, human impacts, and management

Comparative information on distribution, abundance, growth, and recruitment of cod in relation to temperature throughout its range provides a first order basis for predicting the consequences of climate change. This is supported by historic evidence from earlier periods, such as the warm period from 1920–1950s or 1960s, when temperature conditions were similar to those currently developing in the North Atlantic. Recent observations show a northward retreat of cod at the warm end of their range, e.g. in the southern North Sea, and recolonization of cold offshore areas at Greenland, where cod experienced good recruitment, growth, and condition during previous warm periods. Such trends can be expected to continue as a result of further warming. Changes in the annual mean may not be a very reliable indication of limiting temperatures, since the limits may be set by short-term extremes in summer and winter, which are related to the magnitude of seasonal variability. So, for example, cod in the Celtic Sea, which is much more oceanic than the southern North Sea, may survive there at a higher annual mean, because they do not experience such extreme warmth in summer.

Past changes in cod stocks at Newfoundland, Greenland, and Faroes have had varied impacts on the human economy and demography. Fisheries-dependent societies show rapid quantitative responses, such as outmigration of young adults, but also rapid adaptation to the changing circumstances, by development of alternative fisheries or by alterations to the economy to make it less dependent on capture fisheries.

Although the consequences of climate change for marine ecosystems are increasingly well documented and in some cases can be shown to affect the distribution and productivity of cod stocks, fisheries management advice within the ICES area has to date not taken this into account. One reason is that the sequential population models used for short-term advice are based only on information from fishing. Since the founding of ICES, views on the effects of fishing and environment on fish stocks have tended to polarize and we are still striving for a balanced approach. Environmental and biological information (including results from the CCC programme) should be included, provided that it makes a significant difference, is based on some understanding of the underlying processes, and is available in a timely, cost effective way. In practice, such applications of environmental considerations are more likely in a medium- or long-term context and short-term assessments should be kept as simple and robust as possible. More complex models, which include the kind of results produced by the CCC programme, can play a valuable role in simulations designed to test the robustness of simple assessment methods and the management procedures derived from them.

## Theme Session BB – An Ecosystem Approach to Fisheries Management: Worked Examples

Conveners: Paul Connolly (Ireland) and Jake Rice (Canada)

This Theme Session was held to address a major concern arising from the 13th ICES Dialogue meeting, in Dublin, in April 2005. At that meeting clients of *ICES advice* in fisheries management, policy, and the fishing industry stressed that although the concepts behind an ecosystem approach to fisheries management were reasonable, there was little clarity about exactly how an ecosystem approach would actually change the jobs of managers and policy-makers, and affect those engaged in fishing. This Theme Session was intended to attract progress reports from attempts around the world to implement a more ecosystem-oriented approach to fisheries science and management. It was hoped that consolidation of experience to date would contribute to a better understanding of what sorts of changes would be expected as fisheries management took greater account of ecosystem consideration. This initial goal was augmented when leaders of the new EU project Eur-Ocean suggested that the Theme Session include some contributions from that project, which is intended to build a network of European researchers who work on marine ecosystem dynamics and their uses. Their inclusion in this session linked the ongoing efforts to implement an ecosystem approach with the research interests of this network.

The Theme Session included 17 presentations and a poster. Case histories were presented from the northeast US, the Canadian Atlantic and Pacific coasts, Australia, South Africa, Morocco, and the North Sea. Papers also presented ways to use ecosystem indicators as a tool for implementing an ecosystem approach to fisheries management, the potential of MPAs as an important tool in an ecosystem approach, and how the strategic plans for NOAA in the US and the Eur-Oceans network could contribute to strengthening the scientific basis for implementing an ecosystem approach. Several presentations used tropho-dynamic models to explore possible consequences of different management scenarios, or to seek explanations for changes that have been observed in harvested resources or fish communities.

The modelling papers underscored that for many parts of the world, researchers are still trying to understand basic dynamic relationships in the marine ecosystem. Many of the results suggested there may be so much scientific uncertainty that it actually is premature to inform industry, policy, and management of the likely consequences of implementing an ecosystem approach to fisheries. However, there was remarkable convergence in the messages from all the case histories. The points of convergence indicate that even though the implementation of an ecosystem approach is in its infancy, we do know some aspects of it that seem to be crucial to progress, and have at least partial knowledge of some of the likely consequences.

Points of convergence from the case histories include:

- The need for clear, operational objectives, agreed upon by all the groups which eventually affect decision-making.
- The need for reliable indicators which can be used in support of decision-making, and whose information content and performance characteristics are known.
- The importance of explicit risk assessment, qualitative or quantitative, as a part of support to management. Correspondingly, it is important that the modelling and analysis tools that are used deal realistically with uncertainty.
- There are already several tools available to use in applying an ecosystem approach, and we have partial knowledge of the effects of the tools and conditions under which they can be effective. Key tools include management strategy evaluation methods, incentives – particularly economic ones, and spatial management approaches including marine protected areas.

- Social and economic science experts need to be well integrated with experts from the traditional marine science disciplines.
- Multi-sectoral engagement among science, management, policy, the fishing industry, and other stakeholder groups is essential. This engagement is essential at the objective-setting step, to have societal agreement on what management should be attempting to achieve, but is important at many other steps as well.
- Good communication among all groups is essential, and often requires different approaches to transferring information to different audiences.

The case histories also provided a few insights into the context for implementation of an ecosystem approach. The first is that it is easy for science to make the problem so complex and multi-dimensional that it cannot be solved, at least in the short or medium term. The second is that we are not currently using effectively all the information and knowledge that we have at present. These two insights may appear contradictory, but they are not: it is not necessary to understand all relationships in an ecosystem before it is possible to apply what is known to improve practice.

The final message from all the case histories is that progress can be made, and is being made, at implementing an ecosystem approach to fisheries. However, in doing so, it is clear that an ecosystem approach is much more likely to result in reductions in harvesting opportunities (sometimes large), than to result in increases in harvesting. Hence, there will be large medium-term transition costs associated with an ecosystem approach, and progress will only be possible if these transition costs are acknowledged and addressed in ways which are acceptable to the industries being affected.

## Consultative Committee (ConC)

## 1 Opening

The ConC meeting consisted of three sessions (18, 26, and 27 September) and was opened on 18 September 2005 at 14:00. The Chair welcomed all participants. All ConC members were present, except for the Chair of MCAP who was unable to attend the second and third sessions. The Chair informed the participants that the main objective of the first session was to ensure that the Committee would be well prepared for the ASC.

## 2 Adoption of agenda and timetable

The agenda was adopted with no comments.

## 3 Minutes of Consultative Committee (ConC) May meeting / response from the Bureau

The minutes of the ConC mid-term meeting were adopted.

The Chair went through the Action Points that had been agreed at the ConC mid-term meeting in May:

1) There were no options for the Secretariat to negotiate a better price for accessing the secure wireless system during the ASC in Aberdeen.
2) During the Opening Ceremony the General Secretary would ask presenters to contact their Theme Session conveners at the latest the day before their Theme Session – to ensure that people are present.
3) Establish contact with plenary speakers proposed for the 2006 ASC. This would be dealt with under Agenda Item 10.
4) Very little response had been received with regard to proposals for Theme Sessions in 2007. The Chair reminded the members to encourage proposals for Theme Sessions linked to the two main topics, i.e. the Baltic Sea and the Ecosystem Approach.
5) A letter had been sent in August informing symposium conveners of the publication schedule for symposia until 2008.
6) The Baltic Committee had specifically been asked to carry out a review of Expert Group reports in relation to the ten review points. This would be dealt with in more detail under Agenda Item 13.2.
7) The Secretariat will inform all Expert Group Chairs of the ConC decision to include an Executive Summary (or in some cases to improve the Executive Summary).
8) A discussion paper on Expert Group structure (Conc0905–17(1)) had been distributed to Committee chairs in May. Discussions are scheduled to take place during this year's committee meetings. So far very little response had been received. A draft response had been received from the ACME Chair (Conc0905–17(2)).
9) The interim chair of the Publications Committee confirmed that the evaluation of ICES products and "How to make ICES more visible" was an item on the agenda for the Publications Committee meeting. A suggestion would be presented to ConC at the Monday ConC session.

**Response from the Bureau June meeting:**

The response from the Bureau to proposals made by ConC in May can be summarized as follows and was mostly positive:

- The Bureau had welcomed the suggestion from CONC to review the Expert Group structure.
- The user survey for the ICES Data Centre had been adopted.
- The term of office for Committee Chairs to be extended from three to four years. The Bureau had a neutral view on this suggestion.
- The proposal made by ConC to offer support for young scientists and scientists from countries with economies in transition had been adopted by the Bureau. ConC noted that this year four participants had received travel support of DKK 5000 each.
- The extension of membership rules to include Expert Groups under Science Committees had been adopted.
- The ConC recommendation for a one-day ASC registration fee had been adopted.

The Bureau had:

- asked ConC to come up with new ideas for plenary speakers, especially for the ASC in 2007.
- noted the new procedure by which ConC would focus more on crosscutting and/or difficult terms of reference during the ConC review.

# 4 General arrangements for Annual Science Conference (2005)

## 4.1 Draft resolutions

The Chair strongly urged Committee chairs to review all draft resolutions for their groups and to communicate with Expert Group Chairs regarding problems and significant changes/highlights. It was acknowledged that this procedure would require an extra effort, but it would also allow more time for discussion of any problematic and crosscutting Terms of Reference under Agenda Item 18.

ConC noted a proposal from the Publications Committee to include timelines in Draft Resolutions regarding publications. This would allow for the ICES Secretariat to plan resource allocation. There should be a very clear procedure for handling publications in ICES. This issue was dealt with in more detail under Agenda Item 12.

## 4.2 Action Plan audit

The Head of Science Programme informed the Committee of the recent employment of a data programmer. The administrative database will be built in a modular way. The new programmer has made a start with the registrations (as an urgent matter) and address databases. The next task for him would be the Action Plan and resolutions database. This meant that ConC was not able to review the progress on the Action Plan at this meeting.

ConC decided to set up a subgroup which will provide user requirement specifications to the Secretariat. The group consists of the Chair and Vice-Chair of ConC, and the outgoing Chair of ACFM.

## 4.3 Elections of new Committee Chairs

During the Sunday session, ConC noted that elections were planned to take place in the Mariculture, Diadromous Fish, and Publications Committees and also noted that nomination of a new ACFM Chair would take place during the ASC. The outcome of these elections is as follows:

- Ian Bricknell (Scotland, UK) was elected as Chair of the Mariculture Committee.

- Malcolm Beveridge (Scotland, UK) was elected Chair of the Diadromous Fish Committee.
- Martin Pastoors (the Netherlands) was nominated Chair of the Advisory Committee of Fishery Management (ACFM), for appointment by the ICES Delegates.
- Pierre Pepin (Canada), who during the past year had served as Interim Chair, was elected Chair of the Publications Committee.

## 4.4 Requests to Science and Advisory Committees

### 4.4.1 Theme Sessions in 2006/2007

The Chair went through the list of proposed Theme Sessions (ConC0509–10.2) and identified which Theme Sessions needed follow-up. Chairs were asked to finalize the descriptions of Theme Sessions during the ASC for approval under Agenda Item 10.2.

ConC had accepted 16 Theme Sessions at its mid-term meeting, but there would be room for an additional two or three sessions if good proposals were put forward during the ASC.

### 4.4.2 Discussion on Expert Group structure

The Chair of MCAP summarized the discussion from the MCAP meeting that had taken place earlier the same day. MCAP had reached the conclusion that a "blueprint for the new Advisory Structure" was needed and suggested the possibility of having only one Advisory Committee. ConC agreed that it would be wise to discuss the existing Expert Group structure in conjunction with the possible reorganization of the overall Advisory Structure. ConC agreed to suggest a Workshop on Review of the ICES Committee and Expert Group Performance (WKREP) to be held jointly with MCAP on 15 March 2006 at ICES Headquarters in Copenhagen. The workshop will be open to participation from the entire ICES Community. The feedback received from the ASC Committee meetings on the Expert Group structure and the role of Science Committees would be the starting point for discussions during the 'Open Day' Workshop.

## 4.5 Preparation of Committee Reports

The Chair asked that Science Committee reports should not be merely a summary of all issues dealt with during the Committee meetings. Committee Chairs were asked to focus on the discussions and to highlight the important issues during the Expert Group reviews.

The Head of Science Programme encouraged inclusion of descriptive graphs and other attractive and informative exposures into the reports in order to make them more presentable and interesting to read.

## 4.6 Award Selection Committee

A ConC subgroup had been appointed during last year's ASC, consisting of Tom Sephton, Niall Ó Maoiléidigh, and Cornelius Hammer. The ConC Chair had appointed Tom Sephton as coordinator for the Award Selection Committee ahead of the meeting. One representative from each Science Committee and Advisory Committee was needed to assist in selecting the Best Poster, Best Paper, and Best Newcomer. Theme Session conveners were asked to identify candidates for these awards. The *ad hoc* Award Committee met twice during the ASC.

The Chair suggested Cornelius Hammer (Chair), Heye Rumohr, and Dankert Skagen to form the group for 2006, and Adi Kellermann as representative of the ICES Secretariat. ConC supported this proposal.

ConC recommends approval of the ICES Recognition Programme by the Bureau and the Council.

## 5 Parentage of Expert Groups

The Secretariat had made a proposal to change the parentage of 12 Expert Groups. Based on the discussion under Agenda Item 4.4.2 it was agreed to postpone the change of parentage until after the joint ConC/MCAP meeting in March 2006, during which the overall committee structure of ICES will be discussed. Therefore only SGABC was transferred from ACFM to BCC, and WGEEL was transferred from DFC to ACFM.

## 6 Update on the development of Regional Ecosystem Descriptions in the *ICES advice*

The Chair of ACE provided an update on the work conducted by WGRED. The ecosystem overviews prepared by WGRED were now included in the *ICES advice*. It had proved difficult to keep the overviews to 4–5 pages in length as previously proposed and many were close to 30 pages. Despite their length, the texts had generally been well received within the ICES community, although there had been no feedback from Client Commissions at this time.

The review of the WGRED texts in 2005 was felt to be a little confused and it was not clear which Advisory Committee(s) had responsibility for these reviews. It was agreed that the process of reviewing the ecosystem overviews should be simplified in 2006, as the basic texts are already in existence and WGRED and the Committees will be further refining them and adding new information. To ensure that clear responsibilities could be identified during WGRED and the review process, the Chairs of WGRED and the Advisory Committees agreed to establish a clear timetable for the review process.

## 7 Review the status of ICES Symposia including Young Scientist Conference

The Head of Science Programme updated ConC on the latest developments with ICES Symposia, and ConC noted that all symposia are well on track.

ConC recommends approval of three new symposia:

Co-sponsorship with IRD, IMARPE, and FAO of the Symposium on "The Humboldt Current System: climate, ocean dynamics, ecosystem processes, and fisheries" to be held in Lima, Peru, in November 2006: The Chair of Publications Committee informed ConC that a free slot for publication of the proceedings in the *ICES Journal of Marine Science* is available in 2007 and that this would increase the visibility of the *Journal*. He also made it clear that a large volume would require additional funding.

Co-sponsorship of the Symposium on Marine Protected Areas to be held in Murcia, Spain, from 24 to 28 September 2007: ConC noted that publication in the *ICES Journal of Marine Science* has been scheduled for 2008.

Co-sponsorship with possibly PICES and IOC of the Symposium on "Effects of Climate Change on the World Oceans" to be held in Gijón, Spain, in spring 2008: ConC noted that publication in the *ICES Journal of Marine Science* would be possible if the conveners can find funding to cover the costs of a supplement.

Three other Symposia are suggested for 2008, 2009, and 2010: the International Polar Year Symposium, the Marine Mortality of Salmon, and the Symposium on Ecosystem Approach.

**Action:** Firm proposals for the last three symposia will be drafted for the 2006 mid-term meeting.

## 8 Review of the final report from SGPPE

The Study Group on ICES Publication Practices regarding Ethical Concerns on the Use of Animals in Scientific Research (SGPPE) had been established in 2004 and had been tasked by ConC to produce a paragraph for the *ICES Journal of Marine Science* that clarifies the *Journal*'s position with regard to the ethical use and treatment of animals in experimental research. A paragraph was produced, which was reviewed and agreed upon by ConC. It will be inserted into the Directions for Authors in the ICES Journal. The Study Group was dissolved upon the completion of the exercise. The Chair thanked Tom Sephton for chairing SGPPE and for finalising the report.

## 9 Lessons learned from 2005 ASC

ConC evaluated their experience from the 2005 ASC regarding the technical arrangements and the scientific contents of the conference. In general ConC concluded that it had been a successful conference.

**Technical arrangements:**

- The conference facilities were very good and ConC was very pleased with the arrangements made by the local organising committee.
- There was a lack of small meeting rooms for *ad hoc* meetings. In future the ICES Secretariat should book a few small meeting rooms in excess for *ad hoc* use, given that the cost is reasonable.
- The lunch arrangements were excellent!
- The new concept of a less formal conference dinner was highly appreciated.

**Registration:**

ConC noted that in recent years the number of ASC participants had seen an increase. The ASC has developed into a very popular venue for scientists to meet and discuss scientific challenges with colleagues. The main reason for this success is most likely related to the scientific contents of the conference. However, another reason might be that the registration fee is strongly subsidised and that the ASC is much cheaper to attend than other conferences. The possibility of changing the fee structure was discussed to limit the number of participants in the future. A bigger meeting would mean more restrictions as to venues/conference centres, which would have to be big enough to accommodate a large audience. It was commented that if the ICES ASC continues to see an increased number of participants and at the same time maintains the relatively low registration fee, the meeting might impose a very heavy financial burden on future host countries.

The number of different fee categories causes confusion. For future conferences, it was suggested to have a more simple system:

- An early fee for all participants (except for students) registering before 31 August
- A late fee for all participants registering after 31 August
- A one-day fee
- A student's fee as we have today.

In addition, there would be free admission for the Theme Session conveners, ICES staff and ICES officials and members of SPICES as we have today.

The possibility to link the submission of abstracts to an early registration was also discussed. It was agreed that submissions would only be published on the conference CD-ROM, and appear in the final programme, if at least one of the authors had registered in advance and would

attend the conference to present the work. This would be to avoid the number of "no shows" that we have today.

**Action**: ConC agreed to leave it to the Secretariat to prepare a new set of rules/guidelines regarding registration, to ensure that people who submit papers have also registered for the conference. The new guidelines will be discussed at the 2006 ConC mid-term meeting.

**Science Committee meetings**

ConC discussed the experience of having Science Committee sessions running in parallel with Theme Sessions. The Committee noted that:

- owing to the overlap between Science Committee meetings and Theme Sessions, it was difficult for ASC participants to join the Science Committee sessions. Nevertheless, most committees were pleased with the number of participants during their deliberations.
- the term 'Business Session' does not convey the desired sense of a scientific meeting. One suggestion was to use the term "ASC Committee Meeting" to increase participation in these sessions.
- future contents of the Science Committee sessions should include more scientific discussions; inviting a keynote speaker to Science Committee Sessions with subsequent discussions would give more value to these meetings.
- the number of national Delegates participating in the Science Committee meetings was low. This created problems during the election of Chairs in two Science Committees because the required number of voting members was not present.
- despite being clearly emphasized in the ASC Handbook, not all ASC participants are aware that they are allowed to go to Science Committee Meetings. It was therefore suggested to explain the value of the Science Committee meetings to ASC participants during the Opening Session. It was agreed that this would be a very important point for next year's conference.
- the issue of membership in Science Committees and the possibility of changing the Rules of Procedure. Currently, two national members are appointed per committee. As an alternative, Expert Group chairs could become Committee members and reduce the number of national appointees to one per committee. There is an urgent need for travel funds provided to Expert Group Chairs to enable their attendance at the ASC in order to improve communication between various scientific disciplines. The membership of science committees will be discussed at WKREP on 15 March 2006.

In conclusion, ConC agreed to schedule Science Committee meetings for half a day in the middle of the week during the 2006 ASC. This half day should be exclusively for committee meetings with no Theme Sessions running in parallel.

**Miscellaneous**

- ConC noted the low attendance on the closing day.
- The point was raised whether CM papers should be named differently. The Chair of Publications Committee pointed to the fact that if you search databases for anything other than CM documents it would lead to potential confusion and loss of access. ConC therefore recommended that the CM label be kept for reasons of continuity, and because the CM is part of the Unique Identifier (UID) for data storage.

# 10 Development of programme for the 2006 Annual Science Conference (Maastricht, the Netherlands)

## Meeting arrangements

ICES Meeting and Conference Coordinator, Görel Kjeldsen, presented meeting documents Conc0509–10 and 11. The 2006 Annual Science Conference will be held at the Maastricht Exhibition and Congress Centre (MECC) in the Netherlands 19–23 September with ICES Committee meetings running 17–26 September.

The meeting facilities at MECC are excellent and very modern. The conference centre is situated in the outskirts of the city of Maastricht with a number of bus connections and a train station nearby. The registered participants will receive free bus passes. There are a number of hotels in various price categories near MECC and in the city of Maastricht. The host will not provide catering during the 2006 ASC, but there are cafés and restaurants in the conference centre and in the hotel next door.

A technical requirements document has been handed over to the company in charge of the technical support during the conference.

ICES will ask the local organizing committee to ensure that we can have access to the conference centre already on Saturday 16 September to test the technical equipment.

A conference agency has been appointed to handle all the hotel reservations and to set up the social events programme.

The representatives of the host country have informed ICES that they are planning to invite the EU Environment Commissioner, Stavros Dimas, Greece, for the Opening Session because all the Dutch ministers will attend the opening of the Parliament on that day.

## 10.2 Review of proposed Theme Sessions

ConC reviewed the list of proposed Theme Sessions for 2006. Of the 16 Theme Sessions agreed to during the mid-term meeting, two were postponed to 2007 and four new ones were added to the list. Altogether, there will be 18 Theme Sessions in 2006 – the same number as in 2005.

## 10.3 Invited lectures and other special events

**Open Lecture**

Carlo Heip, the Netherlands, has accepted the offer from ICES to give the Open Lecture in 2006. He is Chair of the MARBEF EU-funded research network and is well-known in Europe for his benthic and biodiversity research over a long period.

**Plenary Lectures (Thursday and Friday)**

For plenary lectures ConC agreed to invite:

1) Svein Sundby, Institute of Marine Research, Bergen, Norway. Title: Marine ecosystems and fish stocks under climate variability and change
2) Lesley Rickards, British Oceanographic Data Centre, Liverpool, England, UK Title: Marine Data – A Big Issue

# 11 Development of programme for the 2007 Annual Science Conference

## 11.1 Meeting arrangements

A preliminary reservation has been made at the Marina Congress Center in Helsinki Saturday 15 September–Tuesday 25 September. The 2007 Annual Science Conference will take place Tuesday 18 September–Saturday 22 September. The dates have not yet been officially approved by the Delegates.

ConC noted that the arrangements for 2007 should allow a certain flexibility in the programme. Solutions to avoid overlap between Theme sessions and Committee sessions were considered important and some thoughts on this are presented in this report (see Section 9). A suggestion from the Chair for starting "business meetings" on the Saturday before the ASC to give space for Science Committee meetings on Monday did not receive enthusiastic support.

## 11.2 Review of proposed Theme Sessions

At the mid-term meeting, ConC had agreed on two broad topics for the 2007 ASC: the Ecosystem Approach and the Baltic Sea. There were 20 proposals for Theme Sessions on the table by the end the ASC, but only one theme on the Baltic Sea. It was noted that there was an imbalance in the distribution of Theme Sessions between the four ICES Strategic Goals. The Chair encouraged ConC members to go through the list carefully and contact relevant scientists to fill in gaps, preferably before the ConC mid-term meeting in March 2006.

## 11.3 Invited lectures and other special events

**Open lecture**

A suggestion for Jorge Csirce (FAO Fisheries Division) was put forward. He has been at FAO since 1980 and is involved in the Symposium on the Humboldt Current.

**Action**: The Chair of FTC will contact Jorge Csirce and ask if he is willing to give the open lecture in 2007. The Chair of FTC will report back to ConC at the 2006 mid-term meeting.

**Plenary lectures**

At least one of the plenary talks should be about the Baltic. It was mentioned that the problems related to grey seals/salmon and management development are 'hot topics' in Finland and could be a possible topic for a plenary lecture.

Fritz Köster (Denmark) is a possible candidate to talk about the Baltic ecosystem and he is willing to do so.

A second talk should be on the applications and evaluations of gear-based technical measures in fisheries management, including discard reduction, selective fishing, vulnerable species, and habitat impacts. It was proposed that someone from North America would be appropriate to convey the different experiences in this field between N. America and other areas.

**Action**: The Chair of LRC will do the necessary fieldwork before the 2006 mid-term meeting.

# 12 Publications Committee [PubCom]

The Chair of Publications Committee presented the highlights from the first meeting of the Publications Committee under its new membership structure:

- Procedures for Symposium endorsement of publications. Key role of ConC is in establishing priority (High, low, medium) – this will influence whether the Publications Committee will recommend publication in *ICES JMS*.
- Publications are too long underway. One publication has been in the process since 1996, and has still not been finalized. Proposals for *CRR*s should be based on work completed, not just anticipated. ICES Secretariat makes a commitment in terms of personnel, and timelines would allow for the Secretariat to plan better.
(Suggestion: Brief document description in outline. Identify timeline. ToR for Committee to draft resolution).
- Development of a tracking database for proposed publications and timelines should be a high priority for ICES.
- Another key priority identified by the Publications Committee is to ensure that sufficient resources are allocated to publications within the ICES Secretariat. The Publications Committee strongly recommended that working hours for the ICES Technical Editor should be increased to full time (from 60%). ConC was asked to convey this message to ICES/the appropriate channels.
- Expert Groups have been asked to identify more topics that can be published through *CRR*s, which means that there will be an increasing demand on ICES Editorial and Secretariat personnel.
- The quality of manuscripts that ICES receives is not always good. There is a heavy workload for the Secretariat to structure and edit the text. Two levels of review were identified: 1) Overall clarity of language, and 2) Quality of Science. A catalogue of skills among Committee Members should be developed, and then scientific review of publications, e.g. *CRR*, should be delegated to the person with the most expertise.
- The Publications Committee will provide a new paragraph in the guidelines for authors to put more emphasis on importance of CM documents, i.e. inclusion of papers on CD-ROM.
- The Publications Committee recommends that Theme Sessions are highlighted in a very positive way in the Annual Report. The Annual Report might be restructured slightly.

ConC acknowledged the Publications Committee Report and recommended that:

- the working hours for the ICES Technical Editor should be increased to 100%;
- ICES give priority to the development of a publication tracking database;
- draft resolutions on publications should not be put forward until significant preparatory work has been carried out.

## 12.1 Suggestions from PubC on how to make ICES more visible

Recognising the valuable work and achievements of the ICES Communications Officer, the Publications Committee had been asked to suggest additional ways of making ICES more visible. In response to the question posed by ConC the following suggestions were made:

- The scientific audience is well aware of ICES – the key weakness is with the general public;
- There could be improvements to the website (to be identified) that enhance access to all users;
- Highlighting important publications (e.g. *CRR*s, symposia, “neat” science bits reported at ICES) through press releases could make ICES appear more “reachable”;
- Ask Expert Groups if there are elements of their work that could be provided to the public using layman’s terms (e.g. pamphlets);
- The ICES Communications Officer is on frontline for this; could be assisted by marketing/public relations consultant.

The ICES President emphasized that making ICES more visible has high priority within the ICES Council. Publicity has implications for policy-making and politics in general. The President also supported the view that ICES Expert Groups should provide highlights of new findings that could be aimed at the public or in developing material for general education purposes.

### 12.2 Other issues

ConC supported the recommendation from the Publications Committee for a new publisher for the *ICES Journal of Marine Science*.

## 13 Issues from Science Committees

### 13.1 Report from Science Committee meetings and impression of Theme Sessions

Science Committee Chairs were invited to present highlights from their committee meetings.

In spite of overlap with Theme Sessions, most Science Committee meetings had been well attended. Complaints about overlaps had come from people who could not attend committee deliberations, meaning that attendance could be even higher. However, in general, there is still a need to improve attendance of Expert Group chairs and especially national Committee Members. Some points raised under the presentations:

**Baltic Committee (BCC)**

- Approximately 80% of members attended the meeting and they were very enthusiastic;
- BCC proposed a Study Group on Integrated Assessments in the Baltic Sea, (SGIAB) to be established. The Group will provide a framework for Integrated Assessment of the Baltic ecosystem (in terms of data collection and management, assessment methodology, and network of Expert Groups responsible for the assessment) as a step towards implementing the ecosystem approach in the Baltic. The time scale for implementation of this new structure will be approximately two years;
- Too much time was spent on presentations of Expert Group reports.

**Living Resources Committee (LRC)**

- The meetings were well attended, and for several Expert Groups, both the incoming chairs and outgoing chairs attended. Only five members of the Committee was present, of which three were Expert Group chairs;
- Even though more time than planned was spent on examining the reports, the Chair and attendees felt that the resultant discussions were very fruitful.

**Resource Management Committee (RMC)**

- There is a lack of communication between Expert Groups in ICES – many groups are dependent on input from other Expert Groups. Therefore, it is important that Expert Group chairs attend the ASC;
- The Committee suggested a need to revitalise multispecies work in ICES. Considering the impact on management strategies, one often has to think in a multispecies context. A big international exercise is needed to analyse stomach content material for this purpose;
- The Working Group on Methods of Fish Stock Assessments (WGMG) should be re-established when there is progress on methodological problems. No new meeting planned for next year;

- To have a committee meeting on the last day was not a good idea owing to low participation.

**LRC/RMC joint meeting**

- The meeting was well attended by Expert Group chairs and the joint meeting was an excellent forum for the exchange information between scientists from different Expert Groups.

**Oceanography Committee (OCC)**

- The meeting was well attended by Expert Group chairs and about ten committee members;
- A few Expert Groups have problems with weak participation, and there is a need to find ways to fertilize these groups with new scientists instead of closing down EGs addressing important aspects of the ecosystem;
- One of the main challenges for ICES is to bring forward important results of status, variability, and trends in our ecosystems. Currently, the dissemination of information from Expert Groups tends to be limited to the Expert Group reports. If the Oceanography Committee is to remain viable the members should take on-board the responsibility for this information flow to provide an aggregated short information product, in particular on highlights of extreme events, important challenges which need to be addressed, and major scientific achievements. If all Science Committees start a similar process, ConC can then produce an aggregated cross-committee meta-information source that would encourage and promote collaboration between Expert Groups in support of the "ecosystem approach" of ICES;
- OCC recommends that the ICES Secretariat find ways of operating interactive Expert Group web-pages similar to those being set up for some Expert Groups at individual institutes.

**Diadromous Fish Committee (DFC)**

- The Committee was pleased that it had a stimulating debate and they have proposed jointly organized ASC Theme Sessions and Symposia;
- The Committee carried out reviews of progress of Expert Groups, following the ten review points.

**Fisheries Technology Committee (FTC)**

- 25–30 scientists attended the Committee meetings, but only a few Committee members were present;
- FTC feels a little isolated from the rest of the ICES community. There is mainly one-way communication from FTC and they feel that they receive little feedback from other areas in ICES. The Chair of ACFM commented that the work of FTC was important for the Advisory Programme.

**Mariculture Committee (MCC)**

- The meeting was well attended, but only eight members were present, which was too few for the election of the new chair. The Committee felt it had excellent participation by Expert Group chairs.

**Marine Habitat Committee (MHC)**

- Much better Committee meeting this year compared with last year. The meeting was well attended, but fewer than ten members were present. The presence of Expert Group chairs is extremely important.

Based on the reports from the Science Committees, the ConC Chair expressed his concern regarding inefficient communication between Expert Groups, which results in only limited

knowledge of other groups and what they do. He encouraged Committee Chairs to help Expert Groups to improve communication and become more active in exploring the ICES structure.

The ConC Chair felt that too much time was spent here on reporting the Science Committee meetings. The Science Committee Chairs responded that this was the only opportunity to exchange information between Committees. It is important to bring problems to the next highest level of ICES, and this means ConC. It is important that the views expressed by Committee members are heard. It was suggested to combine the discussion of Expert Group Terms of Reference with the reports from Committees in the future. The Chair will take all views into consideration and readdress this year's procedure before the next ASC ConC meeting.

The number of Theme Sessions was agreed to be appropriate this year, although some Theme Sessions included papers that did not really match the theme title. Moreover, too many presentations were advertising project business or project plans. In future, conveners will be strongly encouraged to sort submissions in terms of quality and not be reluctant to reject contributions to keep the session focused and manageable. It was agreed that it would be better to have fewer papers in more Theme Sessions, rather than a great variety of papers in fewer Theme Sessions. It was agreed that no Theme Session should last for more than one day. ICES has always been the forum for inspired, new topics, so perhaps Committee meetings should also be reopened for scientific presentations. On the other hand, previous experience with completely open sessions has been negative because presenters often tend not to show up for this type of session.

## 13.2 Review of Expert Group reports – the ten review points

The Chair of the Baltic Committee informed ConC about the review process that had been undertaken by his committee. It had not been possible to recruit reviewers from outside the ICES community, but he had finally succeeded in finding two reviewers from inside.

Points raised during discussion:

- The main purpose of the review process is for ConC to ensure that each Expert Group is doing a good job for ICES and for the Expert Group to get sufficient feedback;
- The review process should be a quality control to ensure that the scientific reasoning is correct;
- Should the quality control be carried out by committee members?
- Good reports should be published through ICES *CRR*s or Journals – even ICES CM documents are visible to a wider audience for appraisal.

ConC agreed to revisit the ten review points at the 2006 mid-term meeting.

## 13.3 Salmon at Sea, SALSEA programme

The Chair of DFC, Niall Ó Maoiléidigh, gave a presentation of the SALSEA programme agreed by the SALSEA Research Board. He had been asked by NASCO to bring this forward to the ICES Consultative Committee.

The Diadromous Fish Committee was requested to keep ConC up to date on the progress with SALSEA.

## 13.4 International Polar Year

The ICES Head of Science Programme gave a progress report on the proposal for an ICES Symposium in autumn 2009 or spring 2010 related to International Polar Year (IPY). Of more than 900 expressions of interest for the first round, it turned out that ICES was the only organization proposing a symposium. A proposal for a second round will be submitted to the

IPY Joint Committee before the deadline on 30 September 2005. Venue: Norway has been suggested, and also Cape Town in South Africa.

## 14 Issues from MCAP and Advisory Committees

The Head of Advisory Programme (in the absence of the Chair of MCAP) presented the MCAP discussion related to the Workshop on Review of the ICES Committee and Expert Group Performance (WKREP). Taking into consideration input from the committees presented at this meeting and any additional input submitted before 1 December 2005, the Chairs of MCAP and ConC will prepare a discussion paper on the ICES structure, which will be issued around 1 January 2006. This paper will be the background document for discussions to be held on 15 March.

**ACE**

The Chair of ACE highlighted the following points:

- Discussions on arrangements for the forum for WG Chairs (AMAWGC)/WGRED. The two groups will meet back-to-back. The invitation to Science Committee Chairs will be extended to this meeting, to give strategic advice to Science Committee groups. The meeting is planned for February 2006.
- Members felt that the current ICES structure is good and that focus should be on fixing individual problems instead of disturbing the whole structure. ACE members are now assigned to three Science Committee groups to ensure that BEWG, WGSE, and WGFE deliver the work they are asked for.
- REGNS process – ACE is pleased with the progress within REGNS and actively supports further development.

**ACFM**

The Chair of ACFM made a short presentation noting that:

- ACFM's strategy has been developed and documented in a rolling Action Plan. ACFM has a good follow-up on lines they want to pursue: actions on the incremental implementation of an ecosystem approach, on long-term management plans, and on mixed fisheries forecasts and advice.
- Extension of the AMAWGC model to include Science Committee Expert Group Chairs. The business for Stock Assessment chairs is heavy, but Science WG Chairs could really benefit from participating, as well as potentially benefiting the stock assessment process.
- The plan to reorganize three pelagic groups into two, which was discussed during the first meeting, was not approved by ACFM. ACFM will continue work to find an appropriate structure for the pelagic stock assessment groups.

**ACME**

The Chair of ACME summarized as follows:

- Provision of *ICES Advice*. The Committee will need a better structure to deliver advice without a physical meeting – much of the Committee work will need to be done intersessionally. The Secretariat has offered new software that will facilitate this form of work.
- In-depth review of Expert Group reports. Committee Members have expressed fears that ACME is duplicating the efforts of the Science Committees. This should be addressed in March.
- Communicating advisory research needs within the ICES system. ICES needs to find a more efficient structure for communicating needs from ACME to the Expert Groups and in particular their Chairs. The current system includes having

ACME shadows present at Expert Groups who will be responsible for keeping close contact with relevant Expert Groups.

## 15 Follow-up on Expert Group recommendations to ConC

WGECO had sent three recommendations to ConC for consideration, while SGQAE had sent one.

The first recommendation from WGECO was related to establishing a process to ensure that Expert Groups supporting the advisory function are familiar with a broad array of risk management and scenario exploration tools. ConC felt that this had been dealt with by establishing the Study Group on Risk Assessment and Management Advice (SGRAMA) under RMC.

WGECO Recommendation 2 asked ConC to "ensure that there is an evaluation of the lessons learned from the REGNS and Baltic efforts to undertake integrated ecosystem assessments…". The Chair of ACE would be happy to undertake a review of REGNS since it is very relevant to ACE. ConC welcomed this suggestion.

The last recommendation from WGECO suggested the preparation of a "Plan of Action to build functioning links to the social science community, and to the communities of experts providing science support for management of human activities in (or affecting) the seas which are not within the scope of the Advisory Committees as they currently operate." ConC agreed that this was an important issue, but also felt that it was too early to make specific recommendations to ICES Delegates.

SGQAE recommended that "ICES reviews its decision to only adopt ITIS codes for the biological community database". ConC agreed, and recommended that ICES reconsider the use of ITIS as the only system. It should be complemented by other, existing and functional database systems, such as ERMS and NARMS. Activities are already well on the way. The Head of Science Programme has organized a meeting on the occasion of the CoML/OBIS International Steering Committee in Frankfurt in early November to discuss the issue with the main actors, including ITIS representatives. A solution will be sought, which will allow ITIS to better meet user's requirements.

## 16 Follow-up on other actions agreed at the Consultative Committee meeting in May

### 16.1 ICES involvement in Research Programmes and ICES Position Document

The Head of Science Programme reported on progress with a full proposal for the International Polar Year 2007/2008. An Expression of Interest (EoI) had been submitted to the IPY authorities in April as agreed during the mid-term ConC meeting. It turned out that more than 900 proposals were submitted to the British Antarctic Survey (BAS), which is charged with processing the EoI's. BAS grouped these according to major themes and crosscutting issues, identifying key EoI's in each of these. ICES had been charged with taking the lead for symposia with others who, however, felt this liaison was less appropriate. Subsequent activities yielded a number of topics, forming about 16 Theme Sessions from a broad scope of disciplines. Participants from seven countries were involved, some of whom represent a consortium of several projects which had also submitted EoI's. Theme Session titles have to be considered as preliminary, pending approval of the EoI groups. The ICES IPY symposium is scheduled to be held in 2009 or 2010, possible host countries being the "classically polar nations" such as Norway, or ICES affiliates active in Polar Research such as South Africa.

The full proposal will be finalized and submitted online before 30 September (Second call).

The Head of Science Programme presented the "ICES Science Position Paper" which he had drafted and which had also benefited from input by some Committee Chairs. The document is considered to be a developing discussion working paper which may be regularly updated. It is complemented by the Annex 1 document of the 2005 ACE Report which focuses, in more detail, on issues related to the European Marine Strategy. The ICES Science Position Paper is aimed at filling the gap between the ICES Strategic Plan and the Action Plan as a more tangible science document. The Paper outlines the current mainstreams of marine science, describes and analyses the legal framework of ICES operations, tries to identify the strong points and the weaknesses of ICES, and finally tries to draw conclusions on what ICES should focus on in the future.

The ConC Chair questioned if methane hydrates is something ICES should deal with in the future, and he lacked a description on ecological modelling. Chairs are invited to critically review the Paper with feedback to the Head of Science Programme before 30 November. The document will be considered again at the 2006 ConC mid-term meeting.

**Action**: Chairs to comment on the Position Paper before 30 November 2006.

## 16.2 European Marine Strategy

The ACE Chair presented the meeting document Conc0509-16.2 "Future Science needs of ICES". The document is the output of considerable discussions at the ACE meeting in May related to the European Marine Strategy. He encouraged the Committee Chairs to consider where this would contribute to or inform some of their work.

The Head of Science Programme presented the EMMA group, which is in charge of monitoring the development of the European Marine Strategy. The group met in May 2005 at the European Environment Agency (EEA) in Copenhagen. ICES was represented by the Head of Science Programme. The EEA introduced WISE (Water Information System for Europe), which is intended to develop into an environmental database hosting raw data and indicator data for various reporting purposes. One of these is the regular Pan-European Assessments by the EEA. Owing to long-term, routine commitments by the Regional Commissions, new conceptual frameworks for these Pan-European Assessments will not be operational before 2015.

The further work of EMMA will be guided by a newly established Core Group, consisting of the EEA, DG Environment, the Joint Research Centre (JRC, Ispra, Italy), ICES, and the Regional Commissions. ICES and JRC have been commissioned to draft a Science Paper to initiate a discussion in the Core Group and for transfer of research ideas into the Commission, DG Environment, and DG RTD. They encouraged direct contacts for the efficient transfer of research needs to be considered for implementation and funding. The draft was finalized by the end of August and available at the meeting. Research needs identified by ICES Expert Groups were considered. The meeting of the Core Group was scheduled for November 2005.

The ConC Chair felt it was important to benefit from the good work done by ACE, and asked the Head of Science Programme to use the ACE document in future discussions on EMMA. ConC will be updated on progress at their next meeting. There may also be input from ICES into the EC 7th Framework Programme.

# 17 Review of ICES structure

## 17.1 Roles and effectiveness of Science Committees (and)

## 17.2 Review of the Expert Group structure

These two agenda items were combined. The issue related to the ICES organization was discussed at a number of points, e.g. Agenda Item 9 and 18.

ConC ended up with two keywords for improvement: Communication and Commitment.

### Communication

Points raised during the discussion:

- Build bridges between those Expert Groups that need to communicate, rather than create a large forum for all Expert Groups.
- Improve the communication flow. We are often less aware than we should be of what is happening outside our own field. It was obvious from some of the science committee meetings that Expert Groups would also have benefited from better communication within the committee.
- Expert Groups are encouraged to produce better Executive Summaries as outlined during the ConC mid-term meeting in 2005. All summaries could be made available to all Expert Group chairs by e-mail.
- Information has to be reduced to key highlights, otherwise people will not be able to absorb and act on the information presented to them.
- Improved communication should not only include flow of information between Expert Groups and Committees, but at all levels within the organization. There are examples where Expert Group participants are largely unaware of their role in the ICES system.
- The Secretariat should compile and circulate the Executive Summaries, including the highlights of the Expert Groups for each committee, to facilitate communication of scientific results.

### Commitment

Issues touched on during the discussion:

- Committee members should be committed to their role before they take it on. A well-functioning committee requires a great deal of work from the Committee Chair and its members. More work could be delegated if Committee members would respond to letters from the Chair.
- National Delegates should be more diligent in regard to their duties and commitments to ensure functional working structures in ICES. For instance, they should care more about what is going on in the Committees, e.g. upcoming elections; all Delegates are informed about upcoming business well in advance.
- Expert Group chairs should attend the ASC and the Science Committee meetings, and the Delegates should raise necessary travelling funds. The participation of Expert Group chairs will improve the communication process.
- Lack of commitment was not unique to Science Committees. There is often very little response to e-mails at all levels in ICES.

The General Secretary recalled why Science Committees were set up. Originally the committee members were national points of contact and a source of relevant expertise and knowledge. Today this has changed, and there is less need for national contact points and thereby national appointees in the Science Committees. ICES needs experts that are committed to carrying out the necessary work and who have sufficient national support.

There is no real need for large changes in the composition of Expert Groups. There is a need for better communication between Expert Groups, and this is tied to commitment. With a few exceptions, the Expert Groups are functioning well. A good example of a functional unit of Expert Groups and Committee is the Fisheries Technology Committee, where the topic provides a unifying profile for all constituent groups. It should be noted that FTC comprises only two Expert Groups and a group of directly linked Study Groups and Planning Groups. The value of having a large Expert Group chair meeting, such as the Annual Meeting of Assessment WG Chairs (AMAWGC) was questioned, although AMAWGC works very effectively. It is rather about building bridges between disciplines and committees, and the ASC should be the venue for this.

There was no firm conclusion on the future of the Science Committees. It was recognized that there was a need for a coordinating body; what it is called is not that important. However, it is important to have the right people on the Committees and that the Committees have an open membership.

It is also obvious that Science Committees can contribute a lot to the advisory system if we are able to slightly change the way the system functions.

**Action:** The Chairs of MCAP and ConC to compile a discussion paper for WKREP, consisting of input from all committee reports, including the Advisory Committees.

### 17.3 Timing of Expert Group meetings in relation to each other

This agenda item was dealt with individually during the review of draft resolutions (Agenda Item 18).

## 18 2005 Draft Resolutions

The Chair reminded ConC about the decision last year of making the Terms of Reference (ToRs) more result-oriented. Words like “discuss”, “continue to”, and “review” are too vague, while “report on” and “finalize” indicate a more active attitude. After a short discussion it was agreed that this change of culture is a continuing process. By 2008, all Expert Groups are expected to have action-oriented Terms of Reference.

The review of ToRs was carried out as agreed at the mid-term meeting. The Committee chairs presented the scientific background for the work carried out by the different Expert Groups. This way ConC could focus more on crosscutting issues, instead of spending time on the wording. ConC also added some Terms of Reference, where appropriate, to some of the Expert Groups to improve collaboration between Expert Groups working on similar issues. At the end it was concluded that this was a good way of dealing with ToRs, because the scientific background thus becomes the most important issue.

As a consequence, several breakout discussions were held during the day on issues related to the Terms of Reference. There was a discussion on the role of ConC and the need for better communication and interaction between the Advisory and Science Committees. The point was raised that there is a need to establish a mechanism for Expert Groups to feed into other groups and for ICES to become more efficient. As an example, the use of fishing effort data were mentioned (many groups do not know how to interpret this data).

When discussing the structure several participants noted that the “AMAWGC structure” introduced under ACFM was a good framework for bringing the Expert Groups closer to ICES. AMAWGC is a meeting which acts as a forum for Expert Group chairs where research and advisory strategy can be discussed and joint efforts coordinated. ConC realized that the current AMAWGC ToRs are heavily biased on advisory issues and that many topics will be of inter-

est only to a rather narrow group of fish stock assessment chairs. The ToRs should therefore be amended to reflect the broader scope of AMAWGC. The meeting will be structured with a general session followed by subgroups, where issues specific to the group categories can be discussed. The ConC chair will work with the chairs of the Advisory Committees to develop a suitable framework for AMAWGC.

The Expert Groups under ACFM have very specific ToRs, aiming to help ICES give the best possible advice. The ToRs are mainly related to requests from Clients, so there were few comments to these ToRs. The Expert Groups under the Science Committees mainly establish their own ToRs, aiming at promoting good science to the benefit of ICES (a bottom-up process). This requires a more careful screening of the ToRs, a process that mainly takes place in the Science Committees.

ACME has proposed a Term of Reference to a number of Expert Groups under the Marine Habitat, Mariculture, and Oceanography Committees (MCWG, WGBEC, BEWG, WGMS, WGEXT, WGPDMO, WGHABD) in which they are asked to "discuss and report on potential contributions for the ecosystem overview of the Advisory Reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in the ecosystem attributes." The goal is to provide habitat and water quality information for the Advisory document for 2007, or at the latest 2008. The ACME Chair will contact these Expert Groups and explain in more detail their request for guidance.

REGNS had prepared two specific Terms of Reference to get sufficient background material for their meeting. ConC endorsed these ToRs according to the suggestions from REGNS.

WGRED had changed its working procedure and does not need input from other Expert Groups in 2006. ConC noted this and changed the existing ToRs accordingly.

ICES has two Expert Groups related to data management, one which consists mainly of data managers (WGMDM) and one consisting mainly of users (SGMID). ConC suggested that these groups meet jointly to prepare for a merger into one group consisting of both data managers and data users.

OCC reported that WGPE had a problem with poor attendance. A specific ToR was added where they were asked to look for new members, and several ToRs were rephrased to attract more participants.

ConC felt that the "Workshop on the Decline and Recovery of Cod Stocks throughout the North Atlantic including tropho-dynamic effects" (WKDRCS) under OCC, needs a broad announcement. The discussions here will be highly relevant for assessment scientists. The dates for the workshop should therefore not overlap with, e.g. AFWG. The OCC Chair will contact the conveners.

MCWG has for many years had a very long list of Terms of Reference. MHC had carefully reviewed the suggested ToRs and reduced them to half. ConC appreciated this initiative.

RMC suggested establishing a new Study Group on Risk Assessment and Management Advice. Risk assessment and risk management are important fields in several branches of science. The new study group (SGRAMA) aims to draw on the experience from other branches of science and to include that experience in the development of risk assessment and risk management in fisheries science.

ConC recommended co-sponsorship of three new Symposia:

"The Humboldt Current System: climate, ocean dynamics, ecosystem processes, and fisheries" to be held in Lima, Peru, in November 2006, a Symposium on Marine Protected Areas to be held in Murcia, Spain, from 24 to 28 September 2007, and the Symposium on "Effects of Climate Change on the World Oceans" to be held in Gijón, Spain, in Spring 2008.

The Fishery Technology Committee put forward a Category 4 draft resolution on the OMEGA mesh gauge. The mesh gauge had been developed during an EU-project with many ICES participants and the manufacturing company from the outset. The question was raised if there is any involvement of ICES officials in the production of the gauge and if there would be any conflicts of interest. The General Secretary was requested to ask the initiators of the resolution to clarify and confirm that this is not the case. The General Secretary suggested that it would be helpful to include a statement on this in the letter that would go out about the new mesh gauge.

The Chair of the Publications Committee reiterated his encouragement to Expert Groups to report to the Publications Committee as early as possible when a CRR is emerging from Expert Group work. This year there were several resolutions on new publications.

## 19 ConC ToRs and date for mid-term meeting 2006

The next meeting will be held on 14 and on 16–18 March 2006 at ICES Headquarters.

The 14 March will be a half-day of the joint MCAP / ConC meeting to prepare for WKREP. The first half of 16 March will be used to summarize the Workshop, while the remaining part will be devoted to the ToRs. The early mid-term meeting of ConC means that the Chair and the Head of Science Programme will be given the responsibility to prepare the final programme for the 2006 ASC. The programme will then be circulated to ConC members for approval.

**Action**: The Chair of LRC and ACE were charged to prepare the March discussion.

## 20 Any other business

**MoU between NAMMCO and ICES**

The General Secretary presented meeting document Conc0509–20.1 and explained that ICES would like to formalise communication and cooperation via Memoranda of Understanding (MoU) with organizations that we communicate with (and provide information to on request), to strengthen the communication. A ConC member enquired whether a MoU between IWC and ICES exists; the answer was no. Some rephrasing would have to be made to the document. ConC agreed to recommend the establishment of a MoU between NAMMCO and ICES. The document would then be brought to the attention of the Bureau.

## 21 Closing

Chair thanked the outgoing committee chairs, Tom Sephton (Mariculture Committee), Niall Ó Maoiléidigh (Diadromous Fish Committee), and Poul Degnbol (ACFM), for their dedicated work and contributions to ICES work.

The meeting closed at 18:30.

## List of various Expert Groups that were dissolved, established, changed committee, or were renamed by virtue of Council Resolutions at the 93rd Statutory Meeting

| TYPE OF ACTION | NAME | CHAIR – OUTGOING | CHAIR – INCOMING |
|---|---|---|---|
| *Change of Chairs* | **Committees** | | |
| | Publications Committee (PubC) | Pierre Pepin, Canada | Pierre Pepin, Canada |
| | Advisory Committee on Fishery Management (ACFM) | Poul Degnbol, Denmark | Martin Pastors, the Netherlands |
| | Mariculture Committee(MCC) | Thomas Sephton, Canada | Ian Bricknell, UK |
| | Diadromous Fish Committee (DFC) | Niall Ó Maoiléidigh, Ireland | Malcolm Beveridge, UK |
| | **Expert Groups** | | |
| | Working Group on Zooplankton Ecology [WGZE] | S. Hay, UK | A. Gislason, Iceland |
| | Annual Meeting of Assessment Working Group Chairs [AMAWGC] | P. Degnbol, Denmark | M. Pastoors, NL |
| | ICES-IOC Working Group on Harmful Algal Bloom Dynamics [WGHABD] | J. Martin, Canada | J. Silke, Ireland |
| | The Working Group on Oceanic Hydrography [WGOH] | A. Lavín, Spain | Co-Chairs: S. Bacon and P. Holliday, UK |
| | ICES-IOC Steering Group on GOOS [SGGOOS] | W. G. Harrison, Canada | New Co-Chair: David Mountain, (IOC) |
| | ICES/GLOBEC Working Group on Cod and Climate Change [WGCCC] | | New Co-Chair: K. Wieland, Greenland |
| | Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys [PGNAPES] | J. A. Jacobsen, Faroe Islands | A. Krysov, Russia |
| | Working Group on Fishery Systems [WGFS] | Martin Pastoors, the Netherlands | Doug Wilson, Denmark |
| | Study Group on Target Strength Estimation in the Baltic Sea [SGTSEB] | Bo Lundgren, Denmark | John Horne, USA |
| | Working Group on the Application of Genetics in Fisheries and Mariculture [WGAGFM] | E. Kenchington, Canada | E. Eg Nielsen, Denmark |
| | The Working Group on Marine Shellfish Culture [WGMASC] | A. Bodoy, France | Peter Cranford, Canada |
| | Study Group on Multispecies Assessments in the North Sea [SGMSNS] | E. Bell, UK | New Co-Chair: John Pinnegar, UK |
| | Working Group on the Statistical Aspects of Environmental Monitoring [WGSAEM] | | New Co-Chair: Richard Duin, the Netherlands, |
| | The Working Group on Fish Ecology [WGFE] | Jim Ellis, UK | A. Daniel Duplisea, Canada |
| | The Stock Identification Methods Working Group [SIMWG] | S. Friedland | New Co-Chair: S. Mariani, Ireland |
| | The Working Group on Mackerel and Horse Mackerel Egg Surveys [WGMEGS] | Dave Reid, UK | Paula Alvarez, Spain |
| | Study Group on the Biology and Life History of Crabs [SGCRAB] | Oliver Tully, UK | Julian Addison, UK |
| | The Working Group on Crangon Fisheries and Life History [WGCRAN] | Axel Temming | Andy Revill, UK |
| | Planning Group on Commercial Catch, Discards and Biological Sampling [PGCCDBS] | J. Dalskov, DK | Ernesto Jardim, Portugal |
| | *Pandalus* Assessment Working Group | S. Munch-Petersen, | To be decided after their meeting in |

| TYPE OF ACTION | NAME | CHAIR – OUTGOING | CHAIR – INCOMING |
|---|---|---|---|
| | [WGPAND] | DK | November 2005 |
| *Change of Chairs (Continued)* | ICES/OSPAR/HELCOM Steering Group on Quality Assurance of Biological Measurements [STGQAB] | A. Ikauniece, Latvia | Interim Chair: Johan Wikner, Sweden |
| | Working Group on the Assessment of Northern Shelf Demersal Stocks [WGNSDS] | Rick Officer, Ireland | Robert Scott, UK |
| | Working Group on North Atlantic Salmon [WGNAS] | Walter Crozier, UK | Tim Sheehan, USA |
| | Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim [WGHMM] | V. Trujillo, Spain | Manuela Azevedo, Portugal |
| | Baltic Salmon and Trout Working Group [WGBAST] | I. Perä, Sweden | Atso Romakkaniemi, Finland |
| | Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources [WGDEEP]: | O. A. Bergstad, Norway | Paul Marchal, France |
| | Working Group on Marine Mammal Ecology [WGMME] | Gordon Waring, USA | M. Scheidat, Germany |
| | Workshop on *Nephrops* Stocks [WKNEPH] | Ian Tuck, UK | Nick Bailey, UK |
| | | | |
| *Dissolved* | Planning Group on Aerial and Acoustic Surveys for Mackerel [PGAAM–LRC] | E. Shamray, Russia | |
| | Study Group on the Estimation of Spawning-Stock Biomass of Sardine and Anchovy [SGSBSA-LRC] | G. Y. Stratoudakis, Spain | |
| | Study Group on the Status of Diadromous Fish Species [SGSDFS–DFC] | Niall Ó Maoiléidigh, Ireland | |
| | ICES/NSCFP Study Group on the Incorperation of Additional Information from the Fishing Industry into Fish Stock Assessments [SGFI-ACFM] | Cornelius Hammer, Germany and Hugo Andersson, Sweden | |
| | ICES/OSPAR Steering Group on QualityAssurance of Biological Measurements in the Northeast Atlantic [SGQAE-ACME] | Jon Davies, UK | |
| *Established/ Re-established* | | | |
| | The Study Group on recruitment variability in North Sea planktivorous fish [SGRECVAP–LRC] | | Mark Dickey-Collas, the Netherlands |
| | Study Group on Risk Assessment and Management Advice [SGRAMA–RMC] | | Chairs to be appointed |
| | Study Group on Effects of Sound in the Marine Environment [SGESME–ACE] | | Magnus Wahlberg, Denmark |
| | | | |
| *Renamed* | The ICES-IOC-SCOR Study Group on GEOHAB Implementation in the Baltic [SGGIB] will be renamed the ICES-IOC-SCOR Working Group on GEOHAB Implementation in the Baltic [WGGIB – BCC] | | M. Viitasalo, Finland |
| | Study Group on Salmon Scale Readings[SGSSR] will be renamed Study Group on Salmon Age Determination [SGSAD – DFC] | Jari Raitaniemi, Finland | Jari Raitaniemi, Finland |
| | Working Group on Marine Fish Culture [WGMAFC] will be renamed Working Group on Marine Fish Welfare [WGMAFW – MCC] | A. Mangor-Jensen, Norway | |
| *Changed parent* | | | |
| | ICES/EIFAC Working Group on Eels [WGEEL] (DFC to ACFM) | | |
| | Study Group on Ageing of Baltic Cod [SGABC] (ACFM to BCC) | | |

| TYPE OF ACTION | NAME | CHAIR – OUTGOING | CHAIR – INCOMING |
|---|---|---|---|
| | | | |
| *New Workshops* | Workshop on Indices of Mesoscale Structures in ICES waters [WKIMS–LRC to OCC] | | Co-Chairs: Benjamin Planque, France; Corinna Schrum, Germany |
| | Workshop on "Advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions" [WKAMF–OCC] | | Co-Chairs A. Gallego, UK, E. W. North, USA, and P. Petitgas, France |
| | ICES/BSRP/HELCOM Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea [WKIAB–BCC] | | Co-Chairs: C. Möllmann, Denmark, B. Müller Karulis, Latvia and A. Andrushaitis, Latvia |
| | Workshop on Fisheries Management in Marine Protected Areas [WKFMMPA–MHC] | | Jake Rice, Canada |
| | Workshop on the Decline and Recovery of Cod Stocks throughout the North Atlantic including tropho-dynamic effects [WKDRCS–OCC] | | Co-Chairs: Brian Rothschild, USA; George Lilly, Canada; Svein Sundby, Norway, and Kai Wieland, Greenland |
| | A Workshop on advanced Fish Stock Assessments Techniques [WKAFAT–RMC] | | Co-Chairs: Dankert Skagen, Norway, and Einar Hjorleifsson, Iceland |
| | A Workshop on Mackerel and Horse Mackerel Egg Staging and Identification [WKMHMES–LRC] | | S. Milligan, UK |
| | Workshop on Age Determination of Redfish [WKADR–RMC] | | Co-Chairs: F. Saborido-Rey, Spain, and C. Stransky, Germany |
| | ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea [WKFDM–BCC] | | Co-Chairs: Thomas Lang, Germany, and G. Rodjuk, Russia |
| | A Workshop on Biological Reference Points for Northeast Arctic Haddock [WKHAD–ACFM] | | Chair: Knut Korsbrekke, Norway |
| | Workshop on simple mixed fisheries TAC models [WKMIXMAN–ACFM] | | Co-Chairs: Stuart Reeves, UK, Sarah Kraak, NL |
| | Workshop co-sponsored by OSPAR on Time-series Data relevant to Eutrophication Ecological Quality Objectives [WKEUT–ACE] | | Co-Chairs: T. Smayda, USA, and G. Ærtebjerg, Denmark |
| | Joint ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open-Sea Areas [WKIMON–ACME] | | Co-Chairs: K. Hylland, Norway, and C. Moffat, UK |
| | Workshop on Unaccounted Fishing Mortality [WKUFM–FTC] | | M. Breen, UK |
| | ICES/GLOBEC Workshop on Long-term Variability in SW Europe [WKLTVSWE–LRC] | | Co-Chairs: J. Alheit, Germany, M. F. Borges, Portugal, A. Lavín, Spain, and Andres. Uriarte, Spain |
| | Workshop on Review of the ICES Committee and Expert Group Performance [WKREP-CONC] | | Co-Chairs: Michael Sissenwine, USA, Harald Loeng, Norway and Paul Connolly, Ireland |

## Baltic Committee (BCC)

Chair: Cornelius Hammer, Germany

The Baltic Committee met on Tuesday 20 September 13:30–18:00 and on Wednesday 21 September 9:00–12:30. About 80% of the official members were present at the meeting.

After welcoming the participants the agenda was adopted and the participants introduced themselves. It was then proposed by the Chair to place all documents for the Committee on the ICES Website for download by the participants. Documents becoming available to members should be announced either through the Secretariat or through the Chair. The Chair announced that some issues had come in very late, and would have to be dealt with additionally and apologized for disrupting the official agenda. The Committee acknowledged the importance of this and endorsed the agenda.

## Reports of Expert Groups

### WGBFAS

The Chair of **WGBFAS** reported (on invitation) on the current state and development of the commercially exploited stocks in the Baltic.

### SGGIB

The Chair of **SGGIB** reported on the process of the implementation of GEOHAB in the Baltic. This was followed by a discussion on the possible developments of the SG. After having run for three years now it is time to consider transforming the SG into a WG or, in the extreme, to dissolve it. It was emphasized that in the perspective of IOC-GEOHAB the work of SGGIB is of very high importance with rapidly growing relevance for the Baltic Sea. It would be desirable to implement a GEOHAB programme in the Baltic. The ToRs should clearer formulate the need for a continuation of SGGIB; by no means should the SG be dissolved. It was decided by the Committee to continue the SG for one further year. During this time the SG is asked to develop ToRs, justifying the continuation of the SG, maybe in the form of a working group.

### SGABC

The Chair of **SGABC** reported (on invitation) on the results of the past meeting. It was concluded by the Committee that the intercalibration exercise was most important both for scientists and technicians. Moreover, the Committee concluded that the age-reading problems with cod in the Baltic are far from trivial and will not be solved simply by one or two workshop-intercalibrations between the readers; the individual differences are only one part of the problem. More problems are strongly related to the formation itself of cod otoliths in the variable hydrographic environment of the Baltic Sea, leading to structures which are not consistent over time and space. Therefore, the harmonization of age reading is not a single act but rather a process. New approaches were initiated by the SG (e.g. weighing of the otoliths, creating a database, reconstructing historical data, statistical analysis of age reading in ICES member countries). The Committee is of the opinion that this SG is very important and should by all means continue its work. It is proposed to let the SG grow into a working group; it should then, however, incorporate other fish species like herring, sprat, and flounder as well. Even though the SGABC was not yet officially transferred to the BCC, in expectance of this the Committee endorsed the ToRs of the SG.

## WGBIFS

The Chair of **WGBIFS** reported (on invitation) on the survey design of the Baltic and the inherent problems. The discussion focused on the recent change of survey gear. The SG was recommended to intensify its efforts to develop conversion factors and to carry out further intercalibration.

## COBALT project

The project leader of the **COBALT**-project reported (on invitation) on the state of development of cod larvae rearing for stock enhancement in Denmark for the Central Baltic East of Bornholm. The Chair of BCC informed the audience that Germany is also planning a similar project for the rearing and sea ranching of fingerling cod for the Western Baltic Sea.

## BCC proposal

The ICES Secretariat informed BCC on a proposal to BfN (Germany) for a project for the management of fisheries in Marine Protected Areas to be carried out by ICES. This proposal was discussed and critically commented on by the Committee. The BCC was of the opinion that the issue brought forward in the BfN-proposal is of very high importance and significance for all fishery science, the understanding of the ecosystem, the environmental protection, as well as for the political bodies. BCC therefore strongly supports initiatives to investigate the impact of fishery in MPAs. In the opinion of BCC there are a number of problems adhered to this proposal which cannot easily be ruled out, unless there are specific caveats in the final contract with BfN.

First, to evaluate the impact of fishery in a certain area, highly resolved data from the fishery is required. Currently, these data are not available in the ICES databases. Disaggregated data exist at the respective authorities of the member countries, although it is not clear if a project would be granted access to these data and what legal requirements would have to be met to acquire access. Moreover, it cannot be assessed whether these data will fulfil the project's needs for analysis.

Second, BCC is of the opinion that there is still a lack of a study group addressing the requirements for evaluating closed areas and seasons with respect to fisheries and ecosystem management. The project would for this reason be a welcome opportunity to create such a SG, although, as mentioned above, the SG would not be able to guarantee the results as (apparently) requested in the project proposal. If access to data was denied by the member states or the data were insufficient, the SG would inevitably fail. For this reason the BCC does not support the BfN-proposal, unless clear provision is made for this case in the project proposal and the contract. Moreover, it must be guaranteed that results and data obtained by the project are made available for other projects dealing with similar subjects and *vice versa*, data and results from the projects are taken into account by the proposed one.

## BONUS-169 proposal

The Committee was requested by the representative of the ERA-Net BONUS to make extraordinary time available for a presentation of the state of the **BONUS-169** proposal, which is currently developed. The eight work packages for the period 2007–2011 were explained. It was discussed how this BONUS-169 would fit into the EU-policy and the European Marine Strategy for Regional Seas. It was recognized that the Baltic area would be an ideal environment for setting up such a project. The representative of the project invited the Committee to download the information on BONUS and BONUS-169 from the internet and to comment on it.

### SGEH

The SGEH report was presented by the Chair of SGEH. In the leeway of the positive review for this SG an additional ToR was suggested by the SG to identify the socio-economic mechanisms of marine pollution and to identify ways to reduce pollution. The Committee discussed this issue but remained a little bit indecisive about it.

### SGBFFI and SGBEM

The Chairs of SGBFFI and SGBEM presented the results; the ToRs were endorsed without further discussion.

### SGPROD

The SGPROD report was presented by the Chair of SGPROD. Great achievements were made by performing an ECOPATH workshop and contributing notably to the theme sessions at the ASC in 2006. In ToR f) the first part was omitted, since the Committee felt that developing a workplan for phase II of the project was beyond the scope of a scientific study group. For all the four study groups in support of BSRP an additional ToR was included to take into account the results of the WKIAB, if available. In this context the Chair reported on the results of a questionnaire sent to all ICES group Chairs, investigating the participation of Eastern country scientists in their work. The results show a strong increase in the magnitude and quality of the participation. This is regarded as a document of success for the BSRP.

### SGMAB

The Chair of **SGMAB** reported on the results of its meeting, conducted in conjunction with SGBFFI and addressing multispecies aspects in the Baltic Sea. The Committee discussion focused on the recommendation to include stomach sampling in regular surveys. The following recommendation was brought forward:

## Recommendation to Baltic National Labs from SGMAB

### Cod stomach sampling 2005/2006

The Study Group recommends sampling of cod stomachs on all standard surveys in the Eastern Baltic Sea. The standard surveys include the BITS survey in March and November and the hydroacoustic surveys in May and September/October Sampling every third year or alternatively after an inflow is considered necessary to reflect possible changes in the cod feeding owing to fluctuations in prey abundances or in environmental boundary conditions. Stomach sampling could start during the hydroacoustic survey in autumn 2005 and continue throughout 2006.

Sampling stations have to be randomly distributed over the survey area. Stomachs should be taken stratified by 10 cm cod total length groups. Measuring the cod to the nearest cm below, the length-groups are <10 cm, 10–19 cm, 20–29 cm, 30–39 cm, 40–49 cm, and ≥ 50 cm. A maximum of ten cod stomachs from each length-group will be collected per station. The cod must be processed immediately after getting the sample onboard. Stomachs that have obviously been partially or completely regurgitated during trawling as well as stomachs indicating trawl feeding are excluded from the analysis. Each individual cod stomach gets an identification number, linking the stomach to the fish and single fish data. For the station at least date, time of the day, GPS position of catch, catch depth, and number of the trawl station are recorded. Recording the number of the trawl station creates a link between stomach data and catch composition data. All stomachs sampled are preserved in at least 70–80% ethyl alcohol and transported to LATFRA.

## Review process

The Committee then embarked on a thorough discussion on the review process that was initiated in 2005. BCC had made two scientific reviews on two SGs. This process has met with some difficulties:

a) Many of the approached reviewers were reluctant to take up the task due either to their own time constraints or because did not feel they were competent for the task, the latter being the strongest reason given by potential reviewers from outside the ICES world.

b) There was insufficient time to find a reviewer and insufficient time to do the review because many EG reports were not finished in a deliverable form in due time before the summer break. Since reviewers request at least six weeks for reviewing, the process needs to be initiated at the latest before the end of June; this is the start of the summer holidays in many places and the request was therefore perceived as being very inconvenient.

c) As a consequence, EG reports coming in later than June will hardly be reviewed at all.

d) The incoming two reviews were insufficient; to obtain a balanced view of the science of an EG at least two reviews need to be made. It was, however, not possible to find more than one reviewer per EG in the given time. As a result, the reviews need to be met with caution.

One review was very positive for one of the SGs, the other very critical for the other. Although the first was taken by the SG as an encouragement, the other was felt not to consider the circumstances under which the SG worked. The SG had to cope with a lack of adequate attendance and was therefore hardly able to address its ToRs appropriately. The Committee was not in a position to reflect on the review and to convert the criticism into new ToRs for the SG, since it felt that it was not the ToRs that were inappropriate, but rather the attendance. The Committee was furthermore of the opinion that the ToRs of all four SGs in support of the BSRP should be critically examined in conjunction with an evaluation of the BSRP. Though this is beyond the remit of BCC the Committee was nevertheless of the opinion that the examination should take place and the ToRs perhaps newly defined in two years time at the end of the second phase of BSRP (now renamed "Baltic Sea Large Marine Ecosystem Project", BSLME), at which time WKIAB will have developed a new research structure for the Baltic Sea (see below).

In this context a non-paper was presented with a proposal for a research structure for the Baltic Sea (Regional integrated assessment and the research organization in the Baltic Sea within and outside ICES). The goal of the non-paper is to design a research structure to provide the necessary framework; this is imperative for implementing integrated assessments. This initiative was born out of the recognition of the overlapping character of some SGs and WGs, the lack of coordination, communication, and internal harmonization, beyond that which BCC can accomplish. The core of the new research structure consists of two assessment working groups, one for fisheries assessments and one for integrated assessments. These two are structurally strongly interlinked and coordinated. Both these assessment working groups shall define specific study groups in support of their work and for which they will draft specific ToRs. Apart from those a series of workshops shall be called to life on a more *ad hoc* basis to address specific questions since it was felt that such task-oriented workshops are most efficient.

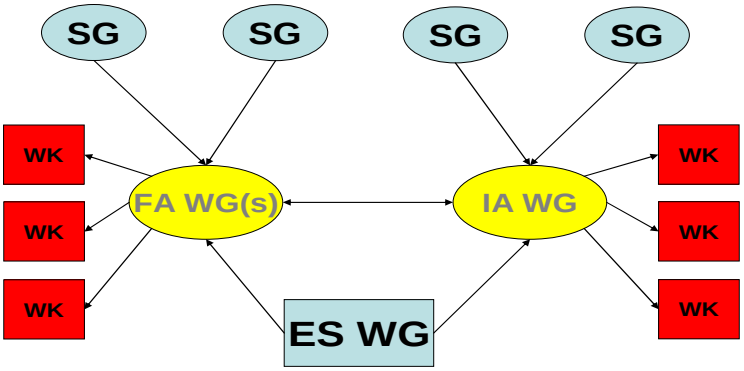



**Figure 1: Suggestion for a new structure for the ICES Baltic Sea assessment and scientific activities. [SG-Study Group, WK-Workshop, FA-Fish stock assessment, IA-Integrated assessment, ES-Ecosystem survey]**

BCC discussed this proposal and was very much in favour of it. Knowing however, that this is just a first draft that the devil lies in the detail and that it was clearly beyond the scope of the Committee meeting to clarify all details, BCC proposed a workshop to define the draft concept better (Workshop on Integrated Assessments in the Baltic Sea, WKIAB). It was felt, however, that integrating environmental parameters into the fishery assessments – which really meets the idea of an integrated assessment and accomplishes the requirements like the REGNS integrated ecosystem assessment for the North Sea – could not be developed *ad hoc*. This would require more than one WKIAB meeting. Rather, it was felt that a series of workshops would be necessary, and that they at a certain stage should include HELCOM as well as the BSLME. These organizations need to contribute, not only with manpower, but also in terms of data. It was made clear that the Workshops/Study Groups would need HELCOM and BSLME to be active in this process to provide input beyond the provision of data only. WKIAB will start the process as soon as possible and develop a new Expert Group structure as provisionally designed in Figure 1, based on the experience.

BCC estimates that the sequences of workshops will deliver concrete proposals for a new structure and newly defined study groups in two years' time. This is expected to be the realistic time frame, considering the complexity of the matter and coinciding with the end of the BSLME project. It is considered appropriate then to have all ToRs of all study and working groups in the Baltic re-examined together in the new structure by the newly formed assessment working groups.

## WKFDM

The ICES/BSRP Sea-going workshop on fish disease monitoring in the Baltic Sea [WKFDM] was endorsed without changes.

## ASC 2007 theme session proposals

The Committee proposes theme sessions for 2007 on:

a) Ecosystem consequences of harmful algae in the ICES area (justification to come), and

b) Marine biodiversity: a fish and fisheries perspective (Co-conveners: Jim Ellis, Remment ter Hofstede, and Henn Ojaveer).

## Diadromous Fish Committee (DFC)

Chair: Niall Ó Maoiléidigh (Ireland)

Rapporteur: Malcolm Beveridge (UK)

The Diadromous Fish Committee met on Thursday, 22 September from 13:30 to 18:00 and on Friday, 23 September from 13:30 to 18:00. Between 15 and 18 participants attended.

## Opening

The Chair welcomed the participants, and as it was the third year since the Committee first met and his last year as Chair, he took the opportunity to remind participants of the aims and responsibilities of the DFC that had been applied by ICES and what had been achieved since September 2003. This is attached as Annex 1 to this report.

## Appointment of a Rapporteur

Malcolm Beveridge (UK) was appointed Rapporteur.

## Adoption of agenda

The Agenda was adopted.

## Committee business

### Reports of Expert Groups

#### *Study Group on the Status of Diadromous Fish Species [SGSDFS]*

The DFC Chair presented a summary of the report, drawing attention both to the information that had been compiled to date and to the deficiencies. The attention of the Committee was drawn to the lack of information provided for a number of sections, most importantly national legislation and summary of current status by species and by country, which had only partial coverage of 12 species and no information on a further 13 North American species. The Chair reiterated that the report was to be submitted to ICES, whether complete or not, by the end of 2005.

#### *ICES/EIFAC Working Group on Eels [WGEEL] – and other eel issues*

Presentations were made by Håkan Wickström (Sweden) on behalf of WGEEL. The report contained a summary of WGEEL and summarized the outcome of the various meetings that had been held since the last DFC meeting in Vigo in September 2004. The report also considered the implications of the EC's decision to include the European eel as a mandatory species under the Data Collection Regulations (DCR).

WGEEL met in Galway in November 2004. Meetings were also held in Brussels in March 2005 and at ACFM in Copenhagen in May 2005. A meeting to consider eel data collection issues had also been held in Sweden in early September 2005 at the request of the Commission. A number of important eel publications appeared in 2005; several eel papers were also presented at the DIADFISH symposium in France in March 2005. An EC FP6 Project (Study for Informed Management of EEL – SLIME) had also been successfully submitted. SLIME, which involves partners from five member states, aims to develop biological reference points and model the effects of legal and technical measures, using real historical data.

WGEEL recommended, as it has done every year since 1999, the urgent need for a recovery plan and for minimising anthropogenic impacts. In addition, it recommended the development of new models for establishing stock status, conservation and management targets, compliance, etc., which later became the focus of the SLIME proposal. WGEEL also felt that the Water Framework Directive could be used to specifically consider eels as an ecological indicator. It recommended that restocking be accorded a priority, given the current extremely low recruitment of glass eels over much of the species' range. ACFM advice is that given that recruitment has been extremely low since 1980 and that the spawning stock is also very low, the species is almost certainly below what is considered safe biological limits.

The Commission has asked ICES whether there are sufficient glass eels for restocking to allow 40% escapement in all rivers, the 40% figure referring to escapement in the absence of pollution, fishing, and anthropogenic river obstructions. The ACFM response was that given glass eel recruitment has been reduced from several thousand tonnes to 100 tonnes per annum during the past 25 years, it is unlikely that such a target could be met within a period of one generation (15 years).

Although no report was available, the Committee were given a verbal account of a so-called 'front-loading' meeting that was held in Brussels in March 2005 involving a discussion between DG Fish and member states. Structural Funds are already available to be used for restocking pilot projects. The Commission announced that it would require management plans from member states by 2006 at the latest. The long-term target that member states are expected to aim for is a 40% escapement, with individual member states to decide how to meet this objective. The Committee noted that Emergency Regulations, which could involve closure of fisheries for the first half of each month, except for glass eel fisheries for restocking, may be imposed.

The meeting held in Sweden in early September at the behest of the EC was to consider the implications of the European eel now being covered by the DCR. The group met to decide what data should be collected, where, when, etc. Although few details are yet available, it has been decided that freshwater population data, and not just fishery data, will be required.

Among the important eel research papers published in 2005 was a paper by Dannewitz *et al.* that appeared in the Proceedings of the Royal Society (Series B; Vol. 272, pp. 1129–1137), confirming the lack of genetic structure among European eel populations. The DFC discussed whether stocking was now considered appropriate, and voiced concerns that glass eel transfers did not affect the populations from which they were removed and that the animals stood a good chance of survival in the areas to which they were being transferred. There was a discussion about the importance of the Anguillicola parasite that now infested more than 80% of the European eels, and the role of pesticides in egg hatching success. There was a general agreement that everything possible should be done to halt the decline of the European eel, although it was accepted that the problems were enormous and the time frame likely to be very long.

### *Study Group on the Bycatch of Salmon in Pelagic Fisheries [SGBYSAL]*

The report, recommendations, and plans for future work were presented by the DFC Chair. Estimates of post-smolt and adult salmon bycatch, although based on an increasingly sound sampling methodology, nevertheless still varied enormously, depending on whether they were based on direct observations or on samples from trawls. They also omitted bycatches associated with other important pelagic fisheries (e.g. blue whiting). The figures therefore have not been incorporated into assessments or catch advice for the North East Atlantic Commission Area as requested by NASCO.

Given the large range in estimates of salmon bycatch which, if variance associated with the estimates is considered may indeed be larger than the reported figures indicate, it was felt that the numbers could be a significant source of mortality. One important source of uncertainty

raised was the differences in mesh sizes of the codends of various Russian trawls which had been sampled, and potential damage inflicted by gear on salmon post-smolts that passed through the codend meshes. It was also agreed that it was important to pursue the issue of salmon bycatch in other fisheries. Further studies on the behaviour of salmon post-smolts and adults in relation to trawl gear were needed.

It was noted that the work of the SGBYSAL now came under the ACFM. It was felt that although the DFC was not consulted on the matter, it agreed that this was appropriate, as the information was made available to the WGNAS for analysis and is also under ACFM control. It was nevertheless recommended that the ToR from ACFM to SGBYSAL be scrutinised by the DFC.

## Overview of WGNAS and WGBAST

The DFC Chair summarized the findings of the Working Group on the status of North Atlantic Salmon, noting data deficiencies and needs. The current poor marine survival, low returns, and increased efforts to reduce exploitation to bring stocks within safe precautionary limits were noted. It was felt that the gravity of the situation was not generally understood and therefore it was suggested that a less technical summary could be posted on the ICES Website or possibly linked to such a summary on the NASCO Website (a recommendation that also found support during the Next Steps for the NASCO process that has just recently finished).

A report was presented by Lars Petter Hansen (Norway) summarising the findings of an inter-Nordic countries tagging study of pre-adult Atlantic salmon at sea, begun in 2002. The study, which had to date tagged some 406 salmon with data storage tags (DSTs), had many objectives, including the determination of winter habitat preferences. Data from DSTs recovered from 4 tagged fish were presented. All four fish had been tagged in the Vøring Plateau region of the Norwegian Sea and the tags were recovered in Norway and southern Sweden. The longest distance travelled was 1400 km in 128 days, by a fish recovered from the Atran River in southern Sweden. The data showed extensive diving activity by the fish, sometimes below 150 m though normally restricted to depths of 70–80 m. There was no diurnal pattern associated with the diving behaviour. As the fish neared the coast, the temperature rose and diving activity ceased. Further funds were being sought to carry out a detailed analysis of the enormous amounts of data that had been generated. The importance of such innovative studies was noted by the Committee.

The Committee was asked to consider a summary account of the WGBAST given by Aatso Romakkaniemi, Chair designate of WGBAST, which provided information on the status of stocks and recommendations. Among the more important ToRs of the WGBAST, were the requirements to not only assess the status of wild and reared stocks of Baltic salmon, but also to try to promote the rebuilding of stocks of wild fish to 50% of the natural production by 2010, while at the same time maintaining the Baltic salmon fishery as high as possible. Production has fallen from 5500 t in 1990 to 25 000 t in 2004. Six million hatchery-reared smolts are released compared with an estimated natural production of 1.5 million wild smolts. Genetic sampling of fisheries shows that wild origin salmon make up a disproportionate amount of the catches. Exploitation is decreasing everywhere in the Baltic, in part because post-smolt mortality hatchery-reared fish has increased from an estimated 75% to 90% in recent years. Modelled trends of wild stocks over time show that northern Baltic rivers are recovering and might achieve IBSFC criteria by 2010; by contrast, the situation in the south is more pessimistic. Here the natural smolt production is declining.

Concern was expressed that the ACFM advice, which set no TAC but which recommended fishing at the same level as in previous years, was more of a summary of the situation than specific catch advice to managers and that it did not reflect the worsening situation in the southern Baltic. This may have been because of a reluctance to set a TAC as model outputs

were judged insufficiently robust, that there were many unknown parameters, such as the effect of M74, and that dioxin levels were such in some areas of the southern Baltic that salmon landings had already been prohibited. Nevertheless, the DFC recommended that a TAC should be reintroduced.

## Consultative Committee and Diadromous Fish Committee business

### Links with other committees and overlap; review of Expert Groups and Committee structure

A considerable amount of the Committee's time was spent in responding to the Consultative Committee's request for Committee feedback on the discussion document prepared by ICES "Reviewing the ICES Expert Group Structure" (Conc0509–17(1)), prepared jointly by the Chair and Vice-Chair of the Consultative Committee, ICES Head of Advisory Programme, and ICES Head of Science Programme. The response to this will be presented to the Consultative Committee separately.

### Any other specific requirements to help DFC in its work?

There was considerable debate about shortening the two half-day sessions, if at all possible, by circulating as many reports as possible before the annual meeting and by trying to get more of the committee business done during the year. This would allow greater opportunities to attend Theme Sessions. Time should be focused on scientific debate. The importance of having the two half-day sessions closer together was stressed.

There was a proposal to hold an annual DFC dinner where matters could be discussed more informally and where newer and older committee members could meet.

There was a proposal to have a short, public-friendly summary of each WG and SC on ICES Website.

### Nominee for ASC Award Selection Committee

A Committee member, Ralph Thiel (Germany), agreed to represent the DFC.

### Adequacy of the arrangements for the meeting

Facilities were considered excellent; the only comment raised was that perhaps a round table format might be preferable.

### Election of new Chair

Committee members or Delegates from ten countries were present. Two nominations were received and Malcolm Beveridge (UK) was elected as the Chair on a majority vote.

## Forthcoming symposia and theme session topics

### Theme Session in 2005 on Rebuilding Diadromous Fish Stocks – update

A brief overview was presented by Ted Potter (UK), Co-Convener of the Theme Session. It attracted an audience of between 60 and 150 people, compared with theme sessions in the two previous years, which had attracted audiences of around 20–30. Fifteen papers were submitted (one withdrawal; one no-show) and covered a good range of species, both diadromous and marine, and topics, including socio-economics. Notable omissions included eels.

Theme sessions on narrower topics, such as Baltic fisheries or Atlantic salmon might be less successful. It was felt that a strategy for theme sessions should be developed i.e. narrow (e.g. single species) and broad theme sessions in alternate years. An alternative model, to discuss

issues of narrower interest at the DFC instead of at theme sessions, was also discussed. In general, however, it was felt that broader, cross-disciplinary, and cross-species sessions were likely to be more successful. It was also felt that greater efforts must be made by the Committee to raise the profile of ICES among scientists.

### 'Interactions between Cultivated and Wild Diadromous Fish Species' full Symposium in 2005 *between ICES and NASCO – update*

An update was given by one of the Theme Session Co-Conveners, Lars Petter Hansen (Norway) which is also available from the NASCO and ICES Websites. The Symposium will take place in Bergen in October 2005. More than 100 participants have registered, sponsorship has been received from 19 institutions and companies, and the meeting is on a sound economic footing. Despite the inclusion of "other diadromous fish" in the title, only two oral papers on species other than Atlantic salmon have been submitted. A special edition of the *ICES Journal*, to be edited by Peter Hutchinson, NASCO, has been made available for oral and poster papers and a management report.

### Joint PICES/ICES/NASCO Symposium on 'Factors Affecting Mortality of Salmon at Sea' – update from NASCO on marine research initiatives

An update was presented by Peter Hutchinson, NASCO, on the inventory of research currently being carried out on salmon at sea and the SALSEA Programme. In summary, there are 52 ongoing and 12 recently completed projects. Thirteen of the projects have appeared on the inventory in the past year and four projects were completed during 2004–2005. Annual expenditure, excluding four un-costed projects, is £5.9 million. Information is being included and updated annually.

The inventory formed the basis for establishing and scoping potential SALSEA work packages and tasks. The inventory also showed that some aspects are already being carried out: e.g. the EC ARC Project, the development and testing of new fishing gear, the influence of contaminants on survival. However, little work was being conducted on salmon abundance and movements at sea. The total cost of investigating Atlantic salmon in the open sea is estimated at £7.5–10 million, depending on the number of voyages that are conducted.

A fundraising agency was commissioned to produce a report on the likelihood of raising the funds required for the research. Although it was recognized that there was strong public support for the work, the funds required were too high to be raised from the private sector alone; contracting parties should raise £4 million and the balance would come from the private sector, although this too would incur additional costs, estimated to be in the region of £350 000. Requests to raise funds were currently with contracting parties.

The SALSEA proposal was also currently out to peer review with two senior scientists from the BASIS (Bering-Aleutian salmon International Survey) project and had been sent to ICES for comment. It is proposed that funds currently with NASCO for SALSEA be expended on project-related workshops.

The symposium is currently being proposed for 2008 or 2009; this was appropriate as the BASIS programme finishes in 2006, and although SALSEA will not have finished by then there will undoubtedly be enough data and findings to discuss. The proposed symposium will be debated at the NPAFC meeting in Korea in October, where it will be raised by Malcolm Windsor, NASCO.

### Review of proposed theme sessions for 2006

In view of the proposed new strategy of alternating between broad and narrow theme sessions it was felt that there might be an opportunity to propose a theme session for 2006 entitled:

"Is there more to eels than SLIME". Conveners: Andrew Pawsen (UK), Håkan Wickström (Sweden), and Erwin Winter (the Netherlands).

### 2007 ASC and suggestions for open session speakers

A theme session on "Application of Genetic Identification to Management of Salmon Stocks" in 2007 has been proposed by DFC. It was proposed that consideration be given to broaden this with more emphasis on applications of genetic stock identification to aquaculture and fisheries management. A tentative title – 'Stock identification – applications for aquaculture and fisheries management?' – was put forward. Terje Svaasand (Norway) agreed to be one of the Co-Conveners, and a second convener will be sought from the Mariculture Committee as there is a broad overlap on this topic.

### Proposals for 2008

A theme session on "Strategies for Monitoring and Assessing Diadromous Fish" proposed for 2006 has been held over and may be considered for 2008. As there was great concern internationally at the status of many diadromous fish species which were considered threatened or endangered, greater effort should be made to attract the interest of IUCN, WWF, and other groups who often have specific interests/responsibilities for endangered diadromous species such as eels, lampreys, and shad and to involve these concerned groups in joint symposia in the future.

## Action plan and future DFC topics

### Action Plan progress and audit

There was little to report since last year, other than the move from a spreadsheet-based to a programme-based system, since funds had only recently been made available to progress this.

### Possible interactions with DIADFISH

Feedback was requested on the DIADFISH meeting that had been held in March in France. Although it had been lively and well attended, there had been no publications so far and as far as the Committee knew there was no follow-up meeting organized as yet. However, DIADFISH has an informative website which should be visited regularly for updates. Nevertheless, there was a request to invite Eric Rochard, DIADFISH, to make a presentation to next year's DFC meeting.

## Draft Resolutions

### Resolutions for Working Groups/Study Groups and review of ToRs

No new Working Groups or Study Groups were proposed. The Terms of Reference for the Study Group on the Bycatch of Salmon in Pelagic Trawl Fisheries (SGBYSAL) and the Baltic Salmon and Trout Working Group (WGBAST) were noted. The draft Terms of Reference for ICES/EIFAC Working Group on Eels (WGEEL) for 2006 was noted. It was noted that ToR (f) had been included because of the increasing understanding of the role of pollution and parasitism in determining spawning numbers and egg hatching success.

The ToR for the Study Group on Salmon Scale Readings (SGSSR), operated via the Baltic Salmon and Trout Working Group, was approved. It was also agreed to consider whether to broaden its remit to include all Atlantic salmon in 2006.

The Terms of Reference for the Working Group on North Atlantic Salmon (WGNAS) were noted. It was recommended that ToR 5, to assess the genetic effects of introgression of farmed salmon on wild salmon, be given to the Working Group on the Application of Genetics in

Fisheries and Mariculture. It was also noted for clarification that ToR 6 had been introduced in anticipation of a request for multi-annual advice.

## Any other business

An additional item, to seek the views of the DFC on a proposed ICES/German Government evaluation of the impact of the establishment of ten Marine Protected Areas (MPAs) within the German EEZ, was presented by Adi Kellermann, Head of Science Programme at ICES. He summarized the purpose of establishing the MPAs, including the additional possible benefits for fisheries and focused on the consideration of the impacts of fishing activities in the MPAs – to what extent did they impact on the areas, did they need regulating, and how to balance regulations affording environmental protection with the rights of fishers? €300 000 had been made available by the German Government to fund ICES to establish a Study Group and support a series of workshops during the next three years to consider these issues. Although it was recognized that this was not a typical ICES venture, it was recognized as being of wide interest and there were no objections to ICES involvement. Concern was expressed that although funding would cover travel and stay for workshop participants, it did not cover staff costs.

There was a request to circulate all presentation from the 2005 DFC meeting to members. The Chair agreed to do this.

## Close

A vote of thanks for the outgoing Chair, Niall Ó Maoiléidigh (Ireland), was proposed.

# Annex 1: Report of the Chair of the Diadromous Fish Committee 2005

## DFC after three years – A short review

The Chair took the opportunity to remind Committee members of the aims and responsibilities of the DFC that had been imposed by ICES and to recount what had been achieved since September 2003. Among its activities the DFC has:

- stimulated scientific debate and cooperation and recommended the establishment of various expert groups;
- proposed and/or jointly organized a theme session in each of the past three years that have been directly relevant to the remit of the DFC;
- established study groups (SGBYSAL, SGSDF) and assumed responsibility for SGSSR (previously run by the Baltic Committee);
- reviewed the progress of working/study groups (SGSDF, SGSSR, SGBYSAL) and scrutinised reports by WGNAS, WGEEL, WGBAST and taken forward recommendations;
- proposed two symposia, the ICES/NASCO Symposium on farmed/wild salmon and other diadromous fish interactions (Bergen, October 2005) and a symposium on factors affecting the mortality of salmon at sea in 2008/2009;
- recommended ToRs for the WGNAS to review the appropriateness and possible development of an experimental tagging programme for investigating the behaviour of escaped farmed salmon.

The DFC has also:

- reviewed the status of diadromous fish stocks;
- evaluated and improved analytical tools for quantifying consequences of habitat alterations;
- evaluated and increased the knowledge base of the effects of human activities on diadromous fish stocks;
- reviewed issues associated with habitat protection and enhancement in freshwater, estuarine and coastal habitats;
- developed and implemented a programme for gaining a fuller understanding of the factors that contribute, and;
- by the end of 2005 it will have produced a baseline status report on diadromous fish.

The DFC has participated in the work of ICES. It has participated in the Consultative Committee, specifically commenting on the Action Plan audit, the proposed restructuring of ICES, and reviews of ICES. The DFC has provided reviewers for ACFM and WGNAS and made available the report of the DFC for scrutiny by the ASC. The DFC has provided volunteers for ICES Award Committees and feedback on keynote speakers.

Delegates believed it most important that the diadromous fish interests has a voice at ICES. It was noted that the DFC was still on trial and that it was important to demonstrate that the DFC was doing useful things. The numbers of participants attending the DFC, typically 15–20, were believed to be similar to those attending other committees. Considering the fact that DFC business is largely concerned with coastal and inland environments, it was pointed out that two of the five ToRs for the DFC specifically mentioned freshwater and that this was a special area of expertise not normally covered by ICES, but which would become increasingly important as scientific advice was being sought more and more on diadromous fish species in the context of the ecosystem approach.

Similarly, as there was great concern internationally at the status of many diadromous fish species which were considered threatened or endangered, greater effort should be made to attract the interest of IUCN, WWF, and other groups who often have specific interests/responsibilities for endangered diadromous species such as eels, lampreys, and shad, and these concerned groups should be involved in joint symposia.

## Fisheries Technology Committee (FTC)

Chair: François Gerlotto (France)

Rapporteur: David D. Somerton (USA)

## Opening

The Fisheries Technology Committee met on Thursday, 22 September 2006 from 13: 30 to 15: 30 and on Saturday, 24 September from 9: 00 to 12: 30. The agenda was adopted without modification. There were 25 participants. David D. Somerton (USA) was appointed as Rapporteur.

## Reports of the Expert Groups

### Fisheries Acoustics, Science and Technology Working Group (WGFAST) — Dave Demer

The Working Group on Fisheries Acoustics, Science, and Technology (WGFAST) met at the Food and Agricultural Organisation of the United Nations in Rome, Italy, from 19 to 22 April 2005. David A. Demer, USA, was Chair, Alex De Robertis, USA, was Rapporteur, and Jessica D. Lipsky, USA, was the Recorder. There were 83 participants from 16 countries.

Topic 1: *Measuring underwater radiated noise from survey vessels and its effects on fish*. Quiet vessels have distinct advantages over conventional vessels. It has been shown that herring did not respond to a vessel which complies with the *ICES Cooperative Research Report No. 209* specification for radiated noise. Reductions in high frequency vessel noise have also increased acoustic detection ranges for fish and zooplankton. However, it is clear that some species, under some circumstances, avoid even quiet survey vessels. Thus, a variety of stimuli produced by vessels such as light, and particle motion, as well as radiated noise, may cause fish to react to a survey vessel. Noise-reduced vessels provide new opportunities to investigate these stimuli. WGFAST recommends that research in this area should proceed swiftly and focus on: i) determining which species of fish react to conventional and to quiet survey vessels and under what circumstances; ii) the stimuli for their behaviours; and iii) the design requirements for vessels surveying these species in sensitive situations. Additionally, for cases in which fish avoidance is inescapable, survey biases should be estimated. Development of economical and portable noise measurement systems is also encouraged.

Topic 2: *Technologies for remote species identification (low-frequency, Doppler, multi-frequency, broad bandwidth, data integration, optical sensors)*. Species identification can be one of the major sources of uncertainty in acoustic surveys of fish and zooplankton abundance, and it is vital to multispecies and ecosystem studies. Substantial progress was reported on a variety of methods for remote species identification. Such methods allow more automated and objective data processing, reduced uncertainty in acoustic estimates of fish biomass, economical ecosystem investigations and studies of predator-prey interactions, and may also facilitate a reduction of bycatch during commercial fishing operations. It was noted that further progress towards species identification will likely require a combination of acoustic and other measurements. Because net sampling is typically used to identify acoustic scatterers, gear selectivity can add substantial uncertainty to acoustic surveys. Thus, the WGFAST encourages research on random and systematic error in net sampling, and development of new methods for verifying acoustic scatterers. Particularly promising are underwater stereo video instrumentation and analysis methods.

Topic 3: *Alternative technologies (small-craft, buoys, ROV, AUV, gliders, fishing vessels, multi-beam sonar, acoustic cameras), with special attention to shallow water and near-*

*boundary assessments (coastal, riverine, demersal and epipelagic species, and bottom typing).* Measurement platforms other than research vessels are being used to economically make measurements on ecologically important temporal and spatial scales. For example, acoustic instruments are being deployed on buoys, landers, autonomous underwater vehicles, remotely operated vehicles, and fishing vessels. Expanded use of these platforms is imperative for successful ecosystem-based fisheries management. Progress was also reported on development of multi-beam sonars, and analyses of their data for biomass estimation. Finally, productive collaborations between commercial manufacturers and the scientific community were reported and encouraged.

Topic 4: *Target strength (modelling and measurements).* There is a growing body of evidence indicating that a first-order approximation of TS versus log-length is generally insufficient to accurately and precisely estimate fish TS. It was shown that factors such as fish orientation (tilt, roll, and yaw), age-dependent changes in morphology, and region-dependent relations between fish mass, length, and swimbladder volumes can eclipse the effect of fish length on their TS. Exemplifying this point was another study showing a bimodal TS distribution from herring characterized with a unimodal length distribution.

## Study Group on Collection of Acoustic Data from Fishing Vessels (SGAFV) — Bill Karp

The Study Group on Collection of Acoustic Data from Fishing Vessels (SGAFV) held its second annual meeting at the United Nations Food and Agriculture Organization (FAO) Headquarters in Rome, Italy, before the 2005 meetings of ICES FTC working groups WGFAST and WGFTFB. The meeting was chaired by Bill Karp (USA). Guy Fleischer (USA) acted as Rapporteur and Jessica Lipsky (USA) acted as Recorder.

Topic 1: *Review and evaluate recent and current research which involves collection of scientific acoustic data from commercial vessels.* The Chair first provided an overview of presentations made on this subject during the 2003 meeting of WGFAST in Bergen Norway and the 2004 meeting of SGAFV. This was followed by 4 presentations by attendees: 1) Richard O'Driscoll and Gavin Macaulay (New Zealand) – Using fish processing time to carry out acoustic surveys from commercial fishing vessels; 2) Hector Peña *et al.* (Norway) – Using commercial fishing vessels to conduct acoustic surveys of capelin in the Barents Sea; 3) Edwin Niklitschek (Chile) – Industry surveys of orange roughy off Chile; and 4) Arnaud Bertrand (France) – Qualitative use of echograms beyond target organisms as support to the ecosystem approach.

Topic 2: *Develop standardized methods and protocols for collection of acoustic data to address specific ecosystem monitoring, stock assessment and management objectives, including: acoustic system calibration and performance monitoring, characterization of radiated vessel noise, comparability of results, survey design, biological sampling, data interpretation and analysis, and data storage and management.* This topic was not addressed at the meeting.

Topic 3: *Prepare background material, guidelines, methods and protocols for possible publication in the Cooperative Research Report series.* Reviews of key sections of the draft SGAFV report were then conducted. The discussion for each section was led by the lead section authors: 1) Introduction (Martin Dorn, USA); 2) Fishing vessel radiated noise concerns – (Ron Mitson, UK, and John Dalen, Norway); 3) Instrumentation and remote operation – (Richard O'Driscoll, New Zealand (on behalf of Gavin Macauley, New Zealand)); 4) Biological sampling – (Bill Karp, USA); 5) Issues regarding cooperative research with industry – (Hector Peña, Norway); 6) Study requirements – (Rudy Kloser, Australia); and 7) Analysis, processing, and data management – (work on this chapter will be initiated following the 2005 meeting; lead author will be Gary Melvin, Canada).

SGAFV will hold its next meeting in Hobart, Tasmania, 25–26 March 2006. Study Group members agreed on the following schedule for work to be completed before this meeting: 1) Lead chapter authors will provide complete drafts to the SGAFV Chair by 1 August 2005; 2) The Chair will collate and review all chapters for consistency and redistribute to SGAFV members by end of October 2005 for final review; 3) Sections will be updated and returned to the Chair by 31 December 2005; 4) The Chair will work with lead authors to develop a comprehensive near-final draft for distribution to SGAFV in February 2006; and 5) Outstanding issues will be resolved at the 2006 SGAFV meeting and the report will be finalized soon after that meeting.

SGAFV members agreed on the following major agenda items for the 2006 meeting of the Study Group: 1) Discuss recent developments in the field; 2) Review the draft final report and resolve any areas of concern; and 3) Reach agreement on a schedule and responsibilities for completion of the final report and submission to the ICES Secretariat for publication as a *Cooperative Research Report*.

### Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB) — Bo Lundgren

Owing to other commitments of the former Chair, no progress was made since the last FAST meeting. Nevertheless, important work has already been done and most of the chapters of the document are written as draft documents. It was agreed that the SG should continue until production of a final report. A new Chair, John Horne, USA, was appointed to take charge of the study group and produce a draft to be evaluated for publication as a *Cooperative Research Report* in 2006.

### Study Group on Acoustic Seabed Classification (SGASC) — John Anderson

The Chair was not available to present a progress report, however; based on activities at the Rome meeting it is clear that the final report is near completion and will be submitted to the next FAST meeting in March as expected.

### Planning Group on the HAC Data Exchange Format (PGHAC) — Laurent Berger

D. Reid, on behalf of the Chair, reported that they have been working by correspondence and progress has been somewhat delayed by the decision to include consideration of new data types, such as multibeam acoustic data. A final document has been transmitted to ICES Publication Committee to be published as a *Cooperative Research Report*. In coming years, PGHAC will focus on multibeam acoustic systems that are likely to be used extensively in the near future.

### Study Group on Survey Trawl Standardization (SGSTS) — Dave Reid

The Study Group on Survey Trawl Standardization was set up to develop recommendations and protocols to improve standardization, and hence quality assurance in the use and design of survey trawls within and beyond the ICES area. As such the group was planned to take up the work of a previous study group (The Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas) and to develop this. The first term of reference below encompassed this aim and was broken down in subsequent ToRs:

a) *review and report on the current status of survey trawl design, recent developments in design, and new technologies which could be suitable for application in revised survey trawl designs, aiming to reduce trawl performance variability or for use in absolute abundance estimation, for example;*

The second ToR addresses a standardization programme:

b) *design and discuss the implementation of a generic ICES survey trawl standardization programme for all survey bottom trawls inside and outside the ICES areas;*

This ToR was addressed in chapter 2 of the report and included a section on the "ideal standard gear" initially developed by SGSTG and then elaborated by this group. This represents a "shopping list" for all characteristics that would make up the best possible net. It was recognized by the SG that no such net currently exists. However, in the second part of chapter 2, the report provides a description of the state of development of the Norwegian Survey Trawl project. This details a radically new design that includes a plated ground gear and a self-spreading design.

In chapter 3 the report examines the issue of trawl performance standardization and, critically, of the monitoring of trawl performance using a suite of available sensors. This also addresses ToR c) passed from the IBTSWG:

c) *IBTSWG – investigate the adequacy of some fishing protocol defined in the IBTS manual from ancient studies with respect to the most recent data available from modern monitoring of gear performances;*

The SG recognized that, although a wide range of sensors were available, including; height, wing and door spread, bottom contact, water speed, symmetry, etc., there were few published protocols for the use of these data. In the few cases where these existed they were still not completely clear. The SG proposes that trawl performance monitoring should incorporate all useful sensor systems and that an integrated protocol for the use of these systems in defining valid trawls be developed. This will be investigated and reported to the next meeting of the SGSTS.

In chapter 4 the report examines the issue of standardizing the procurement, construction, and repair of survey nets. This addresses ToR c):

c) *design and discuss the implementation of a quality control programme for survey trawl procurement, construction, rigging, repair and maintenance;*

It also addresses ToRs b) and d) passed from the IBTSWG:

b) *IBTSWG – further develop protocols and criteria to ensure standardization of all sampling tools and survey gears and review institutional checking lists;*

d) *IBTSWG – review the GOV specifications with respect to the actual material available for construction;*

This chapter was based on protocols developed for net construction in the USA and in Canada. It includes recommendations for the following:

- Standard Net Drawings – following previously published ICES specifications.
- Standardization of construction and material procurement specifications.
- Parts lists of what can be used and how to use it.
- Tolerances, detailing the specification of each part and what level of deviation is acceptable.
- A certification process detailing the process of checks to be made and when and how this is recorded. An example checklist from the AFSC is presented.
- Standard Rigging for Sea – Inspection. Detailing what checks should be made when a net is assembled and prepared for sea.
- Rigging for Sea – Staff Training. The SGSTG recognized that without good training of sea-going personnel (crew and scientists) the efforts put into standardization would be wasted. Details of how this is carried out in the USA were provided. Alternatively, a trained gear technologist should be included as part of the survey team.

- Standardized protocols for net repair at sea and on return. This was recognized as a major problem as repair at sea is difficult, and probably not possible to the level achievable on shore. The SG will prepare a reduced set of critical measures required to maintain the standardization programme. The issue of when to replace rather than repair was also addressed.
- Standardized protocols for operating life of the net.

In chapter 5 the report examines the issue of intercalibration including when and how to carry this out. This chapter addresses ToRs d) and e):

*d) define the operational requirements to be used in intercalibration studies;*

*e) develop protocols to be followed when changes are made to the survey gear;*

Chapter 5 first details the state-of-the-art in intercalibration studies developed by the Workshop on Survey Design and Data Analysis (WKSAD). It also includes a number of additional approaches to intercalibration not included in the WKSAD reports. A number of different approaches to intercalibration are described; however, the SGSTS did not feel that it was competent to choose between these. Chapter 5 goes on to deal with what and when to intercalibrate. In the context of SGSTS this involves changes to survey gears or procedures. Three categories of change were identified and the response to these addressed:

- Improvements designed to allow better compliance with the standards already agreed for the survey – in general these will represent incremental improvements in survey conduct. The best example would the introduction of trawl performance monitoring systems. These will have reduced the number of foul tows included in survey estimates. Usually, the SG felt that these would not require intercalibration unless substantial changes in catchability were expected as a result.
- Changes that depart significantly from agreed standards for the survey – examples here included major changes to net design or survey practice that would be expected to lead to major changes in catchability. These would require intercalibration.
- Minor changes or departures from agreed standards whose effects are individually hard to estimate. Where changes or improvements are proposed that might be expected to change catchability, but possibly not substantially, these should be reserved and introduced in a single batch, along with proper intercalibration.

Chapter 6 addresses the North Sea IBTS in particular, and the question of how much the standard nets used by different national groups have come to deviate over the years. It was agreed that participants would prepare net drawings to a common standard for all nets as they are currently used. These will then be examined as part of the SG work before the next meeting. The differences will be evaluated and their likely impact on trawl performance described. Following this a new set of standard drawings and specifications will be prepared as part of the final *Cooperative Research Report* from this SG.

Chapter 7 briefly describes the type of net drawing software which can be used to carry out the analysis described above and also in:

- Designing new survey trawl concepts
- Comparing or reducing the trawl variability
- Defining technical QA indices
- Defining the limits owing to weather conditions

The final ToR provided for the development of an outline for an *ICES Cooperative Research Report* on Standardization and Quality Control Protocols for Bottom Survey Trawls. The SG agreed that the material in the chapters described above should form the basis for the production of a *Cooperative Research Report*. In each case, the aim will be to define the state-of-the-art and to provide useable guidelines to ensure standardization within particular collaborative

surveys. The aim will be for these to be as generic as possible; however, it is proposed that more detailed descriptions are developed for the ICES IBTS surveys and the North Sea IBTS in particular.

## ICES-FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB) – Norman Graham

The ICES-FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB) met at the FAO Headquarters in Rome, Italy 18–22 April 2005. The group addressed five Terms of Reference (ToRs). During the 2004 meeting, conveners for four of the ToRs were appointed and given the responsibility of forming Topic Groups comprising interested WGFTFB members. Two of the ToRs are being considered during a 2-year period. These topic groups met to review the current literature, receive presentations on individual work items, and to adopt future actions for formation and presentation of their final reports, which will be given at the 2006 WGFTFB meeting. Three other topic groups worked by correspondence throughout the year to produce a series of review documents, outlining the state-of-the-art, summarising the key issues, and providing recommendations for future actions.

Following on from earlier discussions between FTC/WGFTFB and ACFM presentations were given on how the WGFTFB could expand and coordinate the inputs necessary for Fisheries-based Advice and the Ecosystem Approach to Fisheries Management. A summary of the Annual Meeting of the Assessment Working Group Chairs (AMAWGC), which identified the type of information that would assist in the advisory process, was given along with an overview of the changes within the ICES advisory process and the institutional structure of ICES. It was concluded that the WGFTFB would provide necessary information. However, owing to the amount of intersessional work that this may require, some members felt that this would need further support from national institutions and may result in a diversion of resources (time). ICES national Delegates should be made aware of this and transmit this information to their respective institutes. A term of reference for 2006 is proposed, using the North Sea as a case study, with a view to expanding this to cover other eco-regions in the future.

The Topic Group meeting on bycatch in shrimp fisheries reviewed and evaluated recent technical developments in bycatch reduction devices (BRDs); including estimated global usage of BRDs; implementation plans for bycatch reduction in shrimp fisheries; and to assess the adequacy of size selection in shrimp fisheries. This ToR was at the request of the FAO. Several presentations were given to the topic group meeting on bycatch reduction in shrimp trawls from a very wide geographical area (West-Africa, Latin America, Asia, Australia, USA, and Europe). The main selective devices described were TEDs (Turtle Excluder Devices) and JTED's (Juvenile and Trash Excluder Devices), most often in the form of sorting grids. These devices are being strongly promoted in Asia, Latin America, and Africa. A considerable amount of work is going on outside the ICES area and this topic group has established some very important links. The group concluded that "Research between fishing technologists and industry stakeholders involved in cold-water and tropical shrimp fisheries should be initiated to further develop species-selective bycatch reduction devices, and to improve the size selectivity of shrimp and *Nephrops* in trawls. At the local, regional, and national levels, Bycatch/Discard Action Plans should be developed for shrimp fisheries. Where, in certain countries, reliance on catches of juvenile fish in shrimp-trawl fisheries exists, it should be reduced".

The Topic Group meeting on the review of legislation relating to technical conservation measures identified that during the past five years many changes have been made to fisheries legislation relating to gear design and applying to North East Atlantic fisheries. The European Commission has adopted several recovery plans and is scheduled to review technical conservation measures (TCM) legislation. The International Baltic Sea Fisheries Commission has adopted new measures to control fishing gear in their area during the past few years. Legisla-

tors, scientists, and the fishing industry recognize; however, that there are inconsistencies in the current range of legislation. The group produced an extensive list of national and international (EU) legislation pertaining to fishing gear design. Individual countries identified areas of legislation that give the greatest problems from, e.g. an enforcement perspective, and where there is a need for better TCM regulations or where the legislation is considered ineffective from a gear selectivity viewpoint. The group identified where there are inconsistencies in TCM legislation between adjacent waters, or between the scientific advice and/or stock management areas, e.g. several mesh sizes applied for the same stock. Three subgroups considered the following areas (i) Baltic; (ii) North Sea, Norwegian Sea, Skagerrak, Kattegat, and West of Scotland; and (iii) Western Waters. By way of illustration of the complexity and difficulties in EU legislation, the group used *Nephrops* fisheries as a case study. The overall findings were that there are a number of specific issues, which may be considered for revision; gear technologists should be involved in such a process and it is suggested that linkage with the ICES SG on Management Strategies would be appropriate. Regarding inconsistencies between areas, gear technologists should assist by describing the selective characteristics of different legislation (e.g. mesh size). The Chair of WGFTFB has been invited to discuss findings of the topic groups with the EU Commission.

The Topic Group meeting on oil and gas industry fishing interactions met to review and report on work done, identify information gaps, and recommend research priorities on interaction between fishing gear, pipelines and other sub-sea structures, and cuttings piles. The group collated a bibliography of more than 50 papers together with abstracts and summarized their content. Variations in guidelines for 'overtrawlable' and 'trawl-friendly' criteria for sub-sea designs were identified as well as the need for updated information on fishing gear designs and operations to assist sub-sea design engineers. Similarly, there is a need to disseminate information on sub-sea designs that mitigate interaction problems. However, owing to the highly confidential nature of offshore exploration, it is difficult to obtain such information. This limits the development of new mitigation designs resulting from the restriction of knowledge between competing companies. Attempts should be made by relevant bodies to provide generic, non-specific information that can help enhance development. Fishing gear technologists and gear manufacturers should cooperate on the development of simple design modifications to gear components e.g. doors and clumps, to reduce risk of snagging/hooking. There is little available information on improvements or modifications to gear design, and the group concluded that specific studies are needed with model as an appropriate first step. There is little information available on the interaction of gear and the cuttings piles created under drilling platforms. Application of appropriate techniques for assessing risks to structure, fishing gear and vessels from trial results is needed to increase confidence in the application of experimental results. Although the issue of the potential spread of toxic or polluted cuttings material is an important aspect of abandonment policy there should also be consideration of the physical effects on fishing gear of impacting cuttings piles. Full-scale trials are needed to identify likely mechanisms of interaction between the piles and different gear components such as trawl doors, nets, and in particular wires. There is a need to conduct impact/snagging field experiments with more up-to-date gear designs and on the large-diameter bundled pipelines, which are now commonly used buy the offshore industry.

The Topic Group meeting on the use of multiple size selection devices in towed gears convened during the 2005 meeting, and received several presentations on individual work items where selective properties of additional devices e.g. grids and square mesh panels, were compared with standard diamond mesh codends. The group produced a bibliography of current literature and agreed to expand this by sourcing grey literature. The key practical issues of implementation of additional devices for controlling size selection were discussed. These included handling and safety problems, the need for more complex legislation and enforcement officer training, and additional costs to the fishing industry. A number of work items were identified and the structure of the report agreed. The group will aim to publish its finding as an

*ICES Cooperative Research Report* and will continue to work by correspondence, presenting its finding during the 2006 WGFTFB meeting.

The Topic Group on environmentally friendly alternative fishing gears for traditional species worked by correspondence and met during the ICES ASC 2004. During the WGFTFB 2005 meeting the group met to collate and summarize available information (references) on how to attract/guide/direct fish towards static fishing gear such as a trap and pot gear system. A number of individual presentations were given during the Topic Group meeting. The group will continue to work by correspondence through 2005–2006 and will report their findings to the WGFTFB meeting in 2006. The group agreed that efforts would be made to publish these findings as an *ICES Cooperative Research Report*.

#### *WGFTFB advisory activities*

The WGFTFB Chair provided fishing gear technology advice at the following meetings:

The Working Group received three requests from the International Baltic Sea Fishery Commission (IBSFC): the appropriateness of mesh sizes for the Baltic herring fishery; what mesh size of T90 equates to the current BACOMA window; and the appropriate hook size/shape needed for Baltic cod (MLS 38 cm). (i) Regarding herring mesh size, it was concluded that owing to high escape mortality estimates that mesh selection should not be relied on as a principal management tool for controlling fishing mortality; (ii) the available data suggests that the 110-mm T90 gives broadly similar selection to a 110-mm BACOMA window inserted in a 105-mm codend – this advice is given together with several important caveats; and (iii) no advice could be given on hook size/shape owing to lack of data, but information on how to conduct experiments was given. Full details can be found in the *2005 ICES Advice* report.

The Chair of the WGFTFB participated in the ICES Study Group on Salmon Bycatch in Pelagic Trawl Fisheries (SGBYSAL). To estimate the total bycatch of Atlantic salmon in the pelagic fisheries, the study group used ratios of salmon to target species catches from screening of commercial catches and from a range of scientific survey gears and applied these to disaggregated catch data from the commercial pelagic fisheries. The Chair of the WGFTFB recommended that, as a result of operational and design differences between gear types (commercial and survey) and the absence of intercalibration estimates, it was not advisable to use survey gear data to provide estimates of commercial bycatches. Recommendations on how to calibrate between gears were given. As a result, estimates of bycatch have been downgraded from earlier.

#### *Annual Meeting of Assessment Working Group Chairs (AMAWGC)*

Issues considered: 1) A range of areas in which FTC and its WGs can support the advisory process were identified; 2) AMAWGC meeting was used to 'operationalize' FTC input; 3) It was requested that relevant information is provided annually to regional assessment WGs, including: a) regulations and their effects, b) a summary of legislation pertaining to fishing gear construction and operation by ecoregion, c) best estimates of the selective properties as per legislative description, d) information on scale and type of regulation circumvention, and e) information on recent technological changes within fisheries.

### Advice to Assessment Working Groups

#### *Working Group on the Assessment of North Sea and Skagerrak Stocks*

The Chair of WGFTFB presented a working document on fishing technology issues affecting the North Sea and Skagerrak. The recent increases in oil prices have affected a number of fleets, which has resulted in changes in fishing pattern and effort. In the Northern North Sea, a number of twin-rig trawlers have shifted from the shelfedge fisheries west of 4° into the North

Sea mixed gadoid fishery and are now operating as pairtrawlers. This has altered both the spatial effort pattern and target species mix. Beam trawling is becoming increasingly unviable owing to fuel costs. In some fleets there are signs of shifts to less fuel intensive techniques, e.g. static gear and twin-rig trawling. A number of beam trawlers are now tied up, as they are no longer economically viable. If fuel prices continue to rise or remain at current levels, there is likely to be more focus on alternative fishing methods. The WGFTFB provided estimates of the uptake and effect on size selection of the 120-mm square mesh panel (SMP) in the Skagerrak and species-selective gears in the coastal *Crangon* fisheries. The use of the SMP gives fishers an additional three days at sea per month and shifts the L50 for both cod and haddock by ~11 cm. The introduction of species-selective gears in the *Crangon* fisheries has variable results owing to length differences in 0- and 1-group plaice. Models predicting the potential plaice stock benefits show that the benefit is compromised by national derogations from the EU regulations. Estimates derived form a selectivity model, predicting the selective properties of the current minimum mesh sizes by fishery were also presented. WGNSSK was informed of technological creep in some *Nephrops* fisheries, which may result in an expansion of areas available to exploitation, i.e. rougher ground. In addition to the above, a summary of the findings of SGSTS was also provided.

### Study Group on Mesh Measurement — Ronald Fonteyne

This Study Group addressed the Term of Reference on the adoption of the OMEGA gauge and measuring protocol. There is a need to standardize the measurement of mesh size. Scientists, netting manufacturers, and enforcement personnel typically use different instruments. An EU-funded programme "Development and testing of an objective mesh gauge", known as the OMEGA project, was undertaken by a number of European scientific and enforcement bodies as well as netting companies. The main aim of the project was to design, build, and test a new objective mesh gauge, suitable for fisheries inspection, fisheries research, and the fishing industry. In support a protocol for using the new gauge for fisheries inspection, research, and netting manufacturing was drafted, taking account of legal aspects of mesh inspection and this protocol is included in the WGFTFB report 2005. It was concluded that: "The ICES-FAO Working Group on Fishing Technology and Fish Behaviour endorses and encourages the use of the OMEGA mesh gauge as the standard mesh measurement tool for scientific studies and recommends that all stakeholders apply the OMEGA protocol." The Chair reported that the objectives of the study group have been reached. These are: 1) to design, build, and test a new, objective mesh gauge, free of human influence, suitable for fisheries inspection, fisheries research, and the fishing industry, providing unbiased measurements and thereby more reliable and convincing evidence for the courts; and 2) to write a protocol for using the new mesh gauge for control and scientific purposes.

The Study Group produced a document to be published as a *Cooperative Research Report*, to serve as a user manual. A series of recommendations were made to be submitted to Consultative Committee, who would decide what resolution should be given on behalf of ICES for the future use of the Omega gauge as standard measurement tool for research and fishery management.

### Workshop on Survey Design and Data Analysis (WKSAD) — Paul Fernandes

The WKSAD met in Sète, France, in February 2005 and produced a report (CM 2005/B:07) in June 2005. The WKSAV determined that meetings in the near future were not needed.

## FAST/FTFB Joint Session

A joint FAST/FTFB session was held in FAO headquarters, Rome, on 21 April 2005. Approximately 90 participants were present, and work was done on advances in survey strategy,

design, and gear (including observational techniques such as sonar, video, cameras, and longlines), techniques for validating multi-frequency acoustical species methods, with attention to appropriate time, space, and scale (e.g. longlines, gillnets, plankton nets, survey trawls, CUFES, cameras, video, and u-tow), and methods for integrating multidisciplinary data to elucidate forcing functions of fish abundance and behaviour (e.g. environmental conditions, fishing pressure, and vessel noise). The Joint Session reviewed and discussed the reports of AMAWGC (ACFM) and WGRED (ACE) and the role of WGFTFB/WGFAST/FTC in the implementation of fisheries/ecosystem advice by ACFM and ACE.

Before the Joint Session, an Expert Group chair meeting was organized to provide detailed information on the group activities to the new FTC Chair. This meeting was considered fruitful and the FTC Chair was encouraged to continue organising it in the future when joint sessions of FAST and FTFB are possible.

A discussion on the role and need of the Joint Session brought some conclusion: it was agreed that the Joint Session is a valuable tool allowing connexion and contacts between Expert Groups of the two WGs, and that some "exploratory works" could be presented at the Joint Session that are not specifically listed in the WG ToR. The joint sessions should continue in the future. One important result of the Joint Session was to agree on a proposal for a theme session for the 2006 ASC (on "the use of data storage tags to reveal aspects of behaviour important for fisheries management"). The FTC Chair was asked to consider how to improve the Joint Session and to present some proposals for the future of the Joint Session at the Committee meeting. These proposals were discussed and the results are presented below.

## Consultative, ACE and ACFM/Fisheries Technology Committee Business

The ICES Consultative Committee mid-term report was reviewed and the following items relevant to FTC were considered:

a) Annual Science Conference 2006. Four FTC theme sessions were reviewed. The FTC Chair encouraged invited lecturers to be proposed by the participants. One name was suggested: Kieran Kelleher, the author of the recent FAO report – "Discards in the World's Fisheries – An update" FAO Technical Paper no. 470. This is a very important document as it dramatically reduces the global discard estimates from 27 to 7 million metric tonnes. Many authors and indeed ICES still refer to the original estimate; this work needs to be disseminated to the scientific community as a matter of urgency. Governments and NGOs are still using the 27 million tonnes value for political aims.
b) Annual Science Conference 2007 – Helsinki, Finland. The Chair emphasized that proposed theme sessions need to focus on Baltic issues and ecosystem approaches to fisheries. A series of new proposals from FTC was listed.
c) Review of three FTC-sponsored symposia was considered: 1) "Fisheries of the 21st Century" in December 2006 in Boston, USA; 2) "The Humboldt current system" in November 2006 in Lima, Peru; and 3) "Fisheries Acoustics, Science and Technology" in June 2008 in Bergen, Norway.

A particular aspect of the ICES audit process, i.e. the paragraph from the ConC report listing the ten points that should be considered when evaluating the function of the Expert Groups and their reports was discussed during the FTC meeting. Although such a list is considered a particularly good guidance for preparing reports, it was agreed that review of expert reports by an independent reviewer would be extremely difficult to achieve, as it is time-consuming and it would be extremely difficult to find a really independent reviewer.

## New and ongoing science initiatives

A discussion paper prepared by the Chair and Vice-Chair of the Consultative Committee, ICES Head of Advisory Programme, and ICES Head of Science Programme entitled "Reviewing the ICES Expert Group Structure" was delivered to FTC members one month before the ASC and was discussed. The discussion was organized in two parts: a general overview of the Expert Group structure inside ICES, and the particular case of FTC.

From the document delivered to the FTC participants on "Reviewing the ICES Expert Group Structure", 12 of the main questions were considered relevant for comments from the FTC expertise. The questions are:

- The role of the Science Committees as promoters of science questions to funding agencies.
- Response to the integrated action plan (IAP) (*).
- What if active Expert Groups exist and the IAP has no room for them?
- How to deal with Expert Group overlaps?
- How is the work of the Expert Groups' best coordinated? Through the Science Committees?
- Is the current allocation of Expert Groups to committees correct or rational?
- How do individual Expert Groups perform? (Scientific input, networking, strategic input to ICES).
- Currently Expert Groups are single-disciplinary: should this be discouraged?
- How to make the work of Expert Groups more visible?
- Could more Expert Groups develop manuscripts for output as CM papers at the ASC?
- Do WGs need to last forever?
- Will it be possible to have an 'Expert Group Chair Meeting' during the ASC?

(*) referring to this question, FTC has already reviewed its own structure according to the IAC and presented it to ConC in 2004.

It appeared that most of these questions are related to between-Expert Group communication (Expert Group overlap, missing Expert Groups, Expert Group coordination, and single- versus multidisciplinary Expert Groups). This problem of communication between Expert Groups was considered by FTC to be the weakest point. For instance, links identified by the different Expert Groups to other structures do not seem to be established after contacts between the Expert Groups. The table below shows some details of identified links between FTC and other Science Committees.

| COMMITTEE | EXPERT GROUP | LINK WITH FTC EG |
|---|---|---|
| RMC | IBTS | FTFB |
| RMC | REGNS | FTC (*) |
| RMC | REGNS/IBTSWG | FTC (*) |
| BCC | | No links |
| DFC | | No links |
| MCC | | No links |
| LRC | WGBIF | FAST-SGTSEB |
| LRC | WGCRAN | FTFB |
| MHC | WGMHM | FTFB-SGASC |
| OCC | SGGOOS | All Science Committees |
| FTC | FTFB | To all WGs on ecosystem effects of fisheries |
| FTC | FAST | MHC, WGMHM, assessment groups |

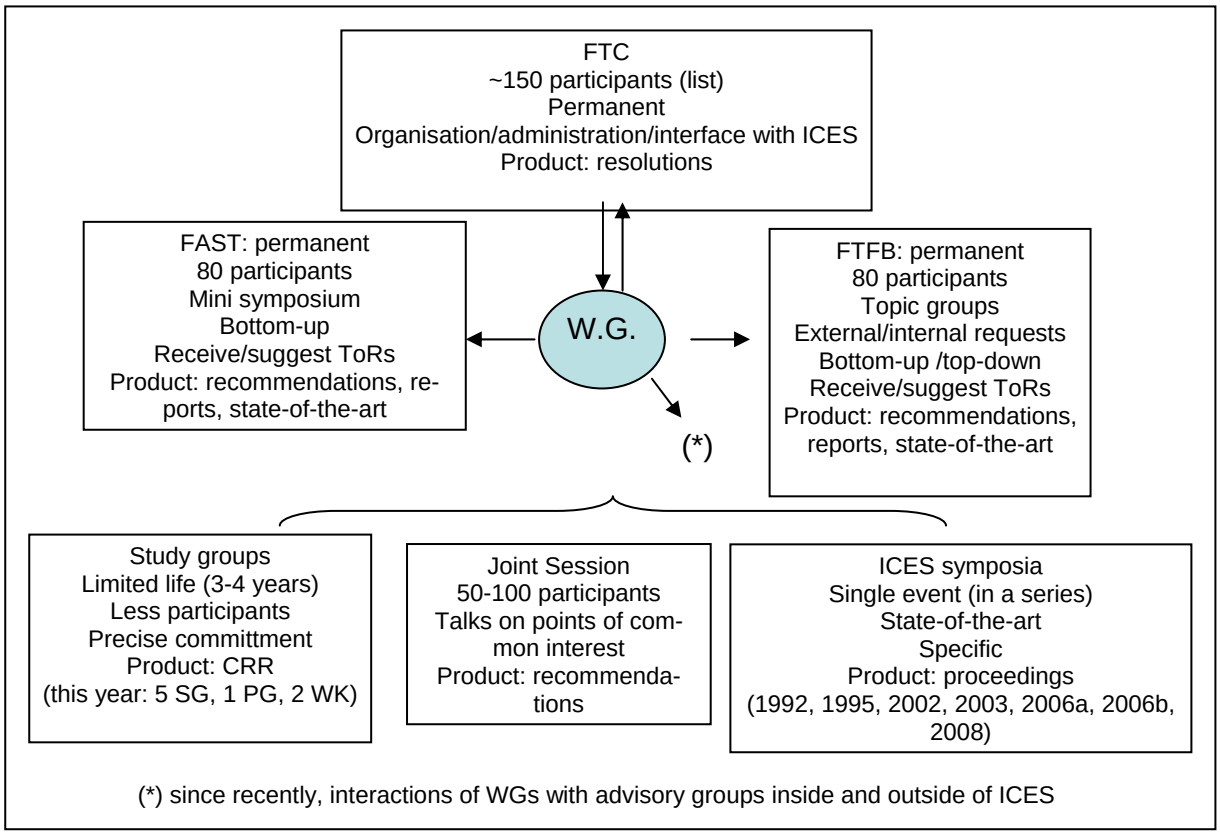
**(*) when FTC is mentioned, it is usually in connection with a broader observation concerning most of the Science Committees.**

On the other hand, a more detailed reading of ToRs for the various Science Committees shows that obvious links with FTC Expert Groups are not even mentioned, e.g. RMC/PGNAPES and FAST, OCC/WGMD and FAST, LRC/WGACEGG and both FAST/FTFB, etc.

The Committee participants agreed that some action must be taken to ensure more horizontal communication across Expert Groups and suggest that a meeting of Expert Group Chairs be held annually at the ASC. These Expert Group Chairs could present an overview of the work done and the array of Expert Groups in their Science Committee. This will promote dissemination in a horizontal and vertical direction, help forge stronger links across science committee Expert Groups, promote multidisciplinary collaboration, and reduce the risk of work duplication. Another related limitation in communication is the fact that committee meetings are scheduled during the theme session period, which results in many potential participants to business meetings not attending.

Another critical question was discussed: "Could more Expert Groups develop manuscripts for output as CM reports at the ASC?" This question opened a large discussion and it was recognized that FTC usually produces mostly either *Cooperative Research Reports* or grey literature. An intermediate format is lacking, e.g. publishing a review or state-of-the-art, etc. The idea of creating a small group of experts for producing a manuscript to be presented at a theme session, and/or as a manuscript for the *ICES Journal of Marine Science* was considered likely to enhance greatly the possibilities of Expert Groups in their scientific production.

The structure and functioning of FTC was then evaluated in terms of the structure of its Expert Groups. The different levels of FTC groups were analysed (WG, SG, Joint Session, symposia, etc.). A synthesis of the FTC structure is described in the following figure.



Currently, there are no serious problems in the two working groups. Although the two groups are equivalent in size and importance, they function differently in some respects.

FTFB is organized into "topic groups", gathering around 20 scientists, who consider a particular ToR. These topic groups produce a detailed document, either contributing to the *Cooperative Research Report* series or as a working document for internal and/or external consideration, e.g. technical conservation regulations. In addition to its other duties, the WG performs considerable consultative work, relating mainly to issues of fishing gear performance, requested by ICES client commissions and other ICES Expert Groups. The group's role has also expanded owing to the co-sponsorship by FAO, which has resulted in participation from a small number of FAO experts. The WGFTFB needs to foster collaboration with institutes in FAO countries to have an adequate knowledge base in the event of external requests outside the ICES areas. FAST, by contrast, focuses more on the science of fisheries acoustics, particularly with regard to stock assessment surveys, and is more self-directed in the areas of research pursued. This is the reason FAST still maintains its general organization under the format of a "mini-symposium", which allows a wide overview on the technological improvements and/or the arrival of new techniques and methods. The work of FAST is also done through "study groups", which have a more organized and longer life than the FTFB topic groups. Owing to their focus on a specific question this leads to the production of *Cooperative Research Reports*. As such, all the FTC participants agreed that no major change or evolution is needed in any of the two WGs, which are fulfilling most of the ICES IAP requirement.

Apart from the individual WG meetings the FTC normally organizes a joint session between the two WGs (with some exceptions when external constraints, e.g. organization of a symposium, invitation by different countries, etc. prevent the WGs from meeting together). The Joint Session allows a rather good insight for all the FTC participants regarding the work done inside the Committee. It allows work on questions of common interest, as well as on topics that are not of high priority (or even not specifically listed in the ToR of the groups). For instance, the new LIDAR technologies; the effect of fish avoidance on acoustic and fishing activities, etc. During the last FTC meeting in Rome, a small Expert Group chair meeting was organized, related to the Joint Session. The participants emphasized that such a meeting of chairs is a good opportunity to have a clearer idea of each group's work and that this experience should be renewed.

Nevertheless the Joint Session identified a series of drawbacks, mainly: lack of visibility of the Joint Session work; low productivity (the only output from the Joint Session is usually a paragraph inside the FTC annual report); no clear policy about Joint Session chairmanship. A revision of the way the Joint Session works is needed.

The last FTC activity is to sponsor symposia. There are three symposia to be held between 2006 and 2008. No major comment of change in the symposia organization is needed.

FTC evaluated the need of additional Expert Groups, recognizing the need to better consider subjects such as:

1) non-acoustic direct observation techniques and methods,
2) survey design and analysis,
3) behavioural ecology, and
4) fish catchability.

The first two issues are linked, and would require the formation of a new working group to consider them in detail. However, more deliberation on this is needed. For the remaining two issues, it is believed that they could be best addressed in the joint FAST and FTFB sessions. The FTC concluded that the Joint Session must be maintained and should better focus on issues of mutual concern, such as survey catchability (ToR q), or issues not directly included in

the ToR of either working group. The Joint Session should have an independent Chair to be most effective, rather than being simply a coordinated project between the two working group chairs. The Joint Session could lead a series of study groups related to fish catchability, e.g. fish avoidance to fishing vessels and fishing gear.

Study group structure and function were examined. The current study groups are often weakened by excessive size and a high turnover between meetings. Consequently, FTC recommended that the size be limited to a small number of participants who are committed for the duration of the group. To include a wider participation, the formation of study groups might be preceded by a workshop on the topic, which is then followed by the study group to focus the ideas into a written document (*Cooperative Research Report*).

Linkages of the working and study groups with the advisory groups were considered. The FTFB is increasingly called upon to provide advice to client commissions, which is likely to increase with the RACs coming on stream, and indirectly through various Expert Groups on specific management groups. Contacts have been taken during 2005 and ways for FTFB to support material to advisory committees exploited (see the FTFB report in this document). The relationships between FAST and the advisory committees was not discussed, although it has been pointed out that connexions with advisory groups using acoustics as an assessment method should be encouraged. More generally speaking, it is apparent that linkages between FTC Expert Groups and those in other science committees are not clear and do not correspond to the reality. FTC believes that one way to help to form more productive linkages is by instituting a meeting of Expert Group chairs at the ASC.

## New Committee business

### Forthcoming theme session topics, workshops, and symposia

*Four theme sessions are foreseen during the 2006 ASC:*

### Quantifying, summarizing and integrating total uncertainty in fisheries resource surveys

Conveners: David Demer (SWFSC, La Jolla, California, USA; david.demer@noaa.gov) and Stephen Smith (DFO, Dartmouth, Nova Scotia, Canada; SmithSJ@mar.dfo-mpo.gc.ca).

### Technologies for monitoring fishing activities and observing catch

Conveners: Bill Karp (FTC), USA, and Kjell Nedreaas (RMC), Norway.

### Use of data storage tags to reveal aspects of behaviour important for fisheries management

(Joint FTC/LRC – proposed ASC 2004). Conveners: David Somerton (USA) and Julian Metcalfe (UK).

### Spatio-temporal characteristics of fish populations and their environmental forcing functions as components of ecosystem-based assessments: effects on catchability

(Joint FTC-LRC – proposed ASC 2004). Conveners: François Gerlotto (FTC), France, and Dave Reid (LRC), UK.

*Three theme sessions are submitted for the 2007 ASC:*

**Environmental and fishery effects of lost and abandoned fishing gears** (FTC). Co-Conveners: Phil MacMullen (SFIA, UK) and Dominic Rihan, (BIM, Ireland).

**Mitigation of seal-induced catch and gear damages** (FTC). Convener: Petri Suuronen (Finland).

**Increasing energy expenses – another challenge for fishers. How do we compensate?** Co-Conveners: Bjarti Thomsen (Faroes) and (Sean Pascoe? –or another economist, UK).

*Three symposia are forthcoming:*

***2006***

**Fisheries Technologies for the 21st Century**. 30 October to 3 November, Boston, USA. Co-Conveners: Chris Glass (US), Bob van Marlen (the Netherlands), and Stephen Walsh (Canada).

**The Humboldt Current System**. December. Lima, Peru. Co-Conveners: A. Bertrand (France), R. Guevara (Peru), and P. Soler (France).

***2008***

**Fisheries Acoustics Science and Technology**. June, 2008. Bergen, Norway. Co-Conveners: E. Ona (Norway), D. Demer (US), and R. Kloser (Australia).

The three symposia are underway with no major questions or changes.

## Draft resolutions

The Committee approved all existing resolutions drafted by the Chairs of the Expert Groups with only minor changes for the continuing works.

## Future meeting locations

In 2006 the two FTC working groups will meet in separate places:

- FAST in Hobart, Australia, 27–30 March;
- FTFB in Izmir, Turkey, 3–7 April.

There will be no Joint Session in 2006, owing to these different invitations. The Committee agreed that such a situation should be avoided to maintain the organization of the Joint Session. This requires the two WGs to be invited by the same institute (or consortium of institutes) in the same place. The Committee understands that this represents a hard task for the inviting institute, as the work of the WGs requires the presence of more than 100 participants during a 10-day period (to include Study Group and topic group separate meetings). It is therefore likely that the Joint Session will not be possible every year. A minimum rhythm of one Joint Session every second year should be maintained.

In 2007, FAST and FTFB will meet in Dublin, Ireland, invited by BIM and MI.

In 2008, FAST will meet in Bergen, Norway, after the venue of the Fisheries Acoustics symposium. FTFB received an invitation from Faroe Islands.

Two invitations have been received for after 2008, from IFOP (Chile) and IMARPE (Peru), for both FAST and FTFB.

## New and continuing initiatives

**FTC involvement in the SCOR panel**

IN 2004 a presentation by Bill Karp (US) was given, presenting the new organization of the SCOR 118 on new technologies for observing marine life as a permanent panel. This new

group will continue through the auspices of CoML and is intended to provide fast-track advice to CoML projects. The purpose of a SCOR panel on this topic is to bring to the attention of the international community of fisheries scientists, marine biologists, biological oceanographers, and others the potential benefits of emerging technologies in the detection of marine life and how these can be economically deployed on large scales.

In 2004 the Committee recognized that the SCOR work could help the Committee develop a broad-based perspective on the development of ecosystem-based technologies. It endorsed the continuation of Bill Karp as our ICES representative on SCOR and recognized that there was a need for a regular update of SCOR activities from time to time.

During this meeting Bill Karp disclosed that, owing to his new activities, he would no longer be able to be present at the SCOR meeting, and he asked the Committee to find a new representative. As no direct answer was forthcoming from the participants, it was agreed that Bill Karp, in connexion with the FTC Chair, would call for a volunteer to be the representative of the FTC.

## Other Business

### Recommendation on the use of the Omega gauge

R. Fonteyne (Belgium) presented the final report of the work of his Study Group on the elaboration of a new mesh gauge to replace the old ICES gauge in use since 1962. A document was presented and will be published as a *Cooperative Research Report*, to function as a user manual. FTC considered the recommendation from FTFB on the adoption of a new standard mesh gauge for scientific measurements and strongly supports the three recommendations listed below:

**Recommendation 1**

The **Protocol for the use of an objective mesh gauge** as edited by R. Fonteyne (Belgium) and as reviewed and approved by the Chair of the Fisheries Technology Committee, will be published in the *ICES Cooperative Research Report Series*. The estimated number of pages is 10.

The manuscript is expected to be submitted to the Secretariat before 1 November 2005.

**Recommendation 2**

The OMEGA gauge and its associated protocol shall replace the existing ICES gauge in use since 1962 for application in fisheries research.

**Recommendation 3 (Interaction with other IGOs)**

The General Secretary shall write to the fisheries commissions in the North East Atlantic, including the Mediterranean and the Baltic, to NAFO, ICCAT, FAO, European Commission, EUROCORD, ISO, and CEN and to ICES Delegates, drawing their attention to the new ICES standard for measuring meshes in fishing gear. The letter shall encourage the organizations to use this gauge as their standard. In particular organizations responsible for control and enforcement of fisheries in the Northeast Atlantic shall be asked to use this gauge and to submit to ICES the data so collected. These data will allow the estimation of gear selectivity on a fleet basis; the use of the gauge is important to ensure data consistency and compatibility among mesh size measurements used by managers, enforcement agencies, fishing industry, and scientists.

### Fisheries Management in Marine Protected Areas

A presentation on a project on Fishery Management in Marine Protected Areas was presented by A. Kellermann, Head of Science Programme. The envisaged project is intended to investigate the effects of fisheries and individual fishing practices in bird-protected areas and NATURA 2000 areas of the German EEZ in the North Sea and the Baltic. Based on this knowledge, fisheries management plans are to be developed which comply with the demands of the ecosystem, and which do not jeopardize the goods to be protected, and which safeguard or restore the favourable state of these areas. Specifically, the fisheries in and around the bird protected areas and NATURA 2000 areas will be documented and their direct and indirect effects assessed. Potential conflicts between the objectives of protection and utilization will be analysed to serve as a starting point for the development of management plans for these areas. The management plans will be the end product of the project.

The FTC received the information and proposal. The Committee recognized that this question is critical for the monitoring of marine protected areas, and considered that as such FTC could provide help to the development of this project if needed by ICES.

The meeting adjourned at 12: 30 on 24 September 2005.

## Living Resources Committee (LRC)

Chair: Dave Reid (UK)

Rapporteur: Henk Heessen (Netherlands)

The Living Resources Committee had two sessions to discuss business: on Tuesday 20 September from 11: 30 to 18:00 and Saturday 24 September from 09:00 to 12:30.

## Opening

The Chair opened the meeting, welcomed the participants and it was agreed that Henk Heessen (Netherlands) would be Rapporteur. The agenda was presented and adopted. The Chair mentioned that in the afternoon of 23 September a joint meeting would be held, together with the Resource Management Committee, on surveys.

## Reports of Working Groups

All Expert Group Chairs were asked to provide reports on their work giving highlights and problem areas, rather than simple repetition of the full activities.

### Working Group on Crangon Fisheries and Life History (WGCRAN)

Axel Temming (Germany), Chair of WGCRAN, presented Doc. G:01.

In the data from the fishery a shift towards deeper water was observed in recent years, which may be related to higher water temperatures. A similar movement has been observed in juvenile plaice. There are many problems with the interpretation of effort data from different countries, each applying their own system. One important shrimp-fishing country (Netherlands) only provides information on effort and catch, but no spatial information. ToRs were fulfilled.

### Study Group on the Biology and Life History of Crabs (SGCRAB)

Julian Addison (UK), incoming Chair of SGCRAB, presented Doc. G:10.

This group has some doubts whether to continue as a SG or to suggest change to a formal WG. They are gradually preparing for assessments of brown crab (*Cancer pagurus*), but suffer from poor data on effort and size distributions. In addition there are problems with stock ID, and the interpretation of fisheries that target different species. As in WGCRAN there is a problem with the lack of spatial information. Should ICES send a message to national governments and EU that such information is essential?

Through the SG ICES can provide a forum for crustacean biologists from inside and outside the ICES community to meet in the interests of ICES. As long as they are interested this should be encouraged. The SG provides relevant information in an ecosystem context, but mainly through national research projects. There is less international integration.

### Working Group on Cephalopod Fisheries and Life History (WGCEPH)

João Pereira (Portugal), incoming Chair of WGCEPH, presented Doc. G:12.

It was noted that the work of WGCEPH is carried out predominantly by scientists from a university background. As such, this should be encouraged by ICES; however, there are problems obtaining funding to attend meetings. Recent work has been strongly linked with the EU-funded project CEPHSTOCK, which has helped ameliorate this problem.

As with the first two groups WGCEPH has a problem with availability and interpretation of effort data. The WG aims to more clearly identify what the data needs and limitations are.

Classical ICES assessments are not possible for cephalopods and the WG is looking for other approaches to the problem: what can we learn from the basic data such as distributions and age-structures. The problem is very much the same for WGCRAN, SGCRAB, WGCEPH, WGEF, and WGNEW.

It was suggested to organize a theme session in collaboration with ACFM in 2007 to bring this problem to a wider audience.

The group will use the material gathered under CEPHSTOCK to prepare a CRR for publication detailing the state-of-the-art.

### Working Group on Fish Ecology (WGFE)

Jim Ellis (UK), Chair of WGFE, presented Doc. G:05.

This group provides a comprehensive and wide-ranging service to a number of Expert Groups, particularly REGNS and also to ACE. The report noted a number of difficulties in fully carrying out its remit. For instance, it was noted that, although a very well designed and constructed acoustic survey was carried in the North Sea, it was targeted on herring, and possibly sprat, and provided little information on other pelagic species, e.g. mackerel. The known problems with the GOV (and indeed beam trawl) selectivity confound attempts to use this long-term survey series for issues such as biodiversity. Problems with useable and meaningful effort data were also highlighted.

The LRC Chair stressed the importance of publishing the work done by the group, either as peer-reviewed publications, or as a *Cooperative Research Report*. The WGFE Chair agreed and said that this was already underway.

### Study Group on Regional Scale Ecology of Small Pelagics (SGRESP)

Pierre Petitgas (France), Chair of SGRESP, presented Doc. G:06.

The work of the group has been extended to a wider range of pelagics including herring in the North Sea and around Ireland. The ID cards prepared for the different stocks were applauded and may be valuable input in the stock annexes of the ACFM report. The reports detail the important aspects of the life history, biology and ecosystem interactions for each stock, including distribution maps, life history movement maps, and schematics detailing the different ways these fish move and breed within the pelagic ecosystem. It was regretted that horse-mackerel is not included in the species dealt with by this group. There was no horse-mackerel specialist attending, and moreover there are many gaps in the knowledge of this species. It was suggested that the group should identify the knowledge gaps. The group proposes to be dissolved in 2006; however, the opportunity should be taken to consider operationalising the advice potential in this group, with some change in ToR. A closer relationship with WGRED may be one approach, or alternatively to extend the collaboration with GLOBEC.

The group proposed two workshops on mesoscale oceanographic processes (with OCC) and on long-term variability in SW Europe. The group will also aim for a *Cooperative Research Report* in their final year, although production of a number of peer-reviewed papers may be more appropriate.

### Working Group on Seabird Ecology (WGSE)

Stefan Garthe (Germany), Chair of WGSE, presented Doc. G:07.

This group is new to LRC and was able to show an admirable proactivity in its work. The group has been able to target upcoming areas of interest in advance and produce studies in a timely fashion. The LRC Chair noted that numbers of these would be suitable for publication, and the WGSE Chair agreed to investigate. The opportunity of having WGSE in LRC was taken to explore the potential for using the IBTS survey as a vehicle for more targeted and standardized seabird surveys.

Seabirds in the northwestern North Sea have shown very poor recruitment in 2004 and 2005. The species concerned have very different prey species, and life histories. Up to 50% of the population may not breed at any one time. Is this linked to poor recruitment in some fish species (Norway pout, herring)?

Discussion also focused on the lack of observations on an ecosystem scale. Should ICES work towards developing a protocol? This may be included in the earlier proposed theme session?

### Study Group on Stock Identity and Management Units of Whiting (SGSIMUW)

Phil Kunzlik (UK), Chair of SGSIMUW, presented Doc. G:05.

The activity of the group in its first year concentrated on scoping of the study and of the gathering of relevant data. The group will continue to study the issues by correspondence in the following year. The group is attempting to avoid received wisdom assumptions about stock structuring in the North Sea, and looking for what is supported by the data. It was suggested that there are possibilities for following a multimarker approach to whiting stock ID, such as has been done for cod, herring and other species.

There was some discussion on the fact that WGNSSK had not done an assessment of whiting in recent years, whereas whiting is one of the most important species in the North Sea.

### Stock Identification Methods Working Group (SIMWG)

Steve Cadrin (USA), Chair of SIMWG, presented Doc. G:15.

The group has introduced a new Co-Chair, Stefano Mariani (Ireland) to enhance the European aspect of their work, and in recognition of his work on herring stock structuring.

This group is now set up somewhat differently to most other LRC groups. Previously it was focused on producing a book on the state-of-the-art in this area. This book has been completed. The function of the WG is now seen as providing oversight in this important area of research. Relations with several active European projects should be formalized. The WG should critically review these and other projects and provide advice when asked, but at the same time be proactive and critical about new developments.

The WG should provide advice to assessment working groups on how the results of relevant projects should be used.

It will continue to monitor and update the state-of-the-art while meeting by correspondence.

## General comment from LRC Chair

The current meeting is the second where the Chair asked for reports from Expert Groups in a new format. Rather than concentrating on the routine business of the group and detailing of ToRs and response, the Chairs were asked to present a “warts and all” approach, concentrating on highlights and problem areas. This proved both stimulating and success. It was possible to identify common problem areas running through the work of many Expert Groups, as well as a number of useful synergies. It also engendered lively and productive discussion, resulting in new ToRs for some groups, and in two theme session proposals on alternative management

and on effort metrics. This process was enhanced by the very strong attendance by Expert Group Chairs. All but one Expert Group was represented by the current or incoming Chair. This is a GOOD thing. The presence of the incoming Chair is probably a very useful development and should be encouraged. The LRC Chair would like to thank the Expert Group Chairs for this strong support of the process.

## ConC and LRC business

The group had an extensive and wide-ranging discussion spread over the two sessions about the discussion document from ConC on the ICES structure. A presentation prepared by a number of scientists from Ireland was given on the subject. An e-mail communication was also received from Germany.

It was impossible to arrive at a complete consensus on what changes (if any) should be made in the ICES structure. Broadly, it was felt that the committee structure could usefully be modified, although there was no clear agreement on how this should be done. Equally, it was felt that the Expert Groups were generally doing their job well, and that no radical changes were required. The information below is collated from the discussion held at the meeting.

## Committees and their role

- Committees should be constructed as coherent scientific entities, with a make up and name that is easily understood and consistent.
- For example, LRC should be called Fisheries Biology Committee. It could then continue to contain the biology, ecology, and survey groups it currently includes. RMC might be designated as Assessment and Management Science.
- The contradiction between discipline committees like OCC or LRC, and the Baltic Committee was noted. LRC contains Baltic survey groups that would also be appropriate for the Baltic Committee, but which clearly benefit from the synergy of meeting with other survey groups.
- The assignment of Expert Groups to committees is not clear – why are North Sea GOV surveys in RMC and North Sea beam trawl surveys in LRC?
- It was suggested that groups delivering material to the assessment and advisory process should all be under the advisory committees, but many felt that this would diminish the science element.
- The role of the committee as an auditor of the system, particularly to identify overlaps, synergies, gaps, and future needs was recognized and agreed.
- The REAL committee was felt to actually be the Expert Group Chairs and a small number of active committee members. Most of the committee members do not turn up and do not contribute. It was suggested that the committees should explicitly include the Expert Group Chairs, and that attendance at the ASC should be a requirement for an Expert Group Chair. The Expert Group members should also be explicitly invited to come to the committee meetings.
- It was suggested that as members were nationally nominated, this nomination should include a requirement to attend meetings in their job descriptions, along with associated resources.
- The review role of committees was discussed. The idea received a mixed reception. Many felt that the new structure of presentations requested by the LRC Chair and the subsequent discussions represented a good quality of review. It was agreed that if possible, the committee members should have a role in review, and that the LRC Chair should compile a catalogue of skills of members. Requests for reviews should be considered part of the mandated role of a member and supported by their home institutes.
- Committees should be promoters of science in their field. But it was felt that for LRC at least this is already the case. The strong listing of theme sessions, new groups, and

symposia are evidence of this. New science and research initiatives are regularly raised in the committee, e.g. CoML and ERANET at this meeting. The venue is also used to initiate EU and other projects by members and active participants.

- The problem of when and how to hold committee meetings was discussed. The solution of committee meetings parallel with theme sessions was universally condemned. The idea of having meetings within the ASC was approved, but it was suggested that a dedicated committee day in mid-ASC would be better, although there were worries this would be seen as a "shopping/sightseeing day" by ASC attendees.
- The position of committees in developing policy in ICES was unclear to some institutes. What is the advantage to a national organization in participating in a committee?

## Expert Groups

- As stated above it was felt by the group that the Expert Group system was working quite well.
- There was strong support for the idea that the system should contain a significant bottom-up drive. Creation and running of an Expert Group requires commitment and time plus resources. Proposals from the floor usually reflect a combination of both personal and institutional commitment and are likely to be success.
- It was agreed that top-down driven groups could also have a role, either based on emerging issues or on an audit of the Action Plan. But in this case, the membership and institutional commitment should be explicitly clarified in advance. When a national delegate signs up to a new group, particularly a top-down driven one, they should also commit to support it. There are examples of failure in both kinds of groups, and lessons should be learned.
- Lack of awareness of one Expert Group by another was highlighted. It should probably be the committees pointing out these overlaps, and the idea of back-to-back or joint meetings to improve this was applauded.
- The idea of Expert Group-based publications received general agreement. Expert Groups are generally happy to try to produce joint publications as a *Cooperative Research Report* or as peer-reviewed publications. Many new lines for this were identified at this ASC.
- The term of Expert Groups was discussed. It was agreed that in some cases a fixed term was useful. The use of workshops and short-term Study Groups was agreed as a good route. But the life of a Study Group, particularly when aiming for a *Cooperative Research Report* should by default be four calendar years, not three. Many Expert Groups will be able to determine their own life history. PGAAM for example felt that it had run its course. The group attempted to build a wider collaboration on mackerel surveys. This was unsuccessful, so they proposed winding up the group and returning to bilateral coordination. SGRESP, although playing a key role in ecosystem interactions felt that as a Study Group they would complete their work within 3 to 4 years, but that some follow-up with different ToRs may be appropriate. In essence, the members felt that the birth and death of Expert Groups can largely be trusted to the active scientists in the field.
- A mechanistic review of ToRs was not felt to be useful. Some ToRs could not be fulfilled, and this could be reported, but essentially represented the reality of what could be done with the level of resources committed. Priority listing of ToRs would be very useful.

## Theme sessions 2005

The committee noted that four theme sessions sponsored by LRC were held at the Aberdeen ASC. These were:

- Marine mammals: Monitoring techniques, abundance estimation and interactions with fisheries.

- Multidisciplinary approaches to the identification of stock structure of small pelagics: implications for assessment and sustainable management.
- Elasmobranch fisheries science.
- Advances in reproductive biology: methodology and applications for fisheries science.

All were well supported with papers and posters and well attended. This speaks well for the commitment and productivity of the LRC community and particularly the conveners.

## Theme sessions 2006

Theme sessions proposed by LRC and currently agreed for 2006 are as follows:

- Large-scale changes in the migration of small pelagic fish and the factors modulating such changes. Conveners: Jürgen Alheit (Germany) and Dave Reid (UK).
- Selected results from CoML. Convener: M. Sinclair. The text has been altered; however, the title needs changing.
- Evolutionary effects of exploitation on marine resources. Conveners: Mikko Heino (Norway), Ulf Dieckmann (Austria), and Jeffrey A. Hutchings (Canada). With RMC.
- Spatio-temporal characteristics of fish populations in relation to environmental forcing functions as a component of ecosystem-based assessment: effects on catchability. Conveners: Francois Gerlotto (France) and Dave Reid (UK). With FTC.
- Use of data storage tags to reveal aspects of behaviour important for fisheries management. Conveners: David Somerton (USA) and Julian Metcalfe (UK). With FTF and RMC.

It was agreed that the theme session entitled "The ecosystem approach: what's the impact on marine science, science-based advice, and management of marine ecosystems", with Conveners Dave Reid (UK), Simon Jennings (UK), and Einar Svendsen (Norway), should be held back until 2007.

LRC also agreed to propose a new theme session for 2006 entitled "Discarding: quantities, causes, and consequences". Conveners: Marie Joëlle Rochet (France) and Lisa Borges (the Netherlands).

## Theme sessions 2007

Theme sessions proposed by LRC for 2007 are as follows:

1) Alternate approaches to management advice and assessment in fisheries; flying outside the ICES Assessment WG paradigm. With ACFM. Conveners: Julian Addison (UK) and João Pereira (Portugal), and one from ACFM ????
2) Capacity and effort metrics: methods and madness? With RMC and FTC. Conveners: Axel Temming (Germany), plus one each from RMC and FTC.
3) Monkfish across the world; common problems and common solutions. Conveners: Jean-Jacques Maguire (Canada), Pilar Pereda (Spain), Rafael Duarte (Portugal), and Helen Dobby (Scotland).
4) Marine biodiversity: A fish and fisheries perspective. Conveners: Jim Ellis (UK), Remment ter Hofstede (the Netherlands), and Henn Ojaveer (the Netherlands).
5) The role of sea ice in polar ecosystems. Conveners: Garry Stenson (Canada), Ken Drinkwater (Norway), Kai Wieland (Greenland), and Bob Dickson (UK).
6) The impact of anthropogenic noise on marine organisms. With FTC. Conveners: Kjell Olsen (Norway), Edward Trippel (Canada), Tony Hawkins (UK), Peter Tyack (USA), and Peter Liss (UK).

## Proposals for symposia

LRC supported the proposal by Luis Valdez (Spain) for a symposium on climate change impacts in 2008.

## Draft resolutions

Draft resolutions were adopted for all Working/Study and Planning Groups residing under the Living Resources Committee.

## Any other business

### Proposals for new groups

Three new proposals for new groups were presented to LRC. Full details and justifications are attached. The three groups were as follows:

1) **Study Group on Recruitment Variability in North Sea Planktivorous Fish** [SG RECVAP]. IJmuiden, the Netherlands. 16–20 January 2006.

Chair: Mark Dickey-Collas (the Netherlands)

Autumn-spawned herring, spring-spawned sandeel, and Norway pout in the North Sea have all exhibited poor recruitment from 2002 to 2004 inclusive. In light of this serial poor recruitment, the SGRECVAP will meet to:

a) Report and assess what mechanisms, both far field and *in situ*, could lead to severely reduced recruitment in all three species and estimate the probability that these recent recruitment events are purely coincidental;
b) Determine what data are available on the seasonal trends in hydrography, planktonic production, ichthyoplankton-predator abundance, anthropogenic influence, and adult fish behaviour in the North Sea to test hypotheses for serial poor recruitment reported in ToR a and to carry out preliminary testing;
c) If plausible causative links can be established, report on any candidate early warning signals that could be used to assist in determination of recruitment scenarios for short-term projections of stock numbers?

2) **ICES/GLOBEC Workshop on long-term variability in SW Europe** [WKLTVSWE]. Lisbon, Portugal, or Santander, Spain. 20–24 November 2006.

Co-Chairs: Jürgen Alheit (Germany), Alicia Lavín (Spain), Andres Uriarte (Spain), and Maria de Fatima Borges (Portugal)

Long-term studies are essential in understanding decadal-scale changes in the environment and in the associated fisheries. This task has been done in some areas e.g. the North Sea, but neglected in others, e.g. Iberian Waters. This group aims to rectify this situation through the following ToRs:

a) rescue, collate, and jointly analyse decadal-scale, long-term time-series of physical, chemical, and biological data from ecosystems surrounding the Iberian peninsula, with focus on the long-term changes in small pelagic fish;
b) to identify possible links to climate variability;
c) to look for possible telecommunication patterns with European and other marine ecosystems.

3) A **Workshop on Age Determination of Redfish** [WKADR] will be held in Vigo, Spain, from 28 August to 1 September 2006.

Co-Chairs: F. Saborido-Rey (Spain) and C. Stransky (Germany)

Reliable age determination data are the basis of age-based analytical assessment of the species and stocks under investigation. For redfish, recent studies have revealed considerable discrepancies in ageing criteria. Thus, different interpretations of the otolith structures of the various redfish species are made by the different countries, resulting in large differences in age per length class in, at least, *S. mentella* and *S. marinus* around Iceland and in the Irminger Sea. This is a critical deficiency in our ability to assess this commercially important stock. The workshop will meet to:

a) review information on age determinations, otolith exchanges and validation work since the most recent redfish age-reading workshop in 1995;
b) identify sources of age determination error in terms of bias and precision, describe the corresponding interpretational differences between readers and laboratories, and agree on the ageing criteria;
c) compare different otolith-based age determination methods for redfish and their effect on growth estimates;
d) analyse species- and stock-specific growth rates and growth increment patterns and provide corresponding specific guidelines for the interpretation of growth structures in otoliths;
e) propose a methodology to combine time-series of age readings based on scales and otoliths;
f) set up a strategic plan for routine age determinations during the next five years and for the inclusion of age data in the analytical assessment of the most important stocks.

## Close

The Chair thanked the Rapporteur for his help with the report of the LRC session and thanked all members for their participation in the discussions.

## Mariculture Committee (MCC)

Chair: Thomas W. Sephton (Canada)

Rapporteur: Ian Bricknell (UK)

The Mariculture Committee met on Wednesday 21 September 9:00–12:30 and on Friday 23 September 13:30–18:00.

### Attendance

Nine Committee members, five WG Chairs (one also a Committee member), and one observer attended the meetings. Twenty-nine members and others sent their regrets at not being able to attend.

## Opening and introduction

The meeting began at 09:00 with attendees, committee members and observers introducing themselves. The Chair presented a brief overview of the Mariculture Committee and its role, function, and structure within ICES for the benefit of those attending.

### Appointment of Rapporteur

I. Bricknell was proposed as Rapporteur and accepted by the Committee.

### Adoption of Agenda and Timetable

The meeting time table and agenda were circulated before the meeting, discussed briefly, and adopted. Volunteers were sought to serve on the Awards Committee. Tom Sephton agreed to represent MCC.

## Arrangements for MCC meeting, and for 2005 ASC

The MCC meeting was partitioned over two working days:

Part I: Wednesday 21 September 2005, 9:00–12:30

Part II: Friday 23 September 2005, 13:30–18:00

## Committee business

### Reports of Expert Groups

WG Chairs were requested to prepare short presentations summarising the highlights, significant results, and bringing forward outstanding issues for discussion. For example, progress being made in relation to achieving the ICES action plan or a ToR being suggested for other Expert Groups to consider.

It was noted for the MCC record that, in the future, all WG reports will be reviewed in light of the following criteria:

1) Were the Terms of Reference properly addressed and completed?
2) Is the report clear and understandable?
3) Is the science quality adequate?
4) Are the conclusions well supported and acceptable?
5) Linkages to ICES Action Plan, other topics, or work elsewhere in ICES?
6) Is the work suitable for an ICES publication?
7) How should the work be continued?

8) Other points to note or query?
9) Was attendance adequate?
10) Was the range of expertise appropriate or adequate?

## WG on the Application of Genetics in Fisheries and Mariculture (WGAGFM)

E. Kenchington (outgoing Chair) presented the report. The meeting was held 3–6 May in Silkeborg, Denmark. There were 19 attendees from ten countries, with ten apologies.

Of these, 12 were official members and seven were Chair-appointed experts, including two members of the European Commission Joint Research Centre involved with a programme called Fish Trace.

The meeting addressed five Terms of Reference.

Einar Eg Nielsen, the new Chair of WGAGFM was welcomed. The 2006 meeting is to be held at the Marine Institute, Newport, Ireland in April and the 2007 meeting is proposed to be held at the ECJRC, Ispra, Italy.

### ToR a

Document the evolutionary ability of fish stocks to respond to climate change by reviewing the information on the nature and rates of environmental change.

- a very thorough discussion of the issues surrounding climate change and the ability of species to adapt;
- there is a range of scope for adaptation among fish species with respect to thermal tolerance and the physiological limitations are discussed.

### ToR b

Evaluate methods and provide recommendations on the application of mixed-stock and assignment analysis to elucidate stock components, with an emphasis on marine fish and fisheries.

Review of the various statistical methods commonly used in MSA, and their applications to the date function. It was proposed to compare and evaluate the properties of the different methods, giving examples from Baltic salmon and Atlantic herring, following which a discussed ensued which identified the most likely best performing marine species; 12 recommendations were made.

### ToR c

Synthesize the evidence and methods for detecting local (genetic) adaptation in marine fish.

This ToR was suggested for the 2005 WG meeting, and before the meeting an outline for a position paper was produced. The WGAGFM discussed the outline in detail and concluded that local adaptation in marine fish populations is a crucial topic, of utmost relevance to fisheries management and conservation biology. It was decided to continue work on this ToR c into 2006. The WG developed an extended outline for discussing and reviewing the topic at the 2006 meeting.

### ToR d

Evaluate the usefulness of probabilistic maturation reaction norms as ecological quality objectives (EcoQOs) to send an early warning signal for the negative impact of fishing and other anthropogenic activities.

The outcome was that the WG endorsed the use of PMRNs as EcoQOs and made recommendations regarding the research needed to establish reference points. This ToR compliments the work done by WGECO and provides another metric for protecting genetic diversity.

**Discussion:** If maturation norms are overlooked in maturation biology, aquaculture may be useful in validating models of maturation assuming that aquacultured fish reflecting the genetic model. However, there is a problem as this experiment is very long term, at least 10–15 years.

**ToR e**

Evaluate the evidence for genetic erosion and changes in life history characteristics of local stocks owing to mariculture activity.

The WG had expected to have more material to synthesize for this ToR, but very little has in fact been published over the few years since it was last addressed. The topic is updated and three research recommendations were made.

## Any other business

Presentation by the European Commission on FISHTRACE – a database containing information on fish abundance, distribution, etc., with genetic information included. They are exploring the "bar code" of life hypothesis, using CO3 and cytochrome b genes. They received advice regarding the suitability of this gene to monitor biogeography, etc. E. Verspoor has developed a salmon genetic database to identify salmon families.

## Discussion

The ecosystem approach could be important *c.f.* climate change, with an anthropogenic effect of K-R conversion occurring, allowing reduced maturation time. This would allow a faster reaction and adaptation to environmental change. However, R species selection destabilizes ecosystems, combined with fishing pressure, climate change, etc. It was suggested that this observation is a genetic effect and could be irreversible.

## WG on Environmental Interactions of Mariculture (WGEIM)

Presented by F. O'Brien. The meeting was held in Ottawa, Canada, 11–15 April 2005 and attended by 11 participants from seven countries. A number of aquaculture countries were not represented and specific invitations may need to be considered. Four members of this WG are also members of the GESAMP WG. Six Terms of Reference were addressed.

**ToRs a and b**

*Environmental risk assessment and communication in coastal aquaculture*

The outcome was to increase cooperation with GESAMP WG 31 and produce a template document with detailed case studies (Preliminary draft of "state of knowledge" of the potential impacts of escaped aquaculture turbot, sea bass, sea bream, halibut, and cod).

So far a template document and five case studies have been produced in draft form and a poster was presented at ASC (Davies *et al*. ICES CM 2005/T:21).

This year's discussions covered turbot and are expected to be finalized this year. The goal is to publish the work, possibly in *Aquaculture*. It has been circulated to WGAGFM for review.

**ToR c**

*Assessing the impact of various EU initiatives on mariculture*

Water Framework Directive: WFD has been active for five years, is very well structured with set time deadlines and an ultimate goal in 2015 of achieving good status for all water bodies. In addition the European Marine Strategy may impact offshore aquaculture.

**Progress:**

The WFD (implementation fully underway) and aquaculture is considered an environmental pressure and designated as an "at risk" category; however, further characterization is required. EMS has had a delayed implementation but will impact beyond the boundaries of WFD in offshore areas and may impact offshore aquaculture initiatives.

It is proposed to continue to monitor EU initiatives and impacts on aquaculture. Aquaculture is an "at risk" activity and the risk needs to be quantified as real or perceived. The aim is to publish a document in October 2005.

**Discussion**

Thanks from the Chair on the diligence in monitoring European Union key issues and the ensuing advice is very much appreciated by advisory commissions. It was suggest that this is keep as an active ToR. F. O'Beirn said that it had been beneficial having both ICES and the national roles contributing from both sides.

**ToR d**

*Evaluate the recent development during the past five years in carrying capacity models for shellfish with a view to proposing an ICES theme session or co-sponsored symposium in this area*

So far four types of models have been discussed:

- Physical
- Production
- Ecological – focus of theme session!
- Social

Action point: Discuss further with Chair of WGMASC.

The group carried out a thorough review of carrying capacity, had discussions about developing a symposium covering ecological factors, but found there was little enthusiasm.

It was not clear how to proceed, although it was felt it was an area worth pursuing, if only in discussion.

Discussion: A question from the floor pointed out that the concept of carrying capacity in shellfish is an issue of interest to WGMASC, so the new Chair of WGMASC is the key in supporting the work that will contribute to this ToR.

**ToR e**

*Consider and evaluate the possibility of a 'sustainability index' concerning environmental interactions of mariculture*

Currently, two areas are proposed for the sustainability index which are: 1) important for managers to monitor aquaculture activities, and 2) review existing indices by monitoring the EU FP6 project recommending indices.

These criteria must be scientifically credible, adaptable, and sustainable.

This ToR is very topical, and judgement was deferred.

**Discussion**

The evaluation started in 2004 and is due to finish in 2007; there have been some recommendations on the identification of useful indices.

**ToR f**

Consider and evaluate the current state of integrated culture systems with a view to assessing the potential of polyculture to mitigate the environmental effects of mariculture.

Progress: Broad range of definitions MTA, polyculture, integrated aquaculture, ecological/sustainable aquaculture:

| ADVANTAGES | DISADVANTAGES |
|---|---|
| reduction in net effluent | technically complex |
| shared operational resources | expertise required |
| intensification of production | greater areas required |
| public perceptions | |

The benefits of culturing species together should be confirmed and research promoted to overcome the technical challenges associated with open and closed/recirculating systems.

**WGEIM 2006 goals**

To reduce the report size it is proposed to produce sections as stand-alone documents that may be considered as an entity in themselves but which may also be added to increase participation from member countries, especially those countries whose main interest is shellfish and who see the WG as being mainly directed at finfish.

**Discussion**

It was suggested that escapes from turbot farms is a big issue as most turbot culture is carried out on onshore farms. However, it was confirmed that net culture is being explored in some member states and so escapes need to be considered.

*Ecological carrying capacity and other ecological impact of phytoplankton consumption.* Work carried out in the 1970s has not been updated since. The feeling from the floor was that next generation modelling is required.

Fish production statistics are no longer going to be collected by the WG – they were never corroborated by other groups and once submitted were never referred to. They became out of date more rapidly than they were uploaded. This data collection function should now be left up to national groups.

## WG on Marine Fish Culture (WGMAFC)

Presented by T. Sephton on behalf of A. Mangor-Jensen who was not able to attend.

The WGMAFC has suffered recently from poor attendance in spite of tremendous success over 15 years. There are worries that the WG will cease to exist if the current situation continues.

Fish welfare is a big issue which needs to be addressed: policies, application, and code of practice covering the use of animals. WGMAFC has not yet met to address these issues, but this could be a major role for this WG in future.

Terms of Reference remain intact from last year, but no formal report has been made.

Interestingly, the WGMASC group came into existence because there was not enough time in WGMAFC to do their ToRs justice.

WGMAFC are planning to meet next year, but the venue has yet to be confirmed.

## WG on Marine Shellfish Culture (WGMASC)

Presented by A. Bodoy. The third meeting of WGMASC was held in La Rochelle.

It was attended by seven members from six countries (including Spain and Denmark, important shellfish producers). Three terms of reference were addressed:

*ToR a* continued from the previous year: update the synthesis and prepare a publication on the development of shellfish hatcheries within ICES countries. This will examine the technical infrastructure and methods (water treatment, broodstock conditioning, feeding schedules, etc.) of the different hatcheries, the proportion of cultured animals to wild conspecifics being used as broodstock, and the application of genetic tools (e.g. triploids) to develop hatchery strains. A comprehensive review of the species cultured in ICES countries was also presented; as were quarantine and broodstock origins.

**Outcome**

Progress on this ToR was based on the use of a dedicated questionnaire. A draft version was tested last year, and before the meeting, it was sent to as many hatcheries as possible. Personal contacts ensured a larger return rate. However, several hatchery managers were reluctant to give quantitative data on their production.

**Recommendations**

WGMASC suggests that MCC considers ways for the collection of data on annual shellfish hatchery production to be implemented at a national level by countries. A questionnaire was presented to be used as a guideline.

"WGMASC suggests MCC to recommend that the shellfish hatcheries should use the FAO manual while taking into account the latest developments in hatchery technology".

When a national survey on shellfish hatchery production is installed, WGMASC recommends that WGITMO monitors the implementation of the Code of Practice on the Introductions and Transfers of Marine Organisms for hatchery-produced shellfish.

*ToR b*: prepare a state of knowledge report comparing and contrasting the standard methods used to measure stress indicators in shellfish and provide a discussion on how they would be used to diagnose incidents of cultured shellfish mortality – a large problem for farmers through loss of production.

**Outcome**

*A definition of stress:*

In life, organisms adapt to normal changes, such as temperature, salinity, and oxygen supply. In contrast to this are extreme situations from which the whole population is unlikely to survive, i.e. typically extreme physiological challenge (Akberali and Trueman, 1985). Living in tidal environments or being subject to mechanical actions, such dredging may lead to adverse situations that are considered as stressors (Marin *et al.*, 2005; Smaal *et al.*, 1991).

Indicators should have the following properties:

- Should allow for simple fast measurements, analysis of complex processes and test results.
- These analyses should be useable by and explainable to non-specialists, such that they can take action to prevent and limit effects.
- Early warning of a problem is essential, e.g. by applying

- a fast specific and sensitive test for known parameters.
- The management tools should be systematic and robust, communicating changes that have the potential to lead to a problem and direct to appropriate action.

**Recommendations**

The WGMASC recommends that this term of reference should remain active, and be developed for the next meeting. Therefore, intersessional work will be organized under the leadership of David Fraser, with the mandate to stimulate the production of the last point of ToR b, that is" provide a discussion of how (stress indicators) would be used to diagnoses incidents of cultured shellfish mortality".

*ToR c: Performance indicators and carrying capacity*

HAB

A list of the main impacts of HAB on shellfish culture is given. The group felt that the right competences on this subject were not available.

Diseases

The same remark applies to this item, but the group acknowledged the contribution from WGPDMO on:

- information related to the distribution causes and significance of the summer mortality syndrome in *C. gigas*;
- the effects of contaminants on immune system of shellfish; and
- the applicability of "health indices".

**Outcome**

*Performance indicators of carrying capacity*

1) Indicators must be of the highest scientific credibility and be accepted only after considerable review of the chosen index;
2) In the development of indicators relating to aquaculture activities it is important to consider them from a managers' perspective;
3) Indicators do not only have to be scientifically credible but must also be simple to measure, be cost effective, and have practical applicability to the aquaculturist;
4) Indicators must be flexible enough to be adapted to the local environment in which they will be used;
5) The ability of an indicator to be accepted by all sectors would be an invaluable tool. The indicator must therefore have relevance to all sectors and detect the linkages between them.

Seven potential indicators were identified and are listed below:

1) Growth (individual and population) – both should be reported;
2) Mortality (during period of production) if available may be useful particularly for contained culture operations (e.g. for protected culture, clams, oysters);
3) Production time to harvest size – it is important to note whether there is a minimum acceptable size or if there are legally set sizes for the aquaculture product;
4) Yield per production area – this would need to be standardized in terms of weight, volume, and production area (spatially and temporally);
5) Meat content – for the producer the important statistic might relate to the yield at harvest;
6) Fouling – the abundance or coverage degree of fouling organisms should be estimated and related to the location, depth, density, and size of culture organisms;

7) Predation – does the abundance of predators relate to location, depth, density, and size of culture organisms? Estimates of lethal or sub-lethal predation might be useful.

**Recommendations**

WGMASC recommends to MCC that a theme session at ICES ASC 2006/7 is dedicated to recent advances in the assessment of carrying capacity and related management tools used in shellfish culture. This session will be jointly sponsored by WGMASC and WGEIM.

WGMASC recommends to MCC that a comparative study of different management systems is carried out with a view to identifying and testing the response of indices under different production conditions and management regimes. The goal will be to identify the key indices.

WGMASC recommends to MCC that the stakeholders should be consulted on the development of carrying capacity models so as to provide valuable input into potential constraints and assessing the value of selected performance indicators. The stakeholders should include industry members/representatives, conservation interests, regulatory representatives, and academia.

WGMASC recommends to MCC that the HAB and Disease sections be completed intersessionally and approved in 2006 with a view to closing this term of reference.

**Discussion**

The WG commented that recommendations should be made to the parent committee and not directly to ICES.

A question was posed whether stress indicators were aimed at disease only or whether disease and environment, etc. were monitored jointly. There was an additional proposal for different indicators for different species.

## WG on Pathology and Diseases of Marine Organisms (WGPDMO)

An overview for 2005–2006 was presented by T. Lang. The WGPDMO is a long-standing WG and held its first meeting in 1976.

Its focus is on wild and farmed marine organisms, finfish, and shellfish, but not marine mammals and birds.

The meeting was held 8–12 March at IFREMER, France, attended by 23 delegates from 12 member countries + Lithuania. The WG was especially pleased to have three experts from Russia in attendance at the extremely well organized meeting.

Eleven ToRs were addressed. Background documents were prepared and disseminated before the meeting.

*The following topics were covered:*

- New disease trends in wild and farmed fish and shellfish – countries were asked to submit national reports before meeting, including countries not represented at the meeting;
- Specific diseases/pathologies in farmed fish/shellfish – e.g. heart and skeletal muscle inflammation (HSMI) in salmon, plankton-related mortalities in farmed fish, summer mortality syndrome in oyster (not only a problem in oysters in France, but also in blue mussels in other countries);
- Interactions between wild and farmed fish – sea lice and management measures (this is very political);
- Biological effects of contaminants – effects on the immune system of fish and shellfish, guidelines for integrated chemical and biological effects monitoring, QA;

- Environmental assessments – availability of ICES disease data, development of 'health indices' in wild fish as ecosystem health indicators, effects of diseases on wild fish populations, Baltic Sea Regional Project (BSRP) (data in the ICES database is submitted by countries and used for environmental assessment. The WG is currently interested in disease at the fish level, but will be looking at the population level in the future);
- ICES publications (WGPDMO Website, Environment Report, Disease Leaflets, *TIMES* papers) – developing statistical methods to assess disease data.

WGPDMO 2005 products were transferred to *ICES Advice* through ACME and these reports consisted of:

- Trends in wild and cultured fish, molluscs, and crustaceans (*National Reports by Member Countries*);
- Review of 'health indices' used for the interpretation of data obtained from biological effects monitoring activities and assessment of their applicability in relation to fish disease monitoring (*W. Wosniok, K. Broeg, and S. W. Feist*);
- Review of effects of contaminants on the immune system in fish and shellfish (*K. Broeg, T. Renault, M. Auffret, and B. Gagnaire*);
- Report on the distribution, causes, and significance of the Summer Mortality syndrome in the Pacific oyster (*Crassostrea gigas*) and in other bivalve species (*T. Renault, S. Ford, and J. F. Samain*).

WGPDMO has collaborated with SGEH/BSRP in 2005.

An **ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea** [WKFDM] (Co-Chairs: Thomas Lang, Germany, and G. Rodjuk, Russia) will meet for 7–10 days in December 2005 onboard RV Walther Herwig III to:

a) provide training and inter-calibration related to methodologies applied in fish disease monitoring in the Baltic Sea;
b) further develop and assess health indicators and indices appropriate for monitoring and assessment purposes;
c) establish a closer collaboration between institutes involved in fish disease monitoring in the Baltic Sea;
d) build the basis for incorporation of fish disease surveys into the revised HELCOM monitoring programme.

WKFDM will report shortly for the attention of the Baltic Committee (and MCC, ACME).

This project is sponsored by World Bank, to provide eastern Baltic countries with funding so they can participate in international monitoring. Focus is on the eastern countries as they have most need for training.

There are at least eleven ToRs for next year's meeting.

The next meeting is to be held at ICES Headquarters in Copenhagen 7–11 March 2006.

**Discussion**

It was suggested that there is an overlap between WGPDMO ToR health indicators and those of MGMASC; if this is the case how can the overlap be eliminated, or can it be used in synergy? Conversely this can be seen as an advantage and there is good communication between groups with exchange of material. It was also noted that there was good communication with the contaminants group.

It was proposed that a method to formalise links between the different WGs be explored. The Chair suggested that the best way of doing this was face-to-face discussions between the WG Chairs at forums such as the Annual Science Conference.

## Consultative Committee and Mariculture Committee business

### ConC Discussion paper on the Role of Science Committees and Expert Groups

A letter introducing the subject was sent to all MCC members and WG Chairs before the ASC. In essence, given that ICES has renewed itself during the past few years, two basic questions were posed:

- Do we have the right mix and composition of WGs to serve the new mandate of ICES?
- Do we need the Science Committees like MCC in a new structure?

There will be a full-scale review of WG roles and responsibilities in light of ICES Strategic Plan and the general move towards an ecosystem approach (e.g. WGREGNS). We are both a marine science and an advisory organization composed of a bottom-up assemblage of basic Expert Groups. Part of the reason for this discussion is the simple fact that our own MCC, along with a few other Science Committees, has not been functioning the way it was envisioned with the restructuring of ICES. We know that the WGs are fully functional and that the WG Chairs form the main body for the discussion of all of our MCC ideas. The MCC has not made a significant contribution for at least five years, and consequently, it may be time to restructure the role of Science Committees as a whole. The WGs do require a coordinator of some sort to represent them at ConC, but probably not an elected Chair of a non-functioning Committee composed of nationally appointed members. Where does that leave us? The discussion ensued.

It was pointed out that members of the Mariculture Committee are nominated by the Delegates. There should be 28 members in attendance, yet only seven or so regular members turn up at Annual Science meetings. It was also pointed out that three MCC members have retired but are still on the MCC members list as the Delegates have not yet replaced them.

**Discussion**

Apart from stock assessment groups most WGs only report to a scientific committee.

WGs are considered to be the ICES stronghold. MCC is not the only committee suffering from this malaise. Many other committees have excellent support for their WGs, but poor support for their committee work. WGs engage in science, whereas the committee is the layer of middle bureaucracy that is intended to help the WGs, providing steering and feedback. Other committees have little or no interaction, and people asking for feedback is rare – they get it straight from the WGs, not the associated committees.

Letters were drafted and sent out by the MCC WG Chairs regarding the future role of the Committee, to which no reply was received. The letter asked how to coordinate expert groups, how to work with them, and how to deal with the output. The Committee itself did not respond formally, but the advisory group proposed a response from the advisory committee, a draft of which now exists from WG on the Marine Environment. The letter asked if the Committee has the correct mixture of WGs; the general belief is that this is the case. Some are more active than others, and there may be scope for an expansion.

Do we need other working groups to collaborate with us? Probably – algae blooms, introductions of exotic species, and ballast water issues were all identified as potential collaborative working groups.

Need a mechanism with WG Chairs to get input to consultative committee. Do we need another intermediate committee or a coordinator? There is a balance of delegates from countries.

The biggest change is that all WG Chairs are now *ex officio* (non-voting) members of their respective committees, in addition to the two full members from each member state.

It has been proposed that a coordinator may be a better way to deliver the product. WGs propose ToRs, the Mariculture Committee reviews these and presents them to the Consultative Committee, who always looks at the end product. The Chair of the Consultative Committee needs for Delegates to approve ToRs – this can take 5–6 months. A better way of interacting and getting feedback is required. It was proposed to eliminate the science committees and replace them with a coordinator, but it must be ensured that WGs are somehow connected to the ConC.

Two WGs within MCC have non-mariculture functions. If ICES moves to an ecosystem approach the role of coordinator might be considered a good idea. Especially if it includes both fisheries and aquaculture components; after all, fisheries is just one component of the ecosystem.

Would the WGs work better with this approach? Groups of experts are needed at the WG level. Specific issues may benefit from open door policies, allowing experts from other WGs to participate. This could involve focused discussions.

It was agreed that there are advantages of meeting face-to-face with other Chairs within MCC, forming collaborative links, etc., even between different areas of expertise. MCC may be seen as being slightly restrictive; it might be beneficial to interact with a broader spectrum of WGs.

The possibility of holding meetings of WGs outside the remit of ICES was discussed. It could include forward planning and ToR development. There were doubts about the efficiency of this idea. A desire to stick to the science committees was expressed, although with some rearrangement/restructuring. Chairs acting as *ex officio* members to the committee may attend the Annual Science Conference. It may not be possible to deal with all issues without the science committees, e.g. peer review. In addition, Delegates are reluctant to implement change, especially if there are cost implications.

Advice, as the output from advisory committees is paid for by clients, resulting in short turnaround work, whereas the work of the science committees is longer term.

A reluctance to support 100 WGs at one meeting was expressed. The suggestion of adopting a geographic approach was suggested, but how this would function was not made clear. The ToRs of WGs are primarily self-generated, but the presentations of the work of various WGs may lead to other ideas that are subsequently taken up or transferred to other WGs.

It was estimated that MCC meetings had 60% attendance by WG Chairs. It is noted that government employees attend more, because they may receive funding to do so, while there is less representation from academic institutions. This may result from the lack of funds to go to the Annual Science Conference as attendance at ICES meetings for WG Chairs is currently self-funded. The possibility of ICES providing funds for WG Chairs to attend appeared to have general support. It was proposed that all WG Chairs be provided with sufficient money to travel to attend meetings. This proposal was supported by the Committee.

Interactions between Committees and the MCC are good at the moment; there are doubts about the success of links with less relevant groups. Small structures are considered better, science committees can play this role better. It was noted that, in the case of MCC, it is easier because there are only five WG reports to read and edit.

There are proposals to merge the advisory committees into one committee. At the MCAP meeting it was proposed to hold a joint MCAP/ConC meeting to discuss the entire structure. Input from WG members is desired, both at science committee meetings but also throughout

the year. The Chair thanked the ConC Chair Harold Loeng for his time and effort in participating at each science committees meeting.

It was proposed that there might be a better place for the science committees to function between the advisory committees and WGs.

The issue of committee members having to judge so many different WGs was raised, with doubts about the ability of members to offer advice on such a broad range of areas. The need to keep a certain level of competence was expressed. Providers of advice may be invited to the advisory committee meeting to see how the advice is incorporated into reports. This would give more involvement in the whole advisory process. A single advisory committee structure may be too cumbersome. It would be beneficial for WGs to realize their full roles and responsibility.

The desire for WGs to remain as they are was expressed, with stricter internal review process and the ability to evaluate the jobs. Science committees may need restructuring to implement an ecosystem approach. The remits need to be clearer, to review the WGs and identify new topics relevant to ICES. There may be scope for joint meetings to reflect common areas of interest.

WG participation is normally high. The structure of MCC could be improved, allowing new activities for fisheries teams, with realignment of WGs to encompass a broader area. The low attendance at committee member level is owing to conflicting demands of middle/senior managers. Eight (28%) committee members out of the full compliment is considered good attendance; interestingly, what is considered to be a quorum is not well defined.

The feedback mechanism to the WG Chair and on to WG members needs to be improved. There is capacity for the ToRs to be changed by ConC after proposal by MCC – reduction in unrealistic workloads to slim down ToR lists; WGs may be dissolved if their ToRs are not sufficiently enlightening about the validity of the group's work. There is need for this feedback to happen much quicker than at present, e.g. proposed instant feedback via e-mail, etc.

The peer review process is mainly an editorial function with the experts preparing the work. In some cases the information is disregarded as it cannot be used. Context also needs to be monitored as, indeed, how it can be interpreted. Advisory committee experts may say they do not have enough material to generate a report. There should be increased feedback from advisory committees to WGs so they can see the relevance of their work.

All WG reports are reviewed by science committees.

Critical mass – five WGs attract small numbers to the MCC meeting, the diversity within MCC is too small to attract some people. Attendance can be low when ICES meetings clash with other more specialist meetings. Increasing the relevance of ICES themes to mariculturists would help attract more people. In addition, Delegates appoint some people without their knowledge and so they may not be able or disposed to attend. Surveying people at WG level to generate a list of interested parties before appointment may result in increased attendance.

## Additional presentation

### Proposal for Fisheries Management in Marine Protected Areas

Support and approval for a three-year project was sought, to set up a WG, study groups, workshops, etc.

### Background

- Fauna-Flora-Habitat directive of the EU (Directive 92/43/EEC): the first comprehensive legal instrument for the protection of habitats and species in the European Union;
- The Special Areas of Conservation (SACs) and Special Protected Area (SPAs) of the Bird Protection Directive (79/409/EEC);
- Forming the European network of protected areas NATURA 2000;
- In the Exclusive Economic Zone (EEZ) in the North Sea and the Baltic ten Marine Protected Areas were reported to the European Commission in May 2004. A management scheme should include maintenance and development plans for human activities, such as dredging, disposal, research, and is required to be set up at a national level;
- Fisheries are not restricted owing to EU regulations in the EEZ, therefore a management concept is required for fisheries;
- A deterioration of habitats and home ranges for species is to be avoided.

**The central questions of the project are:**

1) to what extent do the fishing activities in the Marine Protected Areas represent a significant interference (in the sense of the NATURA 2000 concept);
2) to what extent do they need regulation; and
3) how should the regulations be balanced with the requirements of NATURA 2000 and fisheries.

The primary targets of the NATURA 2000 (closed) areas are to protect habitats and species, but, at the same time, management measures under NATURA 2000 can have a positive effect on the commercially exploited fish stocks. Closed areas are no new concept in fisheries management. In contrast, they are approved management instruments to protect stocks and fisheries. Their target, however, is to optimize the fisheries yield, and thus they are different from the targets of nature conservation. Benefits for both fisheries and environmental quality are expected if both targets can be successfully harmonized.

Support and approval for the project was sought, and the Chair supported the motion.

Part one of the MCC annual meeting was adjourned at 12: 25 to reconvene at 13: 30 on Friday 23 September 2005.

## Election of Chair for Mariculture Committee 2006–2009

The General Secretary reviewed the election procedure for all those present and then opened the floor for nominations. The election was initially declared invalid (9 members from only 7 countries) and further delegates were sought for the election. The election was postponed until 15: 00 (12 members from only 11 countries). Nominations were received for Ian Bricknell (UK), reviewed and a short list generated. The election by secret ballot was conducted and Ian Bricknell was duly elected as the Chair-elect (11 for, 0 against and 1 abstention)

## Forthcoming Symposia and Theme Session Topics

As noted in last year's MCC Report, ConC was advised of a number of conflicting aquaculture science conferences and symposia occurring within the same timeframe as the Annual Science Conferences (ASC) in 2005 (Aberdeen) and 2006 (the Netherlands). For example, EAS, WAS, National Shellfish Association, and the European Marine Biology Association have conferences and symposia that will attract many who might otherwise attend the ASC. ICES is investigating the possibility of co-sponsoring sessions as part of other aquaculture conferences and events to maintain ICES visibility in mariculture.

### 2006 ASC, the Netherlands, and supporting resolutions

None received from MCC or WGs reporting to MCC.

### 2007 ASC, Finland, and supporting resolutions

Theme session proposed by the two working groups WGEIM and WGMASC:

"Ecological carrying capacity in shellfish culture"

Plenary issues will be supported by ICES, proposed by the Chair, and supported by the floor.

**Discussion**

Other topics for theme sessions are required. It is sufficient for other theme session proposals to be dealt with at the ConC meeting in May 2006. A call from the floor asked where theme sessions for 2008 might be suggested.

## Review Draft Resolutions and WG ToRs

A discussion and review of the proposed ToRs for each WG was completed. The MCC was particularly careful to review the ToRs for concrete deliverables and to highlight those changes or new ToRs that we want brought to the attention of the Delegates and Bureau so that they fully understand the importance of ratifying the ToR. Venues and meeting dates were also verified where possible. Each ToR was also viewed for cross links or redundancy to other WG ToRs.

**Discussion**

The floor reminded the meeting that ICES prefers "review" and "report on" rather than just "review". The Chair confirmed that these are continuing review tasks; however, it was agreed that the wording should be changed to reflect ICES guidelines.

Welfare is considered a top priority by ICES and ICES recognize the need to produce a document on aquaculture animal welfare. T. Lang would like WGPDMO to report to the Marine Habitat Committee; this was supported by the Chair.

## Any other business

The proposed 2007 theme session on "Ecological carrying capacity in shellfish culture" is an area where modelling has become outdated. This session is intended to bring about the improvement of models, especially in relation to polyculture. Economic models will also be considered to allow the role of mariculture and its importance regarding ecological impact and economic interests to be evaluated.

The "Blue questionnaire" was completed by MCC as requested.

A recommendation from the floor pointed out the necessity of members and WG Chairs to use the ICES Website. It is often felt that ICES business is not well disseminated, and it was felt from the floor that the MCC should ensure rapid and easy access to the work of and information flow in ICES. WGs should be made aware that the advisory process is managed through the advisory committees and not through the WGs, which can only make recommendations.

The MCC thanked the outgoing Chair for all his work and help during his term of office.

## Close

The meeting closed at 14: 50 on 23 September 2005.

## Marine Habitat Committee (MHC)

Chair: Heye Rumohr, Germany

Rapporteur: Josianne Støttrup, Denmark

The meeting was opened by the Chair of the Marine Habitat Committee Heye Rumohr, Germany. 31 persons were present at the first session of the Marine Habitat Committee meeting on Wednesday 21 September from 13:30 to 18:00, and 18 participated at the second session held on Friday 23 September 10:00 to 12:30.

The Rapporteur appointed for the Committee meeting was Josianne Støttrup, Denmark.

The Agenda was adopted with minor revisions: WGBEC was mentioned twice in the agenda; one should be replaced with WGICZM. Also the numbering was corrected.

## Committee business

The reports of the expert groups were presented and critically evaluated following the ConC template. Only the highlights are listed in the following.

### Report of BEWG

A link between BEWG and SGQAE should be encouraged. The representation of the Baltic countries should also be encouraged. In response to a question as to who had requested the new terms of reference concerning impacts on benthos owing to activities related to alternative energy and dredging disposal; these were internal requests. As soon as the material on these topics is completed, it is expected that it would be reviewed by ACME and possibly included in the advice from this committee.

### Report of SGNSBP

A suggestion was made to change the ToR regarding the *Cooperative Research Report* to indicate that the group will continue to work on the final draft; because this was unlikely to be completed in April 2006, it was agreed to extend the group's existence beyond next year's meeting until April 2007. No further meeting will be held, but this would give time for the group, working by correspondence to finalize the *Cooperative Research Report* document and plan the 2007 Theme Session.

A suggestion was made to ensure closer links with the ICES Data Centre.

A further suggestion was that the SG should also review progress regarding benthic monitoring within the Water Framework Directive.

### Report of MCWG

The discussion centred on two topics. The large number of ToRs for this group, and the increasing narrowing of focus on organic chemistry. Chemical oceanographers are needed within this WG to set standards, especially in answer to questions related to eutrophication. The WG should change focus towards the integration of chemical, physical, and biological data, and address more questions concerning eutrophication, a topic for increasing concern in many ICES countries. As mentioned there is a need for more expertise within this group to change the focus and to properly address eutrophication issues.

The OSPAR request on endocrine disruptors was given to different WGs to deal with and it was noted that the response to this request by MCWG was disappointing. The representative for MCWG responded that this problem will continue to be dealt with in future meetings.

A suggestion was made to critically review the ToRs for this group and rephrase them into 5–7 focal issues while broadening the remit of this group to include, e.g. eutrophication.

### Report of WGICZM

The discussion focused on ICES role in ICZM and the group's role within ICES. The group envisaged the ICES role as providing scientific input to different ICZM tools such as GIS-based information: spatial mapping, impact assessments, and quality elements or objectives. These should be 'picked' up by national or regional 'managers', disseminated to the public, and evaluated for socio-economic impacts. More scientific input may be necessary at this stage, or at a later time after ensuing policy changes make their impact on society and nature, requiring again scientific input on environmental responses or changes. Regarding the group's role within ICES, one of the terms of reference was to review ICES WGs, identify information pertaining to coastal zones and evaluate this information relative to ICZM needs, identify gaps in knowledge, and report back on these research or knowledge requirements. These could then be picked up by the relevant expert groups. More focus on the EU Marine Strategy was sought.

A question on how "coastal" ICES coastal activities really are opened a discussion on the need to include information on terrestrial activities that impact the coastal marine habitats, such as beach nourishment and impact on coastal nursery habitats, or development practices in the coastal region that impact the marine coastal environment. It was decided that this question should be addressed to CONC.

### Report of WGMHM

The discussions centered on the need to quality assure the mapping data and to obtain data in a format that is equivalent to international data standards. The type of data adequate for, e.g. the ICES database was not the raw data which most often is based on sidescan sonar or multibeam data, but the processed data in the form of GIS maps with the different information. GIS maps would be more manageable.

There is a need for improving the link with REGNS and there are good links with other mapping projects such as BALANCE and MESH.

Pelagic habitat mapping is an emerging topic also being discussed by the group but more expertise would be required. The basic approaches for seabed mapping and pelagic mapping are similar so the subject could be tackled by this group. Issues related to coupling between benthic and pelagic habitats are currently not addressed by this group.

### Report of WGMS

This group has traditionally strong links with OSPAR, and its work is therefore very focused on complying with the requests. This group came to the same conclusion as MCWG, i.e. that the merging of the two groups MCWG and WGMS was not a good idea. The group's work is well underway.

### Report of WGSAEM

This is a rather small group of people and there is a need to ensure few, focused ToRs, which the group could encompass. The 2006 meeting will take place in parallel with three other meetings. Since a new Chair is elected and so many other meetings are to take place in parallel, it was suggested that the next meeting should be Co-Chaired by the out-going as well as the incoming Chair. This was accepted by the committee.

There is a need for help and update with non-PRIMER statistics for the MHC working groups. This is especially needed by the many scientists working on benthos related to continuing work with the implementation of the Water Framework Directive.

### Report of WGBEC

The need for intersessional work within this group may be at risk due to the Chair being taken ill. Strategies for overcoming this were already formed at the meeting. There is a need to put more focus on the developments within the EU Marine Strategy and more ecology expertise is required within this group. A suggestion to meet in parallel with MCWG met with a positive response.

In the ensuing discussion concern was expressed about the future role of ICES in lieu of the developments within the EU Marine Strategy. The concern is that the EU may build up its own expertise group and in this process remove expertise from ICES. ICES is both aware of these developments and involved in, e.g. writing guidelines for the ecosystem approach for OSPAR in the implementation of the Marine Strategy in the North Sea.

## Consultative and Marine Habitat Committee business

Josianne Støttrup is a member of the 2005 ASC Award Selection Committee. As it was difficult for the 6–8 members of that Committee to attend all the presentations, it was important that members of the MHC also participated in the work, by informing JS of any outstanding presentations that could be nominated. The committee would look through all the PowerPoint shows of the nominated presentations and choose the Best Presentation and Best New Scientist Presentation from the list. The best Poster was to be chosen later that evening and suggestions for this were very welcome, though before 20:00 the same evening.

The basis document for this discussion is the CONC discussion paper on the new Expert Group structure and the role of the Science Committees.

At the MCAP meeting this document was reviewed and a meeting is planned for the spring 2006 with MCAP and CONC to discuss this paper. An open session will be organized within the meeting to obtain input from other members.

In the ensuing discussion, the following general points were made:

- There is a need for ICES to have a clear view on what its relations are to OSPAR, EU and other organizations, what are ICES expectancies regarding its advice, and how do Member States view ICES role.
- There needs to be better communication of the advice needs for the clients to ensure that the advice generated by the WGs fits with these needs, thereby ensuring that the ultimate advice formed by the advisory committee will then be adequate.
- The WG Chairs need to be made more aware of their role in not only providing science, but also that they prepare the scientific basis for the advice provided by the advisory committees.
- The suggestion to review the system of expert group performance was recommended as this would allow a clear definition of what ICES wants the groups to perform, i.e. what is the expected output.

Regarding the structure of ICES the following points were made:

- A suggestion was to evolve the WG, reflecting the move to an ecosystem framework where each WG had a remit corresponding to the different components within that framework. However, the majority seemed more intent on having a combination of single-discipline WGs and problem-based WGs. It was recognized that the more complex groups may be less successful (the problem-based ones) and here the science committee could play a stronger role than currently displayed.

- The WG Chairs should automatically become science committee members and national funds should be provided for them to attend the ASC to ensure that there is an annual meeting for all the WG Chairs to meet and discuss common problems and concerns. This would also allow integration between groups with similar or overlapping ToRs. This would also provide a basis for sound discussion of the content of the ToRs.
- There should be a balance between the bottom-up approach letting the WG develop their roles and remits to ensure interest and participation, and the top-down approach needed to coordinate the advice.
- The role of the science committees and the advisory committees needs to be better defined and delineated. The science committees could play a role in ensuring that the expert groups are addressing issues outlined in the Action Plan and, since this is a very comprehensive plan that all the issues mentioned are being addressed at some level. A suggestion was that the science committees should concentrate on **coordinating** the work (science) within the expert groups. To do this job properly, however, 15 minutes per WG report is not sufficient. There are nevertheless plans to review a limited number of WG reports *in extenso* per year.

Regarding how to make the work of the expert groups more visible the following suggestions were made:

- Encourage publication in the *ICES Cooperative Research Report* series. This publication has now reasonable time scales for its work and each WG should review their reports with a view to publishing parts or all their report.
- The ASC is a good venue to expose the expert groups and it was noted that the environmental side was underrepresented in the 2005 ASC. Suggestions for themes should be broadened to encompass both environment, ecosystems, and possibly even fisheries.
- A website was suggested for individual WGs. But it was necessary to ensure that such a website was updated regularly. It was not possible for the ICES secretariat to provide website facilities for individual WGs with password access to documents under preparation. The individual WGs are, however, on the ICES Website and the annual EG reports are available here.

### Regarding the duration of WGs

It is natural that single-discipline WGs have a longer or life-long duration, as this information needs updating and will be needed at regular intervals. Problem-based WG may, on the other hand, be short term.

## Forthcoming symposia and theme session topics

### Two symposia are being organized for 2007

The organization for the Symposium on “The Structure and Dynamics of the North Sea Benthos” is progressing well and fliers will be produced before the end of the year. An additional sponsor is currently being sought for from US (EPA).

The organization for the Symposium on Integrated Coastal Zone Management is progressing very well.

No other suggestions were put forward.

### Theme sessions

A theme session on “Harmful Algal Blooms” is planned for 2006 and for 2007 a theme session on “Human Health Risks and marine Environmental Quality” is planned and will be co-

Chaired by D. Vethaak and T. Lang. The remits will include now also fish parasites and fish diseases.

Suggestions for new theme sessions in 2007/2008 were: "The application of assessment criteria to biological effects management" and "Passive Sampling Procedures". Both these suggestions will be presented to the Chair with suggestions for Chairs and some information on background, objectives, etc.

## Action Plan progress and future MHC topics

This was not addressed.

## Draft resolutions

All the WG ToRs were reviewed, commented on, and where appropriate, revised. A general agreement was made to prioritise ToRs, giving high priority to OSPAR and ICES requests, and lower priority to other general items. This would ensure that the important items would be given the appropriate consideration, and the less important items would be dealt with only if time was available.

A suggestion was to make a ToR common to all WGs to consider opportunities for a theme session arising from their work, and if possible to consider suggesting titles that would link their work to "ecosystems" and/or "fisheries".

A ToR was added to several WGs concerning the information to be provided to WGRED. To better prepare the WG Chairs WGRED will provide guidance on the kind of input that is required.

A discussion ensued on how to deal with the many ToRs under MCWG. It was decided to prioritise these ToRs and to write a message to the Chair with clear guidelines explaining that next year's ToRs should be reduced considerably and focused on the main issues, and should address eutrophication issues.

Concerning WGBEC, and the ToR from WIKIMON that would need to be dealt with intersessionally by WGBEC, a decision was taken to communicate with Andrew Kenny, CEFAS, and discuss this issue with and through him.

## Any other business

Adi Kellermann provided a short presentation of an EU project: Fisheries Management in Marine Protected Areas, encompassing work on Special Protected Areas in German waters. Although this is primarily a German project, it is hoped that the final product can be translatable to other MPAs in other areas. A particular aspect within this study is the need to define goals for MPAs (or SPAs) that are designated with aims other than enhancing fisheries. The Marine Habitat Committee endorsed this project.

Julie Gillin, ICES Data Centre Manager, urged the MHC members to respond to the ICES Data Questionnaire and also to urge all WG Chairs to return the filled-in questionnaire to ICES. The response was important for the further development of the Data Centre as a valuable service to ICES Member Countries.

The WG Chairs should be made aware that if they need something from the Data Centre it should be clearly stated in the report, e.g. as a recommendation, which could easily be picked out of the report.

Finally, the people employed within the Data Centre are IT-people and often have other scientific backgrounds than natural sciences. There is therefore often a need for expert help in han-

dling the data. This was suggested to be put as a separate ToR for the WG to consider for their next meeting.

It is possible for ICES Data people to attend WG meetings, but only if these are held in Copenhagen.

It was agreed upon to send a copy of the minutes of this meeting to all WG Chairs.

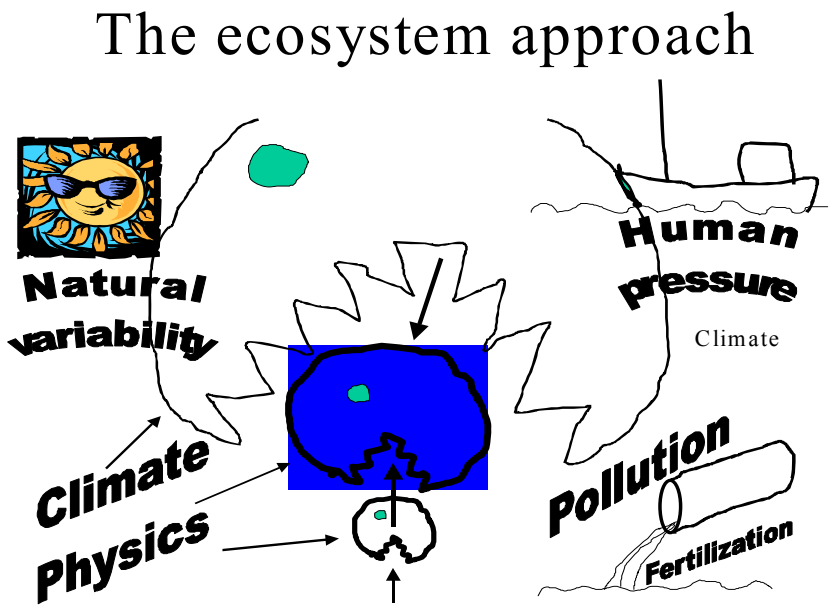
The Chair thanked all people present for their contributions and closed the meeting.

## Oceanography Committee Report (OCC)

Chair: Einar Svendsen (Norway)

Rapporteur: Steve Hay (UK)

The Oceanography Committee met on Tuesday 20 September from 11:30 to 19:00.




### Some important issues/*results*

- In almost all areas of both the eastern and western North Atlantic during 2004, temperature and salinity in the upper layers remained higher than the long-term average, with new records set in many regions. There was isolated cooling off the eastern North American coast.
- Both toxic (*Nodularia spumigena*) and non-toxic Baltic Sea cyanobacteria (*Aphanizomenon* sp. and *Anabaena* sp.) decrease growth in cryptophytes and diatoms.
- Simulations of nutrient load reductions in the North Sea and Baltic show that the effects are strongest in coastal areas near the major rivers, which are the sources of the anthropogenic nutrients. Overall a 50% reduction in nutrients yields about a 10% reduction in primary production.
- The large interannual variability in phytoplankton biomass means that detecting a response to the changes in anthropogenic nutrient loads will require monitoring over many years.
- The Baltic Sea will take decades to adjust to reductions in anthropogenic nutrient inputs because the accumulated phosphorus must be removed by internal ecosystem dynamics rather than flushed out by physical transport owing to the limited ex-change with the North Sea. Nitrogen levels are reduced to a new level during a much shorter period (5–7 years) because denitrification is an effective sink.

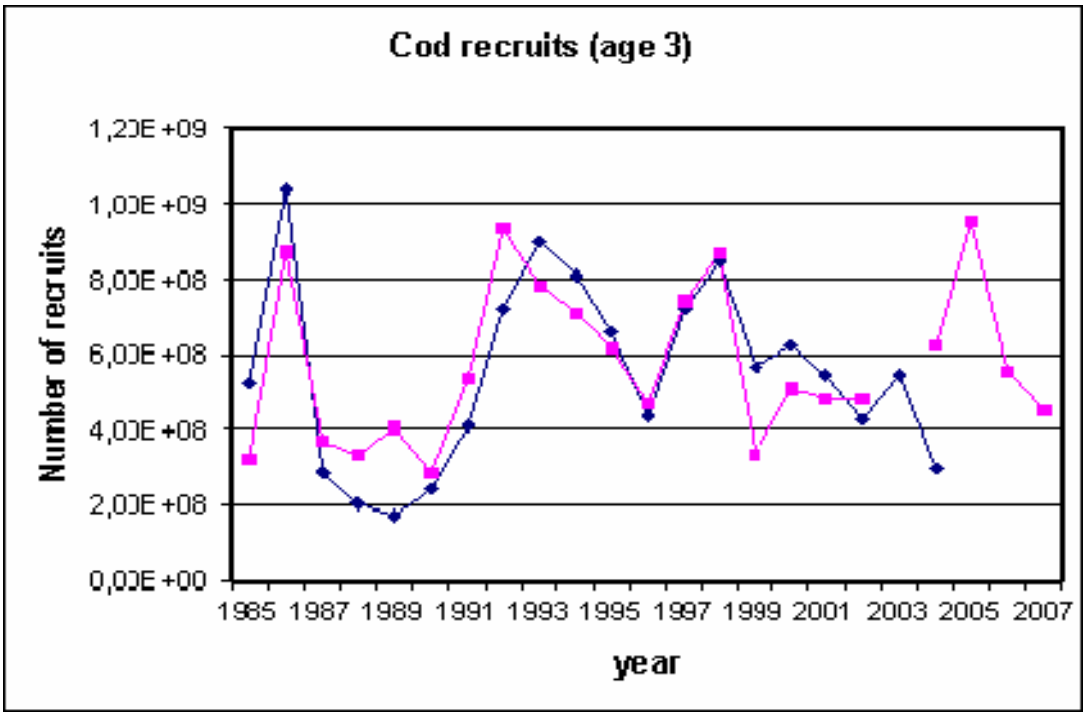
- In the Baltic Sea there is excess phosphorous relative to nitrogen when measured against the ratio that plankton tend to consume them (the Redfield ratio, 16N: 1P). The imbalance of response times for N and P will further increase the excess phosphorous in case of a simultaneous reduction. As a result, a reduction in nutrient input will likely increase the magnitude of cyanobacteria blooms as cyanobacteria get their nitrogen from the atmosphere.
- Simulations of nutrient load reductions show that the North Sea reaches a steady state after 3 to 4 years because it is a relatively open system and there is substantial exchange with the deep ocean.
- Examples noted zooplankton decreases in CPR areas of the North Sea and that spring production has shifted to earlier. Helgoland data also illustrate shifting length of the production season; spring moves back, but with a little shift at the end of the season. These shifts influence often temperature dependant fish recruitment patterns. Match/mismatch between species, seasonal cycles, and/or distributions are particularly important. Species disappearances and timing changes are important for ecology, including fish production and fisheries management.
- Recruitment has to be considered in more than one single step, as undertaken in traditional stock and recruit relationships. Studies and understanding need to consider the adults (production of offspring) through to the juveniles (at recruitment) and not just the early pelagic phases of the life cycle.
- Evidence of large-scale changes in planktonic ecosystems and consequences of this for other trophic levels, including fish, has greatly improved. Relationships between indicators of plankton variability and fluctuations in recruitment or growth are usually supported by information about the underlying processes. The effects of physical and biological forcing on cod are not necessarily either linear or additive, and reductions in stock biomass owing to intensive fisheries may have increased their sensitivity to climatic fluctuations.
- Comparisons between lab-derived growth models and field data suggest that surviving larvae grow near their physiological maximum (limited by temperature).
- The preferred prey-size of larval cod seems to be proportional to larval length. Deviations are the result of the absence of large prey items such as *Calanus*, and for cod 15–25 mm long the presence of large prey may be crucial. Both larvae and zooplankton appear concentrated in fronts. Although *Calanus finmarchicus* is a major component of the larval diet in most stocks, *Pseudocalanus* occupies this role at the warm end of the species range and particularly in the Baltic.
- Recruitment to the Faroe Plateau cod stocks appears governed by a tightly coupled trophic chain, from nutrients through phytoplankton and zooplankton to forage species, such as sandeels. In other areas, such as the Baltic, the processes are considerably more complex, with large-scale, long-term changes in the physical and chemical environment causing interrelated fluctuations in the populations of cod and the two pelagic fish species.
- It remains difficult to pull the detailed, process information which has emerged from large-scale national and regional GLOBEC programmes into a form which finds a use in ICES fish stock assessments. The approach in such assessments is to use fixed stock-recruit relationships as a guide to short- and long-term management, with some sensitivity analysis to explore the consequences of alternative stock-recruit relationships, i.e. environmental variability is treated as noise.
- A review of the three-dimensional (3D) ecosystem models of the North Sea reveals that several of the models were able to reproduce observations of the state variables correctly in the order of magnitude and range of observed variability. Most of the models were able to reproduce the horizontal gradients in the mean seasonal distribution for the nutrients and phytoplankton. Strangely, none of the models provided a good estimate of the mean chlorophyll distribution in spring. The simulation of the temporal variability was less successful as none of the models could accurately simulate the climatological monthly means for all simulated state variables in all seasons. Overall the discrepancies relative to the data grew with the trophic level.

- Three-dimensional ecosystem models of the North Sea do not provide robust simulations of the interannual variability. The differences between models are closely related to differences in the physical simulations. Therefore robust simulations of the interannual variability in the ecosystem require improved simulations of the physical environment.
- Modelling zooplankton will be a major issue during the next decade. Improved simulation of zooplankton is required as a closure term on phytoplankton models and as the link between primary production and larval fish. These are both areas of active research in the international community.
- Recognising that climate change is of international concern, measurements of standard physical oceanography parameters should be included in the Coordinated Environmental Monitoring Programme (CEMP) of the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic.
- Acoustic Doppler current profilers on commercial vessels in regular traffic offer exceptional opportunities for monitoring variability of upper ocean currents over a wide range of time scales and encourages the promotion of such systems in existing vessels and in new construction wherever practicable.
- Long (55 year) time-series of modeled volume transports through a range of sections in the North Sea have been produced, and quarterly reports with potential links to fisheries are being produced under the framework of the North Sea Pilot Project (NORSEPP).
- A multi-authored peer-reviewed book, *Cod in a changing climate – effects of physical variability on a key predator in North Atlantic marine ecosystems,* is to be published, and results were presented in a special theme session at the 2005 ASC.
- An *ICES Cooperative Research Report* on *Spawning and life history information for North Atlantic cod stocks* is written and is soon to be published.
- A Workshop on *Impact of Zooplankton on Cod Abundance and Production* was held in June 2005.
- Guidelines for quality assurance/control procedures are developed to provide consistent advice for managing and exchanging physical, chemical, and biological data, including provision of services to users. Still some updating and outreach activities are needed.
- The first draft of the ICES phytoplankton list with more than 1300 species names is produced.
- A start on the assessment of the application of remote sensing and numerical modelling for phytoplankton showed that these techniques have seen significant improvement, but still they are of only a semi-quantitative character and further work is needed before they can be applied without restriction. However, examples confirmed the value of these techniques. They are quite useful to provide information and resolve issues where full quantitative data are not completely necessary.
- New tools are available (e.g. Individual-Based Models, genetic techniques, etc.), allowing recruitment processes studies that were not previously possible to now be undertaken.
- The fifth ICES Plankton Status Report (PSR) of time-series is prepared for an *ICES Cooperative Research Report*.
- New zooplankton sampling and analysing tools are developing fast.
- OCC and expert groups: Most of the expert groups function quite well with ToRs very relevant for the "ecosystem approach". A few groups have problems with weak participation, and we need to find ways to fertilize these with new scientists (instead of closing down WGs addressing important aspects of the ecosystem). The main challenge for ICES is to bring forward/highlight important results, e.g. of environmental status, variability, and trends (together with new methodologies and basic knowledge) so it becomes easily available for creation of new ideas and cross-disciplinary analysis. Currently, the flow of information very much stops within the expert group reports. If the Oceanography Committee shall be kept alive, the members should take onboard the responsibility for this information flow to a very aggre-

gated information product. If all science committees start a similar process, CONC can produce an aggregated cross-committee information product which would be an important input to the "ecosystem approach" of ICES (and directly useful for WGRED).

## Opening

The Chair welcomed the participants and made an opening address to this well attended Oceanographic Committee meeting. He first pointed out that we had a long session, and a tight agenda. He went on to stress that presentations from the expert groups should only include highlights of the work such as exiting results/notable events, new methodology, new cross-disciplinary activities towards an "ecosystem approach", or important gaps in knowledge and/or the ICES functioning. To encourage such an approach he illustrated this line with some interesting data from his own area in the Barents Sea; where an ecosystem approach through data and models incorporating oceanographic transports and chlorophyll distributions had explained much and made good predictions of variations in cod recruitment.




A Rapporteur was appointed (S. Hay) and the agenda was duly adopted.

Nominations for the ASC Award Selection Committee were made and Charles Hannah and Elizabeth North agreed to participate.

## Reports of expert groups and draft resolutions

Committee business was opened with the presentations of reports of the expert groups and their draft proposals for Terms of Reference for 2005–06, their suggestions for theme sessions, and feedback items for the Oceanographic Committee and ICES, etc.

### Working Group on Phytoplankton Ecology [WGPE] (C:01)

Unfortunately none of the WG members had been able to attend the ASC. It was decided to move on and return to consideration of their report later through the Chair.

## Working Group on Zooplankton Ecology [WGZE] (C:02)

This report was presented by S. Hay on behalf of his WG. Their meeting had 22 attendees from 14 ICES countries and seven scientists from three other ICES countries contributed submissions. The WG also welcomed three new participants from the Baltic Seas Regional Project at their meeting in Lisbon.

The main points raised at the WGZE meeting were addressed, starting with the primary product of WGZE: the update of the annual ICES Plankton Status Report. This year five new time-series from the Baltic and Barents Seas plus a new meta-analysis of the data were incorporated into the new *Cooperative Research Report* format. The OCC recognized the value of the Plankton Status Report and called for further development, use, and integration of this report, and its wider advertisement. WGZE had considered methods, harmonization of units, metrics, and availability of guidelines. Fast developing new technology brings benefits and new problems. However, new applications and sampling are now possible. The WGZE highlighted the GLOBEC/SPACC workshop, in San Sebastian 1–3 November 2005, "Image analysis to count and identify zooplankton". They also recognized the urgent calls from WGPBI and others for more zooplankton research for input to models and ecosystem approaches. Unfortunately the hoped for conjunction of the zooplankton and phytoplankton monitoring reports to extend the Plankton Status Report has not progressed.

The Plankton Status Report is an active output to be promoted and used for ecosystem status assessment, e.g. REGNS, WGRED – though the WGZE called for communication of a more specific outline/framework for WGs to build onto and into in these initiatives. Various plankton trends and changes were noted, particularly in the North Sea and the North Atlantic. These include changes in biomass, community structure, zoogeography, and phenology.

Examples:

- Zooplankton decreases in CPR areas of the North Sea, while
- at Helgoland the spring production has shifted to earlier with a shifting season length of production, i.e. spring production moves back, but with a little shift at the end of the season.

Such shifts influence temperature-dependent fish recruitment patterns, with match/mismatch between species, seasonal cycles and/or distributions in relation to hydrographic boundaries being particularly important. Species disappearances and timing changes are important for ecology, including fish production and fisheries management. Various WGZE members had presented and discussed examples in relation to climate scenarios, regime shifts, and ecology in their own areas, e.g. the North Sea, the Baltic Sea, and around Norway, Iceland, and the Faroe Islands.

As visiting representative of CIESM (Mediterranean "ICES"), the WGZE invited Dr Gabby Gorsky to the WGZE meeting. He talked on CIESM initiatives "Toward a Concerted Action for Zooplankton Studies in the Mediterranean", and about a CIESM meeting on "Harmonisation of Zooplankton Time-series", to which Luis Valdes of Spain was invited.

WGZE had been invited by CIESM. Dr Gorsky emphasized the great need for coordinated and cooperative approaches to plankton monitoring and time-series, the need to create expert networks and to harmonise methods. He emphasized that CIESM are trying to build bridges to ICES, CoML, GOOS, IMBER, and EU programmes. WGZE is keen to extend its relationships with CIESM, and a joint WGZE and CIESM plankton groups meeting was suggested for 2007.

WGZE emphasized that zooplankton links primary/benthic production to fisheries and has been the primary biology research focus that has demonstrated regime shifts and climate change in shelf seas and at basin scales. Widely gathered time-series data must be used to cre-

ate synthesis by linking data centres and holders. WGZE has links with the new SCOR Working Group on Global Comparisons of Zooplankton Time-series. Their goal is global analysis of zooplankton decadal variability, i.e. to do for zooplankton what SCOR WG98 did for small pelagic fish, aiming to investigate zooplankton as the link between physics and fish. They note that zooplankton sampling is simple, inter-comparable, and fishery-independent. Time scales of zooplankton population responses (~1 year or less) also track climate forcing at interannual/decadal time scales and zooplankton are crucial to global biogeochemical cycles. Long zooplankton time-series are now available and initial results are exciting.

Thanks to new guest participants, zooplankton and ichthyoplankton activities of the GEF Baltic Sea Regional Project were also presented and discussed by WGZE. A new CPR line is set up, between Gdynia and Karlskrona in Sweden. The SAHFOS-CPR monitoring is providing essential ecosystem background data, at basin and local scales, and the possible closing down of the Portugal CPR route raised concern among the WGZE. This is widely known as a very valuable route in a key area which will strongly complement the newly targeted route through the Bay of Biscay. WGZE also noted again and with some despair that zooplankton monitoring is not effectively included in regulations or many European monitoring activities, e.g. EU-Water Framework Directive, OSPAR, etc. It is hoped that newly developing EU Marine Strategy Documents will refer to required zooplankton monitoring more effectively, now that ecosystem approaches, including fisheries, are prevalent generally. Regulation requires monitoring and goes far in justifying funding, as it has done for phytoplankton monitoring.

Multivariate techniques are almost essential to analysing complex hydro-biological data. Reanalysis of older data sets would be fruitful and relatively easy, using modern computing techniques. New technologies will allow analysis of archived data and samples. WGZE proposed a practical workshop in the use of multivariate statistics to analyse field plankton studies, particularly time-series (possibly organized by SAHFOS/MBAUK/PML). Santiago Hernandez Leon with several interested parties is preparing for a lab and field workshop series in the subtropical Canaries and later perhaps elsewhere. WGZE think this is a practical, useful, and timely development in a rapidly advancing field, with prospects for assessing rates and processes in the lab and in the field alongside biomass and abundance assessments. Modellers need good functional relationships – often experimental data covers unreal gradients/ranges or is too sparse for good fitting.

The ICES/PICES/GLOBEC 4th International Zooplankton Production symposium is to be held in Japan 2007. Luis Valdes is the ICES representative and Steve Hay a committee member, and arrangements are progressing well. The theme is Human and Climate Forcing on Zooplankton Populations. The symposium is announced on PISCES and ICES web pages; WGZE felt that the ICES web presentation needs some work. ICES could not support the WGZE initiative for a "virtual" workshop to further collaborative comparison and analyses of plankton time-series and other data in the North Sea areas. WGZE member Todd O'Brien has done so with a website to service WGZE (http://www.wgze.net). He deserves ICES thanks and support in this.

To advance the Fiches plankton ID sheets and encourage the training and retention of plankton taxonomic skills, a further taxonomic workshop was proposed. ICES/SAHFOS/MARBEF have arranged a taxonomic workshop for 2006 in Plymouth. Comments by WGZE on progress with ICES data management of biological information raised some concerns. WGZE felt ICES has a good data model as example to follow, yet issues raised strong feelings and much discussion. WGZE felt that complexity of communities, sampling strategies, differing analytical approaches, etc., confound the use of detail in ICES biological data formats. Data format demands may inhibit data provision and exchange, and discourage many from making the effort. WGZE recommended the gathering of data in whatever form, leaving the provider free to contribute without great formatting efforts. Emphasis on metadata collection and advertisement would catalogue more and encourage contacts and collaboration between data hold-

ers. The OCC recognized that ICES new structure and data policies will lead to new and better approaches. The addition of a new ToR to the WGZE and others for the expert groups to "Provide expert knowledge and guidance to the ICES data centre" was welcomed by the WGZE Chair.

Meroplankton (temporary plankton, mostly benthic and fish propagules) is not well studied either by the zooplankton or the benthic ecologists. In shelf seas, where meroplankton often dominate and which carry about 95% of the fish yield, the meroplankton are important for regional and species productivity in terms of biomass, growth, spatial distribution, and seasonality of food resources for fish and other predators. Species identification is the most important problem preventing meroplankton study, but advances in taxonomy and genetics will improve the situation. Some meroplankton species are quite sensitive to temperature and are therefore good candidates for climate change or anthropogenic impact indicator species. This sensitivity may evince as changes in spawning times rather than abundances.

In contact with WGZE and WGRP, WGCCC initiated and ran the successful ICES/GLOBEC "Workshop on the Impact of Zooplankton on Cod Abundance and Production [WKIZC]" held at ICES Headquarters in Copenhagen, 7–9 June 2005.

The next WGZE meeting was proposed for Villefranche, France during the week 27–31 March, kindly hosted by Dr Gabriel Gorsky of the Observatoire Océanologique.

Regarding rotation and replacement for the outgoing WGZE Chair; Dr Ástþór Gíslason of the Marine Research Institute, Reykjavík, Iceland was proposed, and unanimously voted for. He kindly agreed to Chair the WGZE through the next term.

Terms of Reference were proposed for the WGZE meeting next year. Though the phrasing raised some concern with a more action-oriented emphasis being called for by OCC members, the topics were considered good and appropriate by the OCC. The WGZE had also recognized the likely need for WGRED and ICES data managers to call upon their expertise.

## Working Group on Harmful Algal Bloom Dynamics [WGHABD]

Lunch was followed by the presentation from Jennifer Martin, the Chair of ICES/IOC WGHABD, who met in Flødevigen, Norway, 4–7 April 2005. WGHABD cooperates closely with SCOR/IOC GEOHAB. This group had addressed all eight 2004–05 ToRs in their report. Jennifer's presentation focused on three of these. The first was the WG review of the dynamics of toxin producing phytoplankton and associated toxins in shellfish, related to phytoplankton abundance, and phytoplankton community structure with references to HAB population dynamics.

The 2005 focus was toxin producing phytoplankton and associated toxins in shellfish and phytoplankton as indicators of toxicity. The WGHABD pointed out their real concerns that conventional sampling is seriously inadequate. The WGHABD had concerns that spatial (1 m) and temporal (1 day) variability in phytoplankton can be very high, so conventional sampling frequency is often insufficient. Also, compounding the problems are the points that: the toxin concentration varies between individual cells, by more than one order of magnitude; there are often regional differences in species toxicity; and that toxicity in shellfish may be present in the absence of toxic species in the water column. Thus the monitoring results do not mean much if they are not sampled frequently enough and accompanied by seston and environmental sampling. Spatially too, large differences in cell densities are often observed between offshore and the typically inshore monitoring sampling locations. When monitoring for toxic algae is required, particularly in relation to management of shellfish toxicity, local knowledge and experience from years of information gathering and proper scientific assessment are needed to guide and interpret sampling, as well as research on species-specific kinetics and on

intoxication/detoxification processes. A further point is that as knowledge of toxicity causes and effects improves, the regulatory Action Levels for some toxins may be changed.

The WG comprehensively reviewed knowledge concerning specific biologically active chemicals, their nature, presence, and production in algae and their effects on individuals and population dynamics, as well as impacts on ecosystems. Jennifer highlighted some new research findings. Some organisms increase with apparent eutrophication in inshore coastal waters (e.g. Phaeocystis, Noctiluca, Fibrocapsa, Heterosigma), whereas others such as Alexandrium and Dinophysis require offshore influences. Satellite imagery and 5-day weather forecasts, although useful for the prediction of blooms, do not always indicate when toxic species are present in significant amounts, since this does not always coincide with bloom densities. The blooms are often found in sub-surface layers so working in real time, moorings with vertical profiling systems would aid in the required monitoring of blooms in thin layers. There is a need to look out for first-time occurrences of toxic species in particular waters and to make better use of 3D coupled physical-chemical-biological ocean models to understand bloom dynamics.

The WGHABD had proposed and set up their Workshop on New and Classic Techniques for the determination of numerical abundance and bio-volume of HAB-species. This was held at Kristineberg during four days and was very successful. WGHABD member Eileen Bresnan later gave a presentation on preliminary results from this Workshop. 24 people attended and they examined/compared cell counting methods, 18 traditional and new alternatives, particularly molecular probes. For logistic reasons focus was on one test species *Alexandrium fundyense*. Once data and comparisons are complete the aim is to produce a report, including assessments of relative costs and timing, as a *Cooperative Research Report* and a technical manual. The OCC noted that this may go some way to update the old and out of print UNESCO Phytoplankton manual.

Some data, where available, on the distribution and number of harmful algal blooms in the North Sea for the period 1984–2004, was submitted to REGNS. The WGHABD collated and assessed national reports and has updated the decadal mapping of harmful algal events for the IOC/ICES HAE-DAT harmful algal events database. The group reported some difficulties in computerized production and revision of decadal maps from country reports. They had also discussed the types of analyses that should be performed using the IOC-ICES HAE-DAT data set and tried to identify problems and gaps in this data set, which have to be rectified before full analyses is conducted. WGHABD will seek suggestions and assistance from other WGs on data analysis methods for the HAE-DAT data. This links to the WGZE proposal for a workshop in the use of multivariate statistics to analyse field plankton studies, particularly time-series and also relevant for the WGPE.

WGHABD made the recommendations that delegates of Iceland and the Faroe Islands identify national focal points/individuals responsible for data submission to HAE-DAT, decadal maps, and national reports. WGHABD emphasized that these reports should be submitted even if the WG member is unable to attend the meeting and recommended that these focal points are identified by December 2005.

The WGHABD has proposed that Joe Silke (Ireland) take over as Chair as Jennifer Martin is standing down after her term of office. OCC commended the outgoing Chair of WGHABD on her efforts. The WGHABD proposes to meet in Gdynia, Poland, from 3–6 April 2006. WGHABD proposed a joint WGPBI/WGHABD theme session for the 2006 ASC (see later). Proposed ToRs were considered and accepted by OCC (see appendix). The OCC noted that the HAE-DAT database had grown to be a useful product but was not widely recognized outside the HAB science field. Held on the IOC Website it should also be promoted through obvious links on the ICES Website; ICES outputs are recognized and influence decisions and funding agencies such as IOC and NSF.

Points made in discussion related to the general role of phyto-toxins in the marine ecosystem and referred to the WGHABD ToR producing data summaries. There was a discussion of 2005 "big events" such as the serious blooms in the eastern US coastal seas and the economic consequences. It was emphasized that such events need to be reported by WGs and that in this example changes from reactive to predictive sampling had helped to mitigate the effects and consequences of the blooms. There was discussion of the fact that an 18-year cycle in bloom events had also been noted by WGHABD, something oceanographers and other expert groups may help to interpret and understand.

## Working Group on Modelling of Physical/Biological Interactions [WGPBI]

Charles Hannah then presented the results of the Working Group on Modelling of Physical/Biological Interactions [WGPBI]. The Working Group met in Hamburg, Germany from 7 to 8 April 2005. This meeting was co-sponsored by the EU 6th Framework Network of Excellence EUR-OCEANS, which provided funding for PIs and associates to attend and contribute to the WG. The goals of EUR-OCEANS are complementary to the ICES WGPBI. Charles Hannah commented that there was great and growing interest in this WG with 30 members and much on their agenda. Ten presentations were made during the meeting and the 2005 report contains 19 Action items for this year. The first meeting of the Numerical Experimentation subgroup was held on 6 March 2005 in Hamburg. This report to the OCC concentrated on WGPBI 2005 results and initiatives, beginning with the Review of Nutrient Load Reduction Experiments for North Sea and Baltic. This focused on explaining the different responses of the two systems and how simulations had produced some clear results, e.g. effects are strongest in coastal areas near the major rivers, which are the sources of the anthropogenic nutrients. Overall a 50% reduction in nutrients yields about a 10% reduction in primary production. Also the large interannual variability in phytoplankton biomass means that detecting a response to the changes in anthropogenic nutrient loads will require monitoring over many years.

Having produced a review of published North Sea Ecosystem Models the WG concluded that: The models do lots of things well, e.g. several of the models were able to reproduce observations of the state variables correctly in the order of magnitude and range of observed variability. Most of the models were able to reproduce the horizontal gradients in the mean seasonal distribution for the nutrients and phytoplankton. However, clear improvements are needed with respect to simulating, e.g. chlorophyll distribution in spring and interannual variability. Differences between models are closely related to differences in the physical simulations so these models need better simulations of the physics before they can improve. These conclusions were discussed briefly and points made highlighted problems with for example boundary conditions and variable inflows in the region.

WGPBI had had a lively discussion about temperature-dependent growth rates in phytoplankton. Everyone recognizes that individual species have temperature-dependent maximum growth rates. Question: 'Does temperature limit the maximum growth rate of the community?' or 'Is there always a species that can grow rapidly at the given temperature so that community primary production is roughly independent of temperature?' An action item and a ToR were generated in response to this discussion. Problems related to modelling zooplankton were a recurring theme in the WGPBI meeting. Discussion focused on two primary applications: zooplankton as a closure term on phytoplankton models and zooplankton as the link between primary production and larval fish. An OCC comment also raised the continuing problem of quantifying and understanding the role of the great abundance of plankton predators other than fish, whose impact on fish recruitment is currently unquantifiable.

The next WGPBI meeting is proposed for Nantes, France from 6 to 7 April 2006. The WGPBI Website (www.icm.csic.es/bio/wgpbi) was created by Cesc Peters and is being hosted by Institut de Ciències del Mar (CSIC). Fish subgroup members of the WGPBI are planning a

workshop in 3–5 April 2006 entitled "Advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions". It will be chaired by A. Gallego, E. North, and P. Petitgas (local host) and jointly sponsored by WGPBI and WGRP. The workshop will be hosted by P. Petitgas at IFREMER in Nantes, France. Also, the ICES SGRESP (Study Group on Regional Scale Ecology of Small Pelagics) chaired by Pierre Petitgas, is proposing a workshop to extract mesoscale physical structures from hydrodynamic model outputs to construct long-term series of mesoscale features. The WGPBI support this initiative for which Pierre Petitgas and Benjamin Planque are likely co-conveners, while Corinna Schrum agreed to lead WGPBI's involvement. The proposed ToRs for 2006 were considered and accepted, noting that the WGPBI 2005 report contains 19 action items for this year. Discussion noted growing calls for operational models and the growing importance of the interactions and activities between WGPBI and other expert groups. The OCC Chair made the point that ICES is advisory and therefore by definition operational, and some discussion ensued.

## Fisheries management in Marine Protected Areas

Adi Kellermann, Head of ICES Science Programme, then addressed the OCC to give a brief introduction to a German Government call for proposals on "Fisheries management in Marine Protected Areas". In an attempt to bring funds to ICES Adi has been applying for funding from this call and has entered into discussion with ICES science committees and expert groups about his plans and the required scientific work. Provisionally his application is successful with 330 000 euros funding proposed. The background to the call lies in the forthcoming EU Fauna, Flora and Habitats directive (92/43/EEC), which will apply to countries in the EEZ bordering the North Sea and Baltic. This directive will move to merge marine SPAs and SAC regulations into MPA schemes.

Such MPA schemes have been shown in many regions to be effective conservation mechanisms. ICES should be able to be seen as impartial in relation to implications regarding fisheries issues of this directive. The central question is, To what extent do fishing activities need management in MPAs? The OCC responded positively to Adi's presentation and some discussion ensued regarding the effects of this directive and the scales of MPAs in relation to ICES standard areas. Questions also arose as to problems in assembling relevant data and appropriately resolved data to inform management of such MPAs. The possibility of using VMS data to track vessels and effort was mentioned as well as the need for setting up management plans for each area.

To be able to contribute, OCC asked for clearer information on expected products, and it was thought that numerical models could probably supply the relevant information.

## North Sea Pilot Project NORSEPP [PGNSP]

The OCC Chair made a statement regarding the products and activities of the ICES-EuroGOOS Planning Group on the North Sea Pilot Project NORSEPP [PGNSP]. The outputs of this group are largely model outputs, and they have produced quarterly status reports (starting in 2005) on North Sea transports. The point was made that other relevant data will be included if available. In particular, the outputs of data from the Ferrybox monitoring studies could help by providing validation data. The SGGOOS have suggested turning this group into a Working Group since it is moving into an operational phase.

### Working Group on Oceanic Hydrography [WGOH]

There followed Alicia Lavín's report from the Working Group on Oceanic Hydrography [WGOH] which met at University of Rhode Island, Narragansett, USA on 11–14 April 2005. The first day of this meeting was held as a mini-symposium, a productive forum and effective

encouragement to attendance. This was the fourth mini-symposium and included a day of scientific presentations, jointly by WGOH members, and by scientists from the host organization. The main product of the WGOH is the updated ICES Annual Ocean Climate Status Summary (IAOCSS). This, after update and review of results from Standard Sections and Stations with consolidation of the inputs from Member Countries, has been compiled into an excellent *Co-operative Research Report*. This year data from some new stations and satellite data are included, and the report was also presented at the EUROGOOS meeting. In review the WGOH considered taking a more thematic approach with IAOCSS, linking up groups of regions based on circulation patterns and common atmospheric forcing. The aim of this re-organization would be to improve the analysis of patterns and trends and perhaps allow prediction of future conditions in linked areas.

The update and compilation exercise revealed several points. In almost all areas of the eastern and western North Atlantic during 2004, temperature and salinity in the upper layers remained higher than the long-term average, with new records set in many regions. There was isolated cooling off the eastern North American coast. The North Atlantic Oscillation (NAO) index during the winter of 2004 was negative, but both the Iceland Low and the Azores High weakened. A mid-latitude low pressure anomaly associated with the reduced Azores High was stronger in the west, resulting in pressure anomaly patterns over the western Atlantic consistent with a strongly negative NAO.

Discussion raised the point made by the WGOH that acoustic Doppler current profilers on commercial vessels in regular traffic offer exceptional opportunities for monitoring variability of upper ocean currents over a wide range of time scales.

The WGOH had reviewed national monitoring plans and OSPAR's Coordinated Environmental Monitoring Programme (CEMP). The WGOH noted continuing activities within OSPAR and its Working Group on Concentrations, Trends, and Effects of Substances in the Marine Environment (SIME) as part of a review of the role of physical oceanography in the framework of the revised CEMP. It is suggested that OCC contact ACE/ACME and the Secretariat to explore OSPAR's interest to cooperate closer with ICES/WGOH regarding the monitoring of supporting environmental factors in the ICES region. A proposal was submitted to the OSPAR Commission through the German delegate. In relation to the WGOH requirement to review and improve relations with international climate monitoring programmes, the WGOH requested that ICES considers supporting the publication of an issue of CLIVAR Exchanges dedicated to contributions from WGOH members on related activities. Sheldon Bacon (UK) and Penny Holliday (UK) will liaise with the CLIVAR office on this proposed effort.

The WGOH supports ICES in moving towards integrated assessments (Ecosystem Approach). However, the WGOH felt that the new ToR requiring collaboration and provision of data and analysis to the REGNS group was unrealistic as there is no dedicated support. The WGOH acknowledges that this is a pilot project but requests that REGNS consider the sustainability of this approach and look at ways to provide additional support, including national funding routes that could be employed to make the work more practicable. Julie Gillin, the ICES data centre manager, attended the WG and gave an extremely useful and informative presentation. The WGOH agreed to provide advice to the data centre manager with regard to the provision of data products to the ICES community. The data centre manager agreed to consult with WGOH after receiving the results of a customer survey planned for later in 2005.

WGOH shares the General Secretary's concerns about the status of physical oceanography in ICES and the difficulties in attracting physical oceanographers to the ICES Annual Science Conference. WGOH realizes that it must reach out to other disciplines to contribute to an integrated approach to marine science.

The WGOH thanked the Chair Alicia Lavín (Spain) for all of her hard work during the past three years. Sheldon Bacon and Penny Holiday, both from the National Oceanography Centre, Southampton, UK, have offered to Co-Chair the WGOH. The Working Group will meet at the Marine Institute and the University of Galway from 19 to 22 April 2006.

Discussions of this WGOH report raised the issue of data provision to REGNS. A number of relevant North Sea data collections are already published or available. The WGOH had provided data to REGNS and there was much data on the REGNS Website, but much had been provided directly rather than through ICES. And despite ICES introducing NORSEPP into ToR b the WGOH had not had any input from NORSEPP. The WGOH had recognized the ICES concern on the status of oceanography in ICES. They agreed that they must make efforts to reach out to other groups while pointing out that the IAOCSS is available to all and that their data are basic to most marine assessments and research.

## Working Group on Marine Data Management [WGMDM]

WGMDM met in Sopot, Poland, 9–11 May 2005 and the report was presented by Michèle Fichaut, Co-Chair with H. Sagen. WGMDM's role according to ICES was to fly the flag for ICES in setting standards for global databases, to provide important interface for oceanographic and environmental data management in ICES, and to promote good data management practices. The group has a mixture of scientists, data managers, and IT people.

In response to ToR a, the WG noted that the data quality agenda had developed rapidly. The WG has made progress in identifying and comparing existing quality control and quality assurance procedures for physical, chemical, and biological data in use at WGMDM member organizations, and has recommended standards and procedures to ICES and IODE. The WG has surveyed existing practices on merging CTD and water sampler data and has identified and provided access to other guidelines. This is a continuing effort and ToR for the group. The WG output has recommended common standards/procedures and has not concentrated on physical oceanography alone. MDM guidelines are available on ICES Website at www.ices.dk/committe/occ/mdm/guidelines/.

The ToR to "improve usefulness of the Integrated Taxonomic Information System (ITIS) to the marine community and actively promote ITIS species codes within the ICES and IOC communities" was discussed. Recommended by ICES, IOC/IODE, and GE-BICH, one of the main advantages of using ITIS was to have a standard list of well-researched names, but it has a North American, non-marine taxa focus. The speed with which non-North American names are added is hampering the use of ITIS as a reference list of names on this side of the Atlantic. There have been continuing problems for years with groups and data centres relying on this taxonomic coding or its defunct predecessor the NODC codes. The WG had made a comparison between available names in ITIS with other species lists. ERMS (European Register of Marine Species) has 55 000 names, half of them not in ITIS; MASDEA (Marine Species D-base of Eastern Africa) 20 000 names, half not in ITIS; BODC parameter dictionary has 4548 names, 987 not in ITIS. The WG considers the solution to be that ITIS is persuaded to accept lists from other organizations briefed on appropriate QC procedures as applied by ITIS. Discussions are continuing, and this is an active effort and ToR for the group, which several OCC members thought should have a high priority.

The aim is to achieve considerable and rapid improvement of the usefulness of ITIS to ICES and the many others, including such as OBIS, who badly need a good central database of taxonomic names in working order and straightforward to deal with. The committee noted that other Expert WGs, particularly the plankton expert groups have been calling for and striving for this for many years as this is a bad bottleneck to progress. The OCC decided that they must make strong recommendations on this issue.

Steve Hay suggested that:

"*The WGMDM, WGZE, WGPE, and WGHABD have all highlighted the continuing problems with central coding of taxonomic nomenclature for marine data. ITIS has been adopted by ICES and other international bodies. ITIS is NOT up-to-date or effective for many European marine species lists as thousands of these species are not listed. OCC strongly recommends that ICES must itself address this issue urgently, with ITIS, and urge other data centres and expert groups to do so as well.*"

On the issue of Operational Oceanography, the group had a continuing ToR to critically assess the data management practices in place in WGMDM member organizations in support of Operational Oceanography. The WG have produced a list of websites where member institutes make OO data and products available (continuing action). For 2006, MDM will investigate on QC procedures used in OO programmes like ARGO, COOP, and GOSUD. The WGMDM has made recommendations of best data management practices for operational oceanography.

The WG was asked to evaluate and develop future directions for oceanographic data management based on the results of SGXML and make recommendations regarding adoption of the use of XML in the oceanographic community. SGXML worked on metadata standards and parameter dictionaries. In addition several members of the group worked on point data structures, GML investigation (Canada), XML work of the Tokyo Bay Project (Japan), water level data and current meter data (WGMDM) which extended into many data types. The IODE XVIII meeting identified a need for consolidation of metadata terminology and extension of the standards to oceanography. This led to the establishment of a MarineXML Steering group, in which some members of MDM will participate. This ToR will continue although rephrased because SGXML no longer exists. The WG will continue their participation in the steering group to work on metadata standardization.

WGMDM commented on the report of the Study Group on Management of Integrated Data, and recommended strategies and solutions for data integration and distributed database systems at the ICES Secretariat. The WGMDM suggestion is to merge WGMDM and SGMID into a new group of users, data managers, and scientists. The aims would be to advise ICES on data management issues, to promote good data management practice within ICES, to give guidance to the ICES Data Centre, and to liaise with relevant international data management bodies and programmes (IODE, GOOS, SeaSearch/SeaDataNet, etc.). The WG on (Integrated) Data and Information Management (WGIDIM or WGDIM) was suggested as a possible new name for the WG. MDM felt this new WG should report close to the centres of ICES and across OCC, ACME, and ACE (ACFM?), and have a mixture of the current ToRs of MDM and SGMID. For next year this WGMDM ToR on the SGMID has been replaced by one on the future structure.

The WGMDM had been asked to critically examine the use of Geographical Information System in marine data systems in WGMDM member countries, and to make recommendations as to the use of GIS. Many MDM members use GIS such as ESRI products (ArcGIS, ArcIMS Web service, ArcView) and MDM recommended the use of GIS and the use of standards (ISO 19115 for metadata and OPENGIS for geographical objects) MDM has yet to investigate open software such as MAPSERVER, which will be reviewed in a software comparison in a future ToR. The WGMDM has made recommendations on best practice and use of GIS, which resulted from the comparison between open sources and commercial GIS.

Future ToRs were presented and the WG intends to participate and make presentations on data management in the 2006 ASC Theme Session on Data Management. The ICES WGMDM has also made progress towards a dedicated website with relevant content and facilities, hosted at BODC and separate from ICES own website. The next meeting will take place (back-to-back with SGMID) at the ICES secretariat in Copenhagen from 8 to 10 May 2006.

## Workshop on the Impact of Zooplankton on Cod Abundance and Production (WKIZC)

A Workshop on the Impact of Zooplankton on Cod Abundance and Production (WKIZC) was held 7–9 June 2005, at ICES Headquarters. ICES CM 2005/C:08. 88 pp.

Conveners: J. Runge (USA), Ø. Fiksen (Norway), and C. Möllmann (Denmark)

Øyvind Fiksen (Norway) summarized the result for OCC. This workshop was successful and well attended with 18 participants (six countries, six cod stocks, two stocks of other species), 14 presentations, five working documents plus other contributions (PDFs of papers published or in press, etc.). ICES had provided a webpage, with circular letters, agendas, working documents, and other discussion items greatly assisting the set up and function of the workshop, and there is a comprehensive report... and lots of new ideas! The workshop had definite ToRs , presentations, break-out group discussions, plenary discussions, and report writing, and it was organized in three main presentation sessions: Zooplankton dynamics in relation to larval fish; Larval cod feeding processes, diet and prey selection; and Modelling the zooplankton-larval cod linkage.

To determine the zooplankton species in the diets of cod, their temporal and spatial changes were addressed and the main conclusions were to confirm opportunistic feeding by cod larvae, which appear to eat what is there within their size range, although some prey species are more important in particular ecosystems. Temporal changes in the diet composition do not seem to be large compared with the spatial differences, and there is still a lack of direct small-scale coupling between prey field and diet.

The variability in zooplankton populations and their relationships to cod were determined from long-term trends in zooplankton populations with consequences for cod larval survival (e.g. *Calanus* in the North Sea, *Pseudocalanus* in the Baltic). There is a strong role of advection to larval and juvenile habitats (both sides of the North Atlantic).

One of the main difficulties in coupled biophysical models is to include realistic prey-fields, both on the larger, regional scale, and also on the sub-grid scale. Our knowledge of zooplankton (gelatinous and others) as predators on, and competitors with, larval cod is very limited – although variations in the abundance of predatory invertebrates definitely has the potential to affect recruitment success for many fish.

Very little information on zooplankton life histories and population dynamics was presented at the workshop. However, asked to examine the vital rates (growth, reproduction, mortality, recruitment) of zooplankton which are relevant to cod life histories ("stock assessment" of zooplankton), the Workshop determined that this is an underlying component of many of the regional studies which are summarized in Section 4.1 of the WG report. In relation to determining how the timing of zooplankton production and spatial dynamics (including patchiness) of nauplii relates to the spawning, distribution and survival of early stages of cod, more studies are known. The distribution of zooplankton and larval cod overlaps mainly in fronts or other discontinuities. Spatial overlap between large-sized prey and larval cod varies between years, with consequences for the presence of large zooplankton prey (e.g. *Calanus*) in the diet. In some regions such as Georges Bank and the Barents Sea, the advection of prey into spawning- and nursery grounds of larvae appear quite variable. This suggests a connection between large-scale oceanography, zooplankton distribution, and cod recruitment.

To establish the links between zooplankton and later stages of cod a number of strong interactions between larval cod and particular species of zooplankton were identified, e.g. the changes in the zooplankton community in the North Sea and interannual fluctuations in *Pseudocalanus* in the Baltic with recruitment. Links between zooplankton and later stages of cod

appear indirect. At the Faroes survival of juvenile cod is coupled to the availability of sandeels, which is in turn linked to zooplankton.

The workshop strongly supports the proposal of the WG on Zooplankton Ecology for the two following Theme Sessions for the ICES ASCs 2006 and 2007:

*What zooplankton are fish really eating? Species and diets, availability and dependency*. Conveners – Xabier Irigoien and Christian Möllmann.

*Biogeographical changes in zooplankton communities – consequences for marine ecosystems*. Conveners – Luis Valdes and Peter Wiebe.

The OCC recommends that the WKIZC report should be revised and edited by Ø. Fiksen (Norway), C. Möllmann (Denmark), and J. Runge (USA), reviewed by the Chair of the Oceanography Committee, and published in the *ICES Cooperative Research Report Series*. The estimated number of pages is 100.

## ICES/IOC Steering Group on GOOS [SGGOOS]

ICES/IOC Steering Group on GOOS (SGGOOS), met 10–11 June 2005 in Brest, France. The report was presented by Antonio Bode. (CM 2005/C:09)

Tasked to develop global and regional linkages between ICES and GOOS bodies this SG has collated national/regional reports on GOOS activities within ICES and IOC members:

It was noted that information is available by other means (websites) and the use of existing databases should be encouraged. In a review of progress with 2004 ICES/IOC the SGGOOS raised some Action Points, while preparing to promote GOOS in the ICES community (and vice versa). The SG has made recommendations to WGHABD to put more emphasis on dynamics and recommends that PGNSPP be up-rated to WG status.

The SG has made efforts to identify and/or develop components and activities by ICES that may contribute to the Global Ocean Observing System. It has reviewed, through presentations, various relevant national/regional observations, monitoring, or modelling programmes relevant to ICES and GOOS and determined many examples of local, sub-regional, and regional levels of integration. The SG is reviewing ecosystem indicators currently under development (IOC, COOP-GOOS, ICES Status Reports, and previous reports of WGECO), and current methods for ecosystem indicator integration and their use in GOOS pilot projects. Many indicators are addressed in other ICES WG, but SGGOOS will keep track of new developments. SGGOOS welcomes GOOS, EuroGOOS, and other GOOS bodies. ICES membership of SGGOOS has improved during the past years, but some disciplines (fisheries) are not present. SGGOOS felt that ideal participants are those already connected with GOOS activities in member countries and those with interest in the ecosystem approach to resource management.

The SGGOOS discussed the feasibility of an ICES CTD/VOS system which may provide real-time or near-real time delivery of environmental data from ICES coordinated research vessel surveys. Some institutions do report data but many others do not report any, which the SG and OCC regards as a continuing problem which should be resolved, as the information is gathered on research ships and should not be lost. In this way, SGGOOS has suggested the following ToR for appropriate ICES science working groups, i.e. working groups involved in data management (WGMDM or SGMID):

*Identify existing technology available to submit data in real-time to the GTS system. Develop practical guidelines to assist institutes who are not currently submitting their data in this way, including a description of the equipment required and the procedures for data quality control*.

There was some OCC debate about how GOOS might use the ICES status reports and about what GOOS really does for ICES. There is uncertainty as to the use and relationship of par-

ticularly biological data in the context of the strongly "real-time" arena of GOOS activities. SGGOOS has put forward ToRs for 2006 and attention was drawn to the importance of the revised ToR on: *Develop appropriate outreach activities to disseminate information about the programme and develop pilot projects to demonstrate the benefits of taking a GOOS approach in the ICES context*. ICES-IOC Steering Group on GOOS [SGGOOS] with Co-Chairs: Antonio Bode, ICES, and David Mountain, IOC, will meet in Copenhagen, Denmark from 24 to 25 April 2006.

As described in the WGHABD report above, Eileen Bresnan gave an interesting outline of the Workshop on New and Classic Techniques for the Determination of Numerical Abundance and Biovolume of HAB-species – evaluation of the cost, time-efficiency, and intercalibration methods [WKNCT].

## PICES Working Group Developments

The OCC was then given a brief introduction to some PICES developments by Dr Skip McKinnell, the Deputy Executive Secretary of PICES. He outlined in particular the establishment at PICES of two new working groups. The first will be looking at the results of the most recent IPCC models, what are their future projections, what are the prospects for the Pacific, and what regional implementations may be established. The second WG is already established and has its focus on Carbon and Climate with the aim of implementing regional studies in Pacific biogeochemistry and linking Carbon into Global Climate models.

The OCC discussed these initiatives, noting that there were initiatives in the EU to look at Global Climate Change and it would be a good aim to consider the consequences of the physics for regional biology and ecology. The Cod and Climate group have a workshop proposal to examine the issues relating Cod and Climate. It was noted that the 3rd International Zooplankton Production symposium in Gijón, had arisen directly from a joint WGZE/PICES meeting in Hawaii. The question was also raised whether ICES should do more to develop a focus looking into the Global Climate Models. Perhaps better contact should be promoted with these PICES WGs and ICES expert groups or some new ICES Global Climate forum.

## ICES/GLOBEC Working Group on Cod and Climate Change

ICES/GLOBEC Working Group on Cod and Climate Change 2004 [WGCCC] report was presented by Keith Brander. This WG had met by correspondence in 2005 and Keith drew attention to the open meeting to be held at this ASC.

The WG is now in its synthesis phase and the WGCCC sponsored the ICES Symposium on the Influence of Climate Change on North Atlantic Fish Stocks, which was held 11–14 May in Bergen, Norway. Following the opening talk by Jim Hurrell (USA) at this symposium, 62 talks and 35 posters, organized into five major sessions, were given. There is also to be a workshop on Declines and Recoveries of cod stocks in the North Atlantic, to be held in St. John's, Canada, in May 2006. The WG has a book in press, "Cod in a Changing Climate", greatly updating the 1994 *Cooperative Research Report*, with 12 chapters and eight additional papers. The WGCCC will focus future efforts and workshops, aiming towards the development and implementation of an ecosystem approach, the interactions of cod and zooplankton, and the relevance of trophodynamic interactions generally to cod biology/ecology.

WGCCC (in contact with WGZE and WGRP) initiated, planned, and ran the successful ICES/GLOBEC "Workshop on the Impact of Zooplankton on Cod Abundance and Production [WKIZC]" held at ICES Headquarters in Copenhagen, 7–9 June 2005.

The WGCCC recommends that Kai Wieland (Greenland) is approved as Co-Chair with Geir Ottersen (Norway). Discussion raised the issue of whether the persistently high North Atlantic temperatures are having effects on cod stocks and recruitment; and if so what are these ef-

fects? And what is happening in relation to the observed northern movement of species generally? Attention was drawn to a recent science paper which explains the "Influence of the Sub-Polar Gyre on Thermohaline Circulation in the North Atlantic".

## ICES Working Group on Recruitment Processes [WGRP]

ICES Working Group on Recruitment Processes [WGRP] met 15 July 2005, in Barcelona, Spain. ICES CM 2005/C:12. Chair: Richard Nash, IMR, Norway.

WGRP had been making some reflections on its current and future role and realizes that it has to provide advice that is directly relevant to our understanding of stock dynamics and its variability. Also WGRP decided they should move toward analyses that provide inferences at levels higher than single species. Three presentations and a discussion on the work undertaken by the working group were given at the WGRP meeting to help identify the specific contributions that the WG could make to provide or enhance the advice provided by ICES to its clients. Longer-term future goals and objectives for the Working Group include a goal that work undertaken by the WG should result in both reports to ICES and in manuscripts that can be submitted for publication in peer-reviewed scientific journals. The WGRP aim is to: review the contribution of coupled physical-biological models in regard to recruitment, examine selective processes that affect mortality in early life history, construct multi-stage models of recruitment, and examine the effects of stock structure, reproductive potential, and recruitment on stock dynamics. To achieve this it is necessary to bring together experts from various fields of recruitment biology and ecology to discuss the future directions for recruitment research.

Lead by Tom Miller (Co-Chair, USA) the WGRP reviewed the contribution of coupled physical-biological models in regard to recruitment. Coupled physical-biological models have become more widely used to understand and predict recruitment patterns in fish. Such models have been used to identify potential spawning locations, to assess the prey field for feeding larvae, and to identify the fate of larvae arising from different spawning areas. The goal of the project will be to critically review the utility of such models for increasing our understanding of recruitment processes. The review identifies categories of modelling approaches including explanatory, inferential, and hypothesis-generating approaches, and recommends increasing application of models that lead to testable hypotheses as opposed to the explanation of observed patterns. From this study the output will be: A keynote presentation at the WGPBI symposium on Coupled Physical-Biological Models, Brest, France, April 2006 and a manuscript to be submitted to *ICES Journal of Marine Science* in spring 2006.

The WGRP examined selective processes that affect mortality in early life history [Leads: Chris Chambers (USA) and Arild Folkvord (Norway)]

Regarding selective mortality it was concluded that recruits are not randomly selected from the entire spawning period and that there is selection for faster-growing individuals, with overwintering mortality often selectively removing slower growers. There is some evidence of a stabilising selection which was balanced by two examples of directional selection. The goals of the project will be to document the evidence for selective mortality during early life history of fish, define and catalogue the patterns of selective mortality, and review the techniques available to detect the action of selective mortality sources. A range of example data was presented. Results will be presented at a theme session at the 2007 Larval Fish Conference to be held in St. Johns, Newfoundland, Canada.

Construction of multi-stage models of recruitment [Leads: Richard Nash (Norway) and Tom Miller (USA)]

This topic was also accompanied by some data exemplifying the science, including "what is a Paulik diagram?" The aim is to initiate a project to compile and analyse multistage recruitment models. Objectives are to compare Paulik-style diagrams at three levels of resolutions: 1) dif-

ferent stocks of the same species; 2) different species in the same ecosystem; and 3) different species within the same functional guild (i.e. groundfish vs. pelagics). The project will culminate in a special session at a future Larval Fish Conference or ICES ASC meeting. A meeting has not yet been selected.

In OCC discussion a number of points were raised, including WGRP support for a new study group to look at recruitment problems in pelagic fish in the North Sea. The evident needs – to feed process understanding into models and to follow the fish life cycle from egg to metamorphosis and settlement – were highlighted. The WGRP reckons that the benefits of this outlined work plan are that WGRP will produce analyses of direct relevance to *ICES Advice*, shift from summaries of continuing research, increase participation in WGRP meetings, and increase collaboration with other OCC WGs. The WGRP presented their ToRs and will meet by correspondence in 2006.

### Steering Group for the ICES/GLOBEC North Atlantic Programme and Regional Office [SGNARO] (Ken Drinkwater)

During 2005 the Steering Group worked by correspondence, meeting during the ASC. This group had the following ToRs: to review and advise on the further evolution of the ICES/GLOBEC North Atlantic Programme and the workplan of the ICES/GLOBEC office, taking into account the strategic goals for ICES/GLOBEC research and the strategic approach for the ICES/GLOBEC office as agreed by the Council. In addition to consider developments in the international GLOBEC programme, and available funding, and to review and advise on the action plan of the Working Group on Cod and Climate Change.

The international GLOBEC programme, which will end in 2009, remains very active, with many national and regional components undertaking fieldwork, analysis, and publication. The Cod and Climate Change (CCC) programme, which is the main activity of the ICES/GLOBEC North Atlantic programme, is completing its first synthesis phase and has begun a new series of workshops and related activities in fulfilment of the action plan set out for the remaining four years. The first synthesis has include the ICES Symposium on "Influence of Climate Change on North Atlantic Fish Stocks" which took place in May 2004 and will be published shortly as a special volume of the *ICES Journal of Marine Science* as well as the *Cooperative Research Report 274* on "Spawning and Life History Information for North Atlantic Cod Stocks", which appeared in spring 2005. The Theme Session on "Cod in a Changing Climate" at the 2005 ASC will hear presentations on 11 chapters from the book with this title, which is being prepared for publication in 2006.

There was discussion of the SGNARO Workplan, which comprises the Cod and Climate Programme, the IPCC (lead author on the Fisheries chapter), work on small pelagic fish species, and coordination of IPO. Also discussed was funding for the office and of the fact that after ten years USA/Canada had ceased funding. This has left the post running at 80% of full time and so far attempts to completely redress the balance of these funds have not been successful.

There followed a discussion of the problems faced by the Working Group on Phytoplankton Ecology and what might be done to encourage some regeneration of their old enthusiasms. Discussion was strongly in favour of retaining this core WG, there are many areas they have to consider and many new developments in their field. However, they have undoubtedly been going through a depressed phase; having a different but more basic and equally important focus compared with the WGHABD, which has much of the limelight these days. Something must be done; although the WGPE are doing useful work they are struggling with attaining sufficient participation and have poor communication with other WGs. Various courses of action were considered, but OCC concluded that the OCC Chair would discuss the situation with the WGPE Chair and would revise their ToRs to make these more effective and attractive to expert participants.

## Consultative Committee and Oceanography Committee business

The Chair opened discussion on this with a call for ideas and responses to the documents circulated before the ASC. Harald Loeng also gave an introduction to the issues.

### ConC discussion paper on expert group structure

The first question raised was; what does the Oceanography Committee do, for ICES and for the expert groups which report to it?

There was a fairly rapid response from various OCC members, mostly in favour of retaining a parent committee for the expert groups. There was some doubt, however, about the effectiveness of the current set up. It was agreed that the Oceanography Committee served a variety of useful roles in oversight of expert groups and a source of advice to WG Chairs. It acts to provide feedback, direction, decisions, a focus to integrate their work with policy direction and implementation, and as the conduit for "higher power" representation of expert group response to ToRs, proposals, and suggestions. The need for consensus decision-making is important. However, there was considerable support for the idea that the committee would be more effective, particularly if its role was more as a forum for WG Chairs to pull together and exchange ideas. The perennial problem with funding attendance at meetings is not confined to WG members and the "not another meeting" syndrome was an evident concern. One proposal was that country representatives on committees should be the Working Group and Study Group Chairs, but the two per country equity issue may make this problematic. The role of the Delegates and their commitment is an issue.

It is true that in one respect the Oceanography Committee is not an "Advisory Body" in the same sense that the ACFM and Stock Assessment groups are. That is, the OCC-associated expert groups are not usually engaged in such pragmatic operational work. However, their expert input is crucial to many aspects of ICES data and ideas/information gathering. It was also considered that, although peer review is essential, having a long meeting to review the expert group reports is wasteful and if such review were done otherwise then the OCC for example could focus more on issues and ideas. In addition, expert groups do produce operational output such as status reports, workshops, and reviews of science relevant to most marine science areas and much of ICES operational advice. This increasingly includes fisheries ecosystem approaches and informing coastal-zone management issues. Status reports are a form of advice.

The Assessment Groups often complain that there is never time to discuss the underlying science and occasionally members of assessment groups are also involved in expert groups. There are too few forums for these two to meet and resolve problems. Better communication is a very major issue, between Expert Science groups and Assessment Science groups and across disciplines generally. Also, more feedback would help; it would be good to know what actually happens to all the WG output. It was a suggested that 3- to 5-year programmes of cross-group endeavours might be good; REGNS is perhaps a start in this direction. A moderated, web-based virtual forum approach to some science and advisory problems could perhaps help, also avoiding the travel expense difficulties.

WGs are forming their own websites to recognize first, the need to communicate intersessionally and second, the inability of ICES to provide this elementary service.

Often Assessment Groups or policy-makers require indicators, expert data integration outcomes (model outputs), key facts, and highlights to enlighten or reinforce their advice or decisions. However beset by caveats such may be in the eyes of experts, the detail is not always needed. Nevertheless, the quality of the complex science behind such abstractions has to be ensured and advanced. It is this need for interesting and quality science that actually keeps many scientists involved in expert groups, as for many there is not much enthusiasm for rou-

tine assessments or repetitive status reports, without the element of new science interest. For some there is also satisfaction in having a voice or some influence in the direction of research and in the meeting of minds with colleagues and in other science areas. There is a knowledge transfer element and a mentoring factor, too.

### Physical and chemical oceanography in ICES, do we still have a problem?

There is a need to motivate the oceanographers to participate. Note that most are these days involved closely in geochemical or ecological studies, a change from years ago.

There is possibly a greater need for chemists, particularly chemical oceanographers, biochemists, and molecular biologists working in ecology. What should ICES be doing with regard to ocean acidity issues? It was noted that the LOIS office has moved from Texel to GKSS Germany.

### Operational Oceanography in ICES. Needs and approaches?

How does biology fit into this framework? Life needs physics and chemistry in obvious and subtle ways, but which ways are the most important for monitoring for ecosystem status and change or for adaptive responses.

### ICES involvement in the International Polar Year

Conference coming up in Norway 2009.

### Future OCC topics?

"ICES–PICES interaction and ocean basin comparisons" and "Impacts of global warming in the oceans" – both are topics for 2008.

## Recommendations

### Recommendations from OCC

OCC and expert groups: Most of the expert groups function quite well with ToRs very relevant for the "ecosystem approach". A few groups have problems with weak participation, and we need to find ways to fertilize these with new scientists (instead of closing down WGs addressing important aspects of the ecosystem). The main challenge for ICES is to bring forward/highlight important results, e.g. of environmental status, variability and trends (together with new methodologies and basic knowledge) so they become easily available for the creation of new ideas and cross-disciplinary analysis. Currently, the flow of information tends to stop within the expert group reports (and at the Theme sessions). If the Oceanography Committee is to be kept alive, the members should take onboard the responsibility for this information flow to a very aggregated information product. If all science committees start a similar process, Adi Kellermann/the ICES science programme can produce an aggregated cross-committee information product which will be an important input to the "ecosystem approach" of ICES (and directly useful for WGRED).

OCC, LRC, and RCM recommend the support of an ICES/PICES/IOC Symposium on "Effects of Climate Change in the World Oceans" to be held during spring 2008 in Gijón (Spain) with Luis Valdés as local organizer (and/or convener).

OCC (WGOH andWGZE) recommends that the Oceanography Committee and ACME should encourage the measurements of standard physical oceanography and zooplankton parameters in the Coordinated Environmental Monitoring Programme (CEMP) of the OSPAR.

OCC recommends that the ICES secretariat find ways of operating expert group web-pages now being set up at individual institutes.

OCC (SGGOOS) recommends that the Planning Group on the North Sea Pilot Project (PGNSP) be changed to a working group since it appears planning is almost complete and the implementation phase has started with regular production of quarterly status reports.

OCC (SGGOOS) recommends the following ToR for ICES Expert Groups on data management (WGMDM, SGMID): *Identify existing technology available to submit data in real-time to the GTS system. Develop practical guidelines to assist institutes who are not currently submitting their data in this way, including a description of the equipment required and the procedures for data quality control*.

OCC (SGGOOS) recommends that the regular data products of the WGHABD be considered for the GOOS Initial Observing System;

OCC (SGNARO) recommends that ICES (e.g. through the Delegates) examines the possibility of contributing financially to maintaining the ICES-GLOBEC programme until the end of 2009.

OCC (WGMDM) recommends merging (in 2006) the WGMDM and SGMID activities into a new group of data managers, users, and scientists tentatively called the Working Group on ICES Data and Information Management (WGDIM). The groups have agreed to meet back-to-back (May 8–10 at the ICES secretariat) to develop ToRs for the new group, and organize the 2006 ASC Theme Session: Environmental and Fisheries Data Management, Access, and Integration. The following preliminary ToRs for WGDIM are suggested:

- to advise ICES on data management issues;
- to promote good data management practice within ICES;
- to give guidance to the ICES Data Centre;
- to liaise with relevant international data management bodies and programmes (IODE, GOOS, SeaSearch/SeaDataNet, etc.).

OCC (WKIZC) recommends that the Report of the Workshop on the Impact of Zooplankton on Cod Abundance and Production should be revised and edited by Ø. Fiksen (Norway), C. Möllmann (Denmark), and J. Runge (USA), reviewed by the Chair of the Oceanography Committee, and published in the *ICES Cooperative Research Report* series. The estimated number of pages is 100.

OCC (WGOH) recommends that the "Review of Climate Monitoring by the ICES Working Group of Oceanic Hydrography", will be edited by Sheldon Bacon and Penny Holiday and published in a special edition of CLIVAR *Exchanges* October 2006. The estimated number of pages is 36. Estimated production cost: £1500.

## New additional Theme Sessions for the ASC 2006

OCC (WGZE) recommends a Theme Session at the ASC 2006 on: **Biogeographical changes in zooplankton communities; consequences for marine ecosystems.**

### Justification

To a large extent our current assessments of the ecosystem effects of climate change have been most effectively demonstrated by reference to the observed spatial and temporal changes in abundance, distribution, and phenology of plankton communities and key species. Ecosystem regime shifts and links with fisheries harvests, recruitment, etc. have been demonstrated over a range of scales, from basin scales in the Atlantic and Pacific oceans down to different responses noted for different regions of the North Sea.

It is likely that any ecosystem approaches to fisheries management, marine protected areas, habitats and biodiversity conservation, or integrated coastal-zone management will be assisted by reference to information on marine plankton.

It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.

**Co-Conveners**: Louis Valdes and Peter Wiebe (also linked to ACE, ACME, ACFM).

OCC (WGRP and WGZE) recommends a Theme Session at the ASC 2006 on: **What plankton are fish really eating? Species and diets, availability and dependency.**

**Justification**

An ecosystem approach to fisheries and marine environmental management requires understanding of the trophic links in the ecosystem. Despite very many studies and a wide literature, difficult problems remain associated with estimating the transfer of secondary production to fish (or other) predators. This suggested theme topic is aimed to encourage some resolution or at least a consensus approach to describing the food species of plankton-eating fish throughout their life cycles.

**Co-Conveners**: Xabier Irigoien, Christian Möllmann (and Miller)?

OCC recommends a Theme Session at the ASC 2006 or 2007 on: **Evolution in the ocean: a missing perspective in fisheries science?**

**Description:** Human intervention is a dominating force in marine ecosystems: climate change, pollution, and harvest are changing the environment at unprecedented rates. Ecology and evolution operate in concert, and both perspectives are often necessary to describe changes that are qualitative as well as quantitative. As an example, an increasing number of studies suggest that fisheries not only affect the numbers of fish, but that the mortality imposed by fisheries also has consequences for life history traits, phenology, distribution, and behaviour. Although recent theoretical, experimental, and field-based results indicate that evolution can take place within decades, the potential for evolution on contemporary time scales depends on the species, its genetics, and how mortality and the environment changes. In this session we welcome papers that discuss to what degree an evolutionary perspective can or cannot shed light on the rapid changes observable in marine ecosystems.

**Co-Conveners:** Christian Jørgensen (Department of Biology, University of Bergen, Norway), Erin Dunlop (Adaptive Dynamics Network, International Institute for Applied Systems Analysis, Laxenburg, Austria), and Esben Moland Olsen (Centre for Ecological and Evolutionary Synthesis, University of Oslo, Norway).

**Additional comments:** Not knowing where to formally bring a suggestion forward, we would also like to use this opportunity to suggest an invited speaker for a plenary talk (actually, we present two names and let it be up to ICES to choose; both are highly renowned researchers and excellent speakers). Professor David Reznick (University of Riverside, California) and Professor David Conover (State University of New York, Stony Brook) have both been working empirically in the field and in the lab to address the potential for fisheries-induced evolution (David Conover has also worked on temperature adaptations). We believe presenting their findings for examination and discussion at an ICES conference would help identify to what degree evolutionary effects can be expected in commercial fisheries. Although many marine scientists are sceptical about the potential for fisheries-induced selection, we believe that fisheries science needs an informed discussion of this topic; not because the studies that suggest

fisheries-induced adaptive change have ruled out alternative explanations of the data, but because the implications may have far-reaching and perhaps irreversible effects and this therefore calls for a precautionary approach.

## Any other business

## Close 19: 00

# Annex 1: Forthcoming Symposia and Theme Session topics

*WGZE Theme Session Proposals for 2006 ICES ASC (supported by WKIZC) were:*

**Biogeographical changes in zooplankton communities; consequences for marine ecosystems,**

**Co-Conveners**: Luis Valdes and Peter Wiebe + ?

**What plankton are fish really eating? Species and diets, availability and dependency**

**Co-Conveners:** Xabier Irigoien and Christian Möllmann +?

*WGHABD and WGPBI Theme Session joint proposal for 2006 ICES ASC:*

**Harmful Algae Bloom Dynamics: Validation of model predictions (possibilities and limitations) and status on coupled physical-biological process knowledge**

**Co-Conveners**: Tipani Stipa (Finland) WGPBI and Patrick Gentien (France) WGHABD.

It was suggested that this was a useful approach to incorporate numerical tools into the work of the WGHABD.

*WGOH Theme Session proposal for 2006 ICES ASC:*

**Climatic variability in the ICES area 2000–2005 in relation to previous decades: physical and biological consequences**.

**Co-Convenors**: A. Lavín (Spain) and C. Reid (UK)

## Resource Management Committee (RMC)

Chair: Dankert W. Skagen (Norway)

Rapporteur: Per Sandberg (Norway)

The Resource Management Committee met on Friday 24 September from 10: 30 to 12: 30 (22 in attendance) and Saturday 25 September 14: 30 to 16: 30 (9 in attendance).

## Opening

The Chair opened the meeting, welcomed the participants and the Rapporteur was appointed. The Chair outlined the agenda and timetable for the sessions of Committee business. Owing to an overlap with a session in ACFM-ACE, the Saturday meeting had to be postponed by one hour. The agenda and modified time table were adopted.

Attention was drawn to the Joint Session on Surveys with the Living Resources Committee. Members of the Resource Management Committee actively supported this science session and the Chair reminded the Committee that three of its Expert Groups were presenting reports during the survey session:

- International Bottom Trawl Survey Working Group [IBTSWG] (Doc. D:05);
- Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys [PGNAPES] (Doc. D:07); and
- Planning Group on Redfish Stocks [PGRS] (Doc. D:01).

The reports from these groups are presented in the report of the joint session.

The Chair drew the Committee's attention to the forthcoming Symposium on Fisheries Management Strategies, which will take place in Galway in June 2006. This is in the core area of interest for the RMC.

At the opening of the second day's meeting, the Chair noted the regrettable low attendance. Clearly, having a committee meeting at a time when most ASC participants are leaving is not ideal, and other arrangements should be considered for the future.

## Committee Business

### Matters referred by Consultative and Advisory Committees

The Chair oriented about discussions in the Consultative Committee and in ACFM, and invited members of the committee to express opinions on these topics.

One topic was how far ICES should go in including fisheries economy in its remits, and more specifically, whether fisheries economists should be invited to take part in ICES advisory process with reference to the interdisciplinary nature of fisheries advice. Several members highlighted the need to take economics into consideration at least in some aspects of the advisory process, like development of management strategies.

Another topic was the question of quality control of expert group work. The ICES Head of Science Programme Adi Kellermann informed about continuing work to build and improve ICES databases for administrative purposes, which will allow some monitoring of the activities in expert groups. The idea to appoint members of the Committee to review expert group reports was discussed, referring to the 10-point checklist developed by ConC. Although several members opposed the suggestion when it came to a full scientific review of complex reports, the members were open to consider the suggestion if the remit for such a review could be limited.

A third topic was the need to improve communication within the ICES scientific community. In particular, the need to make results from one expert group readily available to other expert groups was highlighted. The following list of points was put forward to trigger the discussion:

- make sure that potential users are aware that information is there;
- ensure that the sender knows what the receiver needs and convey understanding why just this is so important;
- ensure that the sender does the job, including the background work;
- ensure that the receiver gets it – internal communication;
- Several ideas were put forward on how this could be done: Personal contacts include communication in the terms of reference and databases within ICES, and requiring executive summaries from expert groups.

The Chair informed about the initiative by ConC to allow the chairs of expert groups under the advisory committees to invite experts as temporary members of their groups, in line with the rule for expert groups under the science committees. The Committee welcomed this initiative.

## Speakers and Theme Sessions for the 2005 and 2006 ASCs

Time did not allow for a systematic review of the proposed theme sessions. A proposal has been put forward for a theme session on discards, forwarded primarily by the Living Resources Committee, if possible already in 2006. The Resource Management Committee supported this proposal, pointing out that this is a highly relevant theme where much work has been done in recent years which need to be assembled, and it recommends to ConC that it is scheduled for 2006 if at all possible.

A future theme session on recovery plans was suggested by the Committee.

## The future of science committees and expert groups

A discussion paper from the Chair and Vice-Chair of ConC on the future of the ICES Science Committees and Expert Groups was discussed as a separate item on the agenda. Regrettably, very few members were present at the time. This precluded the broad discussion that was anticipated, and flavoured the discussion to some extent. Some points were brought forward:

- The Science Committees have a role to play in monitoring the work by expert groups.
- Noticing that priorities in research institutes nowadays are more driven by funding agencies than by recommendations from ICES, it was suggested that Science Committees may have an important role by promoting initiatives for science towards funding agencies.
- At the ASC, the science committees should have more emphasis on strategic discussions within their area of responsibility. To facilitate such discussions, science committees should be able to invite key-note speakers to their sessions. Likewise, the committee sessions should be open to presentation of papers with special relevance to the field covered by the Committee. However, no one wished to go back to the old system where the committees were the main forum for presentation of work. Rather, the committees might be a forum for presenting important scientific progress that does not fit into the theme session framework.
- Science Committees propose future theme sessions, but the outcome of these theme sessions is not reported back to the Committee. Conveners might be requested to report back to the Committee.
- Science Committees could promote joint meetings between traditional assessment working groups and methodology-oriented working groups to help identify research gaps.

## Presentation and adoption of Reports and draft Resolutions

### *Study Group on Multispecies Assessments in the North Sea [SGMSNS]*

The report was presented by Axel Temming, member of the group. The multispecies work in ICES has been at a modest level for some years, concentrating mostly on updating the multispecies VPA for the North Sea. However, the SG considers that as the ecosystem approach to fisheries management as well as long-term management strategies evolve, there is a rapidly growing need for a better understanding of multispecies interactions and for taking these interactions into account when developing advice. The SG has done preliminary work in that direction, and suggests actions to revitalise the multispecies work in ICES. As a first step, new stomach data are needed (the most recent ones being from 1991). For next year, the SG suggests to design a new stomach sampling programme, and outline a workplan for future multispecies work. The Committee supported this development, and also emphasized the need to include other waters than just the North Sea.

### *Workshop on Fish Stock Assessment Techniques [WKAFAT]*

The report was presented by Dankert Skagen, Co-Chair of the group. This course in assessment methods has been conducted the last two years. The courses have been success, but the very diverse background in the audience has been a problem. The need for a more comprehensive training in assessment methods in ICES has been emphasized by the Workshop Chairs, and the course in its present form should be just one element in this complex. Both an introductory course for beginners and more advanced courses or seminars on selected advanced topics should be considered.

### *Working Group on Methods of Fish Stock Assessments [WGMG]*

This WG did not meet in 2005, and no meeting is planned for 2006. The group should still exist, and be assembled once there are fields where substantial progress is made. It is not, however, a good forum for solving *ad hoc* problems that appear in various contexts in the advisory process, because it will always have to rely on intersessional work. Furthermore, specialised methodological topics may be better handled by specific study groups. Several such groups are active at present (SGASAM, SGMAS, SGMSNS).

### *Working Group on Fishery Systems [WGFS]*

The report was presented by the Chair, Martin Pastoors. This SG considers fishery systems on a broad scale, including socio-economic aspects. Last year's meeting was poorly attended, and the group could not address its terms of reference fully. For next year, a series of EU projects are being completed. The WG suggests considering the outcome of these projects, and further addressing social aspects of the response to fisheries advice as well as institutional interactions, and the work of the SGMAS in a broader perspective. The intention is to present the main results at the upcoming symposium on Management Strategies in June 2006. The Committee supported this plan.

Later in the ASC week, ACFM elected the WG Chair Martin Pastoors as Chair of ACFM, and the Consultative Committee appointed Doug Wilson (Denmark) as new Chair of the WGFS.

### *Study Group on Age-length Structured Assessment Models [SGASAM]*

The Committee Chair gave a brief presentation of the last report. This group both keeps track of continuing developments in the field and addresses specific topics related to length-based and age/length-based assessment methods. The Committee commended the work done by the group, and supported the group's proposal for terms of reference for 2006.

### *The Regional Ecosystem Study Group for the North Sea [REGNS]*

The report was presented by the Chair, Andrew Kenny. The group aims at developing integrated assessments for ecosystems, using the North Sea as a first case. Information has been assembled from a large number of ICES expert groups covering all aspects of the North Sea ecosystem, and work on synthesising the material is well underway. The ambition is to present the case study at a theme session at the ASC in 2006. In the discussion following the presentation, the need for a strategy for future updating of the assessment was pointed out. In this strategy, communications with both other ICES expert groups and the ICES Data Center are important elements. Furthermore, if managers want a comprehensive evaluation of the state of the ecosystem, they have to be prepared that this is a much wider task than the routine fish stock assessments.

## Any other business

The ICES Head of the Science Programme, Adi Kellermann, drew the Committee's attention to a recent ICES involvement in evaluation of specific areas for conservation in the North Sea.

## Living Resources Committee (LRC) and Resource Management Committee (RMC) – Joint Session on Surveys

Chair: Dave Reid (UK)

Rapporteur: Dankert Skagen (Norway)

The Joint Session on Surveys met on Friday 23 September from 13: 30 to 18: 00.

## Opening

The Chair opened the meeting, welcomed the participants and the Rapporteur was appointed. The Chair outlined the agenda and timetable for this single session of joint Committee business. These were adopted without modification.

## Presentation and adoption of reports and draft Resolutions

### Baltic International Fish Survey Working Group [WGBIFS]

The Chair of WGBIFS, Rainer Oeberst (Germany) presented Doc.G:08. The group had been able to meet all its ToRs this year. As requested by the Chair of LRC the report was focused on areas where there were possible needs for improvement. The surveys were completed mostly as specified. For the acoustic surveys, concern was expressed with regard to area coverage. For the bottom trawl surveys, the problem that the depletion of oxygen at times in some areas changes both the horizontal and vertical distribution of the demersal species was noted once again. One way out might be to consider combining acoustic and bottom trawl abundance estimates, but this is by no means a straightforward job. Furthermore, inconsistencies between national standards and the lack of a well functioning database were pointed out as major problems. It has not been possible to perform sufficient intercalibration to establish reliable conversion factors between the vessels. ICES is supposed to take over the database as part of the DATRAS database, but so far, there are still problems to be solved. Immediate solution of these problems was added as a ToR for BIFS. This appears to be a big job, and there may be a need for a dedicated workshop with members of the group and ICES staff to develop a strategy for sorting out inconsistencies and missing data. From committee members who have been through similar processes in other area, one piece of advice was to proceed with further analyses of the data, during which errors in the data that are otherwise difficult to detect become apparent.

### Planning Group on North Sea Cod and Plaice Egg Surveys in the North Sea [PGEGGS]

Clive Fox presented Doc G:11. This survey was conducted in 2004. It was the first synoptic coverage of egg production areas, as an indicator of spawning areas, for plaice and cod in the North Sea, and was remarkably successful given the *ad hoc* nature of the vessel provision. Analysis of samples was completed in 2005. Separation of these eggs is not straightforward, and a genetic method had been successfully developed to solve this problem. The results for plaice showed spawning areas in the southern North Sea as expected. For cod, most eggs were found in the southeastern part, while according to bottom trawl surveys, most adult fish are present in the North. Currently, there is no clear explanation of this discrepancy, but one possibility is that the survey did not hit the peak of the spawning in the North.

## Working Group on Mackerel and Horse Mackerel Egg Surveys [WGMEGS]

The Chair of WGMEGS, Dave Reid (UK) presented Doc G:10 with the final results of the 2004 egg survey for mackerel in the Western and Southern area, and horse mackerel in the Western area.

The surveys were generally successful for both species though a number of weaknesses were identified. The interpretation of the egg production data in terms of spawning biomass remains problematic for horse mackerel, since it is most likely an indeterminate spawner. The WGMEGS has previously recommended that the data are not used as a measure of spawning biomass owing to this uncertainty. From the WGMHSA the question has been raised if this uncertainty is still sufficiently small to allow for discriminating between alternative analytical assessments that diverge with a factor of 2–4. WGMHSA also asked WGMEGS if it was possible to combine North Sea surveys with western and southern. Both these matters have been added as ToRs for WGMEGS in 2006.

The need for a new workshop on mackerel egg ID and staging was highlighted and this will be brought forward for 2006.

## International Bottom Trawl Survey Working Group [IBTSWG]

The Chair of IBTSWG, Jean-Claude Mahé (France) presented Doc D:05. In general, the surveys were executed according to plan in 2005. Standardization of gears is still an issue, there are clearly differences which may bias the overall trawl indices and create problems with comparison between areas covered by different nations and vessels. There is a suggestion to increase the overlap between vessels to get a better understanding of this, as reflected in an extra ToR for next year. Another issue is the coordination of data reporting with the ICES Data Centre, which needs to be continued. In that connection the easily accessible documentation of changes to gear and survey design was noted. There is an increased use of data from the survey for other purposes than just producing abundance indices, e.g. for the work by REGNS and other WGs covering various ecosystem aspects. The need for closer collaboration with such groups was noted, and the WG plans to set aside one day at next years meeting to meet with members of such WGs. It was recommended to transfer the revision of gear specification and documentation to SGSTS.

## Working Group on Beam Trawl Surveys [WGBEAM]

Jim Ellis presented Doc G:04. The surveys involving four countries were carried out as planned. As with the IBTS surveys, there is a growing interest in using this survey to provide data for other WGs, particularly in the context of ecosystem function and fish assemblages. Further collaboration with IBTS and other related North Sea groups is encouraged. A still outstanding problem is open access to some of the data; currently, data from some nations has not been entered into the DATRAS database, and a further coordination with ICES and the DATRAS team is needed.

## Planning Group on Aerial and Acoustic Surveys for Mackerel [PGAAM]

The report from this year could not be presented at the meeting. The PGAAM itself proposes that the group is dissolved. This is partly because it has fulfilled its primary task of coordinating surveys that were being established, partly because important research projects that fed (in particular SIMFAMI) into the group have been finalized, and finally because mackerel surveys are a relatively low priority in most countries. This decision was supported by the Committee. To the extent needed, it is assumed that the necessary coordination can be done either directly between institutes, or through the PGNAPES.

### Planning Group for Herring Surveys [PGHERS]

Bram Couperus (the Netherlands) presented Doc G:04. The group is responsible for planning acoustic and larval surveys, working up the data, and forwarding it to the HAWG. No major problems were encountered. The group is planning to gradually move towards a fully integrated acoustic survey design in the near future. For the time being, a gradually increasing overlap between vessel coverage is planned especially in the important Shetland area. A scrutiny workshop was held in January 2005, and showed reasonable consistency in the interpretation. A connection of maturity stage photographs has been made to ensure harmonisation of maturity determination on the surveys. Further developments include larval surveys around Ireland, standardization of larval sampling gear and extension of the coverage for sprat. The HERSUR database for acoustic survey data are still being maintained by Denmark, but there are problems with data entry, QA, and future database maintenance. It was suggested that it should be used to provide survey metadata to HAWG.

### Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys [PGNAPES]

The new Chair of PGNAPES, Alexander Krysov (Russia) presented Doc D:07. The surveys were carried out as planned in 2005 and the biomass estimates for Atlanto-Scandian herring and blue whiting were produced. The group also provided estimates of the zooplankton abundance and distribution as well as CTD profile data. The group described the migration pattern of the two fish species and the changes in these in recent years, as well as their relationship with the hydrography and zooplankton situation. This represents an important approach to the provision of integrated data, and should be seen as a model for other survey groups. In addition, PGNAPES planned the surveys for 2006. In the following discussion, two points were highlighted: The need for further standardization of gears and sampling procedures, and the problem of building up an adequate international database. The PGNAPES is well aware of these problems, and will attempt to solve them as far as possible.

### Study Group on the Estimation of Spawning-stock biomass of Sardine and Anchovy [SGSBSA]

Miguel Bernal (Spain) presented the report Doc G:02. This was the last meeting planned for this group. Once again, it was complimented for having done an excellent job. Finalising the work included further revisions of the data and production of new software to analyse them. The two previous meeting reports have been published in the *ICES Cooperative Research Report* series, the rest has been submitted for publication. The Study Group has proposed a permanent Working Group to follow up and extend the work of this group, i.e. by including acoustic surveys for sardine and anchovy. Some new tasks for such a working group have been outlined, e.g. coordination of new surveys, notably anchovy surveys in the Gulf of Cadiz and surveys for juvenile anchovy in the Bay of Biscay. ToRs have been drafted and agreed to this end.

## Any other business

There had been full and frank discussions of the reports at the end of each presentation and the need for further general discussion was not necessary. Participants in the session, and the presenters, found the session invaluable and proposed that a similar session be scheduled for the next ASC in 2006.

## Publications Committee (PubC)

Interim Committee Chair: Pierre Pepin, Canada

Rapporteur: Bill Anthony, ICES Technical Editor

The Publications Committee met on Monday 19 September 9:00–18:00 and Saturday 24 September 9:00 to 12:00.

### Opening

The Publications Committee Interim Chair Pierre Pepin (Canada) greeted the committee members. In attendance were Tomas Saat (Estonia), Eero Aro (Finland), Brigitte Milcendeau (France), Dietrich Schnack (Germany), Olafur Astthorsson (Iceland), Mark Dickey-Collas (the Netherlands), Howard Browman (Norway), Tomasz Linkowski (Poland), Antonio Bode (Spain), Ignacio Olaso (Spain), Fredrik Arrhenius (Sweden), and Andy Payne (United Kingdom). Editors from the *IJMS* included Bernard Megrey and Verena Trenkel. Christiane Barranguet and Debbie Barrett represented publisher Elsevier. Also present, representing the ICES Secretariat, were Vivian Piil, Søren Lund, and Bill Anthony, Technical Editor of the *IJMS*.

## Review of 2004 Publications Committee Report

The following points from the 2004 Publications Committee Report were reviewed:

- Change in the structure of the committee.
- Ethical concerns regarding the use of animals in experiments.
- The large **backlog of symposia** proceedings that were to appear in the *IJMS* in 2008 and 2009.

## Review of issues from 2004/2005 Consultative Committee Report

Several issues emerged from the Consultative Committee Report, among others:

- Recommended actions to make ICES more visible.
- Ethical concerns regarding the use of animals in experiments.
- ICES symposia.

The two latter issues received special attention:

The Interim Chair provided background and reported on the **Recommendation from the Study Group on ICES Publication Practices regarding Ethical Concerns on the use of animals in scientific research (SGPPE).**

The Journal Editors will add the following to the 'instructions to authors' for the *ICES Journal of Marine Science*:

> "Confirmation that the author has adhered to general guidelines for the ethical use of animals in research, the legal requirements of the country in which the work was carried out, and any institutional guidelines. If ethical considerations arose in the course of the study, the author should describe in the manuscript how those considerations were addressed. In exceptional cases, where unresolved ethical questions remain, the manuscript may be sent to appropriate experts on the ethical use of animals in research for additional refereeing. In such cases, the decision whether the manuscript is accepted for publication remains with the Editor or, in the final instance, the Editor-in-Chief."

The intention of the section is to ensure proper reporting of procedures used in animal experimentation and to ensure ethical treatment of the animals affected. The wording also establishes a procedure for adjudication of cases where concern is raised either by referees or by the Editors. It is important to note that these requirements apply almost exclusively to manipulative studies where the animals are confined or released back into the environment. As such, population studies often do not require licensing or they easily satisfy the ethical requirements in terms of societal significance.

During the May 2005 meeting of ConC, the Interim Chair drafted an action plan to accommodate publication in the *ICES Journal of Marine Science* of the approved ICES symposia. A key requirement is that the current turnaround time for symposia is approximately 11–15 months from the meeting until final publication. This includes submission, review, assessment, revision, and final preparation of the manuscripts through the ICES Secretariat and the Publisher. Symposium organizers will be required to adhere strictly to the deadlines imposed by the tight schedule. The Chair of the Publications Committee noted that the current schedule imposes limitations on ICES' capability to accept sponsorship of new symposia which require publication in the *ICES JMS* before the end of 2010. ConC noted that it was in the interest of ICES that all major ICES-sponsored symposia are published in *ICES JMS*. ConC also requested that PubC drafts a set of guidelines to ensure coordination of symposium requests.

## Matters arising (ToR a)

**Audrey Geffen** replaced Chris Frid as editor in January 2005.

The **contract with Elsevier** has been extended for one year. Andy Payne explained that the backlog of manuscripts was one of the reasons.

**Committee membership**: The new committee structure, adopted at the end of last year's meeting brought the Publications Committee in line with other ICES committees which consist of two appointed members from each country with one vote per country.

In July 2005, ICES, received a **request from the Librarian of the National Marine Biological Library** in Plymouth to allow scientists from the Plymouth Lab to deposit their ICES documents and reports in the institutional e-print site. Links to PDFS on the ICES Website would be provided, as would any acknowledgement in addition to the bibliographic citation. After discussion with the General Secretary, the Editor-in-Chief, and the Publications Committee Interim Chair, ICES agreed to their request. This relates to the issue of **Open Access** and has potential financial implications, but the situation is currently very dynamic and there are continuing discussions among editors and publishers throughout the world. ICES should keep abreast of the direction of those discussions.

In response to a request by the ICES Librarian to require symposia organizers to **provide copies of <u>all</u> papers to the ICES library,** PubC recommends that if the paper is not good enough to print, or if the author felt it was not ready, it should not be made available. If unpublished material is cited in *IJMS*, it should be cited as a personal communication. However, PubC did feel that it should be **required that symposium organizers submit the titles and abstracts, in both printed and electronic versions to the ICES Librarian**.

PubC also recommended that the CD-ROM with Annual Science Conference documents should receive an **ISBN number**. This might encourage higher submission rates.

## Review of ICES Publications activities 2004/2005 (ToR B)

### Review of *IJMS* Editor's report

The *IJMS* Editor-in-Chief paid tribute to the *IJMS* editors and thanked them for their outstanding work and support, as did the whole Elsevier team.

The Editor-in-Chief noted two items of special interest:

- A manuscript tracking system that has been designed by Bill Anthony has not been completed as a result of a lack of time and personnel constraints.
- Bill Anthony's part-time employment status has created problems for the *Journal*.

These concerns should be brought to the attention of ConC and a solution found.

Considering Vol. 62 (2005), Elsevier presented a helpful attitude toward issues concerning the page budget. *IJMS* has experienced modest, gradual growth. In 2004, there was a 50% surge of material submitted. Nevertheless, *IJMS* editors strove to uphold the recognized standards, rather than raising the rejection rate. The submission rate for 2005 is above that of 2003 at this time of the year, although not as high as 2004. *IJMS* maintained an average 40% rejection rate. The delay time of a standard issue is ten months, the shortest four months. Elsevier has promised that proofs will be ready 3–4 weeks from receipt of manuscript to PDF from publisher.

The average time for a symposium issue is approximately 14 months. Conveners must appoint a guest editor shortly after receiving approval from ICES. ICES covers the in-house editing, but the expense of engaging a guest must be covered by the symposium. Elsevier has handled the overrun on the page budget for symposium issues very well. In the future, no more than 250 free pages will be allowed. Above that, symposium conveners must pay. No more exceptions will be made. The cost will be £50 per page.

Chris Frid resigned at the end of June. Audrey Geffen has joined the team of editors. The transition from Judith to Bill has been seamless.

The Editor-in-Chief reported that he had been approached by two organizations with the idea of publishing "suites" of articles on one topic in regular issues of the *IJMS*. Proposals will be reviewed by the Editors.

The 2007 page budget will be set with Elsevier, regardless of which publisher is chosen.

### Publisher's report

Elsevier reported that the *IJMS* has enjoyed a healthy evolution. Page budget problems were solved quickly. The impact factor went up a little. The number of free copies was reduced in 2004, e.g. a fulfilment centre in Maryland was receiving 50 free copies; this was cancelled immediately. ICES must review whether the current free subscriptions are necessary. At the moment there is enough material to fill issue #1 in 2006, and part of issue #2. In 2006, *IJMS* will use the unassigned symposium issue to clear the backlog of articles received in 2004.

There has been a healthy increase of revenue. There has been an increase of electronic subscribers. The increase of electronic subscriptions makes up for print decrease. The increase of electronic subscriptions and the decrease in print subscriptions has not been as dramatic as predicted.

The *IJMS* belongs to Freedom Collection. *IJMS* is read by many in government, but it is read by many more in academia.

### Disease Leaflets

Steve Feist has not had time to do much. He is working with Claire at the Secretariat. He was not satisfied with the current digitization of PDF files, and with Claire's help, has been turning them into Microsoft Word documents.

### Plankton Leaflets

Alistair Lindley has received no new material for leaflets. His report highlights the problems of updating old issues and publishing new ones. It shows the difficulty of getting contributions owing to a lack of taxonomists.

### Marine Science Symposia series

There were concerns that the impact factor of the *Journal* could be diluted because of misquotations of special issues. Elsevier has contacted the ISI in Philadelphia for clarification. PubC recommends that we keep the manuscript numbering series to allow symposia "that provide an historical perspective" to be published as manuscripts despite the inability of all contributions to meet the scientific rigour criteria of the *Journal*. To avoid the possibility of misquotations and incorrect citations, the symposium number should not appear on the front cover of symposia issues, starting with the next symposium issue. The symposium number should be placed on the inside front cover in an inconspicuous font size.

### Other matters

An updated version of the ICES Code of Practice will appear in 2005 with revisions made in 2004. A Japanese translation of the Code of Practice has been made by a leading aquaculture journal. The new version is being offered at no charge as a service to the scientific community.

*Cooperative Research Reports* are free to download. The cover price on printed copies represents a discounted value, which does not take into account the total costs, i.e. printing, the ICES secretariat staff, etc. These are also published in the spirit that they should be freely available.

The ICES Website has updated links, as well as new maps of the areas under consideration. The Interim Chair requested that the activity levels on the ICES Website should be monitored and that some information is provided to PubC in next year's report.

The most recent newsletter contained 44 pages. Scientists are now volunteering material, probably recognizing that, with a circulation of 4000 copies distributed worldwide, it offers an advantageous platform for their work. The material is not subject to scientific review, but each article has a disclaimer stating that the opinions are those of the author.

There was concern expressed that the topics presented to the general public concentrated on sensationalist and pessimistic topics. The General Secretary explained that the choice of topics for the Web, news releases, etc. is based on what's topical, in news or items that have local interest in certain countries. ICES is aware of the concerns about sensationalism. Journalists are naturally under pressure, and so they are less likely to perceive the difference between what is controversial and what is sensational. Care should be taken in how material is presented to attract attention.

## Election

The election for the Chair of the Publications Committee was overseen by David Griffith and Margaret Moody. Pierre Pepin (Canada) was elected with 13 votes.

## Recommendations to the Consultative Committee

The Head of Science Programme, in consultation with the Chair of the Publications Committee and Editor-in-Chief, sent a **letter to the organizers** of the various symposia in August, 2005, to inform them of the planned publication schedule. A formal letter will be prepared before the end of October as a formality to aid their memory.

**Procedures for the assessment of Symposium sponsorship and publication**: A draft of a document intended to ensure accurate tracking of proposals and progress, and clear criteria for assessment and priorities was prepared for ConC.

PubC proposes that:

1) All symposia should be allocated a unique code number as soon as they are submitted to the Secretariat for discussion in ConC and a permanent record tracking the proposal and progress should be maintained.
2) When ICES is asked to be associated with or co-sponsor a symposium, an "ICES Person", identified by name and preferably from the scientific community, is appointed to the symposium steering group.
3) The ICES Head of Science Programme should be allocated the single responsibility for tracking progress on all ICES co-sponsored symposia. As soon as the unique code number is issued, from then on the Head of Science Programme must report progress to the Consultative Committee at each of its meetings where symposia are on the agenda.

The role of ConC is to determine whether the rationale, objectives, and plan outlined in the symposium proposal falls within the Strategic and Action plans, which currently include:

1 ) Understand the physical, chemical, and biological functioning of marine ecosystems.
2 ) Understand and quantify human impacts on marine ecosystems, including living marine resources.
3 ) Evaluate options for sustainable marine-related industries, particularly fishing and mariculture.
4 ) Advise on the sustainable use of living marine resources and protection of the marine environment.
5 ) Enhance collaboration with organizations, scientific programmes, and stakeholders (including the fishing industry) that are relevant to the ICES goals.
6 ) Maintain and further develop a modern and effective infrastructure to support ICES programmes.
7 ) Broaden the diversity of the scientists who participate in ICES activities.

ConC must then establish the **priority of the symposium within the scope of the Strategic plan** (high, intermediate, low) as a means to guide the decision-making process of PubC concerning the suitability of the symposium for publication in the *Journal* or other avenues.

PubC will then apply the following criteria in deciding whether a symposium issue can be published in the *Journal*:

1 ) Does the subject fall within the mandate of ICES to publish it, in terms of scientific discipline and geography, with due regard to the recent history of publication in the *Journal* of symposia covering similar topics (e.g. one should not concentrate symposium issues to a restricted range of themes)?
2 ) Do the conveners of the symposium meet the requirements set in their guidelines? For instance, is an assigned guest editor adequately experienced and ready to perform the relevant duties, will the conveners commit to meeting both standards and timeliness (generally some 14–15 months from the date of their symposium to hard copy publication), and will they undertake to stay within the gratis page allocation or to cover additional costs? Also, do they commit to publishing in the *Journal* without seeking alternative publication media?
3 ) What is the availability of *Journal* issues 14–15 months after the date of the symposium?
4 ) If 1–3 above can be met but there is still competition for issues in a particular year, then priority for *Journal* issue space should be given in one of two ways. First option would be that higher priority is assigned to those scientific themes

> listed as "hot topics" by the Publisher, who traditionally tests the penetration of its journals and has access to author feedback, electronic download information, and citation information that can help guide the priority setting. Second option would be to overrule this prioritization modestly if ICES decides as a policy that stimulus needs to be given to certain topics deserving of greater exposure at a certain time.

Once availability of gratis issues is exhausted, then the supplement option can be offered to the balance of applicants. The Committee does not recommend that availability of financial resources to sponsor certain symposia be invoked early in the decision process, but rather after 1–4 above have been followed rigorously.

There was also a recommendation that a standardized template be developed and used for all future requests for symposium sponsorship and publication.

The workload to Secretariat staff and *IJMS* editors in the case that issues are added was noted. This eventuality has been anticipated with the plan to add another editor, if necessary.

PubC also offered for consideration a proposal concerning the **availability of ICES personnel** for publication process:

> The Publications Committee noted satisfactory comments made by several of its members relating to the publications performance of Bill Anthony, who joined the organization on a four-year contract of 60% employment one year ago. However, it also recorded and endorsed the concern expressed by the *ICES JMS* Editor-in-Chief that delivery of certain requirements related to the *Journal* by Mr Anthony were sometimes being delayed by his other commitments to ICES. For example, his over commitment had sometimes delayed him meeting the deadlines for copyediting symposium issue manuscripts; there was a delay in publishing the second symposium issue of 2005. Although the Committee fully understands that decisions on what Mr Anthony does for ICES rest with ICES Management and that daily delivery requirements at ICES may sometimes demand that the skills he possesses be directed to areas other than those associated with the *Journal*, it stresses the importance of maintaining the workflow for ICES flagship publication. As constraints on Mr Anthony's working time appear to be at the root of the problem, it was resolved to request ICES Management to consider extending Mr Anthony's working hours to full time, to ensure specifically that *Journal* delivery objectives are not jeopardized, while at the same time not limiting the possibilities for him to assist in other duties at ICES. The ideal situation would seemingly be similar to that of his predecessor, who was able in 100% employment to meet all calls for *Journal* support while still rendering satisfactory service over a wide range of ICES activities related to both publication and administration (e.g. in a 80/20 split).

The General Secretary commented that he had discussed the issue with Bill and because of budgetary restraints, ICES had underestimated what one person could do with 60% of their time. He is constrained by the available budget, but it is high on his list of things to discuss with the incoming General Secretary. This issue will be **highlighted as a key concern when presented to ConC.**

PubC offered for consideration a proposal about the prioritization of the **development of a manuscript tracking system at ICES**:

> It was resolved that ICES Management be asked to consider raising the priority of the development of an in-house tracking system for *ICES JMS* manuscripts, with a view to simplifying the process and speeding up the response time on calls for crucial information, used mainly for planning and reporting purposes. Unfortunately, other priorities for database development at ICES by scarce programming resources has so far pre-

cluded implementation of this system, which incidentally has facility to include information on all ICES publications, not just the *Journal*. The Committee noted the current situation relating to tracking *Journal* manuscripts once they had arrived at ICES. What happens is that Søren Lund receives material, allocates a reference number and interacts by e-mail with initially the Editor-in-Chief, then the editors assigned to each manuscript while it is being processed, ultimately annotating his spreadsheet when a coversheet record of reviewers suggestions and editors decisions is provided to him on either rejection or submission to the Publisher. Requests for statistics by anyone, generally the editors or the Publisher, have to be met either by Søren Lund or Bill Anthony at ICES by them making manual calculations based on the contents of this rather complicated spreadsheet. In this day of electronic tracking, this method is rather archaic, and the Committee noted that Mr Anthony had at the request of the Editor-in-Chief designed a simple electronic tracking system that allowed all editors (wherever they were in the world) and ICES staff from their own PCs access to the information and the statistics at a simple press of a button.

The draft document concerning **new procedures for approval and resolutions of publication commitments** was offered for consideration. It is meant to solve the problem of long delays in the delivery of documents after being proposed. The current decision-making process for ICES Publications (*CRR*, *TIMES*, etc.) has resulted in a backlog of undelivered publications to which ICES has made financial or personnel commitments. To avoid this occurrence, PubC proposes the following set of procedures:

1 ) The Expert Group draft a brief proposal explaining the rationale, objectives, and scientific contribution of the intended publication and its relationship with the ICES Strategic Plan. The proposal should contain an outline of the structure of the document and the expected time frame for completion;

2 ) Each proposal is given a unique code number by the Secretariat and a permanent record tracking the proposal and progress should be maintained;

3 ) The ICES Technical Editor should be allocated the responsibility for tracking progress on all ICES Publications, in consultation with the Head of Science Programme (*CRR*, *TIMES*);

4 ) The proposal is passed to PubC, which consults with the Chair of the parent Science Committee, for approval in principle, which in turn leads to the addition of a ToR to the resolution for the Expert Group;

5 ) Only when a complete draft of the publication is ready and reviewed does the Chair of the parent Science Committee prepare a resolution for publication;

6 ) Step 1 can be skipped if the Expert Group has produced a working draft of the document as part of a previously assigned ToR.

This was supported by the Head of Science Programme who provided helpful comments. This is similar to the drafting of a template. Resolutions would be reviewed by PubC, whose role is to apply a critical eye to the publication process within ICES. It is not intended that PubC will evaluate the merit of each document, because the expertise rests with the parent Scientific Committee.

To address the **decreasing rate of ASC CM document submission** PubC proposes that changes be made to the letter of acceptance sent to the senior authors. The first paragraph following the acceptance should read:

> The legacy of the ICES ASC lies in the proper documentation of presentations from the meeting. Because CM papers often contain information not documented anywhere else, it is essential that authors produce a full CM document to be made available for the scientific community. Documents are assembled onto an indexed CD that is distributed to all meeting participants. Concurrent sessions make it essential that all documents be included on the CD so that all interested participants can benefit from your presentation

as well as to stimulate discussion outside the sessions. CM documents are indexed on many publication databases and will subsequently be made available on the ICES Website. In addition, CM documents are essential tools for planning of the session structure by the convenors.

The following sentence should be struck from the letter:

> Note that the CM document is considered as a progress report of ongoing research and as such does not constitute a peer-reviewed publication.

This issue is one of legacy and proper documentation. The information will be passed on to the Secretariat for next year's ASC.

## Review of Publications costs 2004/2005

The General Secretary was not in a position to provide the committee with an overview of the publication costs and revenues for ICES. The General Secretary and the Interim Chair outlined information required by PubC in the future. This will be provided before 31 December.

## Review of PubC Resolutions

All resolutions concerning publications were reviewed by PubC. All, save one, showed good progress and were supported. The draft resolution from the WGPE concerning "**A Working manual and supporting papers on the use of a standardized incubator in primary production measurements**", edited by F. Colijn (Germany), L. Wetsteijn (the Netherlands), L. Edler (Sweden), and O. Lindahl (Sweden), was not recommended for support. Following discussion with the Chair of the Oceanography Committee, the Interim Chair noted that there is currently no clear plan to revise the document, as originally resolved in 1996. It is only in draft form. When the WGPE has a strong draft document, PubC will consider support of a resolution. Pierre Pepin recommended that the Chair of the Oceanography Committee talk to the Chair of the WGPE.

The WGOH recommends that a "Review of Climate Monitoring by the ICES Working Group on Oceanic Hydrography," will be edited by S. Bacon and P. Holliday and published in a special edition of CLIVAR Exchanges in October 2006. The estimated number of pages is 36. There is an external cost of £1500 (~15000 DKK) to be covered by ICES, which represents a 50% share of the cost of production. ICES will be given 300 copies for distribution. Eight hundred (800) copies will be distributed to the CLIVAR community. The issue was discussed with the General Secretary, the Chair of ConC, and the Head of Science Programme. This publication will make ICES activities more visible to the ocean climate community around the world. PubC recommended support for the resolution.

## Review of bids for publication of *ICES Journal of Marine Science*

Bill Anthony described the process by which a new publisher was identified.

**Background:** When Academic Press, the previous publisher of the *IJMS*, was taken over by Elsevier in 1991, a new contract clarifying the relationship between ICES and the publisher was never written. The result was a lack of transparency in financial accountability, quality control including copy-editing, and in the details of the daily running of the *Journal*.

**The procedure** for identifying a new publisher was a follows:

- Research the field of academic/scientific journal publishing.
- Write a Call for Tender incorporating *IJMS's* special needs.
- Send the Calls for Tender in mid-April with a deadline of June 3.

- Review of the tenders by the Editor-in-Chief, the Interim Chair of the Publications Committee, and the Technical Editor of the *IJMS*.
- Visit the publishers' offices for further presentations and follow-up questions (by the Editor-in-Chief and the Technical Editor).
- Rate each publisher in eight categories.
- Prepare a recommendation.

The current contract with Elsevier was scheduled to expire 31 December 2005, but was extended until 31 December 2006 for the following reasons:

- Publishers deal in calendar years, meaning that a contract would have to start on 1 January 2006.
- In the course of researching the project, it was discovered that a tender process and resulting transfer to a new publisher should be undertaken in no less than 18 months, identifying 1 January 2007 as the next reasonable starting date.
- The large number of manuscripts in the hands of Elsevier would have greatly complicated a transition.

With a new publisher as partner, our goals included:

i ) seeking the means of achieving modest year-on-year growth of the *Journal*, including but not just in terms of profit to ICES,

ii ) requesting greater transparency in the bookkeeping and administrative process by any future Publisher,

iii ) ensuring that the *ICES Journal of Marine Science* stays at least with, but preferably ahead of the game in terms of scientific publishing, and above all,

iv ) achieving excellence in terms of the quality of hard copy and electronic output that ICES and its scientists seek.

Eight criteria were stipulated to allow ranking evaluation against the primary bid criteria to ensure compliance with the four main generic aims listed above. Criteria included:

- Impression of visit
- Written proposal
- Production support and quality
- Copy-editing
- Marketing and promotion support
- Electronic publishing and editorial management
- Position in the sector
- Financial

The ranking was done by Andrew Payne, Editor-in-Chief of the *ICES Journal of Marine Science* and Bill Anthony, Technical Editor separately and unseeingly by both. Equal ranking was given in some categories by one or both evaluators. Marks were assigned against rankings assigned by each evaluator, 1 being the highest ranked, 6 the lowest, accumulated for the total across all criteria, so the lowest total equated to the highest-evaluated bidder. Equal weighting was given to all criteria.

**Recommendation:** Taking the rank in the total of all evaluation criteria, and identifying that key elements in the assessment of the tenders include high quality of publishing standards, copy-editing, as well as the opportunity to build a personal relationship and partnership with a publisher that provides ICES with the greatest ability to establish its own goals for the *ICES Journal of Marine Science*, it is recommended that **Oxford University Press should be contracted for an initial period of five years, starting 1 January 2007**.

**The decision about which Publisher to contract for the publication of the *ICES Journal of Marine Science* must be made by the Bureau by the end of October 2005**.

All committee members expressed their support for the recommendation. There were many expressions of admiration for the work done by Andy and Bill.

## Review Progress with Work Plan

An effort is being made to create a template that can be used consistently across all ICES publications. The **new template** will have one column instead of the current two to facilitate use on the Internet where two columns make readability very difficult. The new template can be given to committee chairs and authors and allow them to submit reports that are already formatted, saving the ICES Secretariat many hours. The largest problem with the template stems from different computer configurations. There are few solutions to the problems associated with the complexity of today's personal computer.

At the 2003 meeting of the Publications Committee, a template assigning outcomes achieved in 2003 to Action Plan points was completed. This was reviewed in 2004, and new actions noted. The Committee notes that the major work item to be carried out in the next few years is the preparation of summary guidelines for all ICES publications series. The guidelines will cover issues such as the intended objective of each series, the editorial and review processes, the formats and submission routes, the pricing and dissemination policy, and the recommended citation format. The series to be covered are the standard publications along with the ICES Website, the ICES Newsletter, ICES Status Reports, and the new *ICES Advice* series. The summary guidelines will appear as a linked PDF file.

There has been little progress on this item during the current year. A plan of action will be drafted by the Chair to initiate the work during the coming year.

Finally, the Chair will consult with members of the ICES Secretariat and members of PubC to increase public awareness of ICES activities. Chairs of Scientific Committees will be asked to canvas their Expert Groups for activities which they believe would be of public interest. In addition, Editors, Symposium Conveners and Committee Chairs will be asked to highlight key topics, symposium volumes or papers that might be of interest for press releases by the Secretariat.

## Next meeting and Terms of Reference

The Publications Committee [PubC] (Chair: Pierre Pepin, Canada) will meet on two days in 2006 during the 94th Statutory Meeting to:

a) review all intersessional activities 2004–2005, including matters brought to the attention of the Chair through the year and the preparation of the status report guidelines;
b) review all ICES Publications activities, including communications and the website, in 2004/2005;

c) review progress with the Work Plan, and integrated web guidance, to achieve publication, information, and media objectives in the ICES Strategic Plan;

d) review information to be supplied by the Secretariat on the cost of ICES publication-related work during 2004/2005.

PubC will report to the Consultative Committee at the 2006 Annual Science Conference.

## Closing Session

The General Secretary announced the results of the elections of Science Committee chairs that were made during the course of the Conference:

- Mariculture Committee, Ian Bricknell, UK
- Diadromous Fish Committee, Malcolm Beveridge, UK
- ACFM, Martin Pastoors, the Netherlands
- Publications Committee, Pierre Pepin, Canada

The Chair of the Consultative Committee then thanked the outgoing Chairs Tom Sephton (Mariculture Committee), Niall Ó Maoiléidigh (Diadromous Fish Committee), and Poul Degnbol (ACFM) for their dedication and contributions to ICES work.

The Chair of the Consultative Committee also introduced the winners of:

- Best poster
- Best new scientist
- Best paper

A committee had been in action throughout the conference to find the best poster and the best presentations.

### Best Poster

There were two winners this year:

> Jorge Gonçalves, Universidade do Algarve, Faro, Portugal. The title of the poster was: "Evaluation of survivorship of fish that have escaped through a demersal purse-seine" (ICES CM 2005/X:18)

and

> Martha O'Sullivan, FRS Marine Laboratory, Aberdeen, Scotland. The title of the poster was: "Absence of spatial and temporal genetic differentiation at the microsatellite loci in the Northeast Atlantic monkfish *Lophius piscatorius*" (ICES CM 2005/T:18).

The co-winners focused on:

- Stock discrimination and the use of modern genetic tools;
- Novel techniques to reduce bycatch in purse-seines.

### Best Paper

The winner was Beth E. Scott, University of Aberdeen, Scotland. The title of the paper was: "Hotspots: Marine top predator foraging habitat predicted from a detailed understanding of temporal and spatial oceanographic processes" (ICES CM 2005/O:39).

The author focused on seabird foraging behaviour reflected in the chlorophyll distribution and oceanographic processes which also maps other top predators. She combined physics, biology, and seabird behaviour in an elegant way.

**Harald Loeng, Chair of the Consultative Committee, handing over the Best Paper award to Beth E. Scott,**

## Best New Scientist

The winner was Ute Hochbaum, University of Hamburg, Germany. The title of the paper was: "Simulating the influence of climate variability on larval fish survival: an example using sprat (*Sprattus sprattus*)" (ICES CM 2005/O:18).

This was an excellent example of combining bio-physical modelling with biological life cycle modelling, and the author had a very stimulating presentation.

## Honourable mention

Clare Embling, University of St. Andrews, Scotland. The title of the paper was: "Investigations into the relationship between pelagic fish and dolphin distributions off the west coast of Scotland" (ICES CM 2005/R:08).

## Closing

The Chair of the Consultative Committee then thanked the General Secretary, David Griffith, who is retiring in January 2006. The Consultative Committee thanked David for the enthusiastic support he had always given to the Committee, for his stimulating contribution to their discussions, and for his kind hospitality when the Committee met in Copenhagen.

The President addressed the Session and commended all those who had contributed to the success of the Conference.

He then declared the 2005 Annual Science Conference closed.

# Part II

# 93rd Statutory Meeting

## Report of Finance Committee

Chair: Serge Labonté, Canada

The Committee met on Monday 17 October 2005 from 09:00 to 17:40 hrs.

All members were present except Boris Kotenev and Georges Pichot. The Danish Delegate was represented in the afternoon by Fritz W. Köster. The President (representing the Bureau), the General Secretary, Jytte Andersen-Rosendal, and Helle Falck from the ICES Secretariat, also participated. Liz Tirpak from the US State Department took part in the meeting as observer. Harald Loeng, CONC Chair was present for agenda item 6.

## Agenda Item 1 Approval of Agenda

The Agenda was adopted without any changes.

## Agenda Item 2 Final Accounts for Financial Year 2004

The General Secretary and J. Andersen-Rosendal summarized the final Income and Expenditure Accounts and Balance Sheet for the Financial Year 2004 (Doc. C. M. 2005/Del:06/05/02). They drew attention to the following:

The Profit and Loss Account indicated an excess of Income over Expenditure of DKK 943 073 for the year 2004 (including DKK 400 000 interest, which was earmarked for the Capital Reserve Fund (CRF) according to the approved budget). Attention was drawn to the transfer of Excess of Income over Expenditure DKK 1 600 000 and one-off Advice DKK 139 626. Administrative expenses (DKK 9 355 574) were higher than last year because of the relocation of ICES headquarters.

The Committee members signed the Final Accounts and Balance Sheet and also signed for the receipt of the Long-Form Audit Report.

## Agenda Item 3 Status Report on the Accounts as of 1 October 2005

The General Secretary reviewed the Status Report as of 1 October 2005 (Doc. C. M. 2005/Del:06/06/03). He pointed out that there were no discrepancies between the revised budget and expenditures.

It was noted that additional income has been realized on *Other income* and *Ongoing projects*, but this additional income was supporting projects requested by clients.

Additional *Income* of DKK 543 000 (after having transferred DKK 400 000 to the CRF) was also added to the revised budget to reflect the Excess of Income over Expenditure from previous year.

The committee then discussed the relevance of showing clearly the capital and reserves in the budget table. As of 31 December 2004, the Capital Reserve Fund (CRF) was DKK 2 635 000 and an amount of DKK 2 031 000 was a surplus from the ASC registration fees before 2005. In 2004 the Excess of Income over Expenditure amounted to DKK 943 000; of that amount DKK 400 000 was transferred to the CRF in accordance with the decision taken by Council at the Vigo meeting in September 2004. The committee recommends that the balance of DKK 543 000 be set aside in a new ICES Initiative Fund, which should also include the DKK 2 031 000 surplus from ASC registration fees.

After some discussion, the Committee accepted the Status Report as of 1 October 2005 and agreed to submit it to the Council with a recommendation for acceptance.

## Agenda Item 4 Draft Budget for 2006 and Draft Forecast Budget for 2007

### Draft Budget for 2006

The General Secretary summarized the Draft Budget 2006 (Doc. C. M. 2005/Del06/05/04). He reminded the Committee that the Draft Budget for 2006 was prepared based on the Forecast Budget approved by the Council at the 2004 Annual Science Conference. The amounts under *Income* are the same as in last year's approved Forecast Budget for the National Contributions and for the Commissions. Under *Income,* a new line (15) has been added to show the Excess of Income over Expenditure from the previous year.

The Committee proposed that the interest earned (DKK 400 000) should be transferred to the Capital Reserve Fund (DKK 200 000) and the proposed ICES Initiative Fund (DKK 200 000).

The Committee accepted the Draft Budget for 2006 with the proposed changes and recommended its approval by the Council.

### Draft Forecast Budget for 2007

The General Secretary noted that the Draft Forecast Budget for 2007 had been produced at the January 2005 Bureau Meeting.

The Committee proposed that the interest earned should be transferred to Capital Reserve Fund (DKK 200 000) and to the proposed ICES Initiative Fund (DKK 200 000).

The Committee accepted the Budget for 2007 with the proposed changes and recommended its approval by the Council.

## Agenda Item 5 Appointment of Auditors for 2005

Based on the satisfactory services provided by the current Auditors during the past year, the Committee agreed to propose to the Council that KPMG C. Jespersen be appointed as the ICES Auditors for another year.

The Committee proposed that the Secretariat asks for new bids from two to three Auditors next year with a view to arranging a three-year contract. It was noted that the cost would be higher in the introduction year if the Council decides to change to a new firm of auditors.

## Agenda Item 6 Review of the Financial Implications of the Consultative Committee Report

Harald Loeng presented the proposals from the report. He pointed out that ConC recommended the support of DKK 50 000 for young scientists' participation in the ASC. He also presented proposals from the Publication committee. He further pointed out that ConC recommended support of one more travel day (*per diem)* for the Consultative Committee to participate, with MCAP, in the Workshop on the Review of the ICES Committee and Expert Group Performance. The Committee agreed to these proposals as they can be accommodated in the 2006 Budget.

He also pointed out that ConC had discussed the desirability of increasing the ASC registration fee, to guarantee the continued success of the ASC.

Finally ConC recommended that the working hours for the ICES Technical Editor should be increased from 60% to 100%.

After some discussion the Committee agreed that the General Secretary should draw up firm proposals to show how these items could be included in future budgets.

## Agenda Item 7 Review the Recommendations of the Report of the BWGFP, May 30–31

The Committee reviewed the matters referred to it by the Bureau as well as the revised recommendations included in the report of BWGFP, May 30–31 2005.

The Committee endorsed the BWGFP recommendations, together with the Bureau's additions and comments.

(i) The Committee discussed the issue of Reserve Funds. In addition to the CRF the Committee recommends the creation of an ICES Initiative Fund to support special projects. This new fund should be used to support key initiatives, in particular:

1 ) Annual Science Conference and the Science Programme, which includes the preparation of a business plan to realistically address the up-to-date requirements of the ASC,
2 ) MCAP's proposal for a Quality Assurance Manager initiative,
3 ) Data Centre Business Plan;

in ways which will not involve seeking permanent increases in national contributions.

The Committee recommends that the DKK 2 031 000 surplus accumulated from ASC registration fees before 2005 be put in this new fund as well as DKK 543 000 excess of income over expenditure from 2004.

(ii) The Committee also discussed the size of the CRF. By December 31, 2005 the CRF will amount to DKK 3 435 000 (11.9% of total income). The Committee felt that given the size of the reserve, the rate of growth could be set at DKK 200 000 per year for 2006 and 2007. By the end of January 2006, the Committee will make a recommendation to the Bureau on the maximum size of the CRF.

(iii) On August 3, 2005 the auditor KPMG provided advice for a practical procedure between the Danish Delegate and the Secretariat concerning Rule 20 (iv) – 20 (vi), sufficient to comply with the requirements of Rule 20 (iv):

*All purchases and sales of Bonds redeemed by lot prior to the amortisation date of the loan of ICES investments in Bonds are copied to the Danish Delegate(s) by the bank. In addition, the Danish Delegate(s) shall receive a copy of the yearly statement from the bank.*

*The Danish Delegate(s) should sign these copies and forward them to ICES in order to confirm that he is informed about and concurs with the investment. If the Danish Delegate(s) considers that the investment is not in accordance with Rule of Procedure 20 (ii) and (iii) he must immediately contact the General Secretary.*

The Committee recommends implementation of the auditor's advice.

A further refinement of the auditor's proposed solution, which could be considered next year, could be to adopt, as a general policy, the current practice of investing only in government securities; the General Secretary would contact the Danish Delegate(s) only in the event of a proposed departure from such a general policy. The General Secretary was asked to discuss this suggestion with KPMG, and to present a working paper to the next Bureau meeting in 2006.

## Agenda Item 8 Matters Referred to Committee by Bureau or Council

This matter was dealt with under agenda item 7.

## Agenda Item 9 Any Other Business

The Finance Committee questioned the usefulness, to Delegates, of tabling the Status of Accounts at 1 October at the Council meeting in its current form. Instead, the Committee recommends that the document be modified to give Delegates concise information on important variances (plus or minus) that are anticipated within the current year's budget.

# Final accounts for the year ended 31 December 2004

## Income statement

| DKK | 2004 | 2003 |
|---|---|---|
| **Revenue** | | |
| National contributions | 18,711,000 | 18,165,000 |
| Other contributions | 7,138,747 | 5,835,794 |
| Affiliated & observers | 0 | 89,770 |
| Sale of publications | 28,820 | 67,149 |
| Other income | 1,739,626 | 1,458,333 |
| Ongoing projects | 1,847,624 | 3,217,317 |
| **Total revenue** | 29,465,817 | 28,833,363 |
| Staff costs | -19,218,955 | -18,887,528 |
| Administrative expenses | -9,335,574 | -7,995,339 |
| Publications | -393,443 | -638,663 |
| **Operating profit** | 517,845 | 1,311,833 |
| Interest income and similar items | 459,966 | 647,339 |
| Interest expense and similar items | -34,738 | -33,102 |
| **Profit for the year** | 943,073 | 1,926,070 |

# Final accounts for the year ended 31 December 2004

## Balance sheet

| DKK | 2004 | 2003 |
|---|---|---|
| **ASSETS** | | |
| **Current assets** | | |
| **Inventories** | | |
| Goods for resale | 130,363 | 168,400 |
| | 130,363 | 168,400 |
| **Receivables** | | |
| Unpaid contributions from observers, etc. | 3,054,723 | 50,000 |
| Unpaid contributions from ongoing projects | 325,297 | 88,201 |
| Other receivables | 603,782 | 451,519 |
| Prepaid expenses | 1,792,553 | 2,260,882 |
| | 5,776,355 | 2,850,602 |
| **Investments** | 8,673,698 | 10,934,802 |
| **Cash at bank and in hand** | 13,136,450 | 14,231,928 |
| **Total current assets** | 27,716,866 | 28,185,732 |
| **TOTAL ASSETS** | 27,716,866 | 28,185,732 |

# Final accounts for the year ended 31 December 2004

## Balance sheet

| DKK | 2004 | 2003 |
|---|---|---|
| **LIABILITIES** | | |
| **Total capital and reserves** | 4,813,630 | 5,570,557 |
| **Provisions** | | |
| Other provisions | 905,095 | 1,267,494 |
| **Total provisions** | 905,095 | 1,267,494 |
| **Liabilities** | | |
| **Short-term liabilities** | | |
| Prepayments contributions | 17,112,000 | 16,908,369 |
| Prepayments ongoing projects | 3,330,860 | 3,445,874 |
| Other payables | 1,555,281 | 993,438 |
| **Total liabilities other than provisions** | 21,998,141 | 21,347,681 |
| **TOTAL LIABILITIES** | 27,716,866 | 28,185,732 |

# Auditors' report

We audited the final accounts of the International Council for the Exploration of the Sea for the period 1 January 2004 - 31 December 2004, prepared in accordance with Rule 18.

The final accounts are the responsibility of the General Secretary. Our responsibility is to express an opinion on the final accounts based on our audit.

## Basis of opinion

Our audit was carried out in accordance with Rule 20 (vii) adopted at the 82nd (1994) Statutory Meeting in Canada and included such auditing procedures as we considered necessary.

Our audit has not given rise to any qualifications.

## Supplementary information

Capital and reserves and profit for the year are significantly influenced by the transfer of DKK 1,600,000 from capital and reserves to the income statement and DKK 100,000 to other prepaid contributions in the balance sheet. The transfer is in accordance with Rule 18 (iii) in the International Council for the Exploration of the Sea's Rules of Procedure adopted by the Council on 3 October 2001.

## Opinion

In our opinion, the final accounts of the International Council for Exploration of the Sea as at 31 December 2004 present fairly assets and liabilities, the financial position and profit for the year in accordance with Rule 18.

Copenhagen, 20 April 2005
**KPMG C.Jespersen**
Statsautoriseret Revisionsinteressentskab

Poul Erik Olsen
State Authorised
Public Accountant

Carsten Nørringgård
State Authorised
Public Accountant

Having scrutinized the Final Accounts, we recommend that the Bureau submits the document to the Council for approval.

Finance Committee:

Serge Labonté
Chairman

Georges Piehot
(Belgium)

i. A.

Niels Axel Nielsen
(Denmark)

Gerd Hubold
(Germany)

Boris Kotenev
(Russia)

# Budget for the Financial Year 2006

| | | Budget 2005 | Budget 2006 |
|---|---|---|---|
| | **INCOME** | | |
| | Price for one share | **368 000** | **379 000** |
| **1.** | **National Contributions** | | |
| | Belgium | 736 000 | 758 000 |
| | Canada | 1 104 000 | 1 137 000 |
| | Denmark | 1 104 000 | 1 137 000 |
| | Estonia | 368 000 | 379 000 |
| | Finland | 552 000 | 568 500 |
| | France | 1 472 000 | 1 516 000 |
| | Germany | 1 472 000 | 1 516 000 |
| | Iceland | 1 104 000 | 1 137 000 |
| | Ireland | 736 000 | 758 000 |
| | Latvia | 368 000 | 379 000 |
| | Netherlands | 1 104 000 | 1 137 000 |
| | Norway | 1 472 000 | 1 516 000 |
| | Poland | 1 104 000 | 1 137 000 |
| | Portugal | 736 000 | 758 000 |
| | Russia | 1 104 000 | 1 137 000 |
| | Spain | 1 104 000 | 1 137 000 |
| | Sweden | 1 104 000 | 1 137 000 |
| | United Kingdom | 1 472 000 | 1 516 000 |
| | USA | 1 104 000 | 1 137 000 |
| | **Total** | **19 320 000** | **19 897 500** |
| | | | |
| | Income from *ICES Journal of Marine Science* | 300 000 | |
| | Sale of Publications | 50 000 | 50 000 |
| | Other Contributions | 7 398 792 | 7 583 150 |
| | Contributions from Affiliates and Observers | 178 777 | 184 140 |
| | ASC Income (Fees) | 375 000 | 3 00 000 |
| | Externally Funded Projects and own Funds | 1 325 324 | 175 009 |
| | Excess of Income over Expenditure from previous year | 543 000 | 0 |
| | | | |
| | **GRAND TOTAL** | **29 490 893** | **28 189 799** |

## Budget Financial Year 2006, continued

| EXPENDITURE | Budget 2005 | Budget 2006 |
|---|---|---|
| Incidentals for President and Chairmen | 610 000 | 610 000 |
| Salaries | 18 041 558 | 18 296 505 |
| Office Expenses | 1 941 400 | 1 943 400 |
| IT-Expenses | 2 844 935 | 2 238 144 |
| Expenses for ASC and Statutory Meetings | 1 155 000 | 1 095 000 |
| Travels, Meetings, etc. | 3 010 000 | 3 161 750 |
| Publications | 845 000 | 845 000 |
| Transferred to Fund for Young Scientist (2007) | 500 000 | 0 |
| ICES Strategic Investment Fund | 543 000 | 0 |
| GRAND TOTAL | 29 490 893 | 28 189 799 |

| INTEREST RECEIVABLE | | |
|---|---|---|
| Interest | 400 000 | 400 000 |

| Interest transferred to Funds | | |
|---|---|---|
| Capital Reserve Fund | 400 000 | 200 000 |
| ICES Strategic Investment Fund | 0 | 200 000 |

## Extraordinary Delegates Meeting to select a General Secretary

20 September 2005

Aberdeen, Scotland, UK

The President opened the meeting at 1330 hours. The purpose of the meeting was to select the next General Secretary of ICES for a six-year term beginning January 2006. The current General Secretary, David Griffith, had chosen not to seek another term.

Only Delegates were allowed to participate in the meeting. All member countries were represented except for Russia, whose Delegate had already expressed apologies for his absence.

The President reviewed the background to the selection process. At the 2004 Delegates' meeting, Doc. Del 04/12/1 describing a proposed procedure had been discussed. The 2004 ICES Annual Report (pages 170–171) documents the agreed procedure. The President reported that this procedure had been followed. He noted that in response to encouragement from the Council to involve the Secretariat Staff, he had made the decision to include the representative of the Staff Association as a full member of the Interview Panel. This meant that three out of six members of the interview panel were from the Secretariat.

There were seventeen applications in response to an advertisement posted on the ICES Website, circulated to Delegates, and published in *New Scientist* and *Nature*. One withdrew before being rated by the preliminary evaluation panel. The preliminary evaluation panel decided that seven of the candidates should be interviewed, but one of these candidates withdrew before being interviewed. Following six interviews, four candidates were subjected to a personality evaluation test. These four candidates were considered by those Bureau members who were not themselves candidates. The Bureau concluded that all four were well qualified and could be successful as General Secretary. It unanimously recommended one of the candidates, and it did not rank the remaining candidates.

The Council had an in-depth discussion on the procedure and on the Bureau's recommendation. The following issues were highlighted:

1 ) Staff participation. Some Delegates thought it had been excessive. The President accepted responsibility for the decision to include a third member of the Secretariat on the Interview Panel. All other participation had been explicitly agreed by the Council at its previous meeting (in 2004). The President stated that, in general, he favours staff involvement, which had been encouraged by the Council at its previous meeting. Also, he noted, he did not think that the outcome would have been different, and he pointed out that the Bureau Recommendation was solely the recommendation of elected members of the Bureau.

2 ) Bureau ranking of candidates. Sweden noted that the Council had tasked the Bureau with ranking candidates for the Council's consideration, and that the Bureau had only partially completed its task by recommending one candidate, but not ranking the remaining candidates. The President acknowledged this shortcoming, and offered Bureau members the opportunity to rank all the candidates it had submitted for Council consideration. None of the Bureau members chose to do so, and there was little support from other countries for pursuing this issue.

3 ) Reduced number of Bureau members participating. It was noted that the Bureau recommendation was from four Bureau members only since other members were candidates for the position. However, it was also noted that two other Delegates participated in the process (on the Interview Panel).

4 ) Essays on criteria for success. Some Delegates would like to have had clear documentation on how well the candidates fulfilled the criteria for success listed in the advertisement for the position. In particular, they were interested in the candidates' vision about the future of ICES. In this regard, Sweden proposed that

the highest ranked candidates be asked to appear before the Council to present their vision and respond to questions. Since this was not the procedure previously agreed by the Council, the proposal was not pursued. It was agreed that in the future, candidates should be required to prepare essays explicitly addressing each criteria for success.

5 ) Secret ballot. Sweden proposed that a secret ballot be used to select the General Secretary, pointing out that this was the custom in other international organizations. The President pointed out that this issue had been discussed and decided at the previous Council meeting. However, in a spirit of assuring that the outcome of the process was deemed legitimate by all member countries, he indicated that he would call for a secret ballot unless some members objected. Several did.

After a thorough discussion, the Council agreed by consensus to endorse the Bureau's recommendation by appointing Dr Gerd Hubold as the next General Secretary. The President thanked the Council for their dedication and professionalism in carrying out this important responsibility. The meeting was closed at 1600 hours.

*Michael Sissenwine*
*ICES President*

# 93rd STATUTORY MEETING, ICES Headquarters, Copenhagen 19–20 October 2005

## STARTING AT 08: 30 hrs, Atlantic Room

***Revised AGENDA***

1 ) Adoption of Draft Agenda

2 ) Progress Report on Administration **(Doc. 02/05/1)**

3 ) Report and Recommendations of the Consultative Committee **(Doc.03/05/1)**

3.1 ) Proposed Change of Rule of Procedure (30(i) **(Doc. 03/05/02)**

4 ) Bureau Working Group on Data Development

4.1 ) Report of Bureau Working Group on Data Development **(Doc. 04/05/1)**

4.2 ) Report on Data Strategy **(Doc. 04/05/2)**

4.3 ) Report on Update of 1994 Data Policy **(Doc. 04/05/3)**

4.4 ) Data Centre Business Plan **(Doc. 04/05/4)**

5 ) Management Committee on the Advisory Process (MCAP)

5.1 ) MCAP Report (7–8 February 2005 Meeting) **(Doc. 05/05/1)**

5.2 ) MCAP/ MICC Report (4–5 April 2005 Meeting) **(Doc. 05/05/2)**

5.3 ) MCAP Review Paper on the Creation of a Quality Control Manager **(Doc. 05/05/3)**

5.4 ) MCAP Report (18 September 2005 Meeting) **(Doc.05/05/4)**

6 ) Report of Finance Committee **(Doc. 06/05/01)**

6.1 ) Final Accounts for Financial Year 2004 **(Doc. 06/05/02)**

6.2 ) Status Report as of 1 October 2005 **(Doc. 06/05/03)**

6.3 ) Draft Budget for 2006 and Forecast Budget for 2007 **(Doc. 06/05/04)**

7 ) Bureau Working Group on Financial Procedures (BWGFP)

7.1 ) BWGFP Report **(Doc. 07/05/01)** *(formerly Doc. 05/05/01)*

7.2 ) Proposed Change of Rule of Procedure 19(i) **(Doc.07/05/02)**

7.3 ) Proposed Change of Rule of Procedure 18(ii) **(Doc. 07/05/03)**

7.4 ) 4 Draft Financial Regulations **(Doc. 07/05/04)** *(formerly Doc. 05/05/02)*

8 ) Strategy Document on the ICES Secretariat's Public Relations Activities **(Doc.08/05/01)**

9 ) Election and Appointment of four new Bureau Members **(Doc. 09/05/1)**

10 ) Appointment of Chair of the Advisory Committee on Fishery Management (ACFM) **(Doc. 10/05/01)**

11 ) Arrangements for future Annual Science Conferences and Statutory Meetings; 2006: Maastricht (The Netherlands) and Copenhagen; 2007: Helsinki (Finland) and Copenhagen **(Doc. 11/05/01)**

12 ) Status Report on the GEF Baltic Sea Regional Project **(Doc. 12/05/01)**

13 ) Current Status of the ICES/GLOBEC Programme and Office **(Doc. 13/05/01)**

14 ) Publication Arrangements for the *ICES Journal of Marine Science*

15 ) Address by Professor Jean-François Minster, Chair of the Marine Board of the European Science Foundation

16 ) *Discussion item:* The workings of the Council – Board of Directors, or Doers?

17 ) *Discussion item:* Updating the 2001 Strategic Plan

18 ) Any other Business

# Decisions from Delegates Meetings (93rd Statutory Meeting)

## 1 Adoption of Agenda

The Agenda was **adopted**.

At the request of the President, Council agreed to allow the ICES Secretariat Staff Representative and an official of the US State Department (the US agency that funds ICES) to observe the 2005 Council Meeting, without prejudice with respect to the unresolved issue of observers at future Council meetings.

## 2 Progress Report on Administration (Doc. 02/05/01)

Taken *ad notam*.

## 3 Report and Recommendations of the Consultative Committee (Doc. 03/05/01)

The Chair of the Consultative Committee (ConC) presented an executive summary of the ConC Report.

Council agreed that the existing awards scheme should continue, but more clarity needs to be added to the new ones before a decision can be made. The Bureau and ConC were asked to further refine the proposals for additional awards, and present a more detailed description for adoption by the Council.

Regarding ConC's discussion of possible benefits by reducing future Annual Science Conferences to four days rather than five, Council indicated general support for the idea, in principle. ConC was asked to give further consideration to the matter and come forward with a proposal, recognising that because of commitments already made for 2006, any such change could not be implemented before 2007 at the earliest.

The question of conducting a user survey among ICES clients was again raised (it had been discussed by MCAP during the year). Council **requested** ConC and MCAP to consider their options about obtaining views not only from the customers, but also from the scientific network of ICES, as input to the 15 March Workshop (see below) and, in general, to the future evolution of the structure and processes of ICES.

The draft Resolutions were generally **adopted**, with some modifications or comments as shown below.

Category 1 – Resolutions involving Publications: **Adopted**.

Category 2 – Resolutions involving Symposia: **Adopted**.

Category 3 – Resolutions involving Meetings of Committees, Expert Groups and Workshops

*Consultative Committee (ConC):* **Adopted**. The ConC/MCAP Open Workshop on 15 March will be chaired by the President (assisted by ConC and MCAP Chairs). Council encouraged the participation of Expert Group Chairs, Delegates and other members of the scientific community, and stakeholders. Delegates also expressed a wish to participate in the meeting the following day (16 March) of Committee Chairs and MCAP. The ConC Chair reminded the Delegates that ConC/MCAP's intention was for the meeting to be mainly for Expert Group Chairs and other scientists, thus maintaining a bottom-up approach. Action: MCAP and ConC Chairs will review the ToRs for the workshop, in consultation with the General Secretary.

*Management Committee for the Advisory Process (MCAP):* ***Adopted.***

*Advisory Committee for Fishery Management (ACFM):* ***Adopted.***

*Advisory Committee on the Marine Environment (ACME):* ***Adopted.***

*Advisory Committee on Ecosystems (ACE):* **Adopted**. Council welcomed the proposed merger of the Study Group on Management of Integrated Data (SGMID) and the Working Group on Marine Data Management (WGMDM).

*Fisheries Technology Committee (FTC):* **Adopted**. Several Delegates expressed concern regarding the cost of sending participants to the Expert Group meetings planned to take place in Turkey and especially those planned for Tasmania, on the grounds that the travel costs for their scientists would make it difficult for them to give practical support to the meetings.

After considerable discussion it was agreed that the meetings in Izmir and Hobart should go ahead as planned, but some Delegates wished to register their concern that the success of the meeting might be in jeopardy because some potential contributors may not get the necessary travel funds.

Other Delegates, however, said that scientific considerations should have priority when selecting a venue, and that any budget difficulties should be resolved at national level.

In response, the ConC Chair said that guidelines are needed for the selection of future venues for Expert Groups and Workshops. Council requested ConC to draft such guidelines, especially criteria against which to assess scientific and other benefits vs. environmental, budget, and other concerns. Delegates expressed a preference to hold such meetings within the ICES member counties. Action: ConC to prepare guidelines for choice of venues for meetings of Expert Groups and Workshops.

Meanwhile, Delegates were asked to quickly inform the Secretariat about how many people they will be able to send to the Turkey and Tasmania meetings in 2006, so that alternative venues might be arranged in the event of a serious shortfall in participation.

*Oceanography Committee (OCC):* **Adopted**.

*Resource Management Committee (RMC):* **Adopted**.

*Marine Habitat Committee (MHC):* **Adopted**. Delegates appreciated that MHC had decreased the number of ToRs for the Marine Chemistry Working Group, but asked that this be done for other MHC Expert Groups too, since many of them still have a very heavy workload (or at least too many ToRs). Action: At the 2006 ASC, MHC will continue to consider the workload for its Expert Groups.

Regarding the Workshop on Fisheries Management in Marine Protected Areas, it was explained by the Head of Science Programme that this group will be financially supported by a project funded by the German Ministry for the Environment; the project has been approved by the Science Committees at the ASC. Generic scientific results can be expected which will be beneficial also to other ICES Member Countries.

*Mariculture Committee (MCC):* **Adopted**.

*Living Resources Committee (LRC):* **Adopted**. The ConC Chair explained that the Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VIII and IX will meet later in October 2005, and thus it had not yet drafted ToRs for 2006. Council authorized ConC to approve ToRs for a 2006 meeting of this Working Group.

Delegates expressed the view that the ToRs for the Working Group on Fish Ecology were too broad and inconsistent. An additional task was therefore added to the Group's ToR, to "develop a roadmap to strategically focus the future work of the Group".

*Baltic Committee (BCC)*: **Adopted**. Delegates agreed that the proposed Study Group on Integrated Assessments in the Baltic should be a Workshop instead, so that what needs to be done can be identified, as well as how to do it. The point was also made that the work to develop integrated assessments in the Baltic Sea should be linked to the other ICES Expert Groups attempting to do the same thing in other parts of the ICES area, so that ICES does not produce three different Integrated Assessments.

*Publications Committee (PUB):* **Adopted**.

Category 4 – Other Resolutions Requiring Action: **Adopted**.

## 3.1 Proposed change of Rule 30(i) and (vi) (Doc. 04/05/02)

### Changing term of office from three to four years

ConC recommended that the term of office for Chairs of the Science and Advisory Committees be changed from three years to four years. This recommendation had been forwarded to the Council, endorsed by the Bureau; however, the Bureau had not taken a position on the recommendation. Notice of the proposed change in the Rules of Procedure was given on 18 August in a letter from the General Secretary to Delegates, in compliance with the two months' notice stipulated in Rule 16.

In the opinion of some Delegates, a four-year period would be a much bigger commitment to demand – not only for the Chair, but also for her/his institute. It was suggested that greater use of Vice-Chairs, and more involvement of Committee members in the workload, might be a better alternative. On the proposal of the United Kingdom, Council **decided to postpone** discussion of this matter to the ConC/MCAP Workshop on 15 March 2006.

### "Open recruitment" to Expert Groups under Advisory Committees

This proposal from ConC represented an extension of the process agreed in 2004, whereby Chairs of Working Groups under the Science Committees could appoint members to the Group, in addition to those appointed by the Delegates.

Delegates accepted the spirit of the proposal, but some expressed concern that this might carry some risks for the integrity of the advisory process.

Council **agreed**, however, that Chairs of Expert Groups under an Advisory Committee can appoint Experts in consultation with the national Delegate of the expert's country. In so agreeing, Council recognized that (a) no obligation would be placed on ICES, or on national Delegates, to fund such participation, and (b) if a Chair wished to appoint an expert from a non-member country, a Delegate of a Member Country could sponsor that expert.

# 4 Bureau Working Group on Data Development (BWGDDP)

## 4.1 Report of the BWGDDP (Doc. 04/05/01)

This report was presented by Niels Axel Nielsen, Chair of BWGDDP.

The Delegate of Belgium asked what proportion of the Secretariat's Data Managers worked on fisheries data and on environment data, respectively. The Data Centre Manager replied that in terms of full-time equivalents, 1½ worked on fisheries and 3½ on environment data.

In relation to data format, the Data Centre Manager assured Delegates that the Data Centre is highly aware that current formats are not optimal, but that the Secretariat is currently experimenting with free formats in cooperation with HELCOM. Her preference would be to use free formats for all data, she said.

Delegates welcomed and **accepted** the BWGDDP Report.

### 4.2 Data Policy (Doc. 04/05/03)

In response to comments about data ownership and access, the BWGDDP Chair said that the global trend is to have data available in the public domain. Although agreeing that we must accept reality and protect the rights of data collectors/submitters, he said that we must also move to accommodate the wider interests.

Following discussion, Delegates **adopted** the Data Policy, with some re-arrangement of words.

### 4.3 Data Strategy (Doc. 04/05/02)

The **Delegate of Spain** asked if results of the user survey carried out during the Annual Science Conference in Aberdeen had been utilized. The Data Centre Manager replied that the survey results had not yet been analysed, but that the intention was to use them to modify our data products; this was one of the goals of the Data Strategy.

The **Delegate of Finland** welcomed the draft Data Strategy and especially the idea of moving towards distributed data, even if this may take some time to accomplish.

The **Delegate of the United Kingdom** also welcomed the draft Strategy as being very relevant, forward-looking and directly linked to the core activities of ICES. He would welcome an analysis, in due course but as soon as possible, of the medium-term cost implications.

Council **adopted** the Data Strategy, noting that it does not commit to any expenditure. Future expenditure will be planned within the further development of the data Centre Business Plan (see below), and approved by Council through the normal budgetary process.

### 4.4 Data Centre Business Plan (Doc. 04/05/04)

Although generally welcoming the document, Delegates looked forward to seeing the plan set in a medium-term context, such as five years.

The President thanked Delegates for their feedback, and said that the Business Plan would be further developed.

## 5 Management Committee on the Advisory Process

### 5.1, 5.2, 5.4 MCAP reports for February (Doc. 05/05/01), April (Doc. 05/05/02), and September 2005 (Doc. 05/05/04)

These reports were presented by the MCAP Chair, Paul Connolly (Ireland).

The **United Kingdom** and **Sweden** expressed appreciation for the excellent summary of MCAP's work during the year. In relation to the EU Regional Advisory Councils (RACs), the **UK Delegate** said that ICES needs more than just a dialogue with the RACs. He pointed out that many Delegates are responsible for providing support for RACs as well as for ICES, and he was concerned that the overall workload may overstretch the support capabilities for the whole advisory framework. He emphasized that a process should be developed to address that. The MCAP Chair confirmed that the Pelagic RAC had already asked for the Chairs of three

ICES Working Groups to attend meetings of that RAC, so the demands had already started even before ICES has been able to develop a policy on interactions with the RACs.

In response to questions from the Delegate of Sweden, the MCAP Chair explained that the European Commission's Joint Research Centre (JRC) is an important component in the advisory link with the EC (the JRC will be providing secretarial support for the EC's Scientific, Technical and Economic Committee on Fisheries (STECF)); and further that MCAP had not rejected the proposal for ICES to carry out a user survey in regard to our advisory process, but the timing (in the course of 2005) had been considered inappropriate.

The **Delegate of the USA** referred to a statement on page 8 of the MCAP-MICC April report (Doc. 05/05/02), regarding the possibility of RACs commissioning their own science. He advised that the equivalent process in the US had proved to be problematic.

In response to a question about stakeholder observers at ACFM, the European Commission observer said that the EC was in favour of transparency, including its application to the production of advice in support of the CFP, but they did not want to see a transparency policy implemented in such a way that the quality and objectivity of the ICES advice would be put at risk. He asked ICES to ensure that the "rules of engagement" for stakeholder observers preserve those essential features; he was concerned that some stakeholder observers seemed to believe that they could influence the content of the advice. It was vital, he said, that the integrity of ICES advice be maintained. These points were supported by the **Delegates of Norway** and **Iceland**, who asked for documentation of the rules for stakeholder observers. Delegates were informed that this documentation already existed; it was agreed that it would be placed on the ICES Website.

The President noted that the European Commission raised no objection to the continuation of the stakeholder observer scheme.

Council **accepted** the three MCAP reports.

## 5.3 Creation of a QA manager post and the adoption of an ICES Quality Policy Statement (Doc. 05/05/03)

During the discussion following the MCAP Chair's presentation, the European Commission observer said that this matter of Quality Assurance will arise in relation to the EU Data Collection Regulation, and will be taken up by the European Commission in the course of negotiating a new Memorandum of Understanding (MoU) with ICES. He said it would be an important issue for the MoU. The **President** welcomed the European Commission's indication of a shared priority.

After some discussion of the draft Quality Assurance (QA) policy on page 3 of Doc. 05/05/03, it was agreed to replace the SGQUA formulation with a shorter statement, as follows:

*ICES Quality Policy Statement*

1 ) *ICES acknowledges that only reliable information can provide the basis for effective advice to support management of human activities affecting, and affected by, marine ecosystems.*

2 ) *Advice is the product of a chain of activities including, inter alia, common understanding of the issue, supporting data collection and analyses, preparation and presentation of the research and advice. All activities in the chain have to meet specified quality requirements.*

3 ) *ICES commits itself to implement the standards and guidelines needed to ensure quality.*

4 ) *ICES will work towards continuous improvements in all aspects of its scientific information.*

On the question of establishing a short-term position of QA Manager, the **President** asked for Council's approval in principle, on the understanding that no definitive decision would be taken until later in the meeting, when Delegates would have the opportunity to discuss the financial implications.

In response, the **Delegate of Sweden** expressed doubts, while **Norway** and the **United Kingdom** spoke in favour of this approach. There being no other comments, the President considered that Council had **approved**, in principle, the proposal to establish a QA Manager post. Further discussions on this topic are recorded below, in relation to the financial issue (Agenda item 6.3).

## 6 Report of Finance Committee (Doc. 06/05/01)

The Report of the Finance Committee and related issues were presented by the Committee Chair, Serge Labonté (Canada).

### 6.1 Final Accounts for the Financial Year 2004 (Doc. 06/05/02)

This document, which included the auditors' report, was adopted.

### 6.2 Status Report of Accounts at 1 October 2005 (Doc. 06/05/03)

Pointing out that the document revealed no significant variances, the President proposed that the Status Report of Accounts be accepted. This was agreed.

### 6.3 Draft Budget 2006 and Forecast Budget for 2007 (Doc. 06/05/04)

In view of the impending demise of the International Baltic Sea Fishery Commission on 31 December 2005, it was agreed to change the "IBSFC" income item to "Baltic Sea Fisheries Advice". The General Secretary explained that the IBSFC Executive Secretary had informed him that the IBSFC had agreed in principle that (a) the existing arrangements for the provision of scientific advice by ICES would be continued; (b) an arrangement would be developed between the European Commission and the Russian Federation to pay for the ICES advice.

The size of the Capital Reserve Fund (CRF) was discussed. The **Delegate of Germany** said that his Ministry had requested that the CRF not be allowed to rise above 10.2% of total income, and that it be shown under "Income" from now on. The President explained that the Finance Committee's proposal involved putting some earned interest into the reserve, to ensure slow growth in the CRF.

Council **requested** the Finance Committee to consider the appropriate size of the CRF, and its presentation in the budget, and present a recommendation to the February 2006 meeting of the Bureau.

The Finance Committee's proposal that the firm of KPMG C. Jespersen be appointed as the ICES Auditors for another year was **agreed**.

Regarding the Finance Committee's review of the financial implications of the Consultative Committee's report, the President pointed out that the Consultative Committee's proposals (see Finance Committee Report, page 2) were intended to be cost neutral. On that basis, Council also **adopted** that section of the Finance Committee Report.

Under the heading of Review the Recommendations of the Report of the Bureau Working Group on Financial Procedures, the Finance Committee proposed the establishment of an ICES Initiative Fund (subsequently renamed by the Delegates "Strategic Investment Fund") to support special projects. Under this proposal, amounts of DKK 2 031 000 of accumulated sur-

plus of ASC registration fees before 2005 and DKK 543 000 from Excess Income over Expenditure from 2004 would be deposited in the fund initially. Additional deposits are indicated in the 2006 and 2007 budgets. In the view of the Finance Committee, the fund should particularly support:

- the ASC and the Science Programme, including the preparation of a business plan which realistically addresses the up-to-date requirements for ASCs;
- MCAP's proposal for a Quality Assurance Manager initiative; and
- the Data Centre Business Plan.

Supporting the idea of a Strategic Investment Fund (SIF), the President said that an excess of income over expenditure of just above 1% was not surprising; it reflected prudent management, and a growth slightly ahead of anticipated inflation. He expressed his serious concern at the possibility of using non-recurring income (such as this) to cover recurring expenses; it should rather be used for non-recurring strategic investments.

The **Delegate of Denmark** supported the SIF proposal, saying that a title such as SIF would be very appropriate, since it would portray it for what it would be – a re-structuring fund, which would include some of ICES "own money" as well as excess income.

The **Delegate of Sweden**, supported by **Latvia**, entered a reserve on the proposal, pointing out that Sweden's policy towards all intergovernmental organizations of which Sweden is a member is for all financial surpluses to be ploughed back into general income. In his view, that is what ICES should do in this situation. In any event, he added, *all* possible activities should be listed as candidates to receive such special funding; he said that there were several, currently unfinanced, improvements to the advisory function which should receive higher priority than a QA manager post.

The **United Kingdom** Delegate said that a new budget line was required to fund a business investment strategy (and he would prefer such a wording rather than "SIF"), and ICES also needed a medium-term plan to set aside appropriate funds, as **Sweden** had said.

**Norway** and **The Netherlands** supported the SIF proposal. The **Delegate of The Netherlands** asked who decides the ICES priorities, and the **President** explained that the Council does so.

The President said that if a financial surplus were put back as income it could substantially reduce the size of each national contribution for the year in question. The following year, however, would require a significant increase in national contributions – possibly of the order of 10% since the financial surplus was unlikely to reoccur. Such fluctuations in annual contributions were likely to be disruptive to government budgets compared with predictable national contributions. In fact, he expressed grave concern that it would not be possible to get a two thirds majority vote for an increase significantly greater than the rate of inflation, even if the reason behind the increase was that national contributions had been decreased the year before, because of a non-recurring source of income. Several Delegates shared the President's concern (e.g. Iceland, USA).

**France** supported the SIF proposal, as a step towards a multi-annual plan.

**Sweden** recognized the two scenarios which the President had just enunciated (reducing national contributions or establishing a SIF), but advocated a third option – put the money aside and postpone until next year a decision on how to use it, including the possibility of utilising it to reduce national contributions. The **President** replied that Sweden's third option was not too far from what was currently being proposed. He said that the idea of putting the surplus into the Capital Reserve Fund had been considered by the Finance Committee and the Bureau, but their view had been that the CRF is intended for emergency use while the SIF would allow

ICES to carry out necessary projects which could not be otherwise funded. The President pointed out that the Council could decide next year to use the SIF to reduce national contributions, as proposed by Sweden, although he recommended against doing so.

The President then put the following draft Resolution to the Delegates:

*Using DKK 543 000 of Excess Income over Expenditure from 2004, and DKK 2 031 000 of surplus income from ASC registration fees prior to 2005, an ICES Strategic Investment Fund will be established to enable the Council to pursue priority initiatives without seeking long-term increases in national contributions.*

*The funds (DKK 2 574 000) will be used for non-incurring expenses, in ways that are consistent with Council policies and guidance.*

**Denmark** asked who would approve expenditures from the proposed fund, and the President pointed out that the last two lines implied that Council would do so. **Norway** suggested that to make the fund operational, management responsibility should rest with the Bureau, who would inform Council of its decisions. The **United Kingdom** said that proposed disbursements from the fund would appear as a line in the budget, which would be submitted for Council approval through normal procedure; variances would be managed by the Bureau.

**Finland**, supported by **Sweden**, had difficulty in accepting the idea of a recurring surplus not being ploughed back into the income side of the budget, but he said he could accept the wording of the draft Resolution.

**Germany** drew Council's attention to the fact that the budgetary surplus which was under discussion was not to the result of national contributions being too high. He pointed out that the primary source was from unexpected income (ASC registration fee income from a greater-than-anticipated number of ASC participants).

The President called for a show of hands on the proposal to create a Strategic Initiative Fund with initial deposits as proposed by the Finance Committee. Eleven indicated Yes, three No and there was one Abstention. On that basis the President deemed that the draft Resolution had been **agreed**. The proposal was not supported by **Latvia**, **Spain** and **Sweden** who felt that the amount of DKK 2 031 000 belonged to the category "unexpected income" and should – in their interpretation of the ICES financial regulations – enter the income side of the following year's budget.

**Sweden**, supported by **Spain**, also said that future proposals concerning issues of principle (such as that which had just been debated) should be circulated in advance, to allow prior discussion in the Member Countries.

Later in the meeting, discussion returned to the question of creating a short-term post of Quality Assurance Manager, postponed from Agenda item 5 (Doc. 05/05/03).

The President pointed out that the QA Manager post has been costed at DKK 2 million over two years, and asked for Council's approval to allocate up to half of that amount from the Strategic Investment Fund, on the assumption that matching funds are obtained from other sources. He invited the European Commission observer to comment. The EC observer replied that the EC viewed this issue as being very important, and reiterated that it would be taken up during discussions on a new Letter of Understanding with ICES. He could not give the commitment requested, however, although he agreed that it is a very important topic.

In response to a question from the **United Kingdom** about the proposed duration of the QA Manager post, the President confirmed that it would be a 2-year appointment, to get a QA system up and running.

The **Delegate of Finland** considered that the job description given in Doc. 05/05/03 was too vague, but the President repeated that what was before Council was a request for approval in principle, and for the authorization to seek matching funds.

The **Delegates of Denmark, Estonia,** and **Iceland** supported the proposal; **Denmark** pointed out that the details could be specified later.

Council **agreed** that matching funding should be sought from external sources, and on that understanding **agreed** to allocate funds from the Strategic Investment Fund, to establish the Quality Assurance scheme proposed in Doc. 05/05/03. It was **agreed** that future expenditures would be based on guidance from the Council when spending plans were deemed to be sufficiently developed, as was the case for the QA project just agreed.

Returning to discussion of *Review of the Recommendations of the Report of the Bureau Working Group on Financial Procedures* in the Finance Committee's report, Delegates **adopted** the procedure advised by the Council's auditors to facilitate the pragmatic implementation of Rule 20(iv):

*All purchases and sales of Bonds redeemed by lot prior to the amortisation date of the loan of ICES investments in Bonds are copied to the Danish Delegate(s) by the bank. In addition, the Danish Delegate(s) shall receive a copy of the yearly statement from the bank.*

*The Danish Delegate(s) should sign these copies and forward them to ICES in order to confirm that he is informed about and concurs with the investment. If the Danish Delegate(s) considers that the investment is not in accordance with Rule of Procedure 20 (ii) and (iii) he must immediately contact the General Secretary.*

Council **agreed** that a further refinement of the above procedure, as described in the Finance Committee's report, should be investigated with the auditors.

Following separate roll-call votes, the Draft Budget 2006 and the Forecast Budget 2007 were **adopted** by the necessary ⅔ majority.

# 7 Bureau Working Group on Financial Procedures (BWGFP) (Doc. 07/05/01)

## 7.1 Presentation of report

Following the presentation of the report by the Chair of the BWGFP (Serge Labonté, Canada) the President reminded Delegates that many of the BWGFP recommendations – apart from those involving changes in the Rules of Procedure – lay within the responsibility of the Secretariat, the Finance Committee, or the Bureau to alter current practices.

## 7.2 Proposed change to Rule of Procedure 19(i) (Doc. 07/05/02)

The new version of Rule 19(i) proposed by BWGFP proposed that Rule 19(i) be changed as follows (new words in **bold**):

*The contributions of Contracting Parties in respect of any financial year* ***should*** *be paid on the 22 July preceding its commencement,* ***but not later than 30 days after the beginning of the financial year****.*

After some explanations by the President in response to questions from Delegates, the President asked if there were any objections to the proposed changes. No objections being raised, the President deemed that the proposal had been **approved** unanimously.

## 7.3 Proposed change to Rule of Procedure 18(ii) (Doc. 07/05/03)

The new version of Rule 18(ii) proposed by BWGFP proposed that Rule 19(i) be changed as follows (new words in **bold**):

*The Budget approved by the Council shall* ***not alter the contributions from Contracting Parties agreed in the Forecast Budget for that year, but may make changes in other sources of income, and in expenditures****.*

The President explained that the purpose of the proposed change was to clarify the meaning of the existing Rule, and asked if the proposal was acceptable to Council. Following indications of assent, and no objections, the President deemed that the proposal had been **approved** unanimously.

## 7.4 Draft Financial Regulations (Doc. 07/05/04)

In response to a question from **The Netherlands**, the President said that a reference to the Strategic Initiative Fund could be added later, conditional upon its approval by Council [see agenda item 6.3 above, which was taken *after* agenda item 7.4].

The draft Financial Regulations presented in Doc. 07/05/03 were unanimously **adopted** by Council as a working document to be updated from time to time whenever necessary. It was also agreed that the tabular version of Section 4 would be used, and the italicised comments would be removed. The Financial Regulations would then be added to the other Basic Documents of ICES.

The President then asked if there were any comments or questions about the other recommendations in the Report of the BWGFP. None being raised, the President deemed the report **adopted.**

# 8 Strategy Document on the ICES Secretariat's Public Relations Activities (Doc. 08/05/01)

The General Secretary introduced this document, drawing particular attention to the four "critical success factors" given on page 2:

*Through the Secretariat and elected officers, ICES must maintain credibility as the objective source of scientific information, and scientific advice, on marine ecosystems and effects of human activity on them.*

*ICES scientific advice must continue to be, and be seen to be, unbiased and free of political interference.*

*Information statements from the Secretariat must not depart from the scientific facts and conclusions. It must be without any "spin", while being written in an accessible style.*

*Information material on ICES and its activities must be understandable to the educated public and the press.*

The **United Kingdom** said that the subject was a very wide one, and nice things had been done, including the ICES Website. Last year, he said, Council had been presented with a policy document, and had agreed very specifically worded policy guidelines, which had not appeared in the Annual Report, such as "press releases to go to Advisory Committee Chairs for checks on accuracy, balance, and non-sensational content".

The **President** replied that this practice was already being followed, and that Doc. 08/05/01 stated that draft press statements "must be checked for accuracy with the Chair of the relevant

Advisory Committee". He suggested amending that sentence to match the text mentioned by the United Kingdom.

In response to a comment from the **Delegate of Denmark**, the General Secretary confirmed that it was already standard practice to inform ACFM members, in advance, of the time slot in which they would be asked to comment on the draft text of an ACFM-related press release. Moreover, he said, ACFM had agreed what elements of their advice should be included in the press release, before it was drafted.

The **United Kingdom** Delegate said that he missed an explicit statement identifying the target audience which the Secretariat's press releases sought to address or influence. He asked if it was fishers, the public, or politicians. Likewise, he said, some thought should be given to what message we are trying to convey – that ICES is a reliable authoritative organization that can give objective advice? He suggested that this should be written down, i.e. what are we trying to achieve through our PR activities?

The President commented that this was an interesting question - whether to educate the public about something they are interested in (fisheries advice) or to educate them about something interesting to us, i.e. about ICES. The Strategic Plan, for example, was written in regard to information about meeting a public need, rather than about the organization.

The President went on to say that he heard Council saying it welcomed the document and did not find anything to disagree with, but had suggested some further items for inclusion: (i) draft press releases should go to Advisory Committee Chairs for checks on accuracy, balance, and non-sensational content; (ii) the target audience should be identified; and (iii) our public statements should be drafted accordingly.

With those amendments, the draft Strategy Document was **approved**.

## 9 Election of four new Bureau Members (Doc. 09/05/01) and a Finance Committee Member

Following the statutory procedures, four new Bureau members were elected:

| | |
|---|---|
| 1st Vice-President: | Joseph Horwood (United Kingdom), replacing Niels Axel Nielsen (Denmark), who had resigned as 1st Vice-President. |
| Vice Presidents: | Frederik Arrhenius (Sweden) |
| | Carmela Porteiro (Spain) |
| | Michael Sinclair (Canada), |
| | replacing Paul Connolly (Ireland) and Peter Gullestad (Norway), whose three-year terms of office had come to an end, and Gerd Hubold (Germany) who had resigned on being appointed General Secretary. |

### Finance Committee membership

The President informed Council that the Bureau wished to nominate Tore Nepstad (Norway) as a member of the Finance Committee to replace Gerd Hubold, who had resigned as a member on being appointed General Secretary. Council approved this nomination and **appointed** Tore Nepstad to the Finance Committee.

## 10 Appointment of Chair of ACFM (Doc. 10/05/01)

On the nomination of ACFM, Council **appointed** Martin Pastoors as Chair of ACFM to replace Poul Degnbol who would complete his three-year term of office on 31 December 2005.

On behalf of the Council, the President thanked Poul Degnbol for his dedicated and skilful work as ACFM Chair, and offered congratulations and good wishes to his successor, Martin Pastoors.

## 11 Arrangements for future Annual Science Conferences and Statutory Meetings (Doc. 11/05/01)

### ASC 2006: Maastricht (The Netherlands), 19–23 September

In regard to the Statutory (Council) Meeting in 2006, Delegates expressed various views on the most suitable time, but the period 25 through 27 October was generally **agreed**.

#### ASC 2007: Helsinki (Finland)

In response to a question from **Canada**, the President reminded Delegates that the Consultative Committee will be considering whether to recommend that the Annual Science Conference in 2007 should last for four days only, rather than five; thus no decision concerning dates could be taken at this stage. The **Delegate of Finland** confirmed that the dates for the ASC meeting at the Helsinki Conference Centre have not yet been finalized.

The President said that it was probably inevitable that the ASC and Council meetings would continue to be held separately in 2007; in February 2006 the Bureau will address the options for 2007 and 2008 and make a recommendation to Council. He encouraged Delegates to give thought to an invitation to host the 2008 ASC.

The United Kingdom advocated a separation of some Consultative Committee business from the ASC, in the interests of reducing the heavy ConC workload at that time. He asked that ConC consider such a possibility, for example that the Advisory Committee Draft Resolutions (particularly on recurring Working Group meetings) might be handled at a mid-year ConC meeting. The Chair of the Consultative Committee supported the idea in principle, but pointed out that more self-discipline would be required from everybody involved, and possibly also some changes in procedures, for such an improvement to be successfully implemented.

## 12 Status Report on the GEF Baltic Sea Regional Project (Doc. 12/05/01)

Council **accepted** this report.

## 13 Current Status of the ICES/GLOBEC Programme and Office (Doc. 13/05/01)

The President said that the GLOBEC Programme has been very successful, but it would not continue indefinitely. Like many such programmes it might evolve into other programmes, and ICES needs to position itself for such future activities.

Council **accepted** the report.

## 14 Publication arrangements for the *ICES Journal of Marine Science*

President informed Council that in the light of a thorough and careful evaluation of the tenders by the Secretariat, the Editor-in-Chief and the Publications Committee, the Bureau had adopted the Publication Committee's recommendation that a contract for the publication of the Journal from 1 January 2007 should be offered to Oxford University Press, and had authorized the General Secretary to enter into negotiations with Oxford University Press immediately.

However, should there be an unexpected breakdown in the negotiations with Oxford University Press, a second option is also available. Council **endorsed** this decision.

## 15 Address by J-F. Minster, Chairman of the Marine Board of the European Science Foundation

### *Discussion*

In response to various questions from Delegates, Professor Minster explained that ESF aims to be an active forum of coordinators (scientific directors, etc.), plus the European Commission, to exchange views. ESF also publishes position papers.

ESF also provides information on where specific equipment is located, and how to access to it. Recently, ESF has established a database (maintained at Lisbon) on research vessel fleets and their "quality". Professor Minster said that in ESF they are trying to exchange information and views on where ship time is needed, and to coordinate research vessel usage. He described this as "a slow convergence process".

Asked by **Canada** where he sees ICES taking a leadership role, especially in operational oceanography, Professor Minster said that the maritime countries in Europe need to act in common, and with other groups which are insufficiently connected; we all need to speak in a coherent fashion. The ESF Marine Board has a Strategic Plan, as has ICES, and we should be updating these together, through workshops, for example.

The ESF Marine Board has been pushing for the networking of data centres. Professor Minster said that there are 50 regional data centres, which represents a lot of manpower, but they are not networked; they are not exchanging data. Such networking, he said, would create the possibility for better sharing of archived data and faster integration, leading to better use of the data to make scientific products.

Professor Minster went on to say that in order to do operational oceanography, real-time data are required, meaning within a few days. He repeated that such real-time availability already exists, and he urged ICES to connect to it. He said that operational monitoring for environmental quality, and operational fisheries data, etc. are not used in operational oceanography, and again urged ICES to work together with ESF so as to make the most of existing opportunities. We must work towards this, he added, because we are losing opportunities.

The General Secretary pointed out that although the ICES Secretariat is still consolidating its new Data Centre structure, nevertheless we are acutely aware of the opportunities presented by data sharing and distributed databases, and are moving to avail of such opportunities.

The **Delegate of Germany** asked where Professor Minster would like to see ICES going. Professor Minster replied that he has the perception that ICES is moving fast and rejuvenating itself from what it was ten years ago, but he also felt that the broadening should include the establishment of links to a number of scientific teams elsewhere who will have different views. He believed that fisheries scientists and physicists must learn from each other.

The President said that ICES seems more ecosystem oriented than the ESF Marine Board, with more hands-on involvement in operational programmes. He said that the opportunities are very rich and it would be remiss of ICES not to work with the ESF Marine Board. He thanked Professor Minster for coming to Copenhagen to tell ICES about the ESF and its marine programme, and for his valuable views.

## 16 The Workings of the Council – Board of Directors or Doers?

This item had been placed on the agenda at the request of Norway. The **Norwegian Delegate** drew attention to the doubtful efficiency that resulted from decisions having to go through several levels. At the same time, ICES has to deal with strategic issues which are emerging inside and outside Europe that may challenge the role of ICES; he asked how ICES should deal with, for example:

- the consequences of those developments;
- the needs of our customers for biological advice;
- the possibility that other organizations may become competitors of ICES;
- the possibility that ICES may become a political forum, if the issue of stakeholder observers develops along certain lines?

He posed further questions – what kind of organization do we want to be, and who decides that – the Delegates? the Bureau? the Consultative Committee? Have we got the right structure? Pointing out that ICES had been devoting a lot of time to the issue of transparency, he questioned whether transparency was in fact the real problem. He suggested that Delegates should start each meeting with a review of the sort of issues he had identified above.

The **United Kingdom Delegate** said that he sympathised with the Norwegian views to a large extent. He said that ICES had gone through great changes in recent years, and although we have a Strategic Plan, it is a bit academic in many ways and does not satisfactorily address some important issues. Some of the ICES structures and procedures are not functioning too well, he continued, which is why Council sometimes has to deal with more detail than would otherwise be necessary. He cited an example: the European Commission frequently wishes to talk to Council, but when they do so they tend to concentrate more on detail than on strategy; some other line of communication was therefore required to handle this.

The **Delegate of Sweden** also agreed with Norway. He said that there tended to be too much "rubber stamping" in the Council's deliberations and not enough time was devoted to major strategic issues; the latter were dealt with by the Bureau or MCAP and not by the Delegates. As a result, some Delegates have felt themselves not fully informed regarding the underlying justification and argumentation on various issues. This hinders full accountability, he said. He recommended more time for Delegate meetings, either by adding more days to the annual meeting, or by having more than one meeting per year – which would take some time away from the Bureau, for example.

The President said that one possible inference to be drawn from Sweden's observations was that some of the need to deal with detail at Delegates meetings resulted from a lack of transparency on how topics got to the Council. If there were more transparency, perhaps Delegates would feel less need to spend time discussing detailed issues at Delegates meetings.

The President asked for the Delegates' views on Sweden's comments, particularly on the duration and frequency of Delegates meetings.

The **USA** suggested that a joint meeting between Delegates and the Consultative Committee would facilitate the discussion of strategic issues.

The **Delegate of Norway** encouraged Delegates to do whatever was necessary to ensure that ICES remained the best organization of its kind; it is critical that ICES makes plans for where it wants to be ten years from now. He suggested having a "Strategic Issues" item on the agenda at every Council meeting.

The **United Kingdom** felt that two days in "Board" mode should be enough. It is more important, he said, to ask (a) are we using that time in the most effective way; (b) in what direction are we moving, strategically speaking; and (c) what is our 3- to 5-year plan? We need more strategic planning in the Council's affairs, he concluded.

**Sweden** supported the Norwegian proposal regarding placing "Strategic Issues" on future agendas, and listed three items which it could have been very valuable to discuss now, had there been sufficient time to do so: evaluation of the stakeholder observer scheme, external peer review, and experience with the fast-track advice process.

The **Delegate of Canada** recommended that the question of the amount of time that should be allocated to Council meetings should be deferred until the two-year experiment separating the ASC and Council meetings was being reviewed. ICES *is* a transparent organization, he said, even though it is also a complex one; the two issues (transparency and complexity) should not be confused with one another. He agreed that more time should be spent discussing strategic issues.

**Spain** agreed with the views of Norway and Sweden. He advocated that more time be allocated to Council discussions.

The Delegate of Sweden requested that the Bureau's draft Delegates Meeting agenda be sent to Delegates at least three weeks in advance, to seek Delegates' comments. Council **agreed**.

During the course of the discussion, it was suggested that the issue raised by Norway concerning the role of the Council and the importance of including strategic matters on the agenda of Delegates meetings should be discussed further at the 15 March 2006 Workshop and the follow-up discussion on 16 March (see Agenda item 3). There was general support for this suggestion.

Summing up the discussion, the President said that it was obvious that we need to spend more time discussing strategic issues, and the Bureau would ensure that these items appear on future Delegates meeting agendas. The Bureau would also consider the question of the total time that should be allocated to Council meetings.

## 17 Updating the Strategic Plan

This item had been placed on the agenda at the request of the United Kingdom. Noting that the Strategic Plan had been adopted in 2001, and that Professor Minster had suggested that a Strategic Plan harmonized with other agencies would be valuable, the **President** invited the Delegate of the United Kingdom to comment.

The **United Kingdom Delegate** pointed out that the Strategic Plan is a mix of an overarching plan and some quite specific goals. It would be better to have an overarching plan for ICES as an organization and separate plans for other sectors such as science, advice, the Secretariat, communication, etc.

He said that the Strategic Plan is not overtly used; ICES should treat it as the living document which the 2001 text proclaimed it to be, and start thinking about implementing the updating which is also mentioned in the text.

**The Netherlands** and **Norway** supported this call to action.

Council **confirmed** that the SP should be a "living document", and that preparations must be made now to implement the updating commitment given in the original Plan. Council **requested** the Bureau to review the situation and propose a course of action (including the possibility of establishing a Bureau Working Group to do the job).

## 18 Any other business

There being no other business, the President closed the meeting.

# Annex 1: Financial Regulations of ICES

## 1 Introduction

The purpose of this document (which is a compilation of various ICES basic documents and reports) is to provide an overview of the financial rules and procedures of the organization, together with an indication of the duties and responsibilities of national Delegates, ICES office-bearers, and Secretariat staff.

The basic finance instruments governing the organization's affairs are the Budget and the Forecast Budget (prepared two years in advance). The statutory sources of income are the annual contributions from the Contracting Parties in accordance with a system of fixed shares (see Section 5, below), plus income from third parties (Client Commissions, Observers, etc.).

A programmatic format of the budget is under development; preliminary versions have accompanied the "traditional" format circulated to Contracting Parties and Delegates since 2003.

## 2 Duties and Responsibilities

### 2.1 Contracting Parties and Council

Each Contracting Party shall pay the expenses of the Delegates, experts, and advisers appointed by it, except in so far as the Council may otherwise determine. [Convention, Article 14 (1)]

The Council shall by a ⅔ majority vote of all the Contracting Parties approve an annual budget of the proposed expenditure of the Council. [Convention, Article 14 (2)]

In the first and second financial years after this Convention enters into force in accordance with Article 16 of this Convention, the Contracting Parties shall contribute to the expenses of the Council such sums as they respectively contributed or undertook to contribute, in respect of the year preceding the entry into force of this Convention. [Convention, Article 14 (3)]

In respect of the third and subsequent financial years the Contracting Parties shall contribute sums calculated in accordance with a scheme to be prepared by the Council and accepted by all Contracting Parties. This scheme may be modified by the Council with the agreement of all Contracting Parties. [Convention, Article 14 (4)]

A Government acceding to this Convention shall contribute to the expenses of the Council such sums as may be agreed between that Government and the Council in respect of each financial year until the scheme under paragraph 4 provides for contributions from that Government. [Convention, Article 14 (5)].

The Council shall based on the Forecast Budget determine the contributions to be paid by the Contracting Parties for the year to which that Budget relates. [Rule of Procedure 18 (i)].

The contributions of Contracting Parties in respect of any financial year shall be paid on the 22 July preceding its commencement. [Rule of Procedure 19 (i)] "The contributions of Contracting Parties in respect of any financial year should be paid on the 22 July preceding its commencement, but not later than 30 days after the beginning of the financial year".

A Contracting Party which has not paid its contribution for two consecutive years shall not enjoy any rights under this Convention until it has fulfilled its financial obligations. [Convention, Article 14 (6)].

## 2.2 Bureau

The Bureau shall be the Executive Committee of the Council and shall carry out the decisions of the Council, draw up its agenda and convene its meetings. It shall also prepare the budget. It shall invest the reserve funds and carry out the tasks entrusted to it by the Council. It shall account to the Council for its activities. [Convention, Article 11 (2]

It shall be the duty of the Bureau:

- to prepare for consideration by the Finance Committee at each annual meeting:
  - a ) the audited accounts for the preceding financial year,
  - b ) a preliminary account for the current financial year, and
  - c ) the Budget for the ensuing financial year and a Forecast Budget for the next following year, and, after considering the report of the Finance Committee on these documents, to present them with such alterations as it may deem desirable to the Council; [Rule of Procedure 13 (ii)]
- to be responsible for the investment of funds of the Council and to give an account of such investments at the end of each ordinary annual meeting; [Rule of Procedure 13 (iii)]
- to present to the Council for approval with such observations and amendments as it may deem appropriate, recommendations of all Committees including the Consultative Committee, and to advise the Council as to the financial obligations involved in the approval of such recommendations. [Rule of Procedure 13 (vii)]

In 1998, Council adopted a proposal from the Finance Committee that the Bureau should prepare the Draft Forecast Budget at its January meeting, to submit it to the Member Countries immediately thereafter. The Finance Committee's justification was that "in many – if not in most – Member Countries, financial applications for the next following year are submitted to the Finance Ministry about one year in advance, i.e. early in the foregoing year. As the contribution to ICES is unknown at that time, the Contracting Parties are obliged to put a fictitious number on the list of applications for their ICES contributions. Most probably this number closely refers to that of the past year. Thus, unexpected increments in contributions might be easily blocked by formal arguments, e.g. 'belatedly submitted' ". [ICES Annual Report 1997/1998, page 136]

In June 2000, the Bureau adopted a proposal by the Secretariat that the Proposed Budget, as well as the Draft Forecast Budget, should be presented at the January meeting of the Bureau, so that the Bureau could more easily compare them. [Bureau Doc. 1198]

## 2.3 Finance Committee

There shall be a Consultative Committee, a Finance Committee, and such other committees as the Council may deem necessary for the discharge of its functions with the duties respectively assigned to them in the Rules of Procedure. [Convention, Article 12]

The Finance Committee at each ordinary meeting of the Council shall examine:

a ) the audited Accounts of the Council for the preceding financial year; *Comment: BWGFP and the Bureau recommend that the words "at each ordinary meeting of the Council" be deleted, on the grounds that they may preclude the Finance Committee from meeting at other times and venues (such as at the Annual Science Conference), and may also preclude working by correspondence.*

b ) the preliminary Accounts for the current financial year;

c ) a Budget for the ensuing financial year and a Forecast Budget for the next following year. [Rule of Procedure 24 (i)]

The Committee shall consider such other matters as may be referred to it by the Bureau or as it may deem desirable and shall report its observations and conclusions to the Bureau. [Rule of Procedure 24 (ii)]

### 2.4 General Secretary and Danish Delegates

The General Secretary shall be responsible for the receipt of all monies due to the Council and for disbursements in accordance with the Budget; he is authorized to meet unforeseen expenditure subject, in cases of doubt, to consultation with the President, and to sign cheques on behalf of the Council or authorize their signature; he shall also be responsible for the preparation of the Council's accounts and for drafting the Budget. [Rule of Procedure 15 (ii)].

The Danish Delegate or Delegates and the General Secretary are charged with the safekeeping of the Council's funds. [Rule of Procedure 20 (i)].

The Finance Committee shall consist of one of the Delegates of Denmark and four other Delegates appointed by the Council for a period of three years, after which they shall not be eligible for re-appointment for the immediately succeeding term. When a member of the Committee ceases to be a Delegate, he/she shall immediately vacate office. [Rule of Procedure 24 (iii)].

## 3 General Financial Procedures and Custody of Funds

### 3.1 Financial Year

The financial year of the Council shall be from 1 January to 31 December. [Rule of Procedure 17]

### 3.2 Budget

The expenditure of the Council shall be regulated in accordance with a Budget approved by the Council at its ordinary annual meeting. A statement of the Proposed Budget and a Forecast Budget for the ensuing year shall be circulated to Contracting Parties and Delegates two months before the meeting. The Council shall based on the Forecast Budget determine the contributions to be paid by the Contracting Parties for the year to which that Budget relates. [Rule of Procedure 18 (i)]

The Budget approved by the Council shall be such that the total amount of the contributions of the Contracting Parties in any year, i.e. the difference between the total expenditure and the total of other income in the Budget shall be the same as the corresponding difference in the Forecast Budget for that year approved by the Council in the preceding year. [Rule of Procedure 18 (ii)] "The Budget approved by Council shall not alter the contributions from Contracting Parties agreed in the Forecast Budget for that year, but may make changes in other sources of income, and in expenditures".

Excess of Income over Expenditure, or Expenditure over Income, on the annual accounts, shall be included as respectively Income or Expenditure in the next following Forecast Budget. [Rule of Procedure 18 (iii)]

Requests to Contracting Parties for the payment of their contributions shall be accompanied by a statement of the Council's Proposed Budget for the year to which they relate and a Forecast Budget for the ensuing year. [Rule of Procedure 19 (ii)]

### 3.3 Liquid assets and Investments

The liquid funds of the Council and all bonds and other documents relating to the invested funds of the Council shall be lodged in a bank. [Rule of Procedure 20 (ii)]

The Council's funds may be invested in bonds in which capital belonging to minors or other capital subject to public administration or control is allowed under prevailing Danish law. [Rule of Procedure 20 (iii)]

## 3.4 Audit

The Council's Auditor shall check the invested and liquid funds as of 31 December each year as soon as possible after that date to prepare the Balance Sheet, and they shall once annually, at such time as they may choose, inspect the Council's funds. The Council's Auditor may consult the Danish Delegate or Delegates on any question in connection with the accounts. [Rule of Procedure 20 (vii)]

## 3.5 Capital Reserve Fund

At the 85th Statutory Meeting (1997) the Finance Committee reviewed and discussed Doc. CM 1997/Del:19 and the Chair emphasized that:

a ) the ICES Capital Reserve Fund (CRF) should be linked to the Total Income rather than Secretariat Salaries, and that it should not be allowed to fall below its current level of about 7% of Total Income and preferably should be kept above 10% of Total Income; *Comment: "Total Income" is interpreted as total overall income, and not just the total income from national contributions.*

b ) it was inappropriate to determine the upper limit for the size of the CRF before the Council had discussed the issue of further development of the ICES Core and Advisory Work Programme, the models to be used for the funding of these, and the associated risks involved. The CRF should be used to balance short-term liquidity matters, but not as a buffer for non-payment of National and Commissions' contributions.

The Council unanimously adopted the Committee's proposal that the purpose of the CRF should be to provide short-term finance to meet budgetary appropriations and unforeseen, or other authorized, purposes. [ICES Annual Report 1996/1997, page 65].

## 3.6 Finance Committee

The Finance Committee shall consist of one of the Delegates of Denmark and four other Delegates appointed by the Council for a period of three years, after which they shall not be eligible for re-appointment for the immediately succeeding term. When a member of the Committee ceases to be a Delegate, he/she shall immediately vacate office. [Rule of Procedure 24 (iii)].

The Council's First Vice-President should attend the meetings of the [Finance] Committee without the right to vote. [Rule of Procedure 24 (iv)]

The Chair of the [Finance] Committee shall be appointed in accordance with Rule 30 (ii). [Rule of Procedure 24 (v)]

## 3.7 General Secretary and Danish Delegates

Any document relating to the Council's invested funds signed on behalf of the Council by the General Secretary and one of the Danish Delegates shall be valid. [Rule of Procedure 20 (iv)]

In case of sale or change of bonds of the Council the General Secretary and one of the Danish Delegates are jointly authorized to give receipts valid in law and to perform all dispositions under real law. [Rule of Procedure 20 (v)]

The General Secretary and one of the Danish Delegates are authorized to raise loans for the purpose of the Council on the security of the Council's bonds. [Rule of Procedure 20 (vi)]

## 3.8 Authorized expenditures

The Council shall pay the travelling and subsistence expenses incurred by the President and the Chairs of the Consultative Committee and of the Advisory Committees in attending meetings of the Council or the Bureau or when engaged on the business of the Council. [Rule of Procedure 21 (i)]

The travelling and subsistence expenses of the Vice-Presidents incurred in attending meetings of the Bureau other than those held in conjunction with ordinary meetings of the Council shall be paid by the Council. [Rule of Procedure 21 (ii)]

The Council may pay the travelling and subsistence expenses of any person appointed by it to perform duties on behalf of the Council. [Rule of Procedure 21 (iii)]

Travelling and subsistence expenses paid by the Council shall be calculated in accordance with a scale approved by the Council. [Rule of Procedure 21 (iv)]

The Council may pay any person appointed by it to perform any prescribed duties for promoting work of the Council, and also to the Chairs of Committees such fees as it may approve from time to time. [Rule of Procedure 22]

# 4 Budget formulation timetable

The ICES financial year corresponds to the calendar year (1 January to 31 December). Budget formulation begins approximately two years in advance. The timetable is generally as follows (the involvement of the Finance Committee in the items marked * are new proposals by BWGFP):

Month 1 (January two years before the subject financial year) – The Secretariat initiates formulation of the **Forecast Budget** for the subject financial year.

*Months 1–2 (January–February) – The Bureau reviews the Secretariat's initial version of the **Forecast Budget**, revises it as appropriate, and sends it to the Finance Committee.

*Months 3–4 (March–April) – The Finance Committee works by correspondence to review and recommend improvements in the **Forecast Budget**, returning it within three weeks for circulation to the Bureau.

Month 6 (June) – The Bureau agrees that the **Forecast Budget** is ready for consideration by the Delegates.

Month 7 (July) – The Secretariat distributes the **Forecast Budget** to Delegates for consideration in advance of the annual meeting of the Council.

Months 9–10 (September–October) – The Finance Committee meets in association with the annual Council Meeting and reports to the Council. Council approves the **Forecast Budget.** This budget will be the basis for requests for payments from Contracting Parties for the subject financial year (see Month 15).

Months 11–13 (December–January) – The Secretariat works from the approved **Forecast Budget** to prepare a **Proposed Budget** for the subject financial year. In accordance with Rule of Procedure 18 (ii), the income from member shares of the **Proposed Budget** is set at the level already approved in the **Forecast Budget** for the subject financial year.

Months 13–14 (January–February of the year before the subject financial year) – The Bureau reviews the Secretariat's initial version of the **Proposed Budget**, revises it as appropriate, and sends it to the Finance Committee.

Month 15 (March of the year before the subject financial year) – The Secretariat sends the approved **Forecast Budget** to Contracting Parties (with copies to Delegates) requesting payment of national shares by 22 July, but not later than 30 days after the beginning of the subject financial year. The request for payments is based on the **Forecast Budget,** rather than the version of the **Proposed Budget** under consideration by the Secretariat, Bureau, and Finance Committee, because the former is the only budget approved by Council for the subject financial year. Note that the cost of member shares is the same for both budgets (see Months 11–13 above).

Months 15–17 (March–May) – The Finance Committee works by correspondence to review and propose improvements in the **Proposed Budget**, and returns it to the Bureau.

Month 18 (June) – The Bureau agrees that the **Proposed Budget** is ready for consideration by the Delegates.

Month 19 (July) –.The Secretariat distributes the **Proposed Budget** to Delegates for consideration in advance of the annual Statutory Meeting of the Council.

Months 21–22 (September–October) – The Finance Committee meets in association with the annual Council Meeting and reports to the Council. Council approves the **Proposed Budget.**

Months 25–36 (January–December of the subject financial year) – The Secretariat executes the approved **Budget** under the oversight of the Bureau.

Following the subject financial year, the accounts are audited and budget execution reviewed by the Finance Committee and the Bureau.

Since Budget formulation extends over two years, the Bureau, Finance Committee, and Council are required to consider two budgets (**Forecast Budget** and **Proposed Budget**) simultaneously.

## 5 Scheme of national contributions

| Country | Number of Shares |
|---|---|
| Belgium | 2 |
| Canada | 3 |
| Denmark | 3 |
| Estonia | 1 |
| Finland | 1½ |
| France | 4 |
| Germany | 4 |
| Iceland | 3 |
| Ireland | 2 |
| Latvia | 1 |
| Netherlands | 3 |
| Norway | 4 |
| Poland | 3 |
| Portugal | 2 |
| Russian Federation | 3 |
| Spain | 3 |
| Sweden | 3 |
| United Kingdom | 4 |
| USA | 3 |
| TOTAL | 52½ |

# Resolutions adopted at the 93rd Statutory Meeting (2005)

## Resolutions involving Publications

2005/1/OCC01 The report on the **Impact of Zooplankton on Cod Abundance and Production**, revised and edited by Øyvind Fiksen (Norway), Christian Möllmann (Denmark), and Jeff Runge (USA), as reviewed by the Chair of the Oceanography Committee will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 100.

2005/1/MHC02 The report on the **Effects of Extraction of Marine Sediments on the Marine Ecosystem**, to be edited by Sian Boyd (UK) and to be reviewed and approved by the Chair of the Marine Habitat Committee, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 150.

2005/1/FTC03 The report on the **Description of the ICES HAC standard data exchange format, version 1.60**, edited by Ian H. McQuinn (Canada), as reviewed and approved by the Chair of the Planning Group on the HAC Data Exchange Format, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 91.

2005/1/OCC04 The **2004/2005 ICES Annual Plankton Status Summary**, edited by members of WGZE, as reviewed and approved by the Chair of the Oceanography Committee, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 30.

2005/1/OCC05 The **2004/2005 ICES Annual Ocean Climate Status Summary**, edited by Alicia Lavìn (Spain) and Sarah Hughes (UK), as reviewed and approved by the Chair of the Oceanography Committee, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 35.

2005/1/MHC06 The Report on the **ICES North Sea Benthos Project 2000**, edited by Hubert Rees (UK), as reviewed and approved by the Chair of the Marine Habitat Committee, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 100.

2005/1/MHC07 The report on **Guidelines for the Study of the Epibenthos of Subtidal Environments**, edited by Hubert Rees (UK), as reviewed and approved by the Chair of the Marine Habitat Committee, will be published in the *ICES Techniques in Marine Environmental Sciences* series. The estimated number of pages is 100.

2005/1/FTC08 The **Protocol for the use of an objective mesh gauge**, as edited by Ronald Fonteyne (Belgium) and as reviewed and approved by Chair of the Fisheries Technology Committee, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 10.

The manuscript is expected to be submitted to the Secretariat before 1 November 2005.

2005/1/OCC09 A **Review of Climate Monitoring** by the ICES Working Group on Oceanic Hydrography (WGOH), will be edited by Sheldon Bacon and Penny Holliday and published in a special edition of CLIVAR Exchanges October 2006. The estimated number of pages is 36.

## Resolutions involving Meetings of Committees, Groups, and Workshops (*= new Chair)

### Consultative Committee

2005/2/CONC01 The **Consultative Committee** [ConC] (Chair: Harald Loeng, Norway) will meet at ICES Headquarters, Copenhagen, back-to-back with MCAP, on 14 and 16–18 March 2006 to:

a ) review progress of 2005 activities of Committees and Expert Groups;

b ) discuss and report on the coordination of pure and applied science in ICES, to identify tactical and strategic priorities for Science and Advisory Committees;

c ) discuss the process of bringing forward (from Expert Groups and Theme Sessions) the most important highlights of recent trends and variability of the state in our ecosystem;

d ) review progress on development of ICES position paper as related to, e.g. the European Marine Strategy, the 7th Framework Programme and other international activities;

e ) review status of preparations for ICES Symposia and prepare resolutions;

f ) review and update the arrangements for the 2006 Annual Science Conference;

g ) further develop the plans for the 2007 and 2008 Annual Science Conferences;

h ) further develop the Action Plan Progress Review and review points for Expert Group reports;

i ) on 14 March (afternoon) together with MCAP to finalize preparations for the Open Day workshop (15 March 2006) on the organization of Expert Groups, and Committees;

j ) on 15 March 2006 ConC will participate in the Open Day workshop;

k ) on 16 March 2006 together with MCAP conclude the open day discussions and make recommendations as appropriate for changes for the considerations by the Bureau (June meeting) and the Council (October meeting).

ConC will make its report available for consideration at the October 2006 94th Statutory Meeting.

2005/2/CONC02 The **Workshop on Review of the ICES Committee and Expert Group Performance** [WKREP] (Co-Chairs: Michael Sissenwine, USA, Harald Loeng, Norway, and Paul Connolly, Ireland) will meet 15 March 2006 in Copenhagen at ICES Headquarters to:

a ) Review and comment upon the background analysis prepared jointly by the ConC and MCAP Chairs;

b ) Propose modifications of the Committee and Expert group structure that will improve Client satisfaction, efficiency, and effectiveness of the ICES Expert Groups;

c ) Consider how the Expert Groups can be given a more prominent profile in ICES and in society in general.

The Workshop will report to ConC and MCAP.

## Management Committee on the Advisory Process (MCAP)

2005/2/MCAP01 The **Management Committee on the Advisory Process** [MCAP] (Chair: Paul Connolly, Ireland) will meet at:

**A**) ICES Headquarters 13–16 March 2006, at Council expense, to review the advisory process for 2006 including;

1) On 13–14 March (morning) to:

   a ) Review the working plans for 2006 for the advisory committees and decide on the agenda for the advisory committees,
   b ) Review the status of communications with Client Commissions,
   c ) Review progress with the quality assurance work in 2006,
   d ) Review progress with ICES involvement in the EU Data Collection Regulation,
   e ) Finalize the preparations for a Dialogue meeting with the Regional Advisory Councils (RACs) where the form of interactions between the RACs and ICES can be discussed,
   f ) Review experiences with special requests for advice in particular with the development of advice through e-mails or other forms of electronic communication;

2) On 14 March (afternoon) together with CONC to:

   g ) Finalize preparations for the Open Day workshop (15 March 2006) on the organization of expert groups and committees;

3) On 15 March 2006 MCAP will participate in the Open Day Workshop on Review of the ICES Committee and Expert Group Performance (WKPER);

4) On 16 March 2006 together with CONC to conclude the Open Day discussions and make recommendations on appropriate changes for consideration by the Bureau (June) and the Council (October).

**B**) together with Client Commissions (MCAP-MICC) at ICES Headquarters 10–11 April 2006 (to be confirmed) at Council expense (for MCAP members) to review the Advisory Process for 2006 and beyond, including:

   a ) Review of 2005 MCAP-MICC meeting and follow-up to action points;
   b ) Review of the MoUs with Fisheries Commissions – how have these worked in the period 2004–2006 and how might they be modified for application in 2007–2009;
   c ) Access to VMS for fish stock assessment;
   d ) Further development of communications with Client Commissions;
   e ) Outline of ICES advisory work programmes for 2006;
   f ) Observers at advisory committees in 2006;
   g ) Quality of data used in the advisory process – links with the Data Collection Regulation;
   h ) Progress towards integrated advice and long-term advice;
   i ) Progress on establishing Regional Advisory Councils and the role of ICES vis-à-vis these RACs;
   j ) Any other business that the Clients may wish to discuss.

**C**) Immediately before or early in the ASC week and after the ASC week in Maastricht, Netherlands, at Council expense to review the advisory process for 2007, including:

a ) Follow-up and status of action points from 2006 MCAP meetings and discussions with Clients;

b ) Further development of communications with Client Commissions;

c ) Review the status of ICES cost recovery for the advisory work;

d ) Review progress of quality assurance work;

e ) Review of interactions with the Regional Advisory Councils;

f ) Progress on Auditing the advisory process;

g ) Review of integrated advice process.

## Publications Committee

2005/2/PUB01 The **Publications Committee** [PUBCOM] (Chair: Pierre Pepin, Canada) will meet on two days in 2006 during the Annual Science Conference to monitor and advise on:

a ) all intersessional activities 2004–2005, including matters brought to the attention of the Chair through the year;

b ) all ICES Publications activities, including communications and the Website, in 2004/2005;

c ) progress with the Work Plan, and integrated web guidance, to achieve publication, information, and media objectives in the ICES Strategic Plan;

d ) information to be supplied by the Secretariat on the cost of ICES publication-related work during 2004.

PUBCOM will report to the Consultative Committee at the Annual Science Conference.

## Advisory Committee on Fishery Management (ACFM)

2005/2/ACFM01 The **Advisory Committee on Fishery Management** [ACFM] (Chair: Martin Pastoors, The Netherlands) has the following tasks:

**A)** To **meet in plenary at ICES Headquarters from 25 May to 1 June 2006** and **from 5 to 12 October 2006** at Council expense to:

- prepare the advice and information on fisheries, living resources and their exploitation and the interaction by fisheries and the ecosystem, as requested by the Fishery Commissions (JNRFC, NASCO, and NEAFC), by the EC, and by Member Countries of ICES, and other advice which the Committee or Council may consider relevant;
- contribute, as required, to the preparation of advice to other regulatory bodies in collaboration with the Advisory Committee on Ecosystems (ACE) and Advisory Committee on the Marine Environment (ACME);
- improve the form of advice to reflect the MoUs with Client Commissions, in particular the need for an ecosystem approach, fisheries-based advice and advice to be based on long-term considerations;
- consider the strategy for the development of the assessments and advice; and update the ACFM action plan. Give guidance to the Science Committees on future scientific needs and priorities related to the work of ACFM.

Attendance at Council expense will be limited to the Chair, national members, and *ex officio* members of ACFM. Chairs of the Assessment Working Groups may be invited to assist ACFM to deal with special issues. With the approval of the General Secretary, the Chair of ACFM may invite experts to attend relevant parts of the May and October meetings at Council expense.

**B)** Assessments made by fish stock assessment working groups will be reviewed by groups set up for that purpose. These groups will work in sessions or by correspondence. The tasks of these review groups are to ensure quality of the assessments made by the As-

sessment Working Groups and, if necessary, update the assessments and projections. These review groups will each have at least three members: one Chair who is appointed among the ACFM members, and two or three nominated experts chosen as independent experts with relevant expertise to allow them to do a technical review of the assessments. Chairs of the Assessment Working Groups will assist in the review of their reports. The review meetings are open to other members of ACFM. Costs of these review meetings will be borne by the national institutes.

**C)** Concerning North Atlantic Salmon: ACFM will **work by correspondence in the period 28 April–4 May 2006** to prepare advice on Atlantic salmon for NASCO, based on the reviewed report of the Working Group on North Atlantic Salmon. The expected release date is 5 May 2006;

**D)** Concerning advice for *Pandalus* stocks: the *Pandalus* Assessment Working Group will meet at ICES HQ in parallel with the NAFO Sc.C./STACFIS shrimp meeting. The report of WGPAND will be available for ACFM's consideration in early November 2006 with a view to release the report by 10 November 2006. TORs including dates and new Chair for WGPAND 2006 to be decided after the WGPAND meeting in November 2005;

**E)** The Institute of Marine Research (IMR) in Bergen is invited to submit to ACFM in October 2006 an assessment of the Barents Sea capelin for review and further processing in the advisory system;

**F)** Presentation of the fisheries advice to NASCO, NEAFC, and EC by the ACFM Chair (or his designate). The advice on North Atlantic salmon will be presented to NASCO by the Chair of the Working Group on North Atlantic Salmon. ICES will, by invitation, present the advice to other groups (including RACs);

**G)** To hold **Consultations** at national expense at the 2006 ASC Meeting to:

a ) establish and review working procedures for ACFM,

b ) propose Terms of Reference, dates, and venues for meetings of groups reporting to ACFM in 2007,

c ) conduct other business related to the functioning of ACFM, including proposals for work to be done by other committees and expert groups.

The Consultations are open to Delegates, Members of MCAP, ACFM members and their alternates, Chairs of groups reporting to ACFM or their designates, *ex officio* members, Commission observers to ACFM, and other experts at the invitation of the Chair of ACFM.

## Assignments for Review of fish stock assessment – 2006

The reviews of fish stock assessment are moved out of ACFM and placed in separate review groups. The table below summarizes the proposed membership of the Review Groups. Each group is assisted by the Chair(s) of the Working Group whose report is under review. Where feasible, the review groups will work by correspondence. The assignments are as follows (confirmed):

| Review group | WG report to be reviewed and its meeting dates | Stocks | No. of stocks for which | Review group chair [ACFM member] | 1. Reviewer | 2. Reviewer | External | WG Chair | When or if correspondence: Deadline | Meeting place for Review group * |
|---|---|---|---|---|---|---|---|---|---|---|
| I | HAWG 14–23 March (ICES) | All | 10 | Gary Shepherd, US | Heikki Auvinen, Finland | Olavi Kaljuste, Estonia | | Mark Dickey-Collas, Netherlands | 24–26/4 | Correspondence |
| II | WGNAS 4–13 April (ICES) | All | 4 areas | Martin Pastoors, ACFM Chair | Dave Meerburg, Canada | Niall O'Maoileidigh, Ireland | | Tim Sheehan, USA | 25–27/4 | ICES HQ |
| III | WGBFAS 18–27 April (Rostock) | All | 10 | Willy Vanhee, Belgium | Andre Forest, France | / | Noel Cadigan, Canada | Tomas Gröhsler, Germany | 22–24/5 | ICES HQ |
| IV | WGBAST 28 March – 6 April (ICES) | All | 3 | Jesper Boje, Denmark, Greenland | Alberto Murta, Portugal | UK (N Ireland) | | Atso Romakkaniemi, Finland | 23–24/5 | ICES HQ |
| V | AFWG 19–28 April (ICES) | All | 8 | Mark Dickey-Collas, Netherlands | Max Cardinale, Sweden | Reidar Toresen, Norway | | Yuri Kovalev, Russia | 22–24/5 | ICES HQ |
| VI | NWWG 1 25 April – 4 May (ICES) | Icelandic cod, haddock and saithe, Redfish and Greenland halibut in V+XII+XIV | 5 + ca. 3 | RMC Chair | Steven Holmes, UK (Scotland) | Jan Horbowy, Poland | | Einar Hjörleifsson, Iceland | 22–24/5 | ICES HQ |
| VII | NWWG 2 25 April – 4 May (ICES) | Faroe stocks, Iceland herring, capelin | 6 | Carl O'Brien, UK | Fran Saborido-Rey, Spain | E Shamray, Russia | | Einar Hjörleifsson, Iceland | 18–19/5 | ICES HQ |
| VIII | WGEF 14–21 June (ICES) | All | Not known | Max Cardinale, Sweden | / | Chair LRC | | Maurice Clarke, Ireland | 30/8–1/9 | Latvia |
| IX | WGDEEP 2–11 May (Vigo) | All | 10 | Maris Plikshs, Latvia | Pablo Abaunza, Spain | Knut Korsbrekke, Norway | Kevin Stokes, NZ | Paul Marchal, France | 22–24/5 | ICES HQ |
| X | WGHMM 9–18 May (Bilbao) | All | 6 + 9 Neph. | Chris Zimmermann, Germany | Olavi Kaljuste, Estonia | Peter Lewy, Denmark | | Manuela Azevedo, Portugal | 4–6/7 | Rostock, Germany |
| XI | WGSSDS 27/6–6/7 (ICES) | All | 14 + 1 neph | Colm Lordan, Ireland | Chair RMC | Rainer Oeberst, Germany | | Wim Demare, Belgium | 23–25/8 | Galway, Ireland |
| XII | WGNSDS 9–18 May (ICES) | All | 13 + 5 neph | Morten Vinther, Denmark | Olga Moura, Portugal | Max Cardinlae, Sweden | | Robert Scott, UK | 20–22/6 | ICES HQ |
| XIII | WGNSSK1 5–14 September (ICES) | IIIa stocks | 3 + 10 neph | Einar Hjorleifsson, Iceland | Valentin Trujillo, Spain | Y. Kovalev, Russia | | Coby Needle, Scotland, UK | 2–4/10 | ICES HQ |

| Review group | WG report to be reviewed and its meeting dates | Stocks | No. of stocks for which | Review group chair [ACFM member] | 1. Reviewer | 2. Reviewer | External | WG Chair | When or if correspondence: Deadline | Meeting place for Review group * |
|---|---|---|---|---|---|---|---|---|---|---|
| XIV | WGNSSK2 5–14 September (ICES) | NSea stocks | 13 | Alain Biseau, France | USA | Joakim Hjelm, Sweden | | Coby Needle, Scotland, UK | 2–4/10 | ICES HQ |
| XV | WGMHSA 5–14 September (Galway) | All | 7 | Denis Rivard, Canada | Knut Korsbrekke, Norway | Frans van Beek, Netherlands | Steve Cadrin, USA | Ciaran Kelly, Ireland | 2–4/10 | ICES HQ |
| XVI | WGNPBW 24–30 August (ICES) | All | 5 | Jan Horbowy, Poland | Eero Aro, Finland | Jose de Oliveira, UK (England) / France | | Asta Gudmundsdottir, Iceland | 3–4/10 | ICES HQ |
| XVII | WGPAND 25 October - 2 November (ICES) | All | 2 | ACFM Chair | Helen Dobby, UK (Scotland) | / | | Michaela Aschan, Norway | | |
| XVIII | WGEEL 23–27 January (Rome) | European eel | 1 | ACFM Chair | Maris Plikshs, Latvia | Wim Demare, Belgium | | Willem Dekker, Netherlands | Deadline: 1 April | Correspondence |

* Review groups scheduled to meet according to the table above are free to choose to work by correspondence instead of having a meeting.

| Member | Review group Chair spring | Review group Chair autumn | Reviewers spring | Reviewers autumn | WG Chair spring | WG Chair autumn | Total number |
|---|---|---|---|---|---|---|---|
| Belgium | | | 1 | 1 | | 1 | 3 |
| Denmark | RC | RC | | 1 | | | 3 |
| Canada | | RC | 1 | | | | 2 |
| Estonia | | | 1 | 1 | | | 2 |
| Finland | | | 1 | 1 | 1 | | 3 |
| France | | RC | 1 | 1 | 1 | | 4 |
| Germany | | RC | | 1 | 1 | | 3 |
| Iceland | | RC | | | 1 | 1 | 3 |
| Ireland | RC | RC | | | 1 | 1 | 4 |
| Latvia | RC | | | 1 | | | 2 |
| Netherlands | RC | | | 1 | 1 | 1 | 4 |
| Norway | RC | | 2 | 2 | | | 5 |
| Poland | | RC | 1 | | | | 2 |
| Portugal | | | 1 | 1 | | 1 | 3 |
| Russia | | | 1 | 1 | 1 | | 3 |
| Spain | | | 2 | 1 | | | 3 |
| Sweden | | | 1 | 2 | | | 3 |
| CEFAS, England &Wales (UK) | RC | | 2 | 1 | | 1 | 5 |
| FRS, Scotland (UK) | RC | | 1 | 1 | | 1 | 4 |
| USA | RC | | 1 | 1 | 1 | | 4 |

**Fish Stock Assessment Groups – stock assignments in 2006**

A system with different types of assessments (Observation, Benchmark, Update, and Experimental) has been established in the fish stock assessment Working Groups. The plan for 2006 is as follows:

| WG Acronym | Observation list | Benchmark | Update | Experimental | No Assessment |
|---|---|---|---|---|---|
| AFWG (incl. Barents sea capelin)<br>Yuri Kovalev, Russia<br>19–28 April, ICES<br>Deadline: 29/04/06 | NEA Cod, Norwegian coastal cod | NEA Greenland halibut | NEA haddock,<br>NEA Saithe, Barents sea capelin | *Sebastes mentella* and *marinus* | |
| HAWG<br>Mark Dickey Collas, NL<br>14–23 March, ICES<br>Deadline: 24/03/06 | North Sea Herring | | Herring in Div. IIIa and subdivs.22–24, Herring VIaN, Celtic Sea Herring, Irish Sea Herring, Herring in VIaS, VIIbc, Sprat | | |
| NWWG<br>Einar Hjörleifsson, Iceland<br>25 April–4 May, ICES<br>Deadline: 05/05/06 | Faroe Plateau Cod | Icelandic Haddock, Faroe Haddock, Icelandic Herring | Icelandic Cod Icelandic Saithe, Icelandic Capelin, Faroe Saithe | Greenland Cod, Icelandic Greenland Halibut, *Sebastes marinus*, D-sea *S. mentella*, Pel. *S. mentella*, Faroe Bank cod | |
| WGBAST<br>Atso Romakkaniemi*, Finland<br>28 March–6 April<br>ICES<br>Deadline: 07/04/06<br>(DFC) | Salmon 24–31 | | Salmon 32 | | Sea Trout |
| WGBFAS<br>Tomas Gröhsler, Germany<br>18–27 April, Rostock, Germany<br>Deadline: 05/05/06 | Cod 25–32, Cod in Kattegat, Sole IIIa | Herring 30 | Cod 22–24, Herring 25–29 and 32 excl. GoR, Herring Gulf of Riga, Herring 31, Sprat | Flounder 24–25 | Plaice, Dab, Turbot, Brill |
| WGDEEP<br>Paul Marchal*, France<br>2–11 May,<br>Vigo, Spain<br>Deadline: 23/05/06<br>(LRC, RMC) | All species | | | | |
| WGNPBW<br>Asta Gudmundsdottir, Iceland<br>24–30 August, ICES<br>Deadline: 31/08/06<br>(LRC, RMC) | Blue Whiting<br>Norwegian Spring-spawning herring | | | | |
| WGEEL<br>Willem Dekker, NL<br>23–27 January,<br>Rome, Italy<br>Deadline: 15/02/06<br>(DFC, LRC, RMC) | European eel | | | | |

| WG Acronym | Observation list | Benchmark | Update | Experimental | No Assessment |
|---|---|---|---|---|---|
| WGHMM<br>Manuela Azevedo*, Portugal<br>9–18 May, Bilbao, Spain<br>Deadline: 28/05/06 | Northern hake, southern hake, | Megrim VII and VIIIa,b,d, Anglerfish VIIIc and IXa, *Nephrops* stocks [MA N (FU 23–24), MA O (FU25), MA Q (FU 26–27, FU 28–29)] | *L.pisc*. VIIb,k and VIIIa,b,d, *L.bude* VIIb,k and VIIIa,b,d, *L.whiff.* VIIIc and IXa, *L.boscii* VIIIc and IXa | *Nephrops* stocks [MA L (FU 16 1718 19), MA O (FU 31), MA Q (FU 30)] | |
| WGMHSA<br>Ciaran Kelly, Ireland, 5 - 14 September<br>Galway, Ireland<br>Deadline: 09/09/06 | | Sardine , Anchovy Biscay | NEA Mackerel | North Sea Horse Mackerel, Southern Horse Mackerel, Anchovy IXa, Western Horse Mackerel | |
| WGNAS<br>Tim Sheehan*, USA<br>4–13 April, ICES<br>Deadline: 14/04/06 | NA Salmon | | | | |
| WGNSDS<br>Robert Scott*, UK<br>9–18 May<br>ICES<br>Deadline: 26/05/06 | Cod VIa<br>Cod VIIa | | | Haddock VIb, Haddock VIIa, Whiting VIIa, all *Nephrops* stocks, Whiting VIa, Anglerfish IIa, IIIa, IV and VI, Plaice VIIa, Sole VII | Megrim VIa, Megrim VIb |
| WGNSSK<br>Coby Needle, UK<br>5–14 September<br>ICES<br>Deadline: 21/09/06 | NS Cod | plaice in IV, Sole in 7 d, Plaice in 3a, Plaice in 7 d | Sole in IV, Sandeel in other areas, Norway pout in IV, Norway pout in other areas, Whiting in 47 d, Sandeel in IV, Haddock in 34, Saithe in 346 | | all *Nephrops* stocks |
| WGPAND<br>Michaela Aschan, Norway<br>25 October – 2 November<br>ICES<br>Deadline: 05/11/06 | | *Pandalus* in IIIa+IVa, Barents Sea shrimp | | | |
| WGSSDS<br>Wim Demaré, Belgium<br>27/6–6/7, ICES<br>Deadline: 7/7 2006 | | Cod VIIe-k, Whiting VIIe-k, sole VIIf.g, haddock VIIb-k sole VIIIa,b *Nephrops* FU 20–22 | Plaice VIIe, Sole VIIe, plaice VIIf,k | Sole VIIh-k, Plaice VII h-k, Sole VII b,c, Plaice VII b,c, | |
| WGNEW<br>Henk Heessen, NL and Jean-Claude Mahé, France<br>13–15 December 2005, ICES Hq,<br>Deadline: 18/12/05 (LRC) | | | | Sea bass, flounder, common dab, lemon sole, brill, turbot, gurnards, red gurnards, and red mullet | |
| WGEF<br>Maurice Clarke<br>14–21 June, ICES<br>Deadline: 22/07/06 | | | | elasmobranch | |

## Advisory Committee on Fishery Management (ACFM) — Assessment Groups

### Cost Sharing

| | | Cost splitting keys (%) | | | | |
|---|---|---|---|---|---|---|
| | ICES | DG Fish | IBSFC | NEAFC | NASCO | Sum |
| Secretariat support for ACFM | 4 | 46 | 7 | 35 | 8 | 100 |
| General Secretariat support for Assessment Working Groups | 4 | 46 | 7 | 35 | 8 | 100 |
| WGBAST | | | 100 | | | 100 |
| WGBFAS | | 20 | 80 | | | 100 |
| WGNAS | | | | | 100 | 100 |
| WGNPBW | | 15 | | 85 | | 100 |
| AFWG | | 15 | | 85 | | 100 |
| HAWG | | 70.6 | 5.8 | 23.6 | | 100 |
| NWWG | | | | 100 | | 100 |
| WGDEEP | | | | 100 | | 100 |
| WGNEW | | 100 | | | | 100 |
| WGEEL | 50 | 50 | | | | 100 |
| WGMHSA | | 75 | | 25 | | 100 |
| WGNSDS | | 68.8 | | 31.2 | | 100 |
| WGNSSK | | 75 | | 25 | | 100 |
| WGPAND | | 75 | | 25 | | 100 |
| WGSSDS | | 75 | | 25 | | 100 |
| WGHMM | | 75 | | 25 | | 100 |

The ACFM action plan highlights the need to develop advice based on long-term considerations on a fisheries basis and within an ecosystem approach. The following generic Terms of Reference specifies the tasks of assessment working groups in achieving the objectives of the action plan.

Please note that the following Terms of Reference are generic, and each individual assessment group should prioritise them according to the detailed planning developed by AMAWGC and the wishes of the group, in the full knowledge that not all ToRs can be achieved in full for all stocks.

WGNSSK, WGSSDS, WGHMM, WGMHSA, WGBFAS, WGNSDS, AFWG, HAWG, NWWG, WGNPBW, and WGPAND will, in addition to the tasks listed for the individual groups in 2006:

1 ) based on input from e.g. WGRED and for the North Sea NORSEPP, consider existing knowledge of important environmental drivers for stock productivity and management and, if such drivers are considered important for management advice incorporate such knowledge into assessment and prediction, and important impacts of fisheries on the ecosystem;

2 ) Evaluate existing management plans to the extent that they have not yet been evaluated. Develop options for management strategies including target reference points if management has not already agreed strategies or target reference points (or HCRs) and, where it is considered relevant review limit reference points (and come forward with new ones where none exist) – following the guidelines from SGMAS (2005, 2006), AGLTA (2005), and AMAWGC (2004, 2005, and 2006). If mixed fisheries are considered important consider the consistence of options for target reference points and management strategies. If the WG is not in a position to perform this

evaluation then identify the problems involved and suggest and initiate a process to perform the management evaluation;

3 ) where mixed catches are an important feature of the fisheries assess the influence of individual fleet activities on the stocks and the technical interactions;

4 ) update the description of fisheries exploiting the stocks, including major regulatory changes and their potential effects. Comment on the outcome of existing management measures including technical measures, TACs, effort control, and management plans. The description of the fisheries should include an enumeration of the number, capacity, and effort of vessels prosecuting the fishery by country;

5 ) where misreporting is considered significant provide qualitative and where possible quantitative information, for example from inspection schemes, on its distribution on fisheries and the methods used to obtain the information; document the nature of the information and its influence on the assessment and predictions;

6 ) provide for each stock and fishery information on discards (its composition and distribution in time and space) and the method used to obtain it. Describe how it has been considered in the assessments;

7 ) report as prescribed by the Secretariat on a national basis an overview of the sampling of the basic assessment data for the stocks considered;

8 ) provide specific information on possible deficiencies in the 2006 assessments including, at least, any major inadequacies in the data on landings, effort, or discards; any major inadequacies in research vessel surveys data, and any major difficulties in model formulation; including inadequacies in available software. The consequences of these deficiencies for both the assessment of the status of the stocks and the projection should be clarified;

9 ) further develop and implement the roadmap for medium- and long-term strategy of the group as developed by AMAWGC;

10 ) Working Group Chairs will set appropriate deadlines for submission of the basic assessment data. Data submitted after the deadline will be considered at a later meeting at the discretion of the WG Chair.

2005/2/ACFM02 The **Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources** [WGDEEP]:

a ) compile an inventory of data sources available on landings and effort of deepwater species, including blue ling, ling, and tusk, by ICES Subarea, Division, or preferably by subdivisions; evaluate the quality of these data;

b ) compile the data available from these data sources on the finest scale possible;

c ) update descriptions of deepwater fisheries, including mapping out deepwater fisheries in preparation for collation of fisheries-based catch and effort statistics using among other data sources VMS information. Provide information on as high spatial and temporal resolution as possible on all current deepwater fisheries in the NE Atlantic;

d ) carry out analytical assessments of ling, red (blackspot) sea bream, and roundnose grenadier, and assessments of other species if possible;

e ) update the data on length/age at maturity, growth, and fecundity, and document other relevant biological information on deepwater species;

f ) update information on quantities of discards by gear type for the stocks and fisheries considered by this group and make an inventory of deepwater fish community data;

g ) initiate work that will allow the WG to evaluate the effects of the closures introduced in 2005 with special regard to species diversity, and /or changes in the density of commercial fish species or any other living organisms, which may indicate the quality of the ecosystem. Furthermore, prepare for work at the 2007 meeting

of the WG on the appropriateness of the continuation of these, or alternative, area closures in 2007;

h ) The Chairs of WGDEC and WGDEEP (Mark Tasker, UK, and Paul Marchal, France) will cooperate to ensure that expertise on cold-water corals and on deep-water fishing is available at the meeting.

Recommendation

The General Secretary should contact the appropriate fisheries commissions and urge that VMS data routinely be made available to ICES for the use by the assessment group.

2005/2/2ACFM03 The **Herring Assessment Working Group South of 62° N** [HAWG]:

a ) assess the status of and provide management options (by fleet where possible) for 2007 for:

1 ) the North Sea autumn-spawning herring stock in Division IIIa, Subarea IV, and Division VIId (separately, if possible, for Divisions IVc and VIId),

2 ) the herring stocks in Division VIa and Subarea VII,

3 ) the stock of spring-spawning herring in Division IIIa and Subdivisions 22–24 (Western Baltic);

b ) forecasts for North Sea autumn-spawning herring should be provided by fleet and according to the management plan agreed between the EU and Norway;

c ) catch options for Div. IIIa shall be given by fleets, taking into account that North Sea herring and Western Baltic herring are taken together in this Division;

d ) assess the status of the sprat stocks in Subarea IV and Divisions IIIa and VIId,e;

e ) for the stocks mentioned in a) and d) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/2ACFM04 The **Working Group on North Atlantic Salmon** [WGNAS]:

a ) With respect to Atlantic salmon in the North Atlantic Area:

1 ) provide an overview of salmon catches and landings, including unreported catches by country to catch and release, and worldwide production of farmed and ranched Atlantic salmon in 2005;

2 ) report on significant developments which might assist NASCO with the management of salmon stocks including new or emerging threats to, or opportunities for, salmon conservation and management;

3 ) report on developments in methods to identify origin of Atlantic salmon at a finer resolution than continent of origin (river stocks, country, or stock complexes);

4 ) describe sampling programmes for escaped farmed salmon, the precision of the identification methods employed and the reliability of the estimates obtained;

5 ) provide an assessment of the minimum information needed which would signal a significant change in the previously provided advice for each Commission area;

6 ) provide a compilation of tag releases by country in 2005;

7 ) identify relevant data deficiencies, monitoring needs, and research requirements[1].

b ) With respect to Atlantic salmon in the Northeast Atlantic Commission area:

1 ) describe the key events of the 2005 fisheries and the status of the stocks[2];

2 ) provide any new information on the extent to which the objectives of any significant management measures introduced in recent years have been achieved;

3 ) further develop the age-specific stock conservation limits, where possible based upon individual river stocks;

4 ) provide annual catch options or alternative management advice for 2006–2008, if possible based on forecasts of PFA for northern and southern stocks, with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[3];

5 ) update and further refine estimates of bycatch of salmon in pelagic fisheries (including non-catch fishing mortality) with an assessment of impacts on returns to homewaters.

c ) With respect to Atlantic salmon in the North American Commission area:

1 ) describe the key events of the 2005 fisheries (including the fishery at St Pierre and Miquelon) and the status of the stocks[2];

2 ) provide any new information on the extent to which the objectives of any significant management measures introduced in recent years have been achieved;

3 ) update age-specific stock conservation limits based on new information as available;

4 ) provide annual catch options or alternative management advice for 2006–2008 with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[3].

d ) With respect to Atlantic salmon in the West Greenland Commission area:

1 ) describe the events of the 2005 fisheries and the status of the stocks[24];

2 ) provide any new information on the extent to which the objectives of any significant management measures introduced in recent years have been achieved;

3 ) provide annual catch options or alternative management advice for 2006–2008 with an assessment of risk relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[3].

***Notes:***

*1) NASCO's International Atlantic Salmon Research Board's inventory of ongoing research relating to salmon mortality in the sea will be provided to ICES to assist it in this task.*

*2) In the responses to questions 2.1, 3.1, and 4.1 ICES is asked to provide details of catch, gear, effort, composition, and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Any new information on non-catch fishing mortality, of the salmon gear used, and on the bycatch of other species in salmon gear, and on the bycatch of salmon in any existing and new fisheries for other species is also requested.*

*3) In response to questions 2.4, 3.4, and 4.3 provide a detailed explanation and critical examination of any changes to the models used to provide catch advice.*

*4) In response to question 4.1, ICES is requested to provide a brief summary of the status of North American and Northeast Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to questions 2.1 and 3.1.*

2005/2/2ACFM05 The **Baltic Fisheries Assessment Working Group** [WGBFAS]:

a ) assess the status of and provide management options for year 2007, for cod, herring, and sprat stocks in the Baltic, and for cod in Kattegat and sole in Division IIIa by appropriate areas* and stock components, taking into account the biological interaction between species. The options should be for a range of fishing mortalities, including those implied by agreed management plans.

*Areas:

**Baltic Herring:**

1. SD 22–24 (based on assessment made by HAWG)
2. SD 25–29, 32 excluding Gulf of Riga (25–27, 28.2, 29, and 32)
3. Gulf of Riga (28.1)
4. SD 30
5. SD 31

**Sprat:**

1. The Whole Baltic: SD 22–32

**Sole:**

1. Division IIIa.

**Cod:**

1. SD 22–24
2. SD 25–32
3. Kattegat.

b ) provide any new information on the state of flatfish stocks in the Baltic;

c ) consider assessments and management options which include information on landings, discards, and fishing mortality rates by fisheries (defined by gear types and mesh sizes) including the pelagic fisheries.

d ) for the stocks mentioned in a) perform the tasks described in C. Res. 2005/2/ACFM01.

2005/2/ACFM06 The **Baltic Salmon and Trout Assessment Working Group** [WGBAST]:

a ) assess and make projections for 2006–2015 of the status of wild stocks of Baltic salmon in terms of smolt production relative to the potential smolt production on a river-by-river basis. The projection shall include an account of the yield in numbers, taking into account reared salmon. The catch options shall for 2007 provide information on the catch possibilities for the Main Basin and the Gulf of Bothnia and for the Gulf of Finland. The projections shall be made for various fishing scenarios and will evaluate the probability of reaching 50%, 75%, and 100% of the potential smolt production in each river;

b ) review the potential smolt production of wild salmon stocks on a river-by-river basis. Review differences in the natural production in the Baltic rivers with a view to identify what causes these differences;

c ) evaluate the effect of delayed opening of the coastal fishery in the Gulf of Bothnia on the productivity of the wild salmon stocks;

d ) provide any new information on the state of sea trout stocks and evaluate the need for management actions to safeguard wild sea trout populations;

e ) evaluate data and information needs for improving the assessment of Baltic salmon stocks.

2005/2/ACFM08 The **Northwestern Working Group** [NWWG]:

a ) assess the status of and provide management options for 2007 for the stocks of redfish in Subareas V, XII, and XIV, Greenland halibut in Subareas V and XIV, cod in Subarea XIV, NAFO Subarea 1, and Division Va, saithe in Division Va,

haddock in Division Va, Icelandic summer-spawning herring and capelin in Subareas V and XIV;

b ) assess the status of and provide effort options and expected corresponding catches for 2007 for cod, haddock, and saithe in Division Vb as these stocks are under effort control;

c ) submit new information on stock identity of the components of redfish such as "pelagic deep-sea" *Sebastes mentella*, "oceanic" *Sebastes mentella* fished in the pelagic fisheries, and the "deep-sea" *Sebastes mentella* fished in demersal fisheries on the continental shelf and slope;

d ) update survey and fishery information on the stocks of redfish in Subareas V, VI, XII, and XIV. In particular, update information on the horizontal and vertical distribution of pelagic redfish and fisheries in the Irminger Sea and adjacent waters as well as seasonal and interannual changes in distribution. This information should allow NEAFC to further consider the appropriateness of separate management measures of different geographical areas/seasons;

e ) provide information on the horizontal and vertical distribution of pelagic redfish stock components in the Irminger Sea as well as seasonal and interannual changes in distribution;

f ) for the stocks mentioned in a) and b) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM09 The **Arctic Fisheries Working Group** [AFWG]:

a ) assess the status of and provide management options for the year 2007 for the stocks of cod, haddock, saithe, Greenland halibut, and redfish in Subareas I and II, taking into account interactions with other species;

b ) update the data files on Barents Sea capelin and oversee the process of providing intersessional assessment and predictions on the stock;

c ) for the stocks mentioned in a) and b) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM10 The **Working Group on the Assessment of Northern Shelf Demersal Stocks** [WGNSDS]:

a ) assess the status of and provide management options for 2007 for the stocks of cod, haddock, whiting, anglerfish, and megrim in Subarea VI, for cod, haddock, whiting, plaice, sole in Division VIIa, and *Nephrops* Functional Units 11, 12, 13, 14, and 15, and for anglerfish stocks in Subarea IV and Divisions IIa, IIIa, and VIa;

b ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM11 The **Working Group on the Assessment of Southern Shelf Demersal Stocks** [WGSSDS]:

a ) assess the status of and provide catch options for 2007 for stocks of cod, haddock, whiting, and plaice in Divisions VIIbc, VIIe, VIIfg, and VIIhk, for sole in Divisions VIIbc, VIIe, VIIfg, VIIhk, and VIIIabd, and for *Nephrops* Functional Units 20–22;

b ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM12 The **Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim** [WGHMM]:

a ) assess the status of and provide management options for 2007 for stocks of hake in Subareas III, IV, VI, VII, VIII, and IX, monk (anglerfish), megrim in Subareas VII, VIII, and IX, and *Nephrops* Functional Units 16, 17, 18–19, 23–24, 25, 26–27, 28–29, 30, and 31;

b ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM13 The **Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak** [WGNSSK]:

a ) assess the status of and provide management options for the following stocks: 1) cod in Subarea IV and Division IIIaN (Skagerrak), and Division VIId, 2) haddock in Subarea IV and Division IIIa, 3) whiting and 4) plaice, both in Subarea IV, Division IIIa, and Division VIId, 5) saithe in Subarea IV, Subarea VIa, and Division IIIa, 6) sole in Subarea IV and Division VIId, for Norway pout and sandeel stocks in Subarea IV and Divisions IIIa and VIa, and 7) *Nephrops* stocks: Functional Units 3, 4, 5, 6, 7, 8, 9, 10, 32, and 33;

b ) quantify the species and size composition of bycatches taken in the fisheries for Norway pout and sandeel in the North Sea and adjacent waters, and make this information available to the Working Group on Ecosystem Effects of Fishing Activities;

c ) provide the data required to carry out multispecies assessments (quarterly catches and mean weights-at-age in the catch and stock for 2005 for all species in the multispecies model that are assessed by this Working Group);

d ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM14 The **Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy** [WGMHSA]:

a ) assess the status of and provide management options for 2006 for the stocks of mackerel, the sardine stock in Divisions VIIIc and IXa, western horse mackerel, southern horse mackerel, anchovy in Subarea VIII, and anchovy in Division IXa;

b ) carry out in-depth exploratory assessments for sardine and anchovy in Subarea VIII;

c ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM15 The **Northern Pelagic and Blue Whiting Fisheries Working Group** [WGNPBW]:

a ) assess the status of and provide management options for 2007 for the Norwegian spring-spawning herring stock and the blue whiting stock;

b ) provide as detailed information as possible on the age/size composition in different segments of the blue whiting fishery;

c ) compile existing information on discards and bycatch in the fisheries;

d ) enumerate the number, capacity, and effort of vessels prosecuting the fishery by country;

e ) reconsider the biological reference points in particular for Norwegian spring-spawning herring;

f ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

2005/2/ACFM16 The ***Pandalus* Assessment Working Group** [WGPAND]:

a ) assess the status of and provide management options for 2007 for the stocks of *Pandalus borealis* in the Barents Sea, the North Sea, Skagerrak, and Kattegat and, taking predation mortality on *Pandalus* stocks into account;

b ) for the stocks mentioned in a) perform the tasks described in C.Res. 2005/2/ACFM01.

TORs to be reviewed after the meeting in November 2005 back-to-back with the NAFO Sc.C./STACFIS *Pandalus* meeting.

2005/2/ACFM17 The **ICES/NAFO Working Group on Harp and Hooded Seals** [WGHARP] (Chair: Richard Merrick, USA) will meet 12–16 June 2006 at ICES Headquarters to:

a ) deal with unresolved questions regarding hooded seals and deliver this part of the advice at the end of June 2006.

WGHARP will report by 1 August 2006 for the attention of ACFM, as well as the Resource Management and the Living Resources Committees.

2005/2/ACFM18 [Agreed at the ASC in 2005] A **Working Group on Assessment of New MoU Species** [WGNEW]:

a ) consider possibilities for fish stock assessments of the following species: sea bass, flounder, common dab, lemon sole, brill, turbot, gurnards, and red mullet through 1) review of knowledge of stock structure, 2) existing monitoring and abundance programmes including the EU Data Collecting programme, 3) existing databases useful for fish stocks assessment. The aim is to compile and publish the findings as a CR Report and as a database in CD form;

b ) evaluate the status of the stocks as appropriate based on existing information;

c ) develop a strategy that will further allow appropriate future assessment of these species, separated into a number of biologically defined stocks.

2005/2/ACFM19 The **Planning Group on Commercial Catch, Discards and Biological Sampling** [PGCCDBS] (Chair: Ernesto Jardim*, Portugal) will meet in Rostock, Germany, from 28 February to 3 March 2006 to:

a ) collate national Standard Operation Procedures for sampling of commercial fisheries. Furthermore, collate survey manuals and Standard Operation Procedures for abundance surveys that provide input to fish stock assessments. These collations shall apply to all assessments and all types of data used for assessments of fish stocks and fisheries in the ICES area. Highlight differences between national programmes;

b ) initiate work on international protocols to be used for evaluation of the quality of data submitted for use in fish stock assessments;

c ) review the recommendations of ICES assessment working groups, Regional Co-ordination Meetings, SGRN and STECF Workshops dealing with DCR relevant for stock assessment and implement appropriate actions;

d ) assess data quality of, *inter alia* catch-at-age estimates, ALKs, age-reading based on exchanges, and maturity sampling, and propose actions leading to quality improvement;

e ) review and assess the 3 years of experience of sampling discard data under the Data Collection Regulation with special reference to how representative these data are;

f ) define raising procedures for discards;

g ) identify emerging problems resulting from changes in the data collection procedures and propose actions to be taken to address their impacts on stock assessment input data.

PGCCDBS will report by 17 March 2006 for the attention of ACFM.

2005/2/ACFM20 The **Study Group on Management Strategies** [SGMAS] (Co-Chairs: Dankert Skagen, Norway, and John Simmonds, Scotland, UK) will meet 23–27 January 2006 at ICES Headquarters to:

a ) continue development of the framework and operational guidelines, started in SGMAS 2005, for the evaluation of fisheries management strategies;

b ) provide in particular an operational framework for fisheries management strategies for types of stocks that are not amenable to the "mainstream" HCRs, such as:

i ) short-lived species,

ii ) stocks where there is poor knowledge base or deteriorating data,

iii ) long-lived species;

c ) identify one or more examples of management strategy evaluation (possibly such as stocks evaluated by AGLTA) that have been carried out within guidelines similar to those provided by SGMAS and include these worked up examples as annexes to the guidelines;

d ) address ecosystem aspects of fisheries management, in particular the comments and requests from WGECO;

e ) explore methods for incorporating the influence of socio-economic factors into fisheries management strategies;

f ) explore approaches to development of management strategies for mixed fisheries incorporating developments from the workshop on simple mixed fisheries management models [WKMIXMAN];

g ) outline the kind of relevant information that will be required from other ICES WGs for management strategies as a first step to obtaining a coherent approach across the ICES WG structure.

SGMAS will report by 6 February 2006 for the attention of ACFM, as well as the Resource Management and the Living Resources Committees.

2005/2/ACFM21 The **Annual Meeting of Assessment Working Groups Chairs** [AMAWGC] (Chair: Martin Pastoors*, The Netherlands) will meet back-to-back with WGRED at ICES Headquarters from 30 January 14: 00 to 3 February 13: 00 2006 and in the margin of the ASC 2006 to:

a ) review the Table of Contents for the ICES Advisory Report for 2006 and for each Chapter identify which Groups shall contribute;

b ) review and plan further implementation of long-term management simulations and evaluations of recovery plans and harvest control rules as presented by, e.g. the Study Group on Management Strategies (SGMAS);

c ) further inclusion of the work of the Working Group on Regional Ecosystem Description (WGRED) in the ICES advisory process regarding fisheries;

d ) plan further implementation of fisheries-based advice by the Assessment Working Groups and integration of fisheries technology expertise, using the results of WKMIXMAN;

e ) review developments in stock assessment methodology in relation to the implementation in the Assessment Working Groups;

f ) make a road map of where the individual WGs should be moving in the medium and long term. This should include issues like assessment methods, surveys, basic scientific work, data collection, proactive development of management strategy options, mixed fisheries issues, ecosystem impacts, and impacts on ecosystem analysis.

AMAWGC will report by 3 March 2006 for the attention of ACFM.

2005/2/ACFM22 The **Fishery Statistics Liaison Working Group** [WGSTAL] (Chair: David Cross, Eurostat) will meet 2–3 May 2006 in Luxembourg to:

a ) review the cooperation between ICES and Eurostat and detail the future procedures within the framework of the ICES/Eurostat Partnership Agreement;

b ) review progress with the FIGIS/FIRMS project (for information);

c ) review the catch database for assessment;

d ) discuss the sources, quality, and use of data on non-reported landings;

e ) review the report of the Inter-Session Meeting of the CWP (Madrid, February 2006) and the plans for CWP-23 (Rome, 2007);

f ) review the progress with implementation by ICES and Eurostat of the finer breakdown of fishing areas for the reporting of catches (STATLANT 27A and EU legislation);

g ) review progress on the development of sustainability indicators.

WGSTAL will report by 25 May 2006 for the attention of ACFM.

2005/2/ACFM23 The **Study Group on the Bycatch of Salmon in Pelagic Trawl Fisheries** [SGBYSAL] (Chair: Marianne Holm, Norway) will work by correspondence in 2006 to:

a ) update the database created by the SGBYSAL in 2005 on disaggregated catch data. This work shall be done in cooperation with national laboratories. The database shall, for the time period "absolute week" 16–36 for 2000–2004 (and earlier if possible) include the gear types used and if possible the number of boats in the commercial fishery of mackerel, herring, blue whiting, and capelin in the Norwegian, Iceland, and Greenland Seas (ICES Divisions IIa, IIb, Va, and Vb), the Northern North Sea (Division IVa), and west of Ireland and Scotland (Divisions VI a and b; VII b,c,j & k) by ICES Division;

b ) explore and make available any additional data for estimating bycatches of Atlantic salmon in the pelagic fisheries in the Northeast Atlantic, including relevant information not included in the data on commercial catches. Where possible assess the reliability of such additional data;

c ) review any new methods used for intensive screenings of pelagic research hauls for the presence of post-smolts (small salmon in their first year at sea, generally < 45 cm) and older salmon;

d ) evaluate methods for assessment of and any information available on non-catch fishing mortality of Atlantic salmon in pelagic fishing gears.

SGBYSAL will report by 20 March 2006 for the attention of the Advisory Committee on Fishery Management, the Diadromous Fish and the Fisheries Technology Committees, as well as the WGNAS.

2005/2/ACFM24 [Agreed at the 2004 ASC] A **Workshop on *Nephrops* Stocks** [WKNEPH] (Chair: N. Bailey, UK) will meet 24–27 January 2006 at ICES Headquarters to:

a ) review feedback on *Nephrops* assessments from the area-based working groups (WGNSSK, WGNSDS, WGSSDS, and WGHMM) and follow up with recommendations for future action;

b ) review progress made on the identification of *Nephrops* metiers and fisheries and consider the implications for measurement of directed effort and the likely consequences for stock assessments;

c ) review progress made on the calculation of precision levels for the *Nephrops* landings and discard sampling programmes, and the consequences this may have for the design of these programmes;

d ) review new information on reporting levels for landings and examine the implications for assessments and advice;

e ) consider the application of fishery-independent methods in stock assessment and the provision of catch options;

f ) review progress made on the updates of sexual maturity parameters;

g ) continue the working groups' investigations on the applicability of alternative and current assessment techniques, focusing in particular on length-structured approaches and spatially-structured models and examining robustness to the particular features of *Nephrops* biology;

h ) evaluate the effects of mesh size regulations on the catchability of small *Nephrops*.

WKNEPH will report by mid-February for the attention of ACFM, as well as the Resource Management, the Fisheries Technology, and the Living Resources Committees.

2005/2/ACFM25 The **Working Group Elasmobranch Fishes** [WGEF] (Chair: Maurice Clarke, Ireland) will meet 14–21 June 2006 at ICES Headquarters to:

a ) update the description of elasmobranch fisheries (including those on deepwater sharks) in the ICES area and compile landings and discard statistics by ICES Subarea and Division;

b ) conduct and report on investigations of spatial dynamics of survey data for shelf-based species and investigate data from IBTS and other surveys;

c ) assess the status of stocks of spurdog, basking shark, skates and rays, lesser spotted dogfish, deepwater sharks, and porbeagle, and provide management options for these stocks;

d ) compile and collate catch data for pelagic sharks in the North Atlantic and attempt to disaggregate generic landings data into more specific groups;

e ) report on the development of a standard exchange format to facilitate the submission of biological, fisheries, discards, and survey data to WGEF. This could be based on existing data formats, though there is a need to have at least biological data by sex. The exact data requirements and formats will be finalized when appropriate and acceptable assessment methods are identified for the various stocks.

WGEF will report to ACFM by 14 July 2006 and make its report available for the attention of the Living Resources Committee.

2005/2/ACFM26 **A Workshop on Biological Reference Points for Northeast Arctic Haddock** [WKHAD] (Chair: K. Korsbrekke, Norway) will be established and will meet 6–10 March 2006 in Svanhovd, Norway, to:

a ) review and revise input data used in assessing the Northeast Arctic haddock;

b ) propose biomass and fishing mortality reference points based on the most appropriate time period;

c ) based on the evaluation framework of management plans adopted by ACFM (SGMAS 2005 and AGLTA 2005) evaluate the proposed and candidate HCRs in relation to long-term yield and year-to-year stability in TACs, taking into account the spasmodic recruitment observed for this stock;

d ) based on the review, comment on the evaluation framework and suggest improvements.

WKHAD will report by 31 March 2006 for the attention of ACFM.

2005/2/ACFM27 The **Workshop on Simple Mixed Fisheries Management Models** [WKMIXMAN] (Co-Chairs: Stuart Reeves, UK, and Sarah Kraak, The Netherlands) will meet 9–13 January 2006 at ICES Headquarters to:

a ) define a framework for simple models of mixed fisheries which can be used to obtain consistency between management (TAC and/or effort) advice for species caught together, given the current availability and accessibility of data;

b ) provide operational guidelines for the use of such models.

WKMIXMAN will report by 20 January 2006 for the attention of ACFM, as well as the Resource Management and the Living Resources Committees. The following external experts will be considered for invitation: Bob Mohn, Ana Parma, Mike Sissenwine, Carl Walters, John Pope, (Tropical fisheries).

2005/2/ACFM28 The **ICES/EIFAC Working Group on Eels** [WGEEL] (Chair: W. Dekker, The Netherlands), will meet 23–27 January 2006 in Rome, Italy, to:

a ) describe the eel stock and fisheries in Europe, focusing on improved spatial coverage (cf. Moriarty and Dekker, 1997);

b ) assess trends in recruitment, stock, and fisheries indicative for the status of the stock, and the impact of exploitation;

c ) evaluate the effect of glass eel restocking on the restoration of the spawning stock in relation to the established rebuilding goals, considering options from no re-stocking to full re-stocking of all available glass eel;

d ) review and revise where appropriate the catch statistics for European eel;

e ) discuss EU considerations regarding a management plan for European eel and comment in relation to the precautionary approach;

f ) consider the feasibility of potential inclusion of spawner quality parameters in stock management advice, specifically focusing on the quantification of the impact of pollution and parasitism;

g ) describe and advise on the tools for post-evaluation of the status of the stock and the impact of management measures on stock and fisheries;

h ) continue work to expand the databases and knowledge of eels, to provide a more complete basis for recovery plans of the stocks/populations.

WGEEL will report by 15 February 2006 for the attention of ACFM and the Diadromous Fish, the Living Resources, and the Resource Management Committees.

## Advisory Committee on the Marine Environment (ACME)

2005/2/ACME01 The **Advisory Committee on the Marine Environment** [ACME] (Chair: P. Keizer, Canada) will meet:

**A)** at ICES Headquarters from 24 to 26 May 2006, including jointly with ACE and ACFM for a period during 26 May at Council expense to:

a ) prepare the scientific advice and information on the status and outlook for the marine environment, including contaminants, requested by the environmental Commissions (OSPAR, HELCOM, EC), other regulatory agencies, and Member Countries of ICES, and any other advice which the Committee or Council may consider relevant;

b ) contribute, as required, to the preparation of advice to other regulatory bodies in collaboration with the Advisory Committee on Ecosystems (ACE) and the Advisory Committee on Fishery Management (ACFM);

c ) improve the form of advice and methods to reflect the need for environment related advice and advice to be based on long-term considerations;

d ) consider the strategy for the development of the advice and an ACME action plan;

e ) Provide advice and guidance to the Science Committees on future scientific needs and priorities related to the work of ACME.

With the approval of the General Secretary, the Chair of the Advisory Committee on the Marine Environment may invite relevant experts to attend specific parts of the meetings at Council expense.

**B)** for **Consultations** to be held at national expense during the 2006 ASC to:

a ) establish and review working procedures for ACME;

b ) propose and finalize Terms of Reference, dates, and venues for meetings of groups reporting to ACME in 2007;

c ) conduct other business related to the functioning of ACME, including proposals for work to be done by other committees and expert groups.

The Consultations will be open to Delegates, the Chair of the Consultative Committee, ACME members and their alternates, *ex officio* members, Chairs of groups reporting to ACME or their designates, Observers to ACME, and other experts at the invitation of the Chair of ACME.

2005/2/ACME02 **A Joint ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open-Sea Areas** [WKIMON] (Co-Chairs: K. Hylland, Norway, R. Law, UK, and C. Moffat*, UK) will meet 17–19 January 2006 at ICES Headquarters to:

a ) develop guidelines for integrated biological effects and chemical monitoring, including:

- specific guidelines for the integration of chemical and biological effects techniques with special emphasis on those parameters that have become mandatory in the OSPAR Coordinated Environmental Monitoring Programme;
- guidelines towards integrated chemical and biological effects monitoring for the entire range of issues in the OSPAR Joint Assessment and Monitoring Programme.

WKIMON will report by 6 February 2006 to the ACME and the Marine Habitat Committee.

2005/2/ACME03 The **ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea** [STGQAC] (Chair: Michael Gluschke, Germany) will meet 7–10 February 2006 in Gothenburg, Sweden, to:

a ) prepare a review of nutrient control sample data, SD, and RSD values over a 3-year period;

b ) review and finalize technical note on co-factor determination;

c ) harmonise and republish the technical notes on contaminant determination in fish with the technical notes on the determination of persistent organic pollutants in biota;

d ) review and finalize the technical note on method validation with respect to the limit of detection and limit of determination;

e ) review and finalize technical note on control charts;

f ) review and provide comments on the draft technical note on mercury determination in biota and sediments;

g ) review and provide comments on the technical note on method validation with respect to detection limit and limit of determination;

h ) harmonise and republish the technical notes on organic pollutants determination in biota;

i ) meet with STGQAB for the discussion of the technical note on co-factor analyses and the examples of control chart use for biological analyses;

j ) Review and report on the progress of the HELCOM project group on harmonization of COMBINE and Water Framework Directive MON-PRO and, in particular, the QA requirements for the WFD;

k ) To review and revise the quality assurance section pf the PLC Guidelines to be consistent with the quality assurance section of the COMBINE Manual.

STGQAC will report by 4 March 2006 for the attention of ACME and the Baltic, the Marine Habitat, and the Oceanography Committees.

2005/2/ACME04 The **ICES/OSPAR/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea** [STGQAB] (Interim Chair: Johan Wikner*, Sweden) will meet 14–16 February 2006 at ICES Headquarters to:

a ) Review and finalize the guidelines for acceptability of biological sampling and analytical practices required by monitoring programmes;

b ) review and evaluate, and report on the status of implementation and the practical use of OSPAR/ICES quality assurance guidelines in marine monitoring and assessment programmes in the OSPAR/ICES/HELCOM area and provide guidance for future assessment programmes;

c ) review and report on the quality assurance measures proposed for monitoring and assessment of EcoQOs;

d ) evaluate and report on the outcome of relevant workshops/intercalibration exercises/ring tests, and document future events, including progress with the implementation of phase II of the BEQUALM scheme;

e ) review and report on the progress with, and offer further advice on the development of QA of biological measurements in relation to OSPAR JAMP products;

f ) review and report on the quality assurance measures being adopted in the marine monitoring and assessment aspects of the EC Water Framework Directive;

g ) review and report on progress in the development and use of the ICES Biological Community Database.

STGQAB will report for the attention of the ACME and the Marine Habitat and the Oceanography Committees by 4 March 2006, as well as to the meeting of the OSPAR Working Group on Concentrations, Trends and Effects of Substances in the Marine Environment (SIME) by 25 February 2006.

2005/2/ACME/05 The **ICES Working Group on Introduction and Transfers of Marine Organisms** [WGITMO] (Chair: S. Gollasch, Germany) will meet 16–17 March 2006 in Oostende, Belgium, to:

a ) synthesize and evaluate National Reports, and report on the audience for and the use of these reports;

b ) prepare a report summarizing introductions and transfers of marine organisms into the North Sea and wherever possible their consequences as input to the 2006 meeting of REGNS (Regional Ecosystem Study Group for the North Sea), and to review and update sub-regional data tables and, where necessary include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop;

c ) prepare a summary of National Reports (1992 to date);

d ) plan Aliens Species Alert reports including evaluation of impacts and increasing public awareness;

e ) develop guidelines for rapid response and control options.

WGITMO will report by 11 April 2006 for the attention of ACME.

2005/2/ACME06 The **ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors** [WGBOSV] (Chair: S. Gollasch, Germany) will meet in Oostende, Belgium, for 3 days during the week beginning 13 March 2006 to:

a ) prepare a documented response to the report from the CONSSO Issue Group on Sustainable Shipping (IGSS) and to:

  i ) review, comment, and report on the final version of the Scoping Study prepared under IGSS,

  ii ) provide recommendations for ACME regarding any “post-scoping” study phase;

b ) discuss and report on the feasibility of using the CONSSO report as a basis for preparing a draft ICES Code of Best Practice for Ballast Water Management;

c ) review, evaluate, and report on existing or developing port sampling and monitoring strategies used by ICES Member Countries for non-indigenous species and recommend cost-effective modifications as required;

d ) continue its global review of shipping vectors through the participation of representatives from ICES, IMO, IOC, CIESM, BMB, and PICES Member States and of invited experts;

e ) critically review and report on the status of ballast water research with an emphasis on new developments in ballast water treatment technology and its evaluation;

f ) review, evaluate, and report on existing and emerging hull fouling regulations and treatment options.

WGBOSV will report by 4 April 2006 for the attention of ACME.

## Advisory Committee on Ecosystems

2005/2/ACE01 The **Advisory Committee on Ecosystems** [ACE] (Chair: Simon Jennings, UK) will meet 24–25 May 2006 at ICES Headquarters, and on 26 May together with ACFM at Council expense to:

a ) prepare scientific advice and information, as requested by the Commissions (OSPAR, HELCOM), other regulatory agencies, and Member Countries of ICES, and any other advice which the Committee or Council may consider relevant;

b ) contribute, as required, to the preparation of advice to other regulatory bodies in collaboration with the Advisory Committee on the Marine Environment (ACME) and the Advisory Committee on Fishery Management (ACFM);

c ) improve the form of advice and methods to reflect the need for ecosystem-based advice and advice to be based on long-term considerations;

d ) consider the strategy for the development of the advice and an ACE action plan. Provide advice and guidance to the Science Committees on future scientific needs and priorities related to the work of ACE.

With the approval of the General Secretary, the Chair of ACE may invite relevant experts to attend specific parts of the meetings at Council expense.

For **Consultations** at national expense during the ASC 2006 week to:

a) establish and review working procedures for ACE;

b) propose Terms of Reference, dates, and venues for meetings of groups reporting to ACE in 2007;

c) conduct other business related to the functioning of ACE, including proposals for work to be done by other committees and expert groups.

The Consultations will be open to Delegates, ACE members and their alternates, *ex officio* members, Chairs of groups reporting to ACE or their designates, Observers to ACE, and other experts at the invitation of the Chair of ACE.

2005/2/ACE02 The **Study Group on Management of Integrated Data** [SGMID] (Co-chairs: Peter Wiebe, USA, and Christopher Zimmermann, Germany), should meet in conjunction with WGMDM at ICES Headquarters from 8 to 10 May 2006 to:

a) review the implementation of the new ICES data policy;

b) review the status of data integration of external data sets currently not available to ICES, but needed for producing the advice relevant to an ecosystem-based management;

c) evaluate the outcome of the ICES data user questionnaire;

d) investigate the need for quality assurance processes and indicators, and any existing standards. If no standards exist, propose a plan for quality process and/or indicator development;

e) review data policies of individual ICES expert groups and flag differences between those and the new ICES policy, while taking account of new developments;

f) together with WGMDM, complete the planning of the ASC 2006 Theme Session on Data Management and Integration (including the formation of a subgroup for the selection of presentations to meet later in the year);

g) prepare for merging WGMDM and SGMID activities into a new group of data managers, users, and scientists called the Working Group on ICES Data and Information Management (WGDIM).

The Group will report for the attention of ACE by 19 May 2006.

2005/2/ACE03 The **Working Group for Regional Ecosystem Description** [WGRED] (Chair: Jake Rice, Canada) will meet back-to-back with AMAWGC at ICES Headquarters from 30 January 14:00 to 3 February 13:00 2006 and in the margin of the ASC 2006 to:

a) consider feedback from ICES Expert Groups and Advisory Groups, and clients of *ICES advice*, regarding the report template for the ecosystem description in the advisory reports, and adapt the template as appropriate;

b) review and propose any revisions to the proposed Table of Contents (ToC) for the ICES Advisory Report for 2006. This ToC proposal will be drafted by the Chairs of the advisory committees for consideration at the MCAP January 2006 meeting;

c) for each Eco-region to be used in the 2006 *ICES advice*, review drafts of Ecosystem Overviews that have been prepared by teams of national experts, as appointed by the Chair, for clarity, accuracy, consistency, and usefulness in the ICES Advisory Reports, and revise as necessary;

d) identify and document any major environmental or anthropogenic events in each Eco-region that should be taken into special account in ICES assessments and advice in 2006, and to the extent possible recommend ways in which this information could be used by Expert Groups and Advisory Committees;

e) review the use of the Eco-region divisions in 2005 assessments and advice, and propose and justify changes, if necessary in the regional delineations;

f) consider further the development of regional assessments based on an incremental approach, taking on board existing knowledge and incorporating integrated assessments when such become available.

The Working Group will report by 1 March 2006 for the attention of ACE, ACFM, and ACME. The report of this Group and information compiled will be made available to relevant fisheries and ecosystem assessment groups.

2005/2/ACE04 The **Working Group on Deepwater Ecology** [WGDEC] (Chair: Mark Tasker, UK) will meet 5–8 December 2005 in Miami, USA, to:

a) compile a list of seamounts in the OSPAR area and classify them initially based on physical attributes;

b) based on evidence to be sought from fisheries managers and other sources, review the distribution of fishing activity on seamounts;

c) review possible classifications of deepwater habitats in the North Atlantic and frameworks for describing sensitivity to fishing activities;

d) examine possible ways of describing fish communities on seamounts;

e) report on new information on the distribution and status of cold-water corals in the North Atlantic and recommend ways by which information on the occurrence of these species might be made more easily available and kept up to date;

f) The Chairs of WGDEC and WGDEEP (Mark Tasker, UK, and Paul Marchal, France) will cooperate to ensure that expertise on cold-water corals and on deepwater fishing is available at the meeting.

WGDEC will report by 31 January 2006 for the attention of ACE and the Living Resources Committee.

2005/2/ACE05 The **Working Group on Ecosystem Effects of Fishing Activities** [WGECO] (Chair: S. Rogers, UK) will meet for 8 days from 5 to 12 April 2006 at ICES Headquarters to:

a) review and report on the full effects of fishing on the North Sea ecosystem, grouped according to the suite of ecosystem components identified in previous meetings and where necessary in a regional context, with an emphasis on:

ii ) the direct effects of demersal trawling on benthic species,

iii ) the ecosystem effects of the small-meshed fisheries targeting fish not for human consumption,

iv ) the ecological consequences of discarding, and

v ) the indirect effects of fishery removals on community-scale indicators identified as promising at past WGECO meetings;

b) complete the identification and selection of key pressures of human activities on the state of the marine ecosystem begun in 2005, and identify indicators, metrics, data series, and reference levels (as appropriate) for these pressures;

c) examine and take forward recommendations of the Study Group on Management Strategies (SGMAS) (meeting in early 2006) in their review of WGECO suggestions for ways in which ecosystem considerations could be incorporated into fisheries management strategies;

d) review and report on the work of WGFE 2006 in their further development of the EcoQO on changes in the proportions of large fish and hence the average weight and average maximum length of the fish community, and complete the evaluation of the utility of size-based indicators in management frameworks;

e) for each area for which a Regional Advisory Council is established, or is under development, review the preparedness of ICES to advise on the ecosystem effects of the fisheries relevant to the RAC. Where deficiencies are identified, consider the risks posed by the gaps, and suggest feasible steps to redress the gaps in the short or medium term;

f) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the "overview" assessment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant.

WGECO will report for the attention of ACE by 15 May 2006.

2005/2/ACE06 The **Working Group on Marine Mammal Ecology** [WGMME] (Chair: M. Scheidat,* Germany) will meet from 30 January to 2 February 2006 at ICES Headquarters to:

a) in relation to fisheries that have a significant impact on small cetaceans and other marine mammals, review and report on any new information on population sizes, bycatches, or mitigation measures;

b) for each WGRED region, review and report on the usefulness of available prey data to quantify marine mammal-prey interactions for multispecies modelling purposes, and provide recommendations for future sampling schemes for quantification of marine mammal-prey interactions;

c) finalize preparations for a Workshop in 2007 (to be held back-to-back with WGMME meeting) on health and immune status, disease agents, and links to environment quality;

d) complete work on a *Cooperative Research Report* on threats to marine mammal populations based on a compilation of prior reports of this and former marine mammal working/study groups;

e) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the "overview" assessment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant.

WGMME will report by 2 March 2006 for the attention of ACE.

2005/2/ACE07 A **Workshop co-sponsored by OSPAR on Time-Series Data relevant to Eutrophication Ecological Quality Objectives** [WKEUT] (Co-Conveners: T. Smayda, USA, and G. Ærtebjerg, Denmark) will be held 11–14 September 2006 in Brorfelde (close to Holbæk), Denmark, to:

a ) examine long-term time-series data sets available for European and relevant North American coastal sites and evaluate specific issues relevant to EcoQO premises and standards through a comparative analysis of the regional and temporal variations exhibited in long-term time-series observatories;

b ) examine the correlations between the patterns in nutrient levels and cycles together with:

i ) changes in the abundance, composition, primary production, and dynamics of phytoplankton,

ii ) changes in blooms of harmful and novel species, and

iii ) changes in oxygen patterns and other water quality parameters. This comparative, regional analysis will seek to establish the properties of nutrient-regulated behaviour of plankton dynamics, regionally and temporally, and potential mitigation of undesirable changes where they occur.

WKEUT will report to ACE and to the Marine Habitat and the Oceanography Committees by 28 April 2006.

2005/2/ACE08 A **Study Group on Effects of Sound in the Marine Environment** [SGESME] (Chair: Magnus Wahlberg*, DK) will be established and will meet by correspondence in 2005/2006 to:

a ) maintain and update an online document describing the physics of sound in the marine environment. The first draft of this is the second chapter of the second AGISC report;

b ) review any new information on the effects of sonar on marine mammals and fish;

c ) review information on mitigation measures to reduce any effects of sound on the marine environment;

d ) review information on the effects of wind farm sounds on the marine environment;

e ) develop a two-year work plan to review other aspects of sound in the marine environment.

SGESME will report by 20 March 2006 for the attention of ACE and WGFAST (FTC).

## Baltic Committee (BCC)

2005/2/BCC01 **A Study Group on Baltic Ecosystem Health Issues in support of the BSRP** [SGEH] (Chair: E. Andrulewicz, Poland) will meet 9–11 November 2005 in Kaliningrad, Russia, to:

a ) report on new developments regarding ecosystem-based approaches to management of the marine environment, with particular reference to progress in ICES, HELCOM, EU, and US EPA;

b ) further develop the Baltic ecosystem health concept in relation to the main ecological problems: eutrophication, hazardous substances, overfishing, and biodiversity (including xenodiversity and habitat destruction);

c ) develop reference levels for selected EcoQ elements;

d ) continue discussion and propose, in cooperation with HELCOM MONAS (MONPRO), reference levels for a set of ecological quality elements (EcoQ elements) that reflect associated ecological quality objectives (EcoQOs) for eutrophication, hazardous substances, impacts of fishing, and loss of biodiversity (including xenodiversity and habitat destruction);

e ) update and finalize deliverables from SGEH Study Group developments undertaken during the last three years;

f ) identify potential contributions to the 2006 ASC Theme Session on "Integrated assessments in support of regional seas ecosystem advice – beyond quality status reporting";

g ) identify existing developments on socio-economic driving forces for pollution in the Baltic Sea. Based on this identification recommend strategies for further development;

h ) evaluate and comment on the external review on the 2005 SGEH report.

SGEH will report by 13 January for the attention of the Baltic Committee and ACE.

2005/2/BCC02 An **ICES/BSRP Sea-going Workshop on Fish Disease Monitoring in the Baltic Sea** [WKFDM] (Co-Chairs: Thomas Lang*, Germany, and G. Rodjuk*, Russia) will meet 5–12 December 2005 onboard RV Walther Herwig III to:

a ) provide training and intercalibration related to methodologies applied in fish disease monitoring in the Baltic Sea;

b ) further develop and assess health indicators and indices appropriate for monitoring and assessment purposes;

c ) establish a closer collaboration between institutes involved in fish disease monitoring in the Baltic Sea;

d ) build the basis for incorporation of fish disease surveys into the revised HELCOM monitoring programme.

WKFDM will report by 31 January 2006 for the attention of the Baltic Committee.

2005/2/BCC03 The **Study Group on Baltic Fish and Fisheries Issues in the BSRP** [SGBFFI] (Co-Chairs: Maris Plikshs, Latvia, and Henn Ojaveer, Estonia) will meet 20–23 February 2006 in Vilnius, Lithuania, to:

a ) finalize the databases on herring and sprat growth data and environmental variables;

b ) finalize meta-analyses of growth changes of Baltic herring and sprat, and conduct growth modelling for stock development forecasts;

c ) review knowledge of population structure of flounder stocks in the Baltic and propose possible stock assessment units;

d ) determine environmental factors, including open-sea and coastal interactions and their influence on fish recruitment, especially for herring and flounder;

e ) apply the coastal fish database for calculation of the slope of the size spectra for some selected coastal commercial fish species and try to relate these changes to fishing effort-related indices;

f ) update the Baltic sea overview, taking into account open-sea and coastal interactions;

g ) take into account the recommendations of the Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea (WKIAB).

SGBFFI will report by 31 March 2006 for the attention of the Baltic Committee.

2005/2/BCC04 The **Study Group on Baltic Sea Productivity Issues in Support of the BSRP** [SGPROD] (Chair: Bärbel Müller-Karulis, Latvia) will meet 6–7 April 2006 in Tallinn, Estonia, to:

a ) review the results of the work of the BSRP lead laboratories on zooplankton and phytobenthos, including monitoring and survey strategies developed within the BSRP;

b ) analyse the technical functioning of the open-sea survey conducted during 2005, and develop a proposal for a combined ecosystem-fisheries survey;

c ) test the performance of the developed system of indicators in characterizing the productivity state of different areas of the Baltic Sea based on existing long-term data, the results of the open-sea survey conducted during 2005, and the results of trophic network modelling;

d ) characterize the productivity state of selected parts of the Baltic Sea ecosystem in 2005 based on the results of the open-sea surveys, using identified suitable pro-

ductivity indicators as a support for the work of fisheries-related groups (e.g. WGBFAS, SGBFFI, SGMAB);

e ) develop a strategy for ecosystem monitoring in BSRP Phase II, based on analysis of available technologies, sampling design, and cost-benefit considerations;

f ) plan a meeting in 2007, as a joint or overlapping meeting with at least one other Baltic EG (e.g. WGGIB, SGEH) to promote the development of integrated ecosystem knowledge and the integration of work across expert groups;

g ) review and take necessary action on the outcome of the Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea (WKIAB).

SGPROD will report by 10 April 2006 for the attention of the Baltic Committee.

2005/2/BCC05 The **Study Group on Baltic Ecosystem Model Issues in Support of the BSRP** [SGBEM] (Chair: W. Fennel, Germany) will meet 24–26 April 2005 in Helsinki, Finland, to:

a) review new developments in Baltic ecosystems modelling. Identify models to support the other SGs of the BSRP;

b) identify data sets of high priority for modelling issues and ensure a bi-directional exchange of information with the other SGs of the BSRP;

c) review the knowledge of the effects of fish acting down the foodweb to nutrients, and to which extent variations in nutrients may act up the foodweb to fish;

d) establish methods to bridge the gap between fish stock models and ecosystem models for the Baltic (prepared intersessionally);

e) report on spatial distribution of fish (prepared intersessionally);

f) provide input and specific contributions to the 2006 ASC Theme Session on "Integrated assessments in support of regional seas ecosystem advice – beyond quality status reporting";

g) evaluate and comment on the external review on the 2005 SGBEM report in general and with regard to the objectives of the SG;

h) take into account the recommendations of the Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea [WKIAB].

SGBEM will report by 31 May 2006 for the attention of the Baltic Committee.

2005/2/BCC06 The ICES-IOC-SCOR **Study Group on GEOHAB Implementation in the Baltic** [SGGIB] will be renamed as the ICES-IOC-SCOR **Working Group on GEOHAB Implementation in the Baltic** [WGGIB] (Chair: M. Viitasalo, Finland) and will meet 6–7 April 2006 in Gdynia, Poland, to:

a ) report and discuss new findings on HABs and HAB modelling in the Baltic;

b ) update the checklist of the harmful species of the Baltic Sea;

c ) estimate the health hazard of cyanobacteria and dinoflagellate toxins to humans and review the concentrations of HAB toxins in the upper trophic levels of the Baltic foodweb;

d ) finalize the proposal for a Cooperative HAB study in the Baltic Sea and agree upon its implementation;

e ) take into account the recommendations of the Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea (WKIAB).

WGGIB will report by 12 May 2006 for the attention of the Baltic Committee.

2005/2/BCC07 The **Study Group on Multispecies Assessment in the Baltic** [SGMAB] (Co-Chairs: E. Aro, Finland, and F. Köster, Denmark) will meet 9–12 May 2006 in Helsinki, Finland, to:

a) review the progress of the stomach sampling programme, its sampling protocols and set-up of formats for inclusion of new information in the international stomach content database;

b) update and correct the multispecies database (i.e. catch in numbers, maturity ogives, mean weight-at-age) for the Eastern and Western Baltic to allow bi-annual key-runs for both areas;

c) validate the consumption rates for Eastern Baltic cod considering the impact of low oxygen concentration, and revise the Western Baltic cod consumption rates;

d) develop a concept for the inclusion of environmentally sensitive and spatially explicit stock-recruitment relationships into multispecies predictions;

e) include coupled weight-at-age, proportion of maturity-at-age, and consumption process models in multispecies prediction models;

f) coordinate and interlink the SG with multispecies and ecosystem modelling activities in the Baltic with relevant BSRP Study Groups, ICES multispecies groups, and EU-projects;

g) explore the effect of heterogeneous distribution of predator and prey on species interactions in the Central Baltic and investigate the need and possibilities to integrate this heterogeneity into multispecies models;

h) develop, apply, and validate enhanced multispecies models, e.g. the Stochastic MultiSpecies model (SMS);

i) implement and evaluate the suitable medium- to long-term projection methodology for simulation of stock and catch development under different fishery scenarios, taking into account HCR for cod and management objectives for Baltic herring and sprat;

j) take into account the recommendations of the Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea (WKIAB).

SGMAB will report by 16 June 2006 for the attention of the Baltic Committee.

2005/2/BCC08 The **Study Group on Ageing Issues of Baltic Cod** [SGABC] (Chair: J. Modin, Sweden) will meet 16–19 May 2006 in Gdynia, Poland, to:

a ) demonstrate statistical tools that can be used to calibrate otolith and fish growth and to estimate age compositions of historical data based on otolith biometrics of Baltic cod;

b ) update the otolith growth model and evaluate its usefulness for an assessment of historical age compositions of Baltic cod;

c ) report on the progress of the compilation of biometric data of Baltic cod otoliths that have been collected from research surveys, market and sea sampling in 2001 to 2005;

d ) develop and advise on the reconstruction of historical age compositions from otolith biometrics. This activity should include a plan for an update of historical otolith weight data for Baltic cod stocks;

e ) perform an in-depth analysis of differences in age-reader interpretation of otolith spatial patterns and explore the usage of metric measurements of otolith structures as a solution to minimize the divergence in age estimation of Baltic cod;

f ) evaluate the use of traditional age determination combined with recent development in image analysis to include back-calculation of length-at-age and growth based on age structures defined by age-readers;

g ) organize the 2006 meeting in parallel sessions, which will allow age-readers to meet separately and discuss interpretations of otolith structures in view of intersessional exchange programmes. The session will be co-chaired by Lotte Worsøe Clausen, Denmark.

SGABC will report by 15 June 2006 for the attention of the Baltic Committee and WGBFAS.

2005/2/BCC09 An ICES/BSRP/HELCOM **Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea** [WKIAB] (Co-Chairs: C. Möllmann*, Denmark, B. Müller-Karulis*, Latvia, and A. Andrushaitis*, BSRP) will meet 1–4 March 2006 in Tvärminne, Finland, to:

a ) develop a framework for an IA of the Baltic Sea, focusing on the role of the environment for fish and fisheries as well as the impact of fishing on the ecosystem, and considering the requirements of the HELCOM Monitoring and Assessment Strategy, the HELCOM Baltic Sea Action Plan, the European Marine Strategy and the UNEP Global Assessment of the State of the Marine Environment;

b ) review existing Integrated Assessments (IA) in the world's oceans and the suitability of their conceptual and methodological application for the Baltic Sea;

c ) review the information needs and data availability for IAs, with a view to establishing a metadatabase for key data series and creating a common network of expertise involving relevant ICES, HELCOM and BSRP groups;

d ) propose a future structure for the ICES Baltic Committee study/working groups and identify ToRs these groups should address to implement the ecosystem approach based on the information needs identified in ToR c);

e ) conduct trial IAs for selected sub-regions of the Baltic Sea as a basis for contributions to the Theme Session on "Integrated assessments in support of regional seas ecosystem advice - beyond quality status reporting" at the ICES ASC 2006;

f ) develop a monitoring strategy for future IAs taking into account existing monitoring programmes and involving relevant ICES, HELCOM and BSRP groups taking into account other international requirements (such as EU Directives), e.g. enhancing present fish surveys to ecosystem surveys, developing cost-effective methods of monitoring, and improving compatibility and integration of physical, chemical, biological and fisheries data sources;

g ) provide WGBFAS with environmental information relevant to commercial fish stocks;

h ) provide HELCOM with information on the effects of fishing on the Baltic Sea ecosystem.

WKIAB will present a preliminary report for the attention of the Baltic Committee at the 2006 Annual Science conference and to the attention of HELCOM MONAS and HELCOM HABITAT.

## Diadromous Fish Committee (DFC)

2005/2/DFC01 The **Study Group on Salmon Scale Readings** [SGSSR] (Chair: Jari Raitaniemi, Finland) will be renamed as the **Study Group on Salmon Age Determination** [SGSAD] and meet 14–15 November 2006 in Riga, Latvia, to:

a ) review available image analysis systems, in particular those which are in use for age determination of salmon;

b ) evaluate the status of analysis of Baltic salmon otoliths, and in particular the possibilities to increase the resolution to facilitate interpretation of otolith microstructure;

c ) review preliminary results of an investigation which studied possibilities to assess post smolt survival rate based on scale growth pattern;

d ) evaluate the results of a scale reading blind test;

e ) prepare a workplan describing the Group's cooperation with the BSRP Groups and the work required to finalize the Group's activities;

f ) discuss terminology: different dates for the birthday of salmon are in use in different laboratories;

g ) discuss opportunities for networking with EFAN/TACADAR (European Fish Ageing Network).

SGSSR will report by 9 June 2006 for the attention of the Diadromous Fish Committee and the Baltic Committee.

## Fisheries Technology Committee (FTC)

2005/2/FTC01 The **Working Group on Fisheries Acoustics, Science and Technology** [WGFAST] (Chair: David A. Demer, USA) will meet 27–30 March 2006 in Hobart, Tasmania, to:

a ) Examine work in the following research areas:

i ) Fish behaviour in response to noise and other vessel-related stimuli,

ii ) Survey techniques for epi-benthic, epi-pelagic, and shallow-water species,

iii ) Acoustical species ID techniques for multispecies assessments, ecosystem studies, bycatch reduction, and objective and automated data processing,

iv ) Instrumentation, survey design, and data analysis techniques for studying aquatic ecosystems, with special attention to the estimation and use of measurement uncertainty in statistical analyses of multi-variate time-series, and techniques for integrating multidisciplinary data to elucidate functional relationships,

v ) Target strength (modelling and measurements),

vi ) Given that numbers of noise reduced vessels have been deployed, WGFAST should review the procedures and practice of noise specification on active research vessels. The review should consider the archival of existing noise specifications and their acquisition parameters. Recommendation for future action should be made based on this review;

b) Review the reports of the:

i ) Planning Group on the HAC (PGHAC) common data exchange format,

ii ) Study Group on Baltic Herring TS (SGTSEB),

iii ) Study Group on Acoustic Seabed Classification (SGASC),

iv ) Study Group on Collection of Acoustic Data from Fishing Vessels (SGAFV),

v ) evaluate a report from a Task Force lead by David Somerton, USA, to give the state-of-the-art in optical imaging and analysis technologies and define the ICES community's requirements for additional optical technology.

WGFAST will report by 1 May 2006 for the attention of the Fisheries Technology Committee.

2005/2/FTC02 The **Study Group on Collection of Acoustic Data from Fishing Vessels** [SGAFV] (Chair: Bill Karp, USA) will meet 25–26 March 2006 in Hobart, Tasmania, Australia, to:

a ) update, summarize, and report on information on research which involves collection of scientific acoustic data from commercial vessels;

b ) develop recommendations for methods and guidelines for collection of acoustic data to address specific ecosystem monitoring, stock assessment and management objectives, including: acoustic system calibration and performance monitoring, characterization of radiated vessel noise, comparability of results, survey design, biological sampling, data interpretation and analysis, and data storage and management; and

c ) prepare background material, guidelines, methods, and recommendations for publication in the *Cooperative Research Report* series.

SGAFV will report by 1 May 2006 for the attention of the Fisheries Technology Committee and make its report available to WGFAST.

2005/2/FTC03 The **Study Group on Acoustic Seabed Classification** [SGASC] (Chair: John Anderson, Canada) will meet in Hobart, Tasmania, from 31 March to 2 April 2006 to:

a ) review and evaluate progress in:

i ) acoustic seabed classification systems, acoustic technologies, theoretical complexities and limitations,

ii ) acoustic data collection procedures and ground-truthing methods for supervised and unsupervised classification of seabeds and habitats, considering issues of measurement scale and integration of data products,

iii ) metadata standards for acoustic systems, including single-beam (SBS), multibeam (MBS), and sidescan sonars (SSS),

iv ) practical applications of acoustic seabed classification (ASC) products in the management and conservation of coastal resources;

b ) intersessionally prepare a draft report and make it available for the WGFAST meeting of 27–30 March and receive and include comments from WGFAST;

c ) finalize draft of the *Cooperative Research Report* on "Acoustic Seabed Classification of Coastal and Continental Shelf Ecosystems", taking comments by WGFAST into account.

SGASC will report by 1 May 2006 for the attention of the Fisheries Technology and the Marine Habitat Committees, as well as for ACE and the Working Group on Fisheries Acoustics and Science Technology.

2005/2/FTC04 A second **Workshop on Unaccounted Fishing Mortality** [WKUFM 2] (Chair: M. Breen*, UK) will meet during the second half of 2006 to:

a ) identify measurable components of unaccounted fishing mortality; and

b ) define indices for assessing their relative impacts in key fisheries, for different capture methods.

WKUFM will report by 30 April 2006 for the attention of the Fisheries Technology Committee, the Study Group on Unaccounted Fishing Mortality (SGUFM), and the Working Group on Fishing Technology and Fish Behaviour (WGFTFB) and all stock assessment WGs.

2005/2/FTC05 The **Study Group on Survey Trawl Standardization** [SGSTS] (Chair: Dave Reid, UK) will meet in conjunction with the 2006 meeting of WGFTFB in Izmir, Turkey, from 1 to 2 April 2006 to:

a) produce documented generic protocols for using net performance monitoring equipment in bottom trawl surveys including new sensors;

b) produce generic guidelines on:
- net drawings,
- trawl procurement and construction,
- rigging before surveys,
- net repair and replacement on surveys,
- personnel training;

c) produce specific guidelines on the above for the North Sea IBTS;

d) define procedures for calibration in the specific case of gear changes;

e) provide report on the differences in GOV trawls deployed within the IBTS;

f) report on development of the Norwegian Survey Trawl Project;

g) define chapters and contents of a proposed *Cooperative Research Report* – including writing responsibilities and timetable.

SGSTS will report by 1 May 2006 for the attention of the Fisheries Technology, the Living Resources, and the Resource Management Committees and make its report available to WGFTFB and WGIBTS.

2005/2/FTC06 The **ICES/FAO Working Group on Fishing Technology and Fish Behaviour** [WGFTFB] (Chair: Norman Graham, Norway) will meet 3–7 April 2006 in Izmir, Turkey to:

a ) The WG shall work intersessionally in topic groups to prepare documents on the following topics in continuation of ongoing work:

- review the species and size selectivity issues relating to commercial and survey pelagic and semi-pelagic trawls,
- explore the means by which it can best provide appropriate information for assessment working groups and ACFM in fishery- and ecosystem-based advice. This will include the information required for fisheries-based forecasts, technological changes and changes in fishing practices, implementation of regulations and other fleet adaptations, ecosystem effects of fishing, and potential mitigation measures. This advice will be focused on the North Sea and address the assessment WG tasks as identified in the report of AMAWGC,
- continue to work on alternative fishing gears for traditional species that are environmentally friendly and responsible fishing methods, reporting to WGFTFB in 2006. This work will be undertaken by the relevant Topic Group, which will continue its work for another year,
- continue work on the use of multiple size selection devices in towed gears, reporting to WGFTFB in 2006. This work will be undertaken by the relevant Topic Group, which will continue its work for another year;

b) establish a new topic group that will work intersessionally to:

- review and update the existing "Definitions and classification of fishing gear categories" to the same detail level as in the FAO Technical Paper 222. As background for this work the group will contact appropriate national and international fisheries management bodies to determine the current status and usage of gear classifications, in collaboration with the FAO Working Party on Fisheries Statistics. The group will identify inconsistencies between adjacent areas and make recommendations for any actions needed to harmonise the use of gear classifications. The group will also identify specific gear parameters that could be monitored to provide better estimates of commercial cpue. The topic group will be co-chaired by Wilfried Thiele, FAO, and John Willy Valdemarsen, IMR, Norway;

c) FTFB shall review the reports from the topic groups mentioned above in subgroups and shall meet in plenum to adopt the report of the meeting.

The Topic Group Co-Chairs will encourage representatives from FAO regions to participate in the meeting.

WGFTFB will report by 28 April 2006 for the attention of the Fisheries Technology Committee.

2005/2/FTC07 A **Study Group on Unaccounted Fishing Mortality** [SGUFM] (Chair: Mike Breen, UK) will continue to work in 2006 to:

a ) conduct and report on a comprehensive literature review, building upon the work of the previous Study Groups on issues relating to the sources of fishing mortality other than those that can be accounted for by the reported catch;

b ) review and evaluate the report of the September 2005 Aberdeen Workshop on Unaccounted Fishing Mortality [WKUFM] and incorporate its recommendations where applicable;

c ) collate available data on sources of unaccounted fishing mortality (2006) and produce a comparative summary of their relative impacts, for different capture methods in key fisheries (2007);

d ) review and make recommendations on methods used to estimate escape mortality from towed fishing gears.

SGUFM will report by 30 September 2006 to the Fisheries Technology Committee and make its report available to WGFTFB and all stock assessment WGs.

A progress report, including a report from the second workshop [WKUFM], will be made available for the WGFTFB meeting in Izmir, Turkey, 3–7 April 2006.

2005/2/FTC08 The **Study Group on Target Strength Estimation in the Baltic Sea** [SGTSEB] (Chair: John Horne, USA*) will continue to work by correspondence in 2006 to:

a ) prepare a new revised and updated version of the document already existing to submit to WGFAST in Hobart, Australia, 27–30 March 2006;

b ) prepare a draft report on the work of the Study Group for possible publication in the *ICES Cooperative Research Report* series, to be submitted at the Fisheries Technology Committee session during the 2006 ASC.

SGTSEB will make a final report available for the attention of the Fisheries Technology Committee and the Baltic Committee and make its report available to WGFAST.

2005/2/FTC09 The **Planning Group on the HAC Data Exchange Format** [PGHAC] (Chair: L. Berger, France) will continue to work by correspondence in 2006 to:

a ) coordinate the further development of the HAC standard data exchange format;

b ) provide information on the changes in the format and its evolution;

c ) share information between manufacturers and users on the way acoustic data are processed and stored;

d ) review the final version of tuples for multi-beam echosounders;

e ) review the development of a tuple for acoustic trawl geometry instruments.

If needed the group will meet during the WGFAST meeting in Hobart, Tasmania, 27–30 March 2006.

PGHAC will make a report available to WGFAST for a meeting 27–30 March and include feedback into the final report, which should be finalized by 14 July 2006 for the attention of the Fisheries Technology Committee and WGFAST.

## Living Resources Committee (LRC)

2005/2/LRC01 The **Planning Group on North Sea Cod and Plaice Egg Surveys in the North Sea** [PGEGGS] (Chair: Clive Fox, UK) will meet 14–16 November 2005 in Charlottenlund, Denmark, to:

a ) undertake statistical analyses of data from the PLACES 2004 surveys;

b ) to consider the feasibility of undertaking stock biomass assessments for North Sea commercial stocks using egg production methods;

c ) produce recommendations on whether further North Sea egg surveys are required and guidance on their design in light of the experiences in 2004.

PGEGGS will report by 30 January 2006 for the attention of the Living Resources and the Resource Management Committees.

2005/2/LRC02 The **Planning Group for Herring Surveys** [PGHERS] (Chair: B. Couperus, The Netherlands) will meet 24–27 January 2006 at the Institute for Baltic Sea Fisheries in Rostock, Germany, to:

a) combine the 2005 survey data to provide indices of abundance for the population within the area;

b) coordinate the timing, area and effort allocation and methodologies for acoustic and larvae surveys for herring and sprat in the North Sea, around Ireland, Division VIa and IIIa, and Western Baltic in 2006;

c) review and update the PGHERS manual for acoustic surveys to address standardization of all sampling tools and survey gears;

d) assess the status and future of the HERSUR database and an intermediate database, containing aggregated data;

e) review the conclusions of the herring age-reading exchange and workshop (Turku, Finland) and report on implications and use;

f) investigate and report on the possible bias introduced by a change in gear for sampling herring larvae during the Dutch herring larvae survey.

PGHERS will report by 6 February 2006 for the attention of the Living Resources and the Resource Management Committees as well as to HAWG.

2005/2/LRC03 The **Study Group on Regional Scale Ecology of Small Pelagic Fish** [SGRESP] (Chair P. Petitgas, France) will meet 27 February to 2 March 2006 in Galway, Ireland, to:

a) continue the assembly of primary level data (e.g. sample based) on life history stages (adult, egg, larva, juvenile) of pelagic fish (mackerel, sardine, anchovy, sprat, herring, blue whiting) in ICES waters at regional scale and in a long-term perspective;

b) combine second level data (e.g. rectangle based) on fish life cycle stages with that on their environment (measurements or model outputs), with particular attention to physical mesoscale processes, lower trophic levels, and multispecies contexts, to evidence interannual changes in long-term history and spatial population patterns;

c) identify critical life cycle stages (e.g. recruitment, spawning habitats, migration) in the context of population collapse or expansion;

d) report on abundance distribution changes in anchovy and sardine in ICES waters North of 50°N;

e) based on the above, identify stock/environment scenarios with potential impact on assessment, prediction, and management. Report on how to integrate these into advice to relevant ICES working groups;

f) provide a review of the state-of-the-art in modelling of population life cycles (e.g. spatial population models), report on their adequacy, and identify the knowledge necessary to support modelling;

g) summarize the knowledge produced by SGRESP and suggest a scientific plan for further progress on environment-population interaction.

SGRESP will report by 1 April 2006 for the attention of the Living Resources Committee, ACFM, and ACE.

2005/2/LRC04 The **Working Group on Fish Ecology** [WGFE] (Chair: A. Daniel Duplisea*, Canada) will meet from 13–17 March 2006 at ICES Headquarters to:

a) with regard to the development of EcoQOs for fish communities, (i) establish standardized protocols for filtering survey data to ensure that subsequent statistical analyses are comparable across a range of scales; (ii) liaise with other ICES Working Groups to collate a temporal series of fishing mortality rates for the main species of the assemblages to provide estimates of multispecies F at appropriate spatial scales; (iii) define what a 'large fish' is; (iv) evaluate how a suite of indicators change in relation to estimated trends in multispecies F; (v) use simulation tools to evaluate the sensitivity of various EcoQO indicators to multispecies F; and (vi) undertake further studies for developing appropriate EcoQOs for threatened and declining marine fish. Examine potential for publication of results in the *Cooperative Research Report* series or in peer-reviewed publications;

b) undertake further studies on the abundance-occupancy relationships in marine fish, with special reference to fisheries and ecosystem management issues, and the underlying mechanisms that affect such relationships;

c) continue studies on food rations and prey composition of North Sea fish by (i) re-evaluating predation mortalities of the MSVPA prey fish populations, and examining the consequences by relevant runs of MSVPA/FOR when using food rations of MSVPA predators obtained by application of a new mechanistic gastric evacuation model rather than the food rations currently used by ICES, and (ii) estimate food rations and prey compositions of grey gurnard, horse mackerel, and

mackerel in the North Sea, applying new information about gastric evacuation rates;

d) address any upcoming nature conservation issues for marine fish, including their value as indicators in the context of the Water Framework Directive;

e) continue the descriptions of essential fish habitat, to support studies on threatened, commercial, and selected non-target species;

f) obtain better estimates of relative catchabilities (commercial or RV) of marine fish, on a size-specific basis when appropriate in collaboration with FTFB;

g) liaise with IBTS to continue studies on the broadscale spatial and temporal patterns in selected fish species and communities along the European continental shelf of the eastern North Atlantic (e.g. the area covered by parts of ICES Divisions VI–IX). Cross-cut with ACFM groups as well as WGRED and SGRESP. Liaise with WGEF on identification and quantification of rare shark species;

h) develop a road map for strategically focusing on the future work of the group.

WGFE will report by 30 April 2006 for the attention of the Living Resources, the Resource Management, and the Diadromous Fish Committees, as well as ACE.

2005/2LRC05 The **Baltic International Fish Survey Working Group** [WGBIFS] (Chair: R. Oeberst, Germany) will meet 3–7 April 2006 at ICES Headquarters to:

a ) take immediate action to resolve the known problems in the data processing, archiving, and extraction associated with the BITS database. This will be carried out in cooperation with ICES Secretariat. This ToR should be undertaken immediately;

b ) combine and analyse the results of the 2005 acoustic surveys and experiments and report to WGBFAS;

c ) update the hydro-acoustic databases BAD1 and BAD2 for the years 1991 to 2005;

d ) plan and decide on acoustic surveys and experiments to be conducted in 2006 and 2007;

e ) examine and report on the results from the BITS surveys performed in autumn 2005 and spring 2006;

f ) plan and decide on demersal trawl surveys and experiments to be conducted in autumn 2006 and spring 2007;

g ) update and correct the Tow database;

h ) produce a workplan for improving the quality assurance for data stored in the BITS/DATRAS database and establish QC protocols for this in collaboration with ICES Secretariat;

i ) review and update the Baltic International Trawl Survey (BITS) manual;

j ) review and update the Baltic International Acoustic Survey (BIAS) manual;

k ) report on the vertical distribution of cod during the BITS survey in a situation with oxygen deficiency close to the bottom, and make appropriate recommendations.

WGBIFS will report by 30 April 2006 for the attention of the Living Resources, the Baltic, and the Resource Management Committees.

2005/2/LRC06 The **Working Group on Seabird Ecology** [WGSE] (Chair: Stefan Garthe, Germany) will meet 3–7 April 2006 in Texel, The Netherlands, to:

a) review the current approaches for identifying offshore seabird aggregations and delineating Important Bird Areas (IBAs) and Special Protection Areas (SPAs);

b) review the breeding success of seabirds in the northwestern North Sea in 2004 and 2005 and explore the reasons for the poor performance;

c) produce recommendations for a comprehensive monitoring programme for seabirds;

d) produce recommendations on how to sample diet and how to report results of dietary studies in seabirds, and provide diet information to SGMSNS for multispecies modelling work;

e) determine potential for a state-of-the-art report as a *Cooperative Research Report*, and report to LRC.

WGSE will report by 10 May 2006 for the attention of the Living Resources Committee, ACE, and ACME.

2005/2/LRC07 The **Working Group on Mackerel and Horse Mackerel Egg Surveys** [WGMEGS] (Chair: Dave Reid, UK) will meet 27–31 March 2006 in Vigo, Spain, to:

a) coordinate the timing and planning of the 2007 Mackerel/Horse Mackerel Egg Survey in the ICES Subareas VI to IX;

b) coordinate the planning and sampling programme for mackerel fecundity and atresia;

c) report on current and potential future variance calculation procedures, and provide information on the scale and direction of any bias or variance in the biomass estimation procedure;

d) review procedures for egg sample sorting, species ID, staging and fecundity, and atresia estimation, based on a workshop in late 2006;

e) analyse and evaluate the results of the 2005 mackerel egg survey in the North Sea;

f) update the survey manual and make recommendations for the standardization of all sampling tools and survey gears;

g) evaluate and report on how to include the results from the North Sea mackerel egg surveys in the NE Atlantic Egg Survey time-series, taking into account both the timing and the precision of the surveys, in particular for the earlier surveys in the North Sea. Consideration should be given to whether the distribution of the combined estimates is more or less precise than the current NEA survey and how much of the probability density functions overlap;

h) for Western horse mackerel knowledge of the magnitude of the variability in fecundity is necessary to evaluate the use of the egg survey as a proxy for SSB in the current assessment framework. Currently inclusion or exclusion of this survey can give rise to a factor of 4 difference of perception. The WGMEGS should give an estimate of precision for the relationship between the estimated egg abundance and its relationship with SSB in the context of resolving a factor of 4.

WGMEGS will report by 1 June 2006 for the attention of the Living Resources and the Resource Management Committees.

2005/2/LRC08 The **Working Group on *Crangon* Fisheries and Life History** [WGCRAN] (Chair: Andy Revill, UK*) will meet 5–8 May 2006 in IJmuiden, Netherlands, to:

a) update statistics for landings and effort data for national fleets;

b) perform consistency checks, quality controls, and preliminary analysis of landings and effort data for *Crangon* fisheries from available EU logbooks from national fleets;

c) complete the meta-database on sources of data for *Crangon* distribution and abundance;

d) improve the parameterization and design of the Y/R model with regard to maturation and spawning cycle of females, treatment of two sexes and size selectivity of fishing, test the sensitivity of the model to variations in the mortality matrix and F/M ratio, and apply the model to an independent data set (UK Wash fishery). Produce a report on the findings;

e) evaluate and report on studies of predation on *Crangon* in relation to estimates of mortality;

f) report on environmental and other influences on recruitment success and productivity in *Crangon* fisheries;

g) review new data on discarding of juvenile fish in *Crangon* fisheries following the introduction of new EU technical measures, and evaluate the impacts.

WGCRAN will report by 31 July 2006 for the attention of the Living Resources and the Fisheries Technology Committees, as well as ACFM.

2005/2/LRC09 The **Working Group on Beam Trawl Surveys** [WGBEAM] (Chair: R Millner, UK) will meet 16–19 May 2006 in Hamburg, Germany, to:

a) prepare a progress report summarising the results of the 2005 beam trawl surveys;

b) calculate population abundance indices by age group for sole and plaice in the North Sea, Division VIIa, and Divisions VIId-g;

c) further coordinate offshore and coastal beam trawl surveys in the North Sea and Divisions VIIa and VIId-g;

d) describe and evaluate the current methods for calculating population abundance indices with emphasis on the inshore surveys;

e) continue the work on developing relative catchabilities and gear efficiencies of the different gears, refer to WGFTB;

f) continue the work on developing and standardising an international database of beam trawl survey data and coordinate such activities with those of the IBTSWG;

g) continue the work on collating information on the epibenthic invertebrate bycatch during beam trawl surveys into a common database and discuss which summary results should be reported;

h) develop protocols and criteria to ensure standardization of all sampling tools and survey gears.

WGBEAM will report by 30 June 2006 for the attention of the Living Resources and the Resource Management Committees, as well as ACFM.

2005/2/LRC10 The **Stock Identification Methods Working Group** [SIMWG] (Co-Chairs: S. Cadrin USA, J. Waldman, USA, and S. Mariani* Ireland) will work by correspondence in 2005/2006 to:

a) liaise with ICES working groups and study groups dealing with stock identification issues; providing technical reviews to expert groups and LRC;

b) review and report on new advances in stock identification methods as they develop;

c) advise on the need for future meetings of the SIMWG, and prepare appropriate Terms of Reference if required;

d) review the papers presented at Session K and Session T at the 2005 ASC and make recommendations for future work based on these.

SIMWG will report by 31 May 2006 for the attention of the Living Resources Committee and will also report on the progress at the 2006 Annual Science Conference.

2005/2/LRC11 The **Study Group on the Biology and Life History of Crabs** [SGCRAB] (Chair: Julian Addison*, UK) will work by correspondence in 2006 to:

a ) compile data on landings, discards, effort, and catch rates (cpue) for the important crab fisheries in the ICES area;

b ) standardize methods for the acquisition, analysis, and interpretation of cpue, size frequency and research survey data and produce user manual;

c ) define and report stock structure / management units for crab stocks;

d ) assess and report on environmental effects including diseases on crab fisheries;

e ) assess and report on the interaction between net/dredge fisheries and other anthropogenic activities and crab stocks;

f ) assess and report on the effects of fishing on the biological characteristics of crab stocks;

g ) review and report on the methods for estimating recruitment in crab stock.

SGCRAB will report by 30 August 2006 for the attention of the Living Resources and Resource Management Committees.

2005/2/LRC12 The **Working Group on Cephalopod Fisheries and Life History** [WGCEPH] (Chair: Joao Pereira, Portugal) will work by correspondence in 2006 to:

a) update and refine available landing statistics at relevant time scales, compile available information on fishing effort of selected fleets, on discards and on selectivity and explore resource survey databases for information about sampled cephalopods in the ICES area. Report on current status;

b) compile methods and results available for stock identification and estimation of population size of fished cephalopods. Report on current status;

c) identify possible precautionary approaches to the management of these cephalopod resources; evaluate management options and consider socio-economic issues. Report on current status;

d) compile available data and identify relationships between abundance and environmental conditions, factors affecting recruitment, migration and distribution patterns of juveniles and adults, trophic interactions and contaminants bioaccumulation;

e) review and report on cephalopod culture techniques and results and their interest in the understanding of biological phenomena;

f) update the bibliographic database of cephalopod literature relevant to fisheries, including grey literature. Make available on WWW;

g) prepare material from EU project CEPHSTOCK and WG reports for *Cooperative Research Report* on the state-of-the-art in cephalopod fisheries biology.

WGCEPH will report by 31 July 2006 for the attention of the Living Resources Committee, ACFM, and ACE.

2005/2/LRC13 A **Study Group on Stock Identity and Management Units of Whiting** [SGSIMUW] (Chair: Phil Kunzlik, UK) will work by correspondence in 2006 to:

a ) carry out spatially-disaggregated analyses of survey data to examine and compare regional trends within north Sea and eastern Channel whiting abundance;

b ) continue attempts to compile spatially-disaggregated catch-at-age data to allow area-based catch-at-age analysis based on the putative stock units described by the Study Group.

SGIMUW will report by 30 June 2006 for the attention of the Living Resources and the Resource Management Committees as well as SIMWG.

2005/2/LRC14 The **Study Group on Recruitment Variability in North Sea Planktivorous Fish** [SGRECVAP] (Chair: Mark Dickey-Collas*, The Netherlands) will be established and will meet 16–20 January 2006 in IJmuiden, The Netherlands, to:

a) report and assess what mechanisms, both far field and *in situ*, could lead to the severely reduced recruitment during the last three years in autumn-spawned herring, spring-spawned sandeel, and Norway pout in the North Sea and estimate the probability that these recent recruitment events are purely coincidental;

b) determine what data are available on the seasonal trends in hydrography, planktonic production, ichthyoplankton-predator abundance, anthropogenic influence, and adult fish behaviour in the North Sea to test hypotheses for serial poor recruitment reported in TOR a) and carry out preliminary testing;

c) if plausible causative links can be established, report on any candidate early warning signals that could be used to assist in the determination of recruitment scenarios for short-term projections of stock numbers.

SGRECVAP will report by 1 March 2006 for the attention of the Living Resources Committee, WGNSSK, and HAWG.

2005/2/LRC15 **ICES/GLOBEC Workshop on Long-term Variability in SW Europe** [WKLTVSWE] (Co-Chairs: Jürgen Alheit*, Germany, Maria Fatima Borges,* Portugal, Alicia Lavín*, Spain, and Andres Uriarte*, Spain) and will be held 20–24 November 2006 in Lisbon, Portugal, to:

a) rescue, collate, and jointly analyse decadal-scale, long-term time-series of physical, chemical, and biological data from ecosystems surrounding the Iberian peninsula with a focus on long-term changes of small pelagic fish;
b) to identify possible links to climate variability;
c) look for possible telecommunication patterns with European and other marine ecosystems.

WKLTVSWE will report by 31 January 2007 for the attention of the Living Resources Committee.

2005/2/LRC16 A **Workshop on Mackerel and Horse Mackerel Egg Staging and Identification** [WKMHMES] (Chair: S. Milligan*, UK) will be held 23–27 October 2006 in Lowestoft, UK, to:

a) carry out comparative plankton sorting trials on typical survey samples. This should follow the pattern of trial–analysis–retrial–identification of problem areas;
b) carry out a comparative egg staging trial for mackerel and horse mackerel eggs following the pattern used in the 2003 egg staging workshop;
c) produce a set of standard pictures and descriptions for species ID and egg staging;
d) carry out intercalibration work on fecundity determination and harmonise the analysis and interpretation of fecundity samples;
e) provide a review of any available documentation on identifying eggs to species and define standard protocols;
f) provide a review of any information available on other egg ID procedures – particularly DNA probes.

WKMHMES will report by January 2007 for the attention of the Living Resources Committee as well as WGMHSA.

2005/2/LRC17 The **Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VIII and IX** [WGACEGG]. (Chair: M. Bernal, Spain) will meet in Lisbon, Portugal, from 27 November – 1 December 2006 to:

a ) plan and coordinate egg surveys in ICES Areas VIII and IX and standardize analysis procedures;
b ) plan and coordinate acoustic surveys in ICES Areas VIII and IX and standardize analysis procedures;
c ) develop a framework to cross-validate egg production and acoustic methods for the estimation of Spawning-stock biomass and its distribution;
d ) explore the possibilities to integrate egg production and acoustic based Spawning-stock biomass estimates;
e ) finalize new egg production procedures and associated software developed under SGSBSA;

f ) integrate biological/environmental information from surveys and additional sources to study the relationships between sardine and anchovy and the pelagic community in ICES Areas VIII and IX.

WGACEGG will report by 22 December 2006 for the attention of the Living Resources Committee, and ACFM.

## Mariculture Committee (MCC)

2005/2/MCC01 The **Working Group on Pathology and Diseases of Marine Organisms** [WGPDMO] (Chair: T. Lang, Germany) will meet 7–11 March 2006 at ICES Headquarters, Denmark, to:

a) produce a report on new disease trends in wild and cultured fish, molluscs, and crustaceans, based on national reports;

b) update information on the causes and effects of Heart and Skeletal Muscle Inflammation (HSMI) affecting farmed salmon in ICES Member Countries;

c) produce an update of current information from ICES Member Countries on the development of sea lice vaccines and management measures for sea lice control;

d) compile a report on effects of climate change on host-pathogen interactions;

e) propose a set of diagnostic techniques for the identification and characterization of microcell-type parasites in oyster species;

f) produce a review on the current status of studies carried out in ICES Member Countries on infectious diseases in shellfish hatcheries;

g) conduct a pilot study assessing the feasibility of constructing a 'disease index', using disease data from North Sea dab (*Limanda limanda*);

h ) review progress made with regard to international collaborative actions including disease and pathology aspects:

- the REGNS Integrated Assessment of the North Sea Ecosystem. Review and update sub-regional data tables and where necessary include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop, and
- the Baltic Sea Regional Project (BSRP);

i ) produce ICES publications on pathology and diseases of marine organisms;

j ) provide expert knowledge and advice on fish disease and related data to the ICES Data Centre on a continuous basis;

k ) discuss and report on potential contributions for the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes;

l ) review available data for each biological effects method to clarify whether data can be compared across the range of recommended fish species and review selection of species, gender, and size ranges (WKIMON).

WGPDMO will report by 31 March 2006 for the attention of the Mariculture Committee, ACME, and the Marine Habitat Committee.

2005/2/MCC02 The **Working Group on Marine Shellfish Culture** [WGMASC] (Chair: Peter Cranford, Canada*) will meet 18–20 April 2006 in Galway, Ireland, to:

a ) prepare a state of knowledge report comparing and contrasting the standard methods used to measure stress indicators in shellfish and provide a discussion of how they would be used to diagnose incidents of cultured shellfish mortality;

b ) complete the development of a recommended framework for the integrated evaluation of the impacts of shellfish aquaculture activities in the coastal zone by identifying a suite of tools (e.g. modelling, technologies) and indicators (ecosys-

tem and shellfish performance) specific for monitoring ecosystem status in relation to shellfish aquaculture and for evaluating ecosystem quality objectives and effects on the productive capacity of coastal systems. This will also provide guidelines for monitoring programmes and the selection of management reference points (operational objectives) and mitigations;

c ) prepare a report assessing the utility of hatchery-reared seed to enhance wild scallop fisheries with the view of improving the management of this resource. Culture techniques, population dynamics parameters, such as growth to the commercial size and mortality, monitoring during the ongrowing stages, yields, number and cost of seeded spat vs. fished adults, potential impacts of culture and dredging should be collected and assessed from different sources during intersessional work.

WGMASC will report by 20 May 2006 for the attention of the Mariculture Committee.

2005/2/MCC03 The **Working Group on Environmental Interactions of Mariculture** [WGEIM] (Chair: F. O'Beirn, Ireland) will meet 24–28 April 2006 in Narragansett, Rhode Island, USA, to:

a) review the outcome of the GESAMP WG 31 on the aquaculture risk analysis methodologies and finalize case studies examining the potential impacts of escaped non-salmonid farmed fish (cod, sea bass, sea bream, halibut, turbot);

b) provide an update report on developments in the implementation of the Water Framework Directive, the European Marine Strategy, and the EU Strategy for sustainable aquaculture, and assess their implications for mariculture;

c) evaluate examples of sustainability indices proposed for mariculture operations and provide specific recommendations on the utility of the proposed indices;

d) evaluate the environmental impacts of integrated (multi-trophic) culture systems and provide recommendations on changes to EU regulatory frameworks that are required to accommodate this form of aquaculture operation;

e) assess and report on the state of knowledge of alternatives to fish for use in formulated feeds for finfish aquaculture;

f) investigate fouling hazards associated with the physical structures used in mariculture and assess their potential for the introduction of invasive/nuisance species into the local environment.

WGEIM will report by 20 May 2006 for the attention of the Mariculture Committee and ACME.

2005/2/MCC04 The **Working Group on the Application of Genetics in Fisheries and Mariculture** [WGAGFM] (Chair: E. Nielsen*, Denmark) will meet 25–28 April 2006 in Newport, Ireland, to:

a) assess selected case studies and report on the current knowledge of the genetic basis of domestication processes in farmed fish and shellfish;

b) identify and provide recommendations on the technical and organizational requirements for establishing practical, functional, and integrated international databases and supporting repositories for genetic stock identification;

c) synthesize the evidence and methods for detecting local (genetic) adaptation in marine fish and shellfish;

d) assess, through a case study of anadromous salmonids, the potential of genetic and spatial data analysis methods for resolving spatial boundaries of finfish and shellfish populations, and for gaining insight into the geographic and ecological factors controlling the development of population boundaries;

e) assess the genetic effects of introgression of farmed Atlantic salmon on wild salmon populations.

WGAGFM will report by 20 May 2005 for the attention of the Mariculture and Diadromous Fish Committees, ACME and ACE (WGECO).

2005/2/MCC05 The **Working Group on Marine Fish Culture** [WGMAFC] (Chair: Anders Mangor-Jensen, Norway) will be renamed as the **Working Group on Marine Fish Welfare** [WGMAFW] and will meet during the second half of 2006 to:

a) report on the status of fish welfare policies in the different ICES countries and on the development of EU policy on fish welfare;

b ) work on developing guidelines for "Fish Welfare in Mariculture" aimed at publishing the completed work as an *ICES Cooperative Research Report*. The guidelines will address; different species, life stages and rearing systems, and include topics such as:

- spawning,
- egg production,
- feeding,
- environmental parameters such as water quality,
- rearing technology,
- husbandry techniques,
- health management and biosecurity;

c ) compile information on the current state-of-the-art of microdiets as a replacement for live food for larval fish.

WGMAFC will report by 25 May 2006 for the attention of the Mariculture and the Diadromous Fish Committees, and ACME.

## Marine Habitat Committee (MHC)

2005/2/MHC01 The **Working Group on Marine Sediments in Relation to Pollution** [WGMS] (Chair: F. Smedes, The Netherlands) will meet jointly with MCWG, WGBEC, and WGSAEM on 27–31 March 2006 at ICES Headquarters to:

a) review and comment on the report of the assessment proposed for the 2005 meeting of OSPAR/MON in relation to sediments;

b) review the response of the WGBEC to suggestions from WGMS for areas of co-operative work on (bio)availability and related issues to report on opportunities for cooperative work;

c) evaluate the progress of work planned by various participants in relation to (bio)availability of organic contaminants in sediments using passive sampling methodologies;

d) continue the collection of information on different estuaries – a case study of the interpretation of monitoring data, taking into account sediment dynamics;

e) review the progress of the OSPAR One-off surveys, or, if already available, evaluate the data in collaboration with the Working Group on the Statistical Aspects of Environmental Monitoring;

f) review and update sub-regional data tables and where necessary include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop.

g) consider the practicalities of the introduction of the monitoring of contaminant pressure (in terms of aqueous concentration and (bio)available concentrations of hydrophobic contaminants in sediments). To make proposals for developing guidelines and for interlaboratory tests;

h) investigate the possibility to develop indicators of sediment contamination by grouping parameters based on biological effects parameters;

i) discuss and report on potential contributions for the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the

health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes;

j) provide expert knowledge and guidance to ICES Data Centre (possibly via sub-group) on a continuous basis.

WGMS will report by 24 April 2006 for the attention of the Marine Habitat Committee and ACME.

2005/2/MHC02 The **Working Group on the Statistical Aspects of Environmental Monitoring** [WGSAEM] (Co-Chairs: Richard Duin*, The Netherlands, and Rob Fryer, UK) will meet jointly with MCWG, WGBEC, and WGMS on 27–31 March 2006 at ICES Headquarters to:

a) develop and review tools for assessing and improving quality assurance of the data generating process;

b) provide further advice on methods for temporal, spatial, and integrated assessments of contaminants in biota, contaminants in sediments, and biological effects and inputs;

c) continue work on statistical aspects in the development of environmental indicators and classifications;

d) review of the OSPAR draft guidelines on frequency and spatial coverage of monitoring [OSPAR 2006/1];

e) specify access needed and request implementation by ICES Data Centre;

f) specify any data for removal from database and request Data Centre to remove data.

WGSAEM will report by 24 April 2006 for the attention of the Marine Habitat Committee and ACE.

2005/2/MHC03 The **Working Group on Marine Chemistry** [MCWG] (Co-Chairs: R. Law, UK, and Jaceck Tronczynski, France) will meet jointly with WGMS, WGBEC, and WGSAEM at ICES Headquarters, Copenhagen, Denmark, from 27–31 March 2006 to:

a) update the database of concentrations of metals and organic contaminants in biota/species of relevance to the OSPAR CEMP and prepare a table of new/updated background concentrations and background assessment concentrations for potential use in OSPAR assessments;

b) with WGBEC, contribute to the development of detailed OSPAR guidelines deriving from the ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open-Sea Areas (WKIMON) [OSPAR 2005/6]. Specifically, to critically review the lists of target PAHs and CBs proposed by WKIMON in relation to ability to interpret information from the available biological effects techniques;

c) examine any proposals developed by OSPAR for guidelines on the frequency and spatial coverage of monitoring for nutrients and eutrophication parameters and provide draft advice on the statistical validity of the guidelines and make proposals for their improvement [OSPAR 2006/1];

d) provide advice on whether the existing systems for monitoring dioxins in fish and shellfish for the purposes of safeguarding human health could be used to monitor trends in concentrations, and/or spatial extent, of dioxins in the marine environment. The specific questions to be addressed are [OSPAR 2006/5]:

   i ) what food safety monitoring of dioxins and furans in fish and shellfish is being carried out in the OSPAR area,

   ii ) to what extent is it possible to trace fish and shellfish samples to the locations in which they were caught,

   iii ) to what extent do the data obtained support the determination of trends in concentrations, and/or spatial extent, of dioxins in the marine environment;

(Report from this ToR is required for the OSPAR ASMO meeting starting 12 April 2006)

e) review the results of one-off surveys for the following chemicals identified by OSPAR for Priority Action: 24,6 tri-tert butylphenol (exploratory one-off survey to establish whether the substance is actually found in sediments in the OSPAR area), endosulphan, (exploratory one-off survey and a hot-spots survey to establish whether the substance is actually found, and to define "hot-spots" of the substance, in sediments of the OSPAR area), and short-chained chlorinated paraffins (baseline survey to establish baseline in sediments in the OSPAR area against which to measure progress on the substance towards the goals of the OSPAR Hazardous Substances Strategy);

f) report on any new annexes on Quality Assurance from the ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea;

g) discuss and report on potential contributions for the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes;

h) present to the Working Group on the Statistical Aspects of Environmental Monitoring (WGSAEM) proposals for collaboration for joint discussion;

i) review and update sub-regional data tables and, where necessary, include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop;

j) review developments within the UNEP Global POPs Monitoring Network with particular emphasis on opportunities for collaboration with ICES;

k) assess the adequacy of the existing analytical methods for short-chain chlorinated paraffins, dioxins, toxaphene, perfluorinted compounds, PBDEs and other brominated flame retardants for marine environmental assessment and provide guidance on the most appropriate techniques;

l) continue to report on new information on tris(4-chlorophenyl)methanol (TCPM) and tris(4-chlorophenyl)methane(TCPMe) in flatfish;

m) critically review the new information on the use of membrane systems for sampling, and on their incorporation within national monitoring programmes;

n) provide expert knowledge and guidance to the ICES Data Centre on a continuous basis.

MCWG will report by 24 April 2006 for the attention of the Marine Habitat and the Oceanography Committees and ACME.

2005/2/MHC04 The **Working Group on Biological Effects of Contaminants** [WGBEC] (Chair: John Thain, CEFAS, UK) will meet jointly with WGMS, MCWG, and WGSAEM on 27–31 March 2006 at ICES Headquarters to:

a) review progress with publication and electronic dissemination of biological effects techniques in the *ICES TIMES* series;

b) critically evaluate the progress with BEQUALM, ICES/BSRP SGEH, and other relevant national (s.a. PRESTIGE oil spill) and international projects and, where relevant, the extent to which they meet the requirements of OSPAR and HELCOM;

c) assess and report on the amount of biological effects data submitted to the new ICES database;

d) evaluate the report from WKIMON second workshop;

e) review and update sub-regional data tables and, where necessary, include new data (parameters) and/or existing data (parameters) updated where relevant. The

data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop;

f) produce a guidance document on the use of biological effects techniques for oil spill situations;

g) evaluate documents prepared intersessionally for "background" biological effects responses;

h) provide expert knowledge and guidance to ICES Data Centre on a continuous basis;

i) respond together with MCWG to request from WKIMON on the following issues:

   i ) Review the selection of available and developing biological effects methods and the degree to which they are/may be appropriate to meet the requirements of the OSPAR Joint Assessment and Monitoring Programme (JAMP), as detailed to meet the needs of the OSPAR Hazardous Substances Strategy, and the need for integrated monitoring,

   ii ) Where suitable contaminant-specific biological effects methods do not exist, investigate the possibility for their development,

   iii ) Review appropriate integrated methods to assess effects on biota and the health of the marine environment from lindane and BFRs,

   iv ) Review the specificity of the COMET assay for DNA damage in relation to the detection of the effects of hazardous substances and potential confounding effects of other factors affecting the assay,

   v ) Review available data for each biological effects method to clarify whether data can be compared across the range of recommended fish species,

   vi ) Selection of species, gender, and size ranges:

   vii ) Review background levels for ALA-D in relevant species (where information is available);

Joint discussions on:

j ) preparing the documents on assessment criteria and discussing the development of integrated assessment with WGSAEM in 2006. See g) above;

k ) passive samplers and their use and application for chemical contaminant and biological effects monitoring;

l ) Discuss and report on potential contributions for the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes.

WGBEC will report by 1 May 2006 for the attention of the Marine Habitat Committee and ACME.

2005/2/MHC05 The **Working Group on Marine Habitat Mapping** [WGMHM] (Chair: D. Connor, UK) will meet 4–7 April 2006 in Galway, Ireland, to:

**International programmes**

a ) review progress of international mapping programmes (including MESH, EEA, OSPAR, BALANCE);

b ) assess and review existing habitat maps for the North Sea and make recommendations on how these maps may be further developed;

c ) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the 'overview' assess-

ment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant;

**National programmes (National Status Reports)**

d ) present National Status Report updates according to the standard reporting format by evaluating national habitat mapping activity during the preceding year (presentations limited to 10 minutes per country);

**Mapping strategies and survey techniques**

e ) refine the table of generic habitat mapping data sets, developed by WGMHM 2005, particularly to develop a generic specification of the information needed to produce habitat maps;

f ) initiate the compilation of a list of metadata catalogues which provide data suitable to support habitat mapping studies (i.e. linked to the table of generic data sets);

g ) review the report of the SGASC relating to acoustic seabed classification;

**Protocols and standards for habitat mapping**

h ) finalize the definitions of the terms habitat and marine landscape/seascape for the purposes of marine habitat mapping;

i ) critically review guidelines for habitat mapping, including the review of protocols and standards for habitat mapping developed under relevant initiatives (e.g. MESH). In addition, identify other areas where the development of guidelines is required;

j ) review standards for calibrating acoustic survey systems;

k ) review progress in the development of 'discovery' and 'survey/method' metadata standards for marine habitat mapping, illustrated with worked examples;

**Uses of habitat mapping in a management context (human activities; implementation of Directives and Conventions) and its relevance in understanding ecosystems**

l ) review the application of and needs for habitat maps in a management context, including case studies to illustrate particular applications. Develop a link between various scales and types of maps to relevant issues and end user needs;

m ) explore the use of habitat maps in understanding and assessing ecosystem structure and function.

WGMHM will report by 31 April 2006 for the attention of the Marine Habitat and Fisheries Technology Committees, as well as ACE.

2005/2/MHC06 The **ICES Study Group on the North Sea Benthos Project 2000** [SGNSBP] (Chair: H. Rees, UK) will meet 10–13 April 2006 at NIOZ, The Netherlands, to:

a) review the outcome of an intersessional Seminar/Writing Workshop held at VLIZ, Belgium, from 16 to 18 November 2005 to:

i ) present summaries of findings to date on the following topics:

- sediments and contaminants
- patterns and changes in the benthos (1986–2000)
- ecosystem interactions and causal influences (1986–2000),

ii ) evaluate and integrate findings across topics,

iii ) produce a draft of a *Cooperative Research Report* on the ICES North Sea Benthos Project 2000,

iv ) progress any outstanding analyses and interpretation of data,

v ) produce additional material for peer-reviewed publications;

b ) work on a final draft of the *Cooperative Research Report* on the ICES North Sea Benthos Project 2000 with the view on completion in 2006;

c ) progress the drafting of text for peer-reviewed publication;

d ) explore strategic alliances with other relevant initiatives (e.g. MARBEF and EU WFD) to maximize the future utility of data and products arising from the North Sea Benthos Project 2000;

e ) agree structure for a proposed ICES Theme Session on the North Sea benthos in 2007;

f ) make recommendations on the utility of North Sea benthos indicators at the species and community level;

g ) make recommendations for future work on the North Sea benthos, including a procedural framework;

h ) agree protocols for future access and use of the NSBP 2000 data via ICES database;

i ) work by correspondence until April 2007 to:

i) complete the Cooperative Research Report,

ii) plan for the 2007 Theme Session.

SGNSBP will report by 1 May 2006 for the attention of the Marine Habitat Committee.

2005/2/MHC07 The **Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem** [WGEXT] (Chair: S. Boyd, UK) will meet 4–7 April 2006 in Cork as guests of the CMRC, University College of Cork, Ireland, to:

a) provide a summary of data on marine sediment extraction for the OSPAR region that seeks to fulfil the requirements of the OSPAR request for extraction data to be provided by ICES and take into account any feedback or comments from OSPAR on the information submitted by WGEXT 2005;

b) review data on marine extraction activities, developments in marine resource mapping, information on changes to the legal regime (and associated environmental impact assessment requirements) governing marine aggregate extraction;

c) review scientific programmes and research projects relevant to the assessment of environmental effects of the extraction of marine sediments, including the outputs of the EUMARSAND and SANDPIT projects;

d) finalize a draft of the *Cooperative Research Report* with the aim of submitting this to ICES MHC and ICES ACME;

e) review and update sub-regional data tables and, where necessary, include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop;

f) review the experience of WGEXT members countries with implementing the provisions of the EU Habitats, Birds and Water Framework Directives, marine spatial planning initiatives, OSPAR MPA, HELCOM BSPA, and developing a European Marine Strategy in relation to aggregate extraction;

g) discuss and report on potential contributions for the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes.

WGEXT will report by 5 May 2006 for the attention of the Marine Habitat Committee and ACME.

2005/2/MHC08 The **Working Group on Integrated Coastal-zone Management** [WGICZM] (Chair: J. Støttrup, Denmark) and will meet 19–21 April 2006 at ICES Headquarters to:

a) update and report on activities of relevant ICES working and study groups to identify information pertaining to the coastal zone and evaluate this information relative to ICZM needs;

b) update and report on ICZM activities in different ICES countries, and in different international organizations;

c) revise and update list of tools and data products and research needs;

d) monitor and report results generated from larger EU-funded projects (PROTECT, MESH, etc.) that are directly relevant to ICZM needs;

e) report on different national attempts at monitoring recreational fisheries and evaluate the progress;

f) report on the effects of hypersaline waters produced by desalinisation plants;

g) report on progress in valuable component or management tools;

h) revise and develop the draft on the development of a framework for integrated evaluation of human impacts in the coastal zone and how to integrate this information for CZM, identifying ICES role in the application of the WFD in the coastal zone.

WGICZM will report by 5 May 2006 for the attention of the Marine Habitat Committee, ACME, and ACE.

2005/2/MHC09 The **Benthos Ecology Working Group** [BEWG] (Chair: H. Rumohr, Germany) will meet 1–5 May 2006 at HCMB, Heraklion, Crete/Greece, to:

a ) review and consider recent developments in continuing benthos research in Europe;

b ) review the final meeting report of the SGNSBP and consider future joint activities in the North Sea;

c ) on request by OSPAR, develop a list of area-specific (groups of) benthic indicator species in relation to the development of the ecological quality objectives for changes in zoobenthos in relation to long-term eutrophication;

d ) discuss the environmental implications of offshore renewable energy generation (wind, wave, tide, etc.);

e ) to review and update sub-regional data tables and, where necessary, include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop;

f ) based on the outcome of the ICES ASC session on Oil in Marine Systems, review progress on guidelines for the assessment of long-term impacts of oil spill;

g ) work intersessionally to produce a draft report on the use of benthic biological criteria for selecting dredging disposal sites;

h ) relate a list of indicators to the impacts of human-induced activities and changes in ecological state. Assess the effectiveness of any potential performance indicators in identifying cause-effect relationships;

i ) consider the outcome of a Workshop on statistical analysis with special emphasis on minimum sampling area and trend analysis in ecological studies;

j ) discuss and report on potential contributions for the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes;

k ) review and comment on the draft text on the application of AQC Criteria (Annex 8, SGQAE 2004) (The answer to this TOR demands intersessional work by BEWG);

l ) specify and request an overview of database contents from ICES Data Centre.

BEWG will report by 15 May 2006 for the attention of the Marine Habitat Committee and ACE.

2005/2/MHC10 The **Workshop on Fisheries Management in Marine Protected Areas** [WKFMMPA] (Chair: Jake Rice*, Canada) will meet 3–5 April 2006 at ICES Headquarters to:

a ) collate and review all available data on fisheries activities in terms of fishing effort, gears, target species, and bycatches from in and around the 10 designated Marine Protected Areas (under the EU FFH directive for the NATURE 2000 network) in the German EEZ, if possible including adjacent MPAs in the EEZ of other EU countries;

b ) specify the relevant scientific analyses of these data that would be possible at the spatial scales at which Management Plans will be developed for these MPAs, and identify important analyses that can only be done meaningfully at much larger or smaller spatial scales;

c ) produce maps of these fishing activities, particularly effort levels, stratified by gear type and seasonal and/or diurnal patterns of activities;

d ) develop a workplan for the further procedure of assessment of the fishing activities;

e ) review the documentation associated with the establishment of these MPAs, and the documents relevant to managing fisheries in these areas. To the extent that the information allows, specify possible operational objectives for these MPAs and associated fisheries consistent with their supporting documentation;

f ) where short-comings are identified in e), relative to suites of objectives appropriate for management within an ecosystem approach, develop a plan of activities to address these deficiencies.

WKFMPA will report by 1 May 2006 for the attention of the Marine Habitat Committee.

## Oceanography Committee (OCC)

2005/2/OCC01 The **Workshop on Indices of Mesoscale Structures in ICES waters** [WKIMS] (Co-Chairs: Benjamin Planque*, France, and Corinna Schrum*, Germany) will meet 22–24 February 2006 in Nantes, France, to:

a) review numerical methodologies for the constructions of indices of mesoscale structures such as fronts, eddies, transport, upwelling, and vertical hydrographic changes;

b) disseminate available tools and software for the automatic detection of mesoscale structures;

c) construct long-term (>10 years) time-series of indices of mesoscale structures in many systems in ICES waters.

WKIMS will report by 1 April 2006 for the attention of the Oceanography Committee.

2005/2/OCC02 The **Working Group on Phytoplankton Ecology** [WGPE] (Chair: Francisco Rey, Norway) will work intersessionally to:

a) improve the participation in the WG activities;

and meet in ICES from 22 to 24 March 2006 to:

b) demonstrate the use of satellite remote sensing and numerical modelling for revealing new information on phytoplankton dynamics;

c) hold an internal mini-workshop and report on using long-term data series for evaluating the impact of climate variability on phytoplankton dynamics and phytoplankton-zooplankton-fish interactions;

d) evaluate and report on annual Phytoplankton Summary Reports and further improve the standardization of the data sets;

e) review new additions to the ICES Phytoplankton Name List that have been compiled intersessionally;

f) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the 'overview' assessment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant;

g) assess the activities and frequency of quality control routines concerning phytoplankton parameters (species composition, abundance, biomass, pigments, primary production) performed at the national and international level. Consider the draft text on the application of AQC Criteria (Annex 8, SGQAE 2004);

h) prepare a more detailed set of guidelines for the future work of WGPE based on the outcome of the 2005 meeting.

WGPE will report by 1 May 2006 for the attention of the Oceanography Committee, ACME, and ACE.

2005/2/OCC03 The **Working Group on Zooplankton Ecology** [WGZE] (Chair: A. Gislason*), Iceland) will meet 27–31 March 2006 in Villefranche, France, to:

a) update the ICES Plankton Status Report; consider progress towards consolidation, interpretation with appropriate statistical methods and recommended monitoring standards;

b) plan and prepare for additional analyses and products utilising the Plankton Status Report Time-series;

c) plan and consider an agenda for a joint meeting with CIESM plankton scientists;

d) review the causation and impacts of introduced or disappearing plankton species, particularly from regions in the ICES and CIESM areas;

e) consider and consolidate the use of website and virtual resources for support of WGZE endeavours;

f) review and comment on the draft text on the application of AQC Criteria (Annex 8, SGQAE 2004). (The answer to this TOR demands intersessional work by WGZE);

g) provide expert knowledge and guidance to ICES Data Centre (possibly via subgroup) on a continuous basis;

h) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the 'overview' assessment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant;

i) review achievements, progress, and prospects for:

   i ) Workshop on the Impact of Zooplankton on Cod Abundance and Production [WKIZC],

   ii ) Workshop on enzymatic and other biochemical and molecular methods to measure rate process in zooplankton,

   iii ) SCOR Working Group, Global Comparisons of Zooplankton Time-series,

   iv ) ICES/PICES/GLOBEC International Zooplankton Production Symposium in Japan 2007,

   v ) GLOBEC/SPACC workshop "Image analysis to count and identify zooplankton" (ZooImage), San Sebastian 2005,

   vi ) A taxonomic workshop to advance the Fiches plankton ID sheets, also to encourage the training and retention of plankton taxonomic skills,

   vii ) Plans and progress in relevant national and international projects relating to plankton studies (e.g. MARBEF, BASIN and others),

   viii ) Data management issues at ICES and elsewhere, including expert knowledge and guidance to the Data Centre.

WGZE will report by 1 May 2006 for the attention of the Oceanography Committee and ACE.

2005/2/OCC04 The **ICES-IOC Working Group on Harmful Algal Bloom Dynamics** [WGHABD] (Chair: J. Silke*, Ireland) will meet 3–6 April 2006 in Gdynia, Poland, to:

a ) review progress in the detection of harmful algal blooms and their dynamics by remote sensing techniques and examining results from new sensors and algorithms as well as validation procedures used for HAB observations;

b ) review the section on Phytoplankton Monitoring in the Report of the Joint FAO/IOC/WHO *Ad Hoc* Expert Consultation for Codex Alimentarius on Biotoxins in Bivalve Molluscs (Oslo 26 September 2004);

c ) review the outcome of the WKNCT Workshop on New and Classical Techniques in Enumeration of Phytoplankton;

d ) review progress towards the joint theme session between WGHABD and WGPBI for the ICES ASC in 2006 titled "Harmful Algae Bloom Dynamics; Validation of model predictions (possibilities and limitations) and status on coupled physical-biological process knowledge";

e ) review progress and analyses that REGNS North Sea Group have done on data sets submitted by members of WGHABD (to meet in the interim);

f ) discuss new findings that pertain to harmful algal bloom dynamics. Bring new findings in phytoplankton population dynamics models, with emphasis on loss processes, to the attention of WGHABD for discussion;

g ) review the on-line format of the HAEDAT submission form and evaluate the amendments made to update historical submissions and links to mapping;

h ) review the structure and composition of the decadal HAE maps for the ICES region with special reference to clarifying the distinction between harmful algal blooms and the harmful affects that are reported on the maps. In particular, the registration of cyanobacterial blooms in brackish and marine waters should be revisited from the emerging perspective of their known toxicity and implicit harmful effects;

i ) collate and assess National reports and update the decadal mapping of harmful algal events for the IOC/ICES harmful algal database, HAE-DAT (Country Reps);

j ) discuss and report on potential contributions to the ecosystem overview of the advisory reports describing the quantity and quality of marine habitat and/or the health of the marine ecosystem, and to consider and report on potential indicators of significant change in these ecosystem attributes;

k ) review and update sub-regional data tables and, where necessary, include new data (parameters) and/or existing data (parameters) updated where relevant. The data tables will be subject to thematic assessment to be undertaken at a REGNS thematic assessment workshop.

WGHABD will report by 20 April 2006 for the attention of the Oceanography Committee and ACME.

2005/2/OCC05 A Workshop on **Advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions** [WKAMF] (Co-Chairs: A. Gallego*, UK, E. W. North*, USA, and P. Petitgas*, France) will be held 3–5 April 2006 in Nantes, France, to:

a ) summarize the current state-of-the-art in modelling physical-biological interactions in fish early-life history;

b ) review important technical/methodological issues (including model sensitivity and validation), prioritize important processes to be included in the models, and identify knowledge gaps;

c ) develop a manual of recommended practices and list of future research directions as proceedings from the workshop.

WKAMF will report by 1 May 2006 for the attention of the Oceanography Committee.

2005/2/OCC06 The **Planning Group for the North Sea Pilot Project NORSEPP** [PGNSP] (Co-Chairs: Martin Holt, UK, and Hein Rune Skjoldal, Norway) will meet 8–9 May 2006 at ICES Headquarters to:

a ) summarize the experiences with producing the quarterly update reports on the North Sea for 2005 and their consolidation into a description of conditions in 2005 as a contribution to the ICES Ocean Climate Status Report;

b ) plan the further production of quarterly update reports for 2006;

c ) review the use of NORSEPP products by other ICES WGs and propose ways to improve working relationships with relevant groups;

d ) evaluate and finalize the NORSEPP products for inputs to the work of REGNS in producing an integrated assessment of the North Sea;

e ) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the 'overview' assessment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant;

f ) based on experiences with production of the quarterly reports and the inputs to REGNS, review and plan possible future development of the NORSEPP products;

g ) review the observational data available for generation of the NORSEPP products, identify gaps, and make recommendations for future improvements and services from the Data Centre.

PGNSP will report by 1 May 2006 for the attention of the Oceanography, the Living Resources, the Resource Management, the Marine Habitat, and the Advisory Committees.

2005/2/OCC07 The **Working Group on Modelling Physical/Biological Interactions** [WGPBI] (Chair: C. Hannah, Canada) will meet 6–7 April 2006 in Nantes, France to:

a ) present and discuss new results related to developments and validation in modelling PBI;

b ) plan and execute the workshop on 'Advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions' and report on conclusions;

c ) identify good ideas for embedding PBI in operational models (e.g. MERSEA) to generate the first generation of products;

d ) investigate current pre-operational applications of PBI models;

e ) complete the compilation of data sets suitable for testing 1D ecosystem models;

f ) review maximum phytoplankton growth rates as function of temperature as the first in understanding whether temperature regulates total production when integrated across the entire phytoplankton community;

g ) cooperate with SGBEM to explore ecosystem models;

h ) collaborate with WGRP to enhance the use of physical-biological models for prediction of fisheries recruitment.

WGPBI will report by 7 May 2006 for the attention of the Oceanography Committee.

2005/2/OCC08 The **Working Group on Oceanic Hydrography** [WGOH] (Co-Chairs: S. Bacon*, UK, and P. Holliday*, UK) will meet 19–22 April 2006 in Galway, Ireland, to:

a) update and review results from Standard Sections and Stations;

b) consolidate inputs from Member Countries to, and continue development of the ICES Annual Ocean Climate Status Summary (IAOCSS), and align data source acknowledgements in IAOCSS with IOC policy;

c) review and improve relations with international climate monitoring programmes;

d) formulate advice to the ICES Data Centre manager on the development of data products and services to improve access to physical oceanographic data for non-expert users;

e) take action for strengthening the role of WGOH and physical oceanography within ICES;

f) continue and extend the isopycnal analysis of *in situ* data;

g) review and report on the results of the North Sea ecosystem (overview) assessment undertaken by REGNS and prepare recommendations for further or modified analysis made where appropriate. The tables of gridded data used for the 'overview' assessment should be checked and, where necessary, new data (parameters) included and/or existing data (parameters) updated if relevant;

h) recommend equipment and protocols for collecting oceanographic data on ICES coordinated bottom-trawl surveys and to determine the expected precision and accuracy of data thus collected. Report outcome to OCC and IBTSWG.

WGOH will report by 2 May 2006 for the attention of the Oceanography Committee, ACME, and ACE.

2005/2/OCC09 The **ICES-IOC Steering Group on GOOS** [SGGOOS] (Co-Chairs: Antonio Bode, Spain, (ICES) and David Mountain*, USA (IOC)) will meet in at ICES Headquarters, Denmark, from 24–25 April 2006 to:

a ) identify and steer the development of global and regional linkages between ICES and GOOS bodies:

  i ) review (intersessionally) and make recommendations on how SGGOOS can assist in the implementation of COOP-GOOS,

  ii ) review (intersessionally) and make recommendations on the role ICES can play in the implementation of COOP-GOOS,

  iii ) review (intersessionally), evaluate and revise SGGOOS Implementation Plan; address any recommendations coming out of the ICES Expert Groups review and evaluation;

b ) identify and steer the development of components and activities of ICES contributing to the Global Ocean Observing System, as well as GOOS products relevant to ICES:

  i ) review (intersessionally) ICES data centre user survey list of improved data products and identify those relevant to GOOS; identify and make recommendations on additional GOOS-relevant data products,

  ii ) report on status and make recommendations on ICES CTD/VOS system to provide real-time or near-real time delivery of environmental data from ICES coordinated research vessel surveys;

c ) identify and steer the development of regional ICES and GOOS pilot projects to demonstrate the benefits of taking a GOOS approach in the ICES context:

  i ) review, through presentations, highlight best practices and make recommendations to further develop and implement regional pilot projects, including NORSEPP, GoMA-GOOS, PICES, etc.;

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 ) update (intersessionally) and review SGGOOS Website,

  ii ) update (intersessionally), review and agree on final form and content of ICES-GOOS flyer,

  iii ) make recommendations for GOOS plenary lecture and display for 2006 ICES ASC,

  iv ) publicize ICES annual status reports (e.g. on climate and zooplankton) within the GOOS community.

SGGOOS will report by 1 June 2006 for the attention of the Oceanography Committee, ACME, and ACE.

2005/2/OCC10 The **Working Group on Marine Data Management** [WGMDM] (Co-Chairs: Michèle Fichaut, France, and Helge Sagen, Norway) will meet jointly with SGMID 8–10 May 2006 at ICES Headquarters (tentatively) to:

a ) quality assurance/control procedures – identify and compare existing quality control and quality assurance procedures for integration of physical, chemical, and biological data in use at WGMDM member organizations, and recommend common standards and procedures to ICES and IOC/IODE;

b ) data type guidelines – assess the continuous development and updating of an accurate list of best data collection guidelines and to recommend on encouraging the use of the guidelines by the scientific community;

c ) taxonomy issues – improve usefulness of the Integrated Taxonomic Information System (ITIS) to the marine community and actively promote ITIS within the ICES and IOC community;

d ) operational oceanography issues – identify existing technology available to submit data in real-time to the GTS system. Develop practical guidelines to assist institutes who are not currently submitting their data in this way, including a description of the equipment required and the procedures for data quality control;

e ) XML (eXtended Markup Language) – Evaluate and develop future directions for oceanographic marine data exchange systems using XML at the national and international level;

f ) GIS (Geographical Information Systems) – critically examine the use of GIS in marine data systems in WGMDM member countries, especially to investigate the use of Open Source GIS as compared with commercial ones like ESRI;

g ) jointly with SGMID:

i ) prepare for merging WGMDM and SGMID activities into a new group of data managers, users, and scientists called the **Working Group on ICES Data and Information Management (WGDIM)**,

ii ) organize the 2006 ASC Theme Session on Environmental and Fisheries Data Management, Access, and Integration,

iii ) review the suggested tasks for WGDIM:

- to advise ICES on data management issues,
- to promote good data management practice within ICES,
- to give guidance to the ICES Data Centre,
- to liaise with relevant international data management bodies and programmes (IODE, GOOS, SeaSearch/SeaDataNet, etc.).

WGMDM will report by 5 June 2005 for the attention of the Oceanography Committee.

2005/2/OCC11 The **ICES/GLOBEC Working Group on Cod and Climate Change** [WGCCC] (Co-Chairs: G. Ottersen, Norway, and K. Wieland*, Greenland) will meet 8–9 May 2006 in St. John's, Canada, to:

a ) review and evaluate the progress on the Synthesis Activities including:

ii ) publication of the book on cod,

iii ) publication of the proceedings of the Symposium on the Influence of Climate Change on North Atlantic Fish Stocks;

b ) review and evaluate the Workshop on the Impact of Zooplankton on Cod Abundance and Production;

c ) review and evaluate the Theme Session on Cod in a Changing Climate (ASC 2005);

d ) make final preparations for the Workshop on the Decline and Recovery of Cod Stocks throughout the North Atlantic including Tropho-dynamic Effects;

e ) continue planning for a Workshop on Cod and Future Climate Change and discuss other Workshops.

WGCCC will report by 31 May 2006 for the attention of the Oceanography Committee.

2005/2/OCC12 A **Workshop on the Decline and Recovery of Cod Stocks throughout the North Atlantic including Tropho-dynamic Effects** [WKDRCS] (Co-Chairs: Brian Rothschild*, USA, George Lilly*, Canada, Svein Sundby*, Norway, and Kai Wieland*, Greenland) will be held 9–12 May 2006 in St. John's, Canada, to:

a ) provide an overview and comparison of the declines which have taken place in cod stocks;

b ) evaluate the relative roles of fishing and climate in causing declines in abundance;

c ) evaluate the causes of observed changes in rates of survival, growth, and maturity, including a tropho-dynamic perspective;

d ) evaluate the consequences for stock resilience of decreases in mean weight and length and in age/size diversity;

e ) document and comment on historic evidence of previous cod stock recoveries and the environmental and fisheries circumstances in which these occurred;

f ) comment on past projections of cod stock recovery, evaluate whether they were correct and draw conclusions concerning how future projections can be improved;

g ) evaluate the role of cod forage species (e.g. capelin) for variability in abundance and size-at-age of cod;

h ) evaluate the role of cod predators (e.g. seals) for variability in abundance and size-at-age of cod;

i ) evaluate the role of climate mediated through cod predators and prey;

j ) evaluate the relationship between the decline and recovery of cod stocks and changes in the marine ecosystems.

WKDRCS will report by 10 June 2006 for the attention of the Oceanography Committee and ACFM, ACE, and the Resource Management Committee.

2005/2/OCC13 The **Working Group on Recruitment Processes** [WGRP] (Co-Chairs: R. D. M. Nash, Norway, and T. Miller, USA) will work by correspondence in 2006 to:

a ) prepare a synthesis of multidisciplinary projects relevant to our understanding of recruitment processes and highlight unresolved issues which deserve further consideration *(carried over from 2005)*;

b ) assess the role of spatial and temporal variability in the distribution and abundance of organisms together with the implications of these sources of variability on the design of sampling programmes and inferences drawn from them *(carried over from 2005)*;

c ) conduct a synthesis and review of the evidence for sources, patterns, and consequences of selective Mortality in fish early life history and its relevance to our understanding of forecasts of year-class strength;

d ) summarize and analyse data relevant to multi-stage 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;

e ) explore the potential of preparing a theme session article for the Marine Ecology Progress Series on the 'Utility of Recruitment Research to Fisheries';

f ) collaborate with WGPBI to enhance the use of physical-biological models for prediction of fisheries recruitment.

WGRP will report by 1 June 2006 for the attention of the Oceanography Committee.

2005/2/OCC14 The **Steering Group for the ICES/GLOBEC North Atlantic Programme and Regional Office** [SGNARO] (Co-Chairs: K. Drinkwater, Norway, and F. Köster, Denmark) will work by correspondence in 2006, and meet as appropriate at national expense, to:

a ) review and advise on the further evolution of the ICES/GLOBEC North Atlantic Programme and the workplan of the ICES/GLOBEC office, taking into account:
   i ) the strategic goals for ICES/GLOBEC research and the strategic approach for the ICES/GLOBEC office as agreed by the Council,
   ii ) developments in the international GLOBEC programme, and
   iii ) available funding;

b ) review and advise on the action plan of the Working Group on Cod and Climate Change.

SGNARO will report by 31 May 2006 for the attention of the Oceanography Committee and the Bureau.

## Resource Management Committee (RMC)

2005/2/RMC01 A **Workshop on Advanced Fish Stock Assessment Techniques** [WKAFAT] (Co-Chairs: D. Skagen, Norway, and E. Hjörleifsson, Iceland) will be held 23–28 February 2006 at ICES Headquarters to:

a ) teach a course covering general stock assessment methodology, including evaluation of data consistency, estimation of the state of a stock, projection of stock status, uncertainty evaluation, and risk assessment.

*Participants will each pay a contribution of DKK 2000 towards the running expenses of the Workshop.*

WKAFAT will report by 31 March 2006 for the attention of the Resource Management and Living Resources Committees, and ACFM.

2005/2/RMC02 The **Study Group on Multispecies Assessments in the North Sea** [SGMSNS] (Co-Chairs: John Pinnegar, UK*, and Morten Vinther, Denmark) will meet 20–25 February 2006 at ICES Headquarters to:

a ) review the value of existing stomach data currently not available to the Study Group for the estimation of species interactions;

b ) determine the characteristics of a stomach sampling programme necessary to achieve a certain statistical and geographic precision of diet composition and food selection for different predators, to be identified by the Working Group;

c ) design a stomach sampling programme based on the results from ToR b);

d ) update population estimates for gurnards, horse mackerel, seabirds (WGSE), and marine mammals (WGMME) and diet composition estimates for seabirds (WGSE) and marine mammals (WGMME);

e ) propose a workplan for the future development of multispecies modelling, including evaluation of management strategies in situations where multispecies interactions are important.

SGMSNS will report by 3 April 2006 for the attention of the Resource Management Committee.

2005/2/RMC03 The **International Bottom Trawl Survey Working Group** [IBTSWG] (Chair: J.-C. Mahé, France) will meet 27–31 March 2006 in Lysekil, Sweden, to:

a ) coordinate and plan North Sea and Northeastern Atlantic surveys for the next twelve months;

b ) agree on a standard reporting format for survey results, and provide this information to the WGNSDS, WGSSDS, WGHMM, and WGNSSK in collaboration with the ICES Secretariat;

c ) further develop standardization of all sampling strategies, computation of indices and estimation of precision;

d ) discuss and propose the extent to which adjacent and overlapping surveys in the southern and western IBTS areas can ensure sufficient overlap incorporating fixed stations, for future comparison of catches;

e ) review the findings from the a) SGSTS and b) WKSAD in respect to issues relevant to IBTS and respond;

f ) review progress made in the DATRAS database with respect to the computation of indices and data access policy and in collaboration with the ICES Data Centre, specify DATRAS enhancements, e.g. indices, parameter applications, and additional flagging of survey positions;

g ) complete the shape files and supporting information for the agreed strata in the Eastern Atlantic;

h ) coordinate the production and dissemination, and consider future publication, of identification keys for North Sea, and southern and western IBTS groundfish surveys;

i ) Identify, in collaboration with members from REGNS, WGSE, WGMME, WGRED, PGNSP, and others as appropriate, important components of the marine ecosystem that can be better monitored during internationally coordinated surveys, determine the practicalities of collecting standardized data for oceanography, benthic fauna, seabirds, and surface observation of marine fauna (marine mammals, sea turtles, pelagic fish, and jellyfish) and consider ways of maintaining a further dialogue with potential users of data that can be obtained through the IBTS surveys.

IBTSWG will report by 30 April 2006 for the attention of the Resource Management Committee.

2005/2/RMC04 The **Study Group on Risk Assessment and Management Advice** [SGRAMA] (Knut Korsbrekke, Norway) will be established and meet 18–21 April 2006 at ICES Headquarters to:

a ) to review and report on available methodologies for risk assessment and frameworks for risk management within and outside the fisheries sector;

b ) based on the review, start development of a framework and operational guidelines for risk assessment and advice which includes considerations on risk management. Risk assessments should *inter alia* relate to conservation limits and targets for exploitation of fish stocks taking into consideration the ecosystem effects of fisheries, and environmental variability and management considerations should relate both to the production of such assessments and to institutional aspects of risk management decisions and implementation. The framework should link to the framework for management strategies developed by SGMAS with the scope of ultimately being integrated with these;

c ) consider and report on training needs and possible modalities for training to disseminate knowledge of risk assessments to members of ICES expert groups;

d ) outline the kind of relevant information that will be required for risk assessments.

SGRAMA will report by 5 May 2006 for the attention of the Resource Management and the Living Resources Committees as well as ACFM, ACE, and ACME.

2005/2/RMC05 The **Working Group on Fishery Systems** [WGFS] (Chair: Doug Wilson*, Denmark) will meet 26–28 April 2006 in Charlottenlund, Denmark to:

a ) present and review results of relevant research projects (e.g. TECTAC, FEMS, EASE, PKFM) that have analysed (elements of) fishery systems; as well as SGMAS;

b ) consolidate the case study to evaluate the North Sea cod management system;

c ) prepare contributions to the ICES Symposium on Management Strategies and to a *Cooperative Research Report* on that topic.

WGFS will report by 31 May 2006 for the attention of the Resource Management Committee.

2005/2/RMC06 The **Regional Ecosystem Study Group for the North Sea** [REGNS] (Chair: A. Kenny, UK) will meet 15–19 May 2006 at ICES Headquarters to:

During the first 3 days:

a ) Hold a workshop to evaluate and plan the finalization of the 2006 integrated ecosystem assessment for the North Sea, to be presented at the 2006 ASC:

i ) review the outcome of the work of an intersessional correspondence group (subgroup of REGNS) with compilation and analyses of a comprehensive integrated data set for different aspects and components of the North Sea ecosystem,

ii ) review the outcome of intersessional work on relating state variables of the ecosystem with human pressures according to themes (eutrophication, pollution, conservation, fisheries, climate, and management),

iii ) prepare plans for finalization of the integrated ecosystem assessment which must take account of the relationship between the thematic human pressures assessments (in ii) above) and the overview integrated assessment (in i) above),

iv ) prepare for presenting the outcome of the integrated ecosystem assessment at the 2006 ICES Annual Science Conference;

During the last 2 days:

b ) Advise on follow-up work to translate the experiences of REGNS in producing an integrated ecosystem assessment into a regular process in ICES of producing or contributing to the production of updated integrated assessments for the North Sea ecosystem;

c ) Based on the experience with the production of the 2006 North Sea integrated assessment: consider requirements that need to be taken into account in a design of a holistic monitoring of the North Sea ecosystem.

REGNS will report by 30 June 2006 for the attention of the Resource Management Committee, ACFM, and ACE.

2005/2/RMC/07 The **Working Group on Methods on Fish Stock Assessments** [WGMG] (Chair: C. O'Brien, UK) will meet 21–26 June 2006 in Galway, Ireland to:

a ) investigate the utility of assessment models that can provide management advice when catch-at-age data based upon commercial landings are thought not to reflect the real level of catches within a fishery;

b ) review approaches for the historical re-construction of discards-at-age data and their incorporation into routine stock assessments; together with the development of estimation methods for the incorporation of information from self-sampling discard schemes;

c ) investigate and test the sensitivities of catch-at-age stock assessment methods to known data problems with particular reference to the retrospective problem; and

d ) evaluate, test, and review developments in computer software for routine application in stock assessment that are presented to ICES.

WGMG will report by 7 July 2006 for the attention of the Resource Management Committee and ACFM.

2005/2/RMC08 The **Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys** [PGNAPES] (Chair: A. Krysov*, Russia) will meet 15–18 August 2006 in Reykjavik, Iceland, to:

a ) critically evaluate the surveys carried out in 2006 in respect of their utility as indicators of trends in the stocks, both in terms of stock migrations and accuracy of stock estimates in relation to the stock-environment interactions;

b ) review the 2006 survey data and provide the following data for the Northern Pelagic and Blue Whiting Working Group:

  i ) stock indices of blue whiting and Norwegian spring-spawning herring,

  ii ) zooplankton biomass for making short-term projection of herring growth,

  iii ) hydrographic and zooplankton conditions for ecological considerations,

  iv ) aerial distribution of such pelagic species as mackerel;

c ) describe the migration pattern of the Norwegian spring-spawning herring and blue whiting stocks in 2006 based on biological and environmental data;

d ) plan and coordinate the surveys on the pelagic resources and the environment in the Northeast Atlantic in 2007, including the following:

  i ) the international acoustic survey covering the main spawning grounds of blue whiting in March–April 2007,

  ii ) the international coordinated survey on Norwegian spring-spawning herring, blue whiting, and environmental data in May–June 2007,

  iii ) Russian investigations on pelagic fish and the environment in June–July 2007,

  iv ) Icelandic investigations on pelagic fish and the environment in June–July 2007,

  v ) Norwegian investigations on pelagic fish and the environment in July–August 2007;

e ) finalize and adopt the proposed protocol to ensure standardization of all sampling tools, procedures, and survey gears.

PGNAPES will report by 15 September 2006 for the attention of the Resource Management and the Living Resources Committees, as well as ACFM and ACE.

2005/2/RMC09 A **Workshop on Age Determination of Redfish** [WKADR] (Co-Chairs: F. Saborido-Rey*, Spain, and C. Stransky*, Germany) will be held from 28 August to 1 September 2006 in Vigo, Spain, to:

a ) review information on age determinations, otolith exchanges, and validation work since the most recent redfish age-reading workshop in 1995;

b ) identify sources of age determination error in terms of bias and precision, describe the corresponding interpretational differences between readers and laboratories, and agree on the ageing criteria;

c ) compare different otolith-based age determination methods for redfish and their effect on growth estimates;

d ) analyse species- and stock-specific growth rates and growth increment patterns and provide corresponding specific guidelines for the interpretation of growth structures in otoliths;

e ) propose a methodology to combine time-series of age readings based on scales and otoliths;

f ) set up a strategic plan for routine age determinations during the next 5 years and for the inclusion of age data in age-based and (age-)length-based analytical assessment of the most important stocks;

g ) consider publishing the results in the *ICES Cooperative Research Report* series.

WKADR will report by 15 September 2006 for the attention of the Resource Management Committee, the Northwestern Working Group, the Study Group on Redfish Stocks, the Arctic Fisheries Working Group, and ACFM.

2005/2/RMC10 The **Study Group on Age–length Structured Assessment Models** [SGASAM] (Chair: Helen Dobby, UK) will meet at ICES Headquarters from 27 November to 1 December 2006 to:

a ) provide a forum for dissemination of information regarding developments in methodologies and applications of length and age–length structured models in ICES areas and elsewhere;

b ) implement improved process-based models for predation, growth, maturation, fecundity, and condition in age–length structured model frameworks;

c ) compare the performance of models with different process-based submodels and/or different levels of complexity, and use and develop formal statistical methods to conduct these comparisons;

d ) evaluate the use of age–length structured models for the assessment of stocks for which age-disaggregated data are sparse or unreliable (e.g. *Nephrops*, elasmobranchs, hake, anglerfish, redfish);

e ) investigate the utility of age–length structured models for investigating the effects of potential management measures (e.g. technical measures such as mesh size changes).

SGASAM will report by 31 December 2006 for the attention of the Resource Management Committee.

## Resolutions involving Symposia

2005/3/ACFM/SY01 A "**European Symposium on Marine Protected Areas"** will be held 25–28 September 2007 in Murcia, Spain (to be confirmed) with two EU FP6 projects PROTECT (Coordinator: Erik Hoffmann, DIFRES) and EMPAFISH (Coordinator: Angel Perez-Ruzafa, University of Murcia) as conveners.

Co-sponsors: so far these include ICES, local and regional authorities, and government agencies.

2005/3/OCC/SY02 An **ICES/PICES/IOC Symposium on Effects of Climate Change on the World Oceans** will be held during the spring 2008, at Gijón, Spain, with Luis Valdés as ICES convener.

A Steering Committee will be established with three members nominated by ICES, three by PICES, and three by IOC to assist the local organizers in planning the Symposium. The General Secretary will solicit appropriate co-sponsorship.

2005/3/FTC/SY03 A Symposium on **The Humboldt Current System: climate, ocean dynamics, ecosystem processes, and fisheries** will be held in Lima, Peru, from 27 November to 1 December 2006 with Arnaud Bertrand, France; Renato Guevara, Peru; and Pierre Soler, France, as co-conveners.

ICES will be co-sponsoring this symposium together with the Institut de Recherche pour le Développement and Instituto del Mar del Peru (IMARPE) and FAO.

## Other Resolutions Requiring Action

### Interaction with other IGOs

2005/4/FTC01 The **OMEGA mesh gauge** and its associated protocol shall replace the existing ICES mesh gauge in use since 1962 for the application in fisheries research.

2005/4/FTC02 The General Secretary shall write to the Fisheries Commissions in the Northeast Atlantic and the Baltic, to NAFO, ICCAT, FAO, the European Commission, and to ICES Delegates, drawing their attention to the new ICES standard for measuring meshes in fishing gear. The letter shall encourage the organizations to use this gauge as their standard. In particular, organizations responsible for control and enforcement of fisheries in the Northeast Atlantic shall be asked to use this gauge as their standard.

# Part III

## ICES Administrative Report

# Introductory note

This note summarizes keynote facts about ICES. More extensive information is available on the ICES Website http://www.ices.dk.

## Function

The marine ecosystems of the North Atlantic and adjacent seas have been a prime concern of the International Council for the Exploration of the Sea (ICES) since its inception in 1902. As the oldest intergovernmental marine science organization in the world, ICES has long recognized the mutual interdependence of the living marine resources and their physical and chemical environment. Although the Council's original statutes have undergone occasional modification to adjust for changing conditions, challenges, and priorities, its main focus has continued to be on international cooperative studies. Article 1 of the 1964 ICES Convention formally identifies the Council's principal functions as:

a ) to promote and encourage research and investigations for the study of the sea, particularly related to the living resources thereof;

b ) to draw up programmes required for this purpose and to organize, in agreement with the Contracting Parties, such research and investigations as may appear necessary;

c ) to publish and otherwise disseminate the results of research and investigations carried out under its auspices or to encourage the publication thereof.

In addition, since the 1950s (with regard to fisheries) and the 1970s (regarding the marine environment), a major task for ICES has involved the provision of scientific information and advice to intergovernmental regulatory commissions and the governments of ICES Member Countries, for purposes of fisheries conservation and the protection of the marine environment.

The work of ICES encompasses the broad areas of fisheries, oceanography, and environmental sciences including marine pollution, and is organized and carried out by scientists from its Member Countries.

## Membership

ICES currently has 19 Member Countries:

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

Affiliate status has been granted to Australia (CSIRO), Chile (Instituto de Fomento Pesquero (IFOP)), Greece (Institute of Marine Biology of Crete), New Zealand (National Institute of Water and Atmospheric Research), Peru (Instituto del Mar del Peru (IMARPE)), and South Africa (Sea Fisheries Research Institute).

## Organization

The principal decision- and policy-making body of ICES is the Council, comprising two Delegates appointed by each Member Country, in addition to the President. Meetings of the Council are chaired by the President, who is elected from among the Delegates for a three-year period. The President, together with the First Vice-President and five ordinary Vice-Presidents (also elected for three years from among the Delegates) constitute the Bureau, the executive committee of ICES. The General Secretary, the Chair of the Consultative Committee, and the Chair of the Management Committee on the Advisory Process (MCAP) are *ex officio* members. The Bu-

reau is responsible, together with the General Secretary, for overseeing the daily operations of ICES, convening the Annual Science Conference, and preparing budgets. The Bureau forms the link between Delegates and the ICES Secretariat. The Finance Committee advises the Council and the Bureau on financial matters.

The General Secretary—the chief executive officer of ICES—heads a group of Professional and General Service staff currently numbering 38 people, who together form the ICES Secretariat, based at ICES Headquarters in Copenhagen (Denmark). The Secretariat provides the administrative, secretarial, editorial, and publication services for the Council, and serves as the communications link for the approximately 1600 scientists involved in ICES activities located in the Member Countries, the growing number of Affiliates, as well as with other relevant international organizations. More than 700 scientists annually attend meetings at ICES Headquarters, supported by the staff and in-house facilities. The Secretariat is also responsible for organising the Annual Science Conference, Symposia, and Dialogue Meetings in Denmark and abroad.

The supervision of the Council's work programme resides mainly in various committees. On the scientific side, there are eight Science Committees providing a wide coverage of the main facets of marine science, three Advisory Committees, the Consultative Committee, and the Management Committee on the Advisory Process (MCAP). MCAP oversees the advisory process. The Consultative Committee, consisting of the Chairs of the Science Committees and the Advisory Committees, plus a Chair and Vice-Chair elected by the Committee, oversees all aspects of the Council's scientific work. The primary means by which the actual work is planned, coordinated, conducted, appraised, and reported on for subsequent peer-review, are the large number of Study, Working, Planning, and Steering Groups and Workshops. These Expert Groups are established as needed by the Council, on the recommendation of the respective Committees, and maintained for as long as necessary to address the questions and terms of reference assigned to them. Each Expert Group has a parent Committee to which it reports progress and from which it receives instructions, as necessary, for further work. All Member Countries and Affiliates are entitled to appoint members to any of these groups. Except for meetings of groups whose members might be restricted to particular experts appointed by the Council, observers from non-Member Countries and international scientific organizations may be invited to join Expert Group meetings.

ICES currently has more than 100 Working, Study, Planning, and Steering Groups and Workshops forming the basis for its annual work programme. Subjects include such wide-ranging fields as marine chemistry; sediments; physical oceanography; environmental impact of mariculture; ecosystem effects of fishing; fish diseases, fish behaviour, and genetics; ecology of benthos, plankton, fish, seabirds, and marine mammals; biological effects of contaminants; trend monitoring; marine data management and statistics; single- and multispecies fish-stock assessments; fishing technology; and surveys for fish eggs, larvae, juveniles, and adults.

## Scientific and Advisory Functions

### 1. Fisheries

An important responsibility of ICES is the coordination of fisheries-related scientific research. This comprises monitoring the abundance and composition of fish stocks in the Northeast Atlantic, including developing appropriate methods to estimate fish-stock abundance, collecting statistics on fish catches, fishing effort, relevant biological data on the various life stages of fish, recruitment to fish stocks, multispecies interactions and their effects on individual fish stocks.

ICES is the official scientific advisory body to Member Countries and the following Commissions:

- North-East Atlantic Fisheries Commission (NEAFC);
- North Atlantic Salmon Conservation Organization (NASCO);

- Commission of the European Union (EC).

These commissions and the governments of ICES Member Countries formulate requests to ICES for information and advice related to the management of specific stocks of fish. The ICES Advisory Committee on Fishery Management (ACFM) meets twice a year (summer and autumn) to prepare its advice. Ecosystem questions (which frequently include fisheries-related elements) are handled by the Advisory Committee on Ecosystems (ACE), which generally meets once per year. ACFM and ACE advice is published annually in the *ICES Advice* series.

### 2. Marine Environment

ICES also provides scientific information and advice on matters related to the marine environment through its Advisory Committee on the Marine Environment (ACME) and the Advisory Committee on Ecosystems (ACE) to Member Country governments and the following Commissions:

- OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic;
- Helsinki Commission – Baltic Marine Environment Protection Commission (HELCOM, Convention for the Protection of the Marine Environment of the Baltic Sea Area);
- Commission of the European Union (EC).

ACME and ACE meet annually and publish their advice in the *ICES Advice* series.

### 3. Management of the Advisory Process

Through Council Resolution C. Res. 2000/4DEL01, overall responsibility for managing the production and delivery of scientific advice rests with the Management Committee for the Advisory Process (MCAP). Membership of MCAP consists of the Chairs of ACFM, ACME, ACE, and the Consultative Committee. The General Secretary is an *ex officio* member.

### 4. Oceanography

Oceanographic investigations form an integral part of the ICES programme of multidisciplinary work aimed at understanding the features and dynamics of water masses and their ecological processes. Special emphasis is placed on the influence of changes in the environment on the distribution, abundance, and population dynamics of utilized fish resources. This theme is an important element of the project of the International Geosphere-Biosphere Programme, called GLOBEC (Global Ocean Ecosystem Dynamics), in which ICES plays a key implementation role via the North Atlantic Regional Office of GLOBEC which is located in the ICES Secretariat. Oceanographic investigations are also directly relevant to marine pollution studies in view of the influence oceanographic conditions have on the distribution and transport of contaminants in the marine environment. ICES promotes the development and calibration of oceanographic equipment and the maintenance of appropriate standards of quality and intercomparability of oceanographic and environmental data.

## Data Centre

Data serve as the foundation for objective assessments of the status of the marine environment and its living resources. The ICES Secretariat maintains some of the world's largest and longest databases on oceanography, contaminants/pollution, and fisheries. Many of the data are quality controlled directly by ICES and/or by the data submitter using an ICES data checking system.

ICES maintains oceanographic data supplied by Member Countries dating back to the early 1900s. The oceanographic database is supplemented by an inventory of cruise information,

based on Reports of Scientific Cruises and Oceanographic Programmes (ROSCOP), which summarizes all cruise activities in Member Countries related to physical oceanographic, marine biological, pollution, fisheries, and geophysical research.

ICES is the oldest international data centre for marine contaminants, including data from its Co-operative Monitoring Studies Programme, and from the Oslo and Paris Commissions' Joint Monitoring Programme covering contaminants in biota, seawater, and sediments. ICES also served as the centre for environmental and biological data used in the work of the North Sea Task Force, and has a formal agreement with the Arctic Monitoring and Assessment Programme (AMAP) to act as its thematic data centre for the marine component.

In the area of fisheries, ICES maintains a database containing detailed information relevant to fish-stock assessment, data from quarterly International Bottom-Trawl Surveys, and catch statistics for the Northeast Atlantic.

ICES is working towards readily accessible, multidisciplinary databases, including distributed databases, to ensure expedient data compatibility, to strengthen support of the ecosystem approach, and to offer the best possible service to the science community.

## Coordination of Cooperative Programmes

Baltic Sea Regional Project: In partnership with HELCOM, ICES is a key player in the implementation of the GEF Baltic Sea Regional Project (BSRP), in cooperation with the World Bank and UNDP.

The objective of the BSRP is to introduce ecosystem-based assessments to strengthen the management of Baltic Sea coastal and marine environments through regional cooperation and targeted, transboundary marine and watershed activities. The ultimate aim is to reduce impacts from non-point sources of pollution and to increase sustainable biological production. Within the overall project (under HELCOM's coordination), ICES is responsible for the component entitled Baltic Sea Large Marine Ecosystem Activities.

ICES/GLOBEC Office: The Office, which is housed within the ICES Secretariat in Copenhagen, has been coordinating and helping to implement the GLOBEC programme within the ICES area since 1996. The GLOBEC programme aims to improve forecasts of the responses of the marine ecosystem to physical forcing and global change by developing our understanding of its structure and functioning under varying physical conditions. The research provides the basis for a wider ecosystem approach to issues in fisheries management and environmental protection. Within ICES this requires close cooperation between physical, chemical, and biological oceanographers on the one hand, and fisheries and environmental assessment scientists on the other.

GLOBEC is a core project of the IGBP (International Geosphere-Biosphere Programme) and is sponsored by the Intergovernmental Oceanographic Commission and the Scientific Committee on Oceanic Research.

## Publications

Since its inception, ICES has published well over a thousand periodicals and monographs.

As part of its function of publishing and disseminating results of research, the Council organizes scientific symposia and other meetings that are open to participants from both Member and non-Member Countries. The following series are available to the scientific community and the general public:

- ICES Journal of Marine Science

- ICES Marine Science Symposia (Symposium proceedings formerly published in this series now usually appear as special numbers of the ICES Journal, above)
- ICES Cooperative Research Reports
- ICES Advice
- ICES Fisheries Statistics
- ICES Oceanographic Data Lists and Inventories (now available on the Internet at http://www.ices.dk)
- ICES Identification Leaflets for Plankton
- ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish
- ICES Techniques in Marine Environmental Sciences
- ICES Annual Report
- ICES/CIEM Newsletter

## Collaboration with Other International Organizations

More than 40 international organizations have observer status and cooperative relations with ICES. Of the United Nations agencies, ICES works actively with the Fisheries Department of the Food and Agriculture Organization (FAO), the Intergovernmental Oceanographic Commission of UNESCO (IOC), the International Maritime Organization (IMO), the World Meteorological Organization (WMO), and the United Nations Environment Programme (UNEP). ICES also carries out cooperative scientific activities with many intergovernmental marine science organizations, particularly the North Pacific Marine Science Organization (PICES) and the Northwest Atlantic Fisheries Organization (NAFO). Among the non-governmental organizations with which ICES has active links, one of the most important is the Scientific Committee on Oceanic Research (SCOR), which promotes and coordinates international oceanographic activities. ICES also has cooperative agreements with other eminent organizations such as the Arctic Monitoring and Assessment Programme (AMAP), the World Wide Fund for Nature (WWF), and BirdLife International.

# Progress Report on Administration

1 January to 31 December 2005

## 1 The Council and its Members

### 1.1 Country membership

The number of Contracting Parties remained at nineteen.

### 1.2 Payment of national contributions

By 31 December 2005, national contributions for 2006 had been received from Canada, Estonia, Finland, France, Germany, Ireland, Latvia, Netherlands, Norway, Poland, Portugal, Spain, Sweden, UK, and USA.

### 1.3 National Delegates

Kris Cooreman has replaced Ronald Fonteyne as Delegate of Belgium.

## 2 Cooperation with other international organizations

The Council has continued its active cooperation with other international organizations, including those to which it provides scientific information and advice in the areas of fisheries management (IBSFC, NASCO, NEAFC, and the European Commission (DG-Fisheries)), and marine environmental protection (HELCOM, OSPAR, and EC DG-Environment).

Meetings during the period since 1 January until 31 December 2005 of the above-named and other organizations at which ICES was represented are included in **Annex 1**. Observers' reports on some of these meetings were issued at the 2005 Annual Science Conference as ICES CM 2005/Gen:1.

## 3 Meetings and other activities organized by the Council

### 3.1 Bureau

The Bureau (Chair: Mike Sissenwine, President of ICES) met in Copenhagen on 9 and 10 February 2005. The main Agenda items were the ICES Secretariat Workplan for 2005, the Draft Budget for 2006, the Draft Forecast Budget for 2007 (including Programmatic Budgets), and Appointment of a new General Secretary. The Bureau met again for its mid-term meeting in Copenhagen on 21 and 22 June 2005. The main Agenda items were the Report of the Working Group on Financial Procedures, the Report of the Bureau Working Group on Data Development, the MCAP Report of its February 2005 Meeting, the MCAP/MICC Report of its 4–5 April Meeting, and Appointment of a new General Secretary. The Bureau met also on 19 September 2005 with the main Agenda items covering the Statutory Meeting (19–20 October 2005), the proposal by the German Federal Agency for Environmental Protection for ICES to give advice regarding fishing and marine protected areas in Germany's zones of the North Sea and the Baltic, a possible MoU with NAMMCO, and Lifetime Achievement Awards.

### 3.2 Advisory Committees

All Advisory Committees (ACE, ACFM, and ACME) and MCAP met for consultations during the Annual Science Conference in Aberdeen. At these consultations the Committees developed and adopted recommendations for 2006 for consideration by the Consultative Com-

mittee. The Committees will meet in parallel in May 2006 and will hold joint sessions as appropriate. This is a further step towards an integrated advisory system.

### ACE

The Advisory Committee on Ecosystems held its meeting at ICES Headquarters from 26 to 31 May 2005, chaired by Simon Jennings. In 2005, ACE has provided advice on several topics, including to the EC on the interaction of common dolphins and fisheries in the Northeast Atlantic, and information and advice about appropriate eco-regions for the implementation of an ecosystem approach in European waters. Advice was also provided to HELCOM on seal and harbour porpoise populations in the Baltic marine area.

At its consultations at the Annual Science Conference in Aberdeen, the Advisory Committee on Ecosystems finalized the advice on sonar impact on fish populations. Together with ACFM, the Committee also finalized advice for OSPAR and NEAFC on fishery effects, vulnerable habitats, and sea mounts.

### ACFM

The Advisory Committee on Fisheries Management met from 26 May to 3 June at ICES Headquarters and was chaired by Poul Degnbol. In addition to the advice on fish stocks, several requests for advice were answered, including advice on redfish stocks in the Irminger Sea, long-term management advice for several North Sea stocks, deepwater stocks and Baltic salmon, restocking of European eel, and Bay of Biscay anchovy.

During the consultations at the ASC in Aberdeen, the Committee nominated Martin Pastoors (The Netherlands) as the next Chair of ACFM. This nomination was approved by the Delegates and Martin Pastoors took up his new position on 1 January 2006.

### ACME

The Advisory Committee on Marine Environment met from 13–17 June at ICES Headquarters and was chaired by Paul Keizer. Among the topics of advice provided to Clients, advice was provided to OSPAR on the design of one-off surveys to provide new information for a number of OSPAR chemicals for priority action, the assessment of long-term impact of oil spills on marine and coastal life, and the scientific aspects of risk management of ballast water.

## 3.3 Working/Study Group meetings and workshops

A list of the meetings of Working, Study, and other Groups and Workshops specified in the Council Resolutions from the 92nd Statutory Meeting in 2004 and which have been taking place in 2005 is given in **Annex 2.**

# Secretariat matters

## 4 Staffing

The total number of people employed in the ICES Secretariat during the current Financial Year is 40. They have occupied 16 posts at the Professional level, and 24 posts at the General Service level.

Hans Mose Jensen (Danish citizen) was granted an 11-month contract as Programmer from 1 February 2005. His contract was subsequently extended to 31 December 2006.

Helle Falck (Danish citizen) took up employment on 1 June as Temporary Office Assistant, initially under a one-year contract. Her contract has now been extended until 31 May 2007.

Wei Ning (Chinese citizen) took up employment on 1 July 2005 on a four-year contract as Administrative Programmer, but then relinquished his post as per 31 December 2005.

Michael Drew (UK citizen) took up employment on 1 February 2006 with a four-year contract as Administrative Programmer.

Søren Anker Pedersen (Danish citizen) was employed as BfN (German Federal Agency for Environmental Protection) Coordinator on 1 February 2006, and his contract will run until 31 January 2007.

# 5 Publications

## 5.1 ICES Journal of Marine Science (Journal du Conseil)

A major goal for 2005 was met with the announcement of the choice of Oxford University Press as the replacement for Elsevier whose contract expires 31 December 2006. A major goal for 2006 remains the smooth transfer and the building of a solid partnership between ICES and OUP.

Another major goal was met with the development of a template to expedite the work of publishing ICES reports and documents by assuring the uniformity of all incoming documents. The template was greeted with enthusiasm by Working Group Chairs and has proven its value in saving time and effort for ICES Secretariat staff members. Another set of templates was recently introduced to standardize documents related to the administration of meetings (agenda, list of documents, timetable, etc.).

Seven candidates applied for the vacancy resulting from Chris L. J. Frid's resignation, and Audrey Geffen, University of Bergen, Norway, was appointed with effect from 1 January 2005. Her research has addressed various aspects of larval fish ecology, focusing mainly on the effects of environmental variables on growth and survival. Before moving to Norway, she worked for 15 years as a research fellow at the Port Erin Marine Laboratory in the Isle of Man. She has ample experience at both ends of the editorial pencil as a prolific author and an editor.

As the manuscript submission rate has returned to its level pre-2004, the *Journal's* six editors held the reins through 2005 without need for appointment of another, though the situation is to be held in review as the current annual load is about the maximum an editor can handle, especially so with symposium issue numbers scheduled to increase too.

The processing by Elsevier of accepted manuscripts proceeded well during 2005, all volumes to date being circulated by target month or just before. The first six issues of Volume 62 totalled 1201 pages, comprising five regular issues (79 full papers/short communications; one editorial) and one (May) with the proceedings of the ICES Symposium on "Quantitative Ecosystem Indicators for Fisheries Management" (40 papers). Guest Editor Niels Daan collaborated closely with conveners and co-editors Villy Christensen and Philippe Cury during the editorial process, resulting in a highly impressive 13-month period from symposium to publication.

The second symposium issue published in October, "Influence of Climate Change on North Atlantic Fish Stocks" with Guest Editors Ken Drinkwater *et al*. comprised 31 papers; ±360 pp. The final regular issue contained 174 pages.

The following numbers have been published since the 2005 ICES Annual Science Conference/93rd Statutory Meeting:

Volume 62, Number 6, pages 1021–1201 (September 2005).

Volume 62, Number 7, pages 1203–1541 (October 2005) titled "Influence of Climate Change on North Atlantic Fish Stocks". The articles stem from the eponymous

ICES Symposium held in Bergen, Norway, 11–14 May 2004. This number is also designated as *ICES Marine Science Symposia (MSS)* Volume 223.

Volume 62, Number 8, pages 1543–1716 (December 2005).

Volume 63, Number 1, pages 1–186 (January 2006).

In 2006, the *ICES Journal of Marine Science* will appear in nine issues, two of which will be dedicated to the proceedings of ICES symposia.

Institutional subscriptions also continue to be available in different combinations of Web and paper versions (at varying rates determined by criteria established by Elsevier), with electronic versions playing an ever greater role in the proportion of the revenue received.

Subscribers can download full-text versions of articles, usually several weeks before paper versions are off press, and non-subscribers can access tables of contents and abstracts of articles at *www.ScienceDirect.com*.

## 5.2 ICES Marine Science Symposia (Actes du Symposium)

Since Volume 200, numbers of ICES Marine Science Symposia have been included in the series *ICES Journal of Marine Science,* but retain a place in the consecutive numbering system of *ICES Marine Science Symposia (MSS).*

Volume 62, Number 7, pages 1203–1541 (October 2005) titled "Influence of Climate Change on North Atlantic Fish Stocks". The articles stem from the eponymous ICES Symposium held in Bergen, Norway, 11–14 May 2004. This number is also designated as *ICES Marine Science Symposia (MSS)* Volume 223.

## 5.3 ICES Cooperative Research Report (Rapport des Recherches Collectives)

The following numbers in the *ICES Cooperative Research Report* series have been published since January 2005:

No. 271: Vector Pathways and the Spread of Exotic Species in the Sea, dated March 2005.

No. 272: Ecosystem Effects of Fishing: Impacts, Metrics, and Management Strategies, dated July 2005.

No. 273: Guidance on the Application of the Ecosystem Approach to Management of Human Activities in the European Marine Environment, dated July 2005.

No. 274: Spawning and Life History Information for North Atlantic Cod Stocks, dated June 2005.

No. 275: The Annual ICES Ocean Climate Status Summary 2004/2005, dated July 2005.

No. 276: Zooplankton Monitoring Results in the ICES Area: Summary Status Report, dated September 2005.

No. 277: The international introduction of the marine red king crab *Paralithodes camtschaticus* into the Southern Barents Sea, dated September 2005

## 5.4 ICES Techniques in Marine Environmental Sciences

The following number in the *ICES Techniques in Marine Environmental Sciences* series has been published since January 2005:

No. 39: Review of Analytical methods for determining metabolites of polycyclic aromatic compounds (PACs) in fish bile, dated July 2005.

## 5.5 ICES Advice

Entering its second year, the new *ICES Advice* series, combining ICES advice from all three Advisory Committees published the 2005 issue in December 2005.

## 5.6 ICES Annual Report

The *ICES Annual Report* for 2004 was issued in May 2005.

## 5.7 ICES/CIEM Newsletter

The 2005 Newsletter was published in September in time for distribution at the Annual Science Conference.

## 5.8 Occasional publications

ICES Code of Practice on the Introduction and Transfers of Marine Organisms, published in December 2005.

Leaflet on stock assessment methods: *Fish Stocks: Counting the Uncountable?*

## 5.9 Publications Committee

Bill Turrell completed his term of office as Chair of the Publications Committee at the end of 2004. Pierre Pepin was appointed by the Bureau as interim Chair of the re-structured Publications Committee, and during the 2005 ASC the Committee elected him as Chair for the next three years.

# Annex 1: Meetings at which ICES was represented by Observers January–December 2005)

ASMO Meeting, The Hague, the Netherlands, 18–22 April 2005. ICES Representative: Head of Advisory Programme.

BS RAC Stakeholder Meeting, Copenhagen, 22 June 2005. ICES Representatives: Chair of ACFM and Fisheries Assessment Scientist.

Committee of North Sea Secretariat Senior officials (CONSSO) on 6th North Sea Commission, May 2006, Stockholm, Sweden, 27–28 April 2005. ICES Representative: Head of Advisory Programme.

CWP Workshop on the FAO FishCode Project, Copenhagen, 28 February to 1 March 2005. ICES Representative: Head of Advisory Programme.

CWP 21st Meeting, Copenhagen, 1–4 March 2005. ICES Representative: Head of Advisory Programme.

High-level Meeting with Officials of EC DG-Fish and Maritime Affairs. Brussels, Belgium, 30 March 2005. ICES Representatives: General Secretary and Head of Advisory Programme.

EC DG-Fish and Maritime Affairs. Meeting with Officials concerning "Data Policy and Data Collection Regulations", Brussels, Belgium, 22 April 2005. ICES Representatives: Niels Axel Nielsen, Head of Advisory Programme, and Data Centre Manager.

EC DG-Fish and Maritime Affairs. Meeting with Officials concerning "Call for Tender on Certain Policy-Oriented Projects", Brussels, Belgium, 25–26 April 2005. ICES Representative: Head of Advisory Programme.

EC DG-Fish and Maritime Affairs/JRC/ICES Meeting, Brussels, Belgium, 21 May 2005. ICES Representatives: Head of Advisory Programme, Data Centre Manager, Niels Axel Nielsen, Olle Hagström, Iain Shepherd, and Juan Pablo Pertierra.

EC DG-Fish. Fisheries in the Baltic, Brussels, Belgium, 6 July 2005. ICES Representative: Head of Advisory Programme.

European Commission's Joint Research Centre (JRC) at Ispra, Italy, 17 May 2005. ICES Representatives: General Secretary, Head of Advisory Programme, Head of Science Programme, and Data Centre Manager.

EU Evaluation of Proposals: "Scientific Support to Policy Theme 1.3: Modernisation and Sustainability of Fisheries, including Aquaculture-based Production Systems. Brussels, Belgium, 7–11 March 2005. ICES Representative: Fisheries Assessment Scientist.

EFARO/EAFE Workshop on Triple P Advice, Tessaloniki, Greece, 21 March 2005. ICES Representative: Head of Advisory Programme.

EFARO. 15th Annual Directors Meeting, Zeeland, the Netherlands, 18–21 May 2005. ICES Representative: General Secretary.

EMMA. Meeting of the Working Group on European Monitoring and Assessment, ICES Headquarters, 8–9 February 2005. ICES Representative: Head of Science Programme.

EMMA Meeting of the Working Group on European Monitoring and Assessment, Copenhagen, 31 May to 1 June 2005. ICES Representative: Head of Science Programme.

EuroGOOS Conference, Brest, France, 8–9 June 2005. ICES Representative: Head of Science Programme.

EUROSTAT. Meeting on Fish Stock Assessment Catch Data, Luxembourg, 4 May 2005. ICES Representative: Head of Advisory Programme.

FAO. 4th Meeting of Regional Fisheries Bodies, Rome, Italy, 14–16 March 2005. ICES Representatives: President and General Secretary.

FEMS EU Project Meeting, San Sebastian, Spain, 28 February to 1 March 2005. ICES Representative: Fisheries Assessment Scientist.

FEMS EU Project Meeting, Umbria, Italy, 6–9 September 2005. ICES Representative: Fisheries Assessment Scientist.

FIRMS Steering Committee, Copenhagen 25–26 February 2005. ICES Representative: Head of Advisory Programme.

First General Assembly of the Pelagic RAC, Hoofddorp, the Netherlands, 5 September 2005. ICES Representative: Fisheries Assessment Scientist.

HELCOM. 16th Meeting of Heads of Delegations, Helsinki, Finland, 1–2 March 2005. ICES Representative: General Secretary.

HELCOM. 17th Meeting of Heads of Delegations, Helsinki, Finland, 14–15 June 2005. ICES Representative: General Secretary.

HELCOM. 18th Meeting of Heads of Delegations, Helsinki, Finland, 12–13 December 2005. ICES Representative: General Secretary.

IBSFC Annual Meeting, Visby, Sweden, 4–8 September 2005. ICES Representative: Head of Advisory Programme.

Inaugural Assembly of the Northwestern Waters Regional Advisory Council, Dublin, Ireland, 30 September 2005. ICES Representative: General Secretary.

IOC-IODE. 18th Session of the IOC Committee on International Oceanographic Data and Information Exchange. Held in Oostende, Belgium, 26–30 April 2005. ICES Representative: Data Centre Manager.

IMDIS. International Conference on Ocean Data and Marine Information Systems, Brest, France, 31 May to 3 June 2005. ICES Representative: Data System Analyst.

MARBEF Annual Assembly, Board of Governance, Oporto, Portugal, 21–23 March 2005. ICES Representative: Head of Science Programme.

MarinERA Steering Committee Meeting, Brussels, Belgium, 1–2 December 2005. ICES Representative: General Secretary.

NEAFC Annual Meeting, London, UK, 14–17 November 2005. ICES Representative: Chair of ACFM.

NAMMCO Council Meeting, Tromsø, Norway, 1–3 March 2005. ICES Representative: Head of Science Programme.

North SEA RAC Workshop on Spatial Planning, London, UK, 11 May 2005. ICES Representative: Fisheries Assessment Scientist.

OSPAR Biodiversity Committee, Bonn, Germany, 21–25 February 2005. ICES Representative: Head of Science Programme.

OSPAR/ASMO Meeting, The Hague, the Netherlands, 19–22 April 2005. ICES Representative: Head of Advisory Programme.

OSPAR. 2005 Meeting of the OSPAR Commission, Malahide, Ireland, 27 June to 1 July 2005. ICES Representative: General Secretary.

Regional Coordination meeting under the EC Data Collection Regulation, Bergen, Norway, 26–28 September 2005. ICES Representative: Fisheries Assessment Scientist.

Russian Fisheries Conference, Moscow, Russia, 8–10 November 2005. ICES Representative: Chair of ACFM.

SAPSG. Salmon Action Plan Surveillance Group. Karlshamn, Sweden, 27–28 June 2005. ICES Representative: Head of Advisory Programme.

WMO/IOC Joint Commission for Oceanography and Marine Meteorology (JCOMM), Halifax, Nova Scotia, Canada, 15–17 September 2005. ICES Representative: Data Centre Manager.

# Annex 2: ICES Working/Study/Steering Group Meetings and Workshops January–December 2005

**Advisory Committee on Fishery Management**

Study Group on Management Strategies

(C. Res. 2004/2ACFM21)
Co-Chairs: D. Skagen and J. Simmonds
Held at ICES Headquarters, 31 January to 4 February 2005
Report available as ICES CM 2005/ACFM:09

Workshop on Sampling Design for Fisheries Data

(C. Res. 2004/2ACFM17)
Chair: J. Vigneau
Held in Pasajes, Spain, 1–3 February 2005
Report available as ICES CM 2005/ACFM:11

Study Group on the Bycatch of Salmon in Pelagic Trawl Fisheries

(C. Res. 2004/2ACFM25)
Chair: M. Holm
Held in Bergen, Norway, 8–11 February 2005
Report available as ICES CM 2005/ACFM:13

Annual Meeting of Assessment Working Group Chairs

(C. Res. 2004/2ACFM22)
Chair: P. Degnbol
Held at ICES Headquarters, 14–18 February 2005
Report available as ICES CM 2005/ACFM:12

Planning Group on Commercial Catch, Discards and Biological Sampling

(C. Res. 2004/2ACFM20)
Chair: J. Dalskov
Held in Oostende, Belgium, 1–4 March 2005
Report available as ICES CM 2005/ACFM:15

Herring Assessment Working Group

(C. Res. 2004/2ACFM03)
Chair: M. Dickey-Collas
Held at ICES Headquarters, 8–17 March 2005
Report available as ICES CM 2005/ACFM:16

ICES/NSCFP Study Group on the Incorporation of Additional Information from the Fishing Industry into Fish Stock Assessments

(C. Res. 2004/2ACFM19)
Co-Chairs: H. Andersson and N. Hammer
Held in Stavanger, Norway, 14–15 March 2005
Report available as ICES CM 2005/ACFM:14

Working Group on North Atlantic Salmon

(C. Res. 2004/2ACFM04)
Chair: W. Crozier
Held in Nuuk, Greenland, 4–14 April 2005
Report available as ICES CM 2005/ACFM:17

Baltic Salmon and Trout Assessment Working Group

(C. Res. 2004/2ACFM06)
Chair: I. Perä
Held in Helsinki, Finland, 5–14 April 2005
Report available as ICES CM 2005/ACFM:18

Baltic Fisheries Assessment Working Group

(C. Res. 2004/2ACFM05)
Chair: T. Gröhsler
Held in Hamburg, Germany, 1–21 April 2005
Report available as ICES CM 2005/ACFM:18

Arctic Fisheries Working Group

(C. Res. 2004/2ACFM09)
Chair: Y. Kovalev
Held in Murmansk, Russia, 19–28 April 2005
Report available as ICES CM 2005/ACFM:20

Northwestern Working Group

(C. Res. 2004/2ACFM08)
Chair: E. Hjörleifsson
Held at ICES Headquarters, 26 April to 5 May 2005
Report available as ICES CM 2005/ACFM:21

Fishery Statistics Liaison Working Group

(C. Res. 2004/2ACFM23)
Chair: D. Cross
Held in Luxembourg, 2–3 May 2005
Report available as ICES CM 2005/ACFM:22

Working Group on the Assessment of Northern Shelf Demersal Stocks

(C. Res. 2004/2ACFM10)
Chair: R. Officer
Held in Murmansk, Russia, 10–19 May 2005
Report available as ICES CM 2005/ACFM:23

Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk, and Megrim

(C. Res. 2004/2ACFM12)
Chair: V. Trujillo
Held in Lisbon, Portugal, 10–19 May 2005
Report available as ICES CM 2006/ACFM:01

Study Group on Ageing Issues in Baltic Cod

(C. Res. 2004/2ACFM24)
Chair: J. Modin
Held in Klaipeda, Lithuania, 17–20 May 2005
The report will be available in 2006.

Working Group on Elasmobranch Fishes

(C. Res. 2004/2ACFM27)
Chair: M. Clarke
Held in Lisbon, Portugal, 14–21 June 2005
The report will be available in 2006.

Working Group on the Assessment of Southern Shelf Demersal Stocks

(C. Res. 2004/2ACFM11)
Chair: Wim Demare
Held at ICES Headquarters, 21–30 June 2005
The report will be available in 2006.

Northern Pelagic and Blue Whiting Fisheries Working Group

(C. Res. 2004/2ACFM07)
Chair: A. Gudmundsdóttir
Held at ICES Headquarters, 25 August to 1 September 2005
The report will be available in 2006.

ICES/NAFO Working Group on Harp and Hooded Seals

(C. Res. 2004/2ACFM16)
Chair: T. Haug
Held in St John's, Canada, 30 August to 3 September 2005
The report will be available in 2006.

Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak

(C. Res. 2004/2ACFM13)
Chair: C. Needle
Held at ICES Headquarters, 6–15 September 2005
The report will be available in 2006.

Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy

(C. Res. 2004/2ACFM14)
Chair: C. Kelly
Held in Vigo, Spain, 6–15 September 2005
The report will be available in 2006.

*Pandalus* Assessment Working Group

(C. Res. 2004/2ACFM15)
Chair: Sten Munch-Petersen
Held in Halifax, Canada, 26 October to 4 November 2005
The report will be available in 2006.

Working Group on Assessment of new MoU Species

(C. Res. 2004/2ACFM18)
Co-Chairs: Henk Heessen and Jean-Claude Mahé
Held at ICES Headquarters, 13–15 December 2005
The report will be available in 2006.

**Advisory Committee on the Marine Environment**

ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open-Sea Areas

(C. Res. 2004/2ACME04)
Co-Chairs: K. Hylland and R. Law
Held at ICES Headquarters, 10–13 January 2005
Report available as ICES CM 2005/ACME:01

ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea

(C. Res. 2004/2ACME03)
Chair: M. Gluschke
Held at ICES Headquarters, 22–25 February 2005
Report available as ICES CM 2005/ACME:03

ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea and ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic

(C. Res. 2004/2ACME02)
Co-Chairs: A. Ikauniece and J. Davies
Held at ICES Headquarters, 22–25 February 2005
Report available as ICES CM 2005/ACME:02

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

(C. Res. 2004/ 2ACME05)
Chair: S. Gollasch
Held in Arendal, Norway, 14–18 March 2005
Report available as ICES CM 2005/ACME:04

**Advisory Committee on Ecosystems**

Working Group for Regional Ecosystem Description

(C. Res. 2004/2ACE07)
Chair: J. Rice
Held at ICES Headquarters, 14–18 February 2005
Report available as ICES CM 2005/ACE:01

Working Group on Deepwater Ecology

(C. Res. 2004/2ACE03)
Chair: M. Tasker
Held at ICES Headquarters, 8–11 March 2005
Report available as ICES CM 2005/ACE:02

Study Group on Management of Integrated Data

(C. Res. 2004/2ACE02)
Co-Chairs: P. Wiebe and C. Zimmermann
Held in Lisbon, Portugal, 11–13 April 2005
Report available as ICES CM 2005/ACE:03

Working Group on Ecosystem Effects of Fishing Activities

(C. Res. 2004/2ACE06)
Chair: S. Rogers
Held at ICES Headquarters, 12–19 April 2005
Report available as ICES CM 2005/ACE:04

Working Group on Marine Mammal Ecology

(C. Res. 2004/2ACE05)
Chair: G. T. Waring
Held in Savonlinna, Finland, 9–12 May 2005
Report available as ICES CM 2005/ACE:05

Workshop on Time-series Data Relevant to Eutrophication Ecological Quality Objectives

(C. Res. 2004/2ACE04)
Co-Chairs: T. Smayda and G. Ærtebjerg
Held in Brorfelde, Denmark, 7–11 November 2005
The report will be available in 2006.

**Oceanography Committee**

Working Group on Phytoplankton Ecology
(C. Res. 2004/2C01)
Chair: F. Rey
Held in Oldenburg, Germany, 16–18 March 2005
Report available as ICES CM 2005/C:01

Working Group on Zooplankton Ecology

(C. Res. 2004/2C02)
Chair: S. Hay
Held in Lisbon, Portugal, 4–7 April 2005
Report available as ICES CM 2005/C:02

ICES-IOC Working Group on Harmful Algal Bloom Dynamics

(C. Res. 2004/2CO3)
Chair: J. L. Martin
Held in Flødevigen, Norway, 4–7 April 2005
Report available as ICES CM 2005/C:03

Working Group on Modelling of Physical/Biological Interactions

(C. Res. 2004/2C04)
Chair: C. Hannah
Held in Hamburg, Germany, 7–8 April 2005
Report available as ICES CM 2005/C:04

ICES-EuroGOOS Planning Group on the North Sea Pilot Project (NORSEPP)

(C. Res. 2004/2C05)
Co-Chairs: M. Holt and H. R. Skjoldal
Held in Brussels, Belgium, 11–13 April 2005
Report available as ICES CM 2005/C:05

Working Group on Oceanic Hydrography

(C. Res. 2004/2C06)
Chair: A. Lavín
Held in Rhode Island, USA, 11–14 April 2005
Report available as ICES CM 2005/C:06

Working Group on Marine Data Management

(C. Res. 2004/2C07)
Co-Chairs: M. Fichaud and H. Sagen
Held in Sopot, Poland, 9–11 May 2005
Report available as ICES CM 2005/C:07

Workshop on Impact of Zooplankton on Cod Abundance and Production

(C. Res. 2004/2C08)
Co-Chairs: Ø. Fiksen, J. Runge, and C. Mölllmann
Held at ICES Headquarters, 7–9 June 2005
Report available as ICES CM 2005/C:08

ICES-IOC Steering Group on GOOS

(C. Res. 2004/2C09)
Co-Chairs: W. G. Harrison and A. Bode
Held in Brest, France, 10–11 June 2005
Report available as ICES CM 2005/C:09

Workshop on New and Classic Techniques for the Determination of Numerical Abundance and Biovolume of HAB species – Evaluation of the Cost, Time-efficiency and Intercalibration Methods

(C. Res. 2004/2C10)
Co-Chairs: B. Karlson and C. Cusack
Held in Kristineberg, Sweden, 22–27 August 2005
Report available as ICES CM 2005/C:10

**Fisheries Technology Committee**

Study Group on Survey Trawl Standardization

(C. Res. 2004/2B02)
Chair: D. Reid
Held in Rome, Italy, 16–18 April 2005
Report available as ICES CM 2005/B:02

Study Group on Collection of Acoustic Data from Fishing Vessels

(C. Res. 2004/2B03)
Chair: W. Karp
Held in Rome, Italy, 17–18 April 2005
Report available as ICES CM 2005/B:03

ICES-FAO Working Group on Fishing Technology and Fish Behaviour

(C. Res. 2004/2B04)
Chair: N. Graham
Held in Rome, Italy, 18–22 April 2005
Report available as ICES CM 2005/B:04

Working Group on Fisheries Acoustic Science and Technology

(C. Res. 2004/2B05)
Chair: D. Demer
Held in Rome, Italy, 19–22 April 2005
Report available as ICES CM 2005/B:05

Study Group on Acoustic Seabed Classification

(C. Res. 2004/2B06)
Chair: J. Anderson
Held in Rome, Italy, 23–24 April 2005
Report available as ICES CM 2005/B:06

Workshop on Survey Design and Data Analysis

(C. Res. 2004/2B07)
Co-Chairs: P. G. Fernandes and M. Pennington
Held in Sète, France, 9–13 May 2005
Report available as ICES CM 2005/B:07

**Resource Management Committee**

Study Group on Redfish Stocks

(C. Res. 2004/2/D01)
Chair: C. Stransky
Held at ICES Headquarters, 27–29 January 2005
Report available as ICES CM 2005/D:02

Workshop on Advanced Fish Stock Assessment Techniques

(C. Res. 2004/2D02)
Co-Chairs: D. Skagen and E. Hjörleifsson
Held at ICES Headquarters, 24 February to 1 March 2005
Report available as ICES CM 2005/D:04

Study Group on Age-Length Structured Assessment Models

(C. Res. 2003/2D07)
Chair: H. Dobby
Held at ICES Headquarters, 14–18 March 2005
Report available as ICES CM 2005/D:01

International Bottom Trawl Survey Working Group

(C. Res. 2004/2D03)
Chair: J.-C. Mahé
Held in Hamburg, Germany, 29 March to 1 April 2005
Report available as ICES CM 2005/D:05

Study Group on Multispecies Assessment in the North Sea

(C. Res. 2004/2D04)
Co-Chairs: M. Vinther and E. D. Bell
Held at ICES Headquarters, 5–8 April 2005
Report available as ICES CM 2005/D:06

Working Group on Fishery Systems

(C. Res. 2004/2D05)
Chair: M. Pastoors
Held at ICES Headquarters, 9–13 May 2005
Report available as ICES CM 2005/D:07

Regional Ecosystems Study Group for the North Sea

(C. Res. 2004/2D06)
Chair: A. Kenny
Held at ICES Headquarters, 9–13 May 2005
Report available as ICES CM 2005/D:08

Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys

(C. Res. 2004/2D07)
Chair: J. A. Jacobsen
Held in Galway, Ireland, 16–18 August 2005
Report available as ICES CM 2005/D:09

**Marine Habitat Committee**

Working Group on the Statistical Aspects of Environmental Monitoring

(C. Res. 2004/2E02)
Chair: R. Fryer
Held in Nantes, France, 28 February to 4 March 2005
Report available as ICES CM 2005/E:02

Working Group on Marine Sediments in Relation to Pollution

(C. Res. 2004/2E01)
Chair: F. Smedes
Held in Nantes, France, 28 February to 4 March 2005
Report available as ICES CM 2005/E:01

Marine Chemistry Working Group

(C. Res. 2004/2E03)
Co-Chairs: R. Law and J. Tronczynski
Held in Vigo, Spain, 7–11 March 2005
Report available as ICES CM 2005/E:03

Working Group on Marine Habitat Mapping

(C. Res. 2004/2E05)
Chair: D. Connor
Held in Bremerhaven, Germany, 5–8 April 2005
Report available as ICES CM 2005/E:05

Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem

(C. Res. 2004/2E06)
Chair: S. Boyd
Held in San Sebastian, Spain, 5–8 April 2005
Report available as ICES CM 2005/E:06

ICES Study Group on the North Sea Benthos Project 2000

(C. Res. 2004/2E04)
Chair: H. Rees
Held at ICES Headquarters, 12–15 April 2005
Report available as ICES CM 2005/E:04

Benthos Ecology Working Group

(C. Res. 2004/2E07)
Chair: H. Rumohr
Held at ICES Headquarters, 9–13 April 2005

Report available as ICES CM 2005/E:07

Working Group on Biological Effects of Contaminants

(C. Res. 2004/2E08)
Chair: J. Thain
Held in Reykjavik, Iceland, 18–22 April 2005
Report available as ICES CM 2005/E:08

Working Group on Integrated Coastal-Zone Management

(C. Res. 2004/2E09)
Chair: J. Støttrup
Held at ICES Headquarters, 20–22 April 2005
Report available as ICES CM 2005/E:09

**Mariculture Committee**

Working Group on Pathology and Diseases of Marine Organisms

(C. Res. 2004/2F02)
Chair: T. Lang
Held in La Tremblade, France, 8–12 March 2005
Report available as ICES CM 2005/F:02

Working Group on Environmental Interactions of Mariculture

(C. Res. 2004/2F04)
Chair: F. O'Beirn
Held in Ottawa, Canada, 11–15 April 2005
Report available as ICES CM 2005/F:04

Working Group on the Application of Genetics in Fisheries and Mariculture

(C. Res. 2004/2F01)
Chair: E. Kenchington
Held in Silkeborg, Denmark, 3–6 May 2005
Report available as ICES CM 2005/F:01

Working Group Marine Shellfish Culture

(C. Res. 2004/2F05)
Chair: A. Bodoy
Held in La Rochelle, France, 13–15 May 2005
Report available as ICES CM 2005/F:05

**Living Resources Committee**

Planning Group for Herring Surveys

(C. Res. 2004/2G02)
Chair: B. Couperus
Held in Bergen, Norway, 24–28 January 2005
Report available as ICES CM 2005/G:04

Working Group on Fish Ecology

(C. Res. 2004/2G03)
Chair: J. Ellis
Held in Santander, Spain, 21–26 February 2005
Report available as ICES CM 2005/G:05

Study Group on Regional-Scale Ecology of Small Pelagics

(C. Res. 2004/2G04)
Chair: P. Petitgas
Held in Plymouth, UK, 28 February to 2 March 2005
Report available as ICES CM 2005/G:06

Study Group on Stock Identity and Management Units of Whiting

(C. Res. 2004/2G01
Chair: P. Kunzlik
Held in Aberdeen, UK, 15–17 March 2005
Report available as ICES CM 2005/G:03

Working Group on Seabird Ecology

(C. Res. 2004/2G05)
Chair: S. Garthe
Held in Texel, the Netherlands, 29 March to 1 April 2005
Report available as ICES CM 2005/G:07

Working Group on Mackerel and Horse Mackerel Egg Surveys

(C. Res. 2004/2G07)
Chair: D. Reid
Held in Bergen, Norway, 4–8 April 2005
Report available as ICES CM 2005/G:09

Baltic International Fish Survey Working Group

(C. Res. 2004/2G06)
Chair: R. Oeberst
Held in Rostock, Germany, 4–8 April 2005
Report available as ICES CM 2005/G:08

Planning Group on Aerial and Acoustic Surveys for Mackerel

(C. Res. 2004/2G11)
Chair: E. Shamray
Held in Bergen, Norway, 5–7 April 2005
Report available as ICES CM 2005/G:13

Study Group on the Biology and Life History of Crabs

(C. Res. 2004/2G08)
Chair: O. Tully
Held in Galway, Ireland, 9–11 May 2005
Report available as ICES CM 2005/G:10

Planning Group on North Sea Cod and Plaice Egg Surveys in the North Sea

(C. Res. 2004/2G09)
Chair: C. Fox
Held in Lowestoft, UK, 10–12 May 2005
Report available as ICES CM 2005/G:11

Working Group on Beam Trawl Surveys

(C. Res. 2004/2G10)
Chair: R. Millner
Held in Lowestoft, UK, 7–10 June 2005
Report available as ICES CM 2005/G:12

Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VIII and IV

(C. Res. 2004/2G12)
Chair: M. Bernal
Held in Vigo, Spain, 24–28 October 2005
The report will be available in 2006.

**Baltic Committee**

Study Group on Baltic Ecosystem Model Issues in Support of the BSRP

(C. Res. 2004/2H03)
Chair: W. Fennel
Held in Gdańsk, Poland, 14–16 February 2005
Report available as ICES CM 2005/H:03

ICES/IOC/SCOR Study Group on GEOHAB Implementation in the Baltic

(C. Res. 2004/2H04)
Chair: M. Viitasalo
Held in Flødevigen, Norway, 7–8 April 2005
Report available as ICES CM 2005/H:04

Study Group on Baltic Fish and Fisheries Issues in the BSRP

(C. Res. 2004/2H05)
Co-Chairs: M. Pliksh and H. Ojaveer
Held in Riga, Latvia, 9–13 June 2005
Report available as ICES CM 2005/H:05

Study Group on Multispecies Assessment in the Baltic

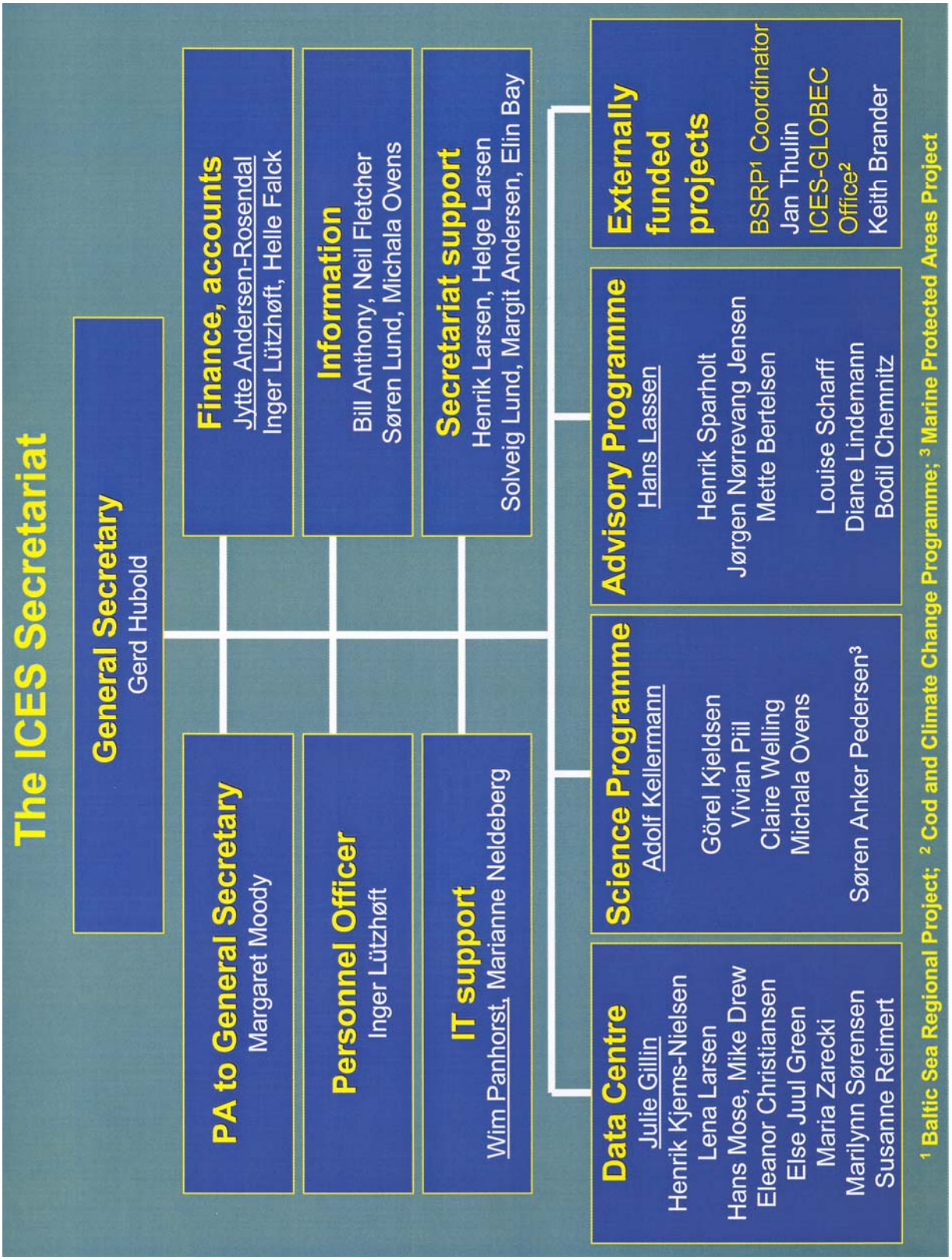
(C. Res. 2004/2H06)
Co-Chairs: E. Aro and F. Köster
Held in Riga, Latvia, 13–17 June 2005
Report available as ICES CM 2005/H:06

**Diadromous Fish Committee**

ICES/EIFAC Working Group on Eels

(C. Res. 2004/2I01)
Chair: W. Dekker
Held in Galway, Ireland, 22–26 November 2005
Report available as ICES CM 2006/I:01

## ICES Secretariat, Organization Chart



# Part IV

# Overview of ICES Membership, Organisation, and International Collaboration

## OFFICIALS OF THE COUNCIL/ *ADMINISTRATEURS DU CONSEIL*

**(as per 1 January 2006/*dès du 1er janvier 2006*)**

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## Editors of Council Publications/ *Rédacteurs des Publications du Conseil*

(as per 1 January 2006/*dès du 1er janvier 2006*)

| | |
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| *ICES Fisheries Statistics* | Fisheries Adviser/ *Conseiller des Pêches* |
| *ICES Cooperative Research Report* | General Secretary/ *Secrétaire Général* |
| *ICES Identification Leaflets for Plankton* | J. Alistair Lindley[1] |
| *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish* | Stephen Feist[2] |
| *ICES Journal of Marine Science* | Andrew I. L. Payne[3], Editor-in-Chief/ *Rédacteur-en-Chef*<br>Editors:<br>Audrey Geffen[4]<br>Bernard Megrey[5]<br>Pierre Pépin[6]<br>Verena Trenkel[7]<br>John W. Ramster[8] |
| *ICES Marine Science Symposia* | Editor specially appointed for each volume/ *un rédacteur est spécialement désigné pour chaque volume* |
| *ICES Techniques in Marine Environmental Sciences* | Head of Science Programme/ *Directeur du Programme Scientifique* |


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## Management Committee for the Advisory Process/ *Comité de Gestion pour le Processus d'Avis*

| | |
|---|---|
| **Chair/*Président*** | **Paul Connolly** |
| Chair of the Advisory Committee on Fishery Management/ *Président du Comité d'Avis sur la Gestion des Pêches* | Martin Pastoors |
| Chair of the Advisory Committee on the Marine Environment/ *Président du Comité d'Avis sur l'Environnement Marin* | Paul Keizer |
| Chair of the Advisory Committee on Ecosystems/*Président du Comité d'Avis sur les Ecosystèmes* | Simon Jennings |

## Advisory Committees/*Comités d'Avis*

*Membership of each of the Advisory Committees below (ACFM, ACME, and ACE) will consist of the Chairs of such other Committees as the Council decides, and of one scientist nominated by each delegation who so wishes, and subsequently appointed by the Council. Membership of the Advisory Committees will be reviewed by the Delegates in response to the Terms of Reference of each session, which shall be circulated to Delegates in a timely manner. Delegates may choose to send an alternate for the national member of a particular Advisory Committee, taking into account the agenda and the need for the participation to be tailored to match the scientific needs for specific types of advice.*

### Advisory Committee on Fishery Management/ *Comité d'Avis sur la Gestion des Pêches*

| | |
|---|---|
| **Chair/*Président*** | **Martin Pastoors** |
| Chair of the Living Resources Committee/ *Président du Comité des Ressources Vivantes* | David G. Reid |
| Chair of the Resource Management Committee/*Président du Comité de la Gestion des Ressources* | Dankert Skagen |
| Chair of the Baltic Committee/*Président du Comité de la Baltique* | Cornelius Hammer |

– and scientists nominated by the Delegates (see above).

### Advisory Committee on the Marine Environment/ *Comité d'Avis sur l'Environnement Marin*

| | |
|---|---|
| **Chair/*Président*** | **Paul Keizer** |
| Chair of the Mariculture Committee/*Président du Comité sur la Mariculture* | Ian Bricknell |
| Chair of the Marine Habitat Committee/*Président du Comité sur l'Habitat Marin* | Heye Rumohr |
| Chair of the Oceanography Committee/*Président du Comité sur l'Océanographie* | Einar Svendsen |

– and scientists nominated by the Delegates (see above).

### Advisory Committee on Ecosystems/*Comité d'Avis sur les Ecosystèmes*

| | |
|---|---|
| **Chair/*Président*** | **Simon Jennings** |

– and scientists nominated by the Delegates (see above)

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## Chairs of ICES Expert Groups Assigned to a Parent Committee/ *Présidence des groupes subsidiaires CIEM affectés à leur comité de source*

*The membership lists for the following Working/Study Groups, workshops and other groups are not provided here, but are available on request from the ICES Secretariat, the National Delegates to ICES (an overview of their names and addresses is provided on pp. 344–346), or from the Chairs themselves (postal and e-mail addresses provided on pp. 376–382).*

### Consultative Committee/*Comité Consultatif*

| | |
|---|---|
| **Workshop on the Review of the ICES Committee and Expert Group Performance (WKREP)** *Atelier sur la performance des Comités et de groupes d'experts du CIEM* | Co-Chairs: President (Mike Sissenwine), Chair of CONC (Harald Loeng), and Chair of MCAP (Paul Connolly) |

### Management Committee for the Advisory Process
### *Comité de gestion pour le processus d'avis*

### Advisory Committee on Fishery Management
### *Comité d'avis sur la gestion de la pêche*

| | |
|---|---|
| **Annual Meeting of Assessment Working Group Chairs (AMAWGC)** *Réunion annuelle des presidents des groupes de travail sur les évaluations* | Martin Pastoors (Netherlands) |
| **Joint ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP)** *Groupe de travail CIEM/NAFO conjoint sur les phoques du Groenland et les phoques à capuchon* | Tore Haug (Norway) |
| **Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)** *Groupe de travail sur l'évaluation des stocks démersaux dans la Mer du Nord et le Skagerrak* | Coby Needle (UK) |
| **Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy (WGMHSA)** *Groupe de travail sur l'évaluation des stocks de maquereaux, de chinchards, de sardines et d'anchois* | Ciaran Kelly (Ireland) |
| **Working Group on the Assessment of Northern Shelf Demersal Stocks (WGNSDS)** *Groupe de travail sur l'évaluation des stocks démersaux du plateau continental du nord* | Robert Scott (UK) |
| **North-Western Working Group (NWWG)** *Groupe de travail nord-ouest* | Einar Hjörleifsson (Iceland) |
| **Northern Pelagic and Blue Whiting Fisheries Working Group (WGNPBW)** *Groupe de travail sur la pêche pélagique du nord et du merlan bleu* | Asta Gudmundsdóttir (Iceland) |
| **Baltic Salmon and Trout Assessment Working Group (WGBAST)** *Groupe de travail sur l'évaluation des stocks de saumon et de truite dans la Baltique* | Atso Romakkaniemi (Finland) |
| **Baltic Fisheries Assessment Working Group (WGBFAS)** *Groupe de travail sur l'évaluation de la pêche dans la Baltique* | Thomas Gröhsler (Germany) |

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|---|---|
| **Working Group on North Atlantic Salmon (WGNAS)**<br>*Groupe de travail sur le saumon de l'Atlantique Nord* | Tim Sheehan (USA) |
| **Arctic Fisheries Working Group (AFWG)**<br>*Groupe de travail sur la pêche de l'Arctique* | Yuri Kovalev (Russia) |
| **Working Group on the Assessment of Southern Shelf Demersal Stocks (WGSSDS)**<br>*Groupe de travail sur l'évaluation des stocks démersaux du plateau continental du sud* | Wim Demare (Belgium) |
| **Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk, and Megrim (WGHMM)**<br>*Groupe de travail sur l'évaluation des stocks de merlu, de baudroies et de cardines du plateau continental du sud* | Manuela Azevedo (Portugal) |
| ***Pandalus* Assessment Working Group (WGPAND)**<br>*Groupe de travail sur l'évaluation du pandalus* | Sten Munch Petersen (Denmark) |
| **Herring Assessment Working Group for the Area South of 62°N (HAWG)**<br>*Groupe de travail sur l'évaluation des stocks de hareng pour la zone au sud de 62°N* | Mark Dickey-Collas (Netherlands) |
| **Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)**<br>*Groupe de travail sur la biologie et l'évaluation des stocks de ressources halieutiques des grands fonds* | Paul Marchal (France) |
| **Fisheries Statistics Liaison Working Group (WGSTAL)**<br>*Groupe de liaison sur les statistiques de pêche* | David Cross (EUROSTAT) |
| **Working Group on the Assessment of New Species (WGNEW)**<br>*Groupe de travail pour l'estimation des stocks de nouvelles espèces* | Co-Chairs: Henk Heessen (Netherlands) and Jean-Claude Mahé (France) |
| **ICES/EIFAC Working Group on Eels (WGEEL)**<br>*Groupe de travail CIEM/EIFAC sur les anguilles* | Willem Dekker (Netherlands) |
| **Study Group on Elasmobranch Fishes (WGEF)**<br>*Groupe d'étude sur les poissons élasmobranches* | Maurice Clarke (Ireland) |
| **Study Group on the Bycatch of Salmon in Pelagic Trawl Fisheries (SGBYSAL)**<br>*Groupe d'étude sur les captures accessoires de saumon dans les pêcheries au chalut pélagique* | Marianne Holm (Norway) |
| **Study Group on Management Strategies (SGMAS)**<br>*Groupe d'étude sur les stratégies de gestion* | Co-Chairs: Dankert Skagen (Norway) and John Simmonds (UK) |
| **Planning Group on Commercial Catch, Discards, and Biological Sampling (PGCCDBS)**<br>*Groupe de planification sur les captures commerciales, les rejets et l'échantillonnage biologique* | Ernesto Jardim (Portugal) |

| | |
|---|---|
| **Workshop on Biological Reference Points for Northeast Arctic Haddock (WKHAD)**<br>*Atelier sur les points de référence biologiques pour l'églefin du Nord-Ouest Arctique* | K. Korsbrekke (Norway) |
| **Workshop on Simple Mixed Fisheries TAC Models (WKMIXMAN)**<br>*Atelier sur les modèles simples pour la détermination des TAC dans les pêcheries mixtes* | Co-Chairs:<br>Stuart Reeves (UK) and<br>Sarah Kraak (Netherlands) |
| **Workshop on *Nephrops* Stocks (WKNEPH)**<br>*Atelier sur les stocks de Nephrops* | Nick Bailey (UK) |

## Advisory Committee on the Marine Environment
## *Comité d'avis sur l'environnement marin*

| | |
|---|---|
| **Working Group on Introductions and Transfers of Marine Organisms (WGITMO)**<br>*Groupe de travail sur les introductions et les transferts d'organismes marins* | Stephan Gollasch (Germany) |
| **ICES/IOC/IMO Working Group on Ballast Water and Other Ship Vectors (WGBOSV)**<br>*Groupe de travail CIEM/COI/OMI sur les eaux de ballast et autres modes d'introduction par les navires* | Stephan Gollasch (Germany) |
| **ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea (SGQAC)**<br>*Groupe directeur CIEM/HELCOM sur l'assurance de qualité des mesures chimiques dans la mer Baltique* | Michael Gluschke (Germany) |
| **ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea (SGQAB)**<br>*Groupe directeur CIEM/HELCOM sur l'assurance de qualité des mesures biologiques dans la mer Baltique* | Co-Chairs:<br>Anda Ikauniece (Latvia) and<br>Johan Wikner (Sweden) |
| **Joint ICES/OSPAR Workshop on Integrated Monitoring of Contaminants and their Effects in Coastal and Open Sea Areas (WKIMON)**<br>*Atelier commun CIEM/OSPAR sur le contrôle intégré des contaminants et leurs effets en zone côtière et en mer ouverte* | Co-Chairs:<br>Kjetil Hylland (Norway),<br>Robin Law (UK), and<br>C. Moffat (UK) |

## Advisory Committee on Ecosystems
## *Comité d'avis sur les ecosystems*

| | |
|---|---|
| **Working Group on Marine Mammal Ecology (WGMME)**<br>*Groupe de travail sur l'écologie des mammifères marins* | M. Scheidat (Germany) |
| **Working Group on Ecosystem Effects of Fishing Activities (WGECO)**<br>*Groupe de travail sur les effets écologiques des activités de pêche* | Stuart Rogers (UK) |
| **Working Group on Deep-Water Ecology (WGDEC)**<br>*Groupe de travail sur l'écologie des eaux profondes* | Mark Tasker (UK) |
| **Working Group for Regional Ecosystem Description (WGRED)**<br>*Groupe de travail pour la description des écosystèmes régionaux* | Jake Rice (Canada) |

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| **Study Group on Management of Integrated Data (SGMID)**<br>*Groupe d'étude sur la gestion des données intégrées* | Co-Chairs:<br>Peter Wiebe (USA) and<br>Christopher Zimmermann (Germany) |
| **Study Group on the Effects of Sound in the Marine Environment (SGESME)**<br>*Groupe d'étude sur les effets des sons dans l'environnement marin* | Magnus Wahlberg (Denmark) |
| **Workshop co-sponsored by OSPAR on Time-Series Data relevant to Eutrophication Ecological Quality Objectives (WKEUT)**<br>*Atelier co-sponsorisé par OSPAR sur les séries chronologiques des données pertinentes pour les objectifs de qualité écologique pour l'eutrophisation* | Co-Chairs:<br>Ted Smayda (USA) and<br>Gunni Ærtebjerg (Denmark) |

## Baltic Committee
## *Comité sur la Baltique*

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| **Study Group on Multispecies Assessment in the Baltic (SGMAB)**<br>*Groupe d'étude sur les prévisions multispécifiques en mer Baltique* | Eero Aro (Finland) and<br>Fritz Köster (Denmark) |
| **ICES/IOC/SCOR Working Group on GEOHAB Implementation in the Baltic (WGGIB)**<br>*Groupe de travail CIEM/COI/SCOR sur la mise en place de GEOHAB en mer Baltique* | Markku Viitasalo (Finland) |
| **Study Group on Baltic Fish and Fisheries Issues in the BSRP (SGBFFI)**<br>*Groupe d'étude sur les stocks de poissons et les pêcheries dans le projet BSRP* | Co-Chairs:<br>Maris Pliksh (Latvia) and<br>Henn Ojaveer (Estonia) |
| **Study Group on Baltic Sea Productivity Issues in Support of the BSRP (SGPROD)**<br>*Groupe d'étude sur la productivité de la mer Baltique en appui au projet BSRP* | Bärbel Müller-Karulis (Latvia) |
| **Study Group on Baltic Ecosystem Health Issues in Support of the BSRP (SGEH)**<br>*Groupe d'étude sur l'état de santé de l'écosystème en mer Baltique en appui au projet BSRP* | Eugene Andrulewicz (Poland) |
| **Study Group on Baltic Ecosystem Model Issues in Support of the BSRP (SGBEM)**<br>*Groupe d'étude sur les modèles d'écosystème en mer Baltique en appui au projet BSRP* | Wolfgang Fennel (Germany) |
| **Study Group on Ageing Issues in Baltic Cod (SGABC)**<br>*Groupe d'étude sur les problèmes de détermination d'âge de la morue de la mer Baltique* | Johan Modin (Sweden) |
| **ICES/BSRP/HELCOM Workshop on Developing a Framework for Integrated Assessment for the Baltic Sea (WKIAB)**<br>*Atelier CIEM/BSRP/HELCOM sur le développement d'un schéma d'évaluation intégrée pour la mer Baltique* | Co-Chairs:<br>C. Möllmann (Denmark),<br>B. Müller Karulis ( Latvia),<br>and A. Andrushaitis (Latvia) |

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| **ICES/BSRP Sea-Going Workshop on Fish Disease Monitoring in the Baltic Sea (WKFDM)**<br>*Atelier à la mer CIEM/BSRP sur le contrôle des maladies des poissons en mer Baltique* | Co-Chairs:<br>Thomas Lang (Germany) and G. Rodjuk (Russia) |

## Diadromous Fish Committee
## *Comité des poissons diadromes*

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| **Study Group on Salmon Age Determination (SGSAD)**<br>*Groupe d'étude sur la détermination de l'age du saumon* | Jari Raitaniemi (Finland) |

## Fisheries Technology Committee
## *Comité sur la technologie de pêche*

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|---|---|
| **Working Group on Fisheries Acoustics Science and Technology (WGFAST)**<br>*Groupe de travail sur l'étude de la science et la technologie acoustique de la pêche* | Dave Demer (USA) |
| **ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB)**<br>*Groupe de travail CIEM/ONUAA sur la technologie de pêche et le comportement des poissons* | Norman Graham (Norway) |
| **Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB)**<br>*Groupe d'étude sur l'estimation des index de réflection dans la mer Baltique* | John Horne (USA) |
| **Study Group on Survey Trawl Standardisation (SGSTS)**<br>*Groupe d'étude sur la standardisation des chaluts* | David Reid (UK) |
| **Study Group on Acoustic Seabed Classification (SGASC)**<br>*Groupe d'étude pour la classification des fonds marins par acoustique* | John Anderson (Canada) |
| **Study Group on Collection of Acoustic Data from Fishing Vessels (SGAFV)**<br>*Groupe d'étude sur la collecte des données acoustiques des navires de pêche* | William Karp (USA) |
| **Study Group on Unaccounted Fishing Mortality (SGUFM)**<br>*Groupe d'étude sur les mortalités par pêche non comptablisées* | Mike Breen (UK) |
| **Planning Group on the HAC Data Exchange Format (PGHAC)**<br>*Groupe de planification sur le format d'échange des données HAC* | Laurent Berger (France) |
| **Workshop on Unaccounted Fishing Mortality (WKUFM)**<br>*Atelier sur les mortalités par pêche non comptablisées* | Mike Breen (UK) |

## Living Resources Committee
## *Comité sur les ressources vivantes*

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|---|---|
| **Stock Identification Methods Working Group (SIMWG)**<br>*Groupe de travail sur les méthodes d'identification des stocks* | Co-Chairs:<br>Steve Cadrin (USA), John Waldman (USA) and S. Mariani (Ireland) |
| **Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS)**<br>*Groupe de travail sur les études d'oeufs de maquereaux et de chinchards* | Paula Alvarez (Spain) |
| **Working Group on *Crangon* Fisheries and Life History (WGCRAN)**<br>*Groupe de travail sur la pêche et stades de vie des Crangons* | Andy Revill (UK) |
| **Working Group on Cephalopod Fisheries and Life History (WGCEPH)**<br>*Groupe de travail sur la pêche et stades de vie des céphalopodes* | Jean-Paul Robin (France) |
| **Working Group on Beam Trawl Surveys (WGBEAM)**<br>*Groupe de travail sur les campagnes de chaluts à perche* | Richard Millner (UK) |
| **Baltic International Fish Survey Working Group (WGBIFS)**<br>*Groupe de travail sur les campagnes internationales des poissons baltiques* | Rainer Oeberst (Germany) |
| **Working Group on Fish Ecology (WGFE)**<br>*Groupe de travail sur l'écologie des poissons* | Daniel Duplisea (Canada) |
| **Working Group on Seabird Ecology (WGSE)**<br>*Groupe de travail sur l'écologie des oiseaux de mer* | Stefan Garthe (Germany) |
| **Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES Areas VIII and IX (WGACEGG)**<br>*Groupe de travail sur les campagnes d'acoustique et les campagnes sur les oeufs pour la sardine et l'anchois dans les zones VIII et IX du CIEM* | Miguel Bernal (Spain) |
| **Study Group on Stock Identity and Management Units of Whiting (SGSIMUW)**<br>*Groupe d'étude sur l'identification des stocks et les unites de gestion pour le merlan* | Phil Kunzlik (UK) |
| **Study Group on the Biology and Life History of Crabs (SGCRAB)**<br>*Groupe d'étude sur la biologie et stades de vie des crabes* | Julian Addison (UK) |
| **Study Group on Regional Small Pelagic Fish (SGRESP)**<br>*Groupe d'étude régional sur les petits poissons pélagiques* | Pierre Petitgas (France) |
| **Study Group on Recruitment Variability in North Sea Planktivorous Fish (SGRECVAP)**<br>*Groupe d'étude sur la variabilité du recrutement chez les poissons planctonophages de la mer du Nord* | Mark Dickey-Collas (Netherlands) |

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| **Planning Group for Herring Surveys (PGHERS)**<br>*Groupe de planification sur les études du hareng* | Bram Couperus (Netherlands) |
| **Planning Group on North Sea Cod and Plaice Egg Surveys in the North Sea (PGEGGS)**<br>*Groupe de planification des campagnes d'études des oeufs de morue et de plie en mer du Nord* | Clive Fox (UK) |
| **Workshop on Mackerel and Horse Mackerel Egg Staging and Identification (WKMHMES)**<br>*Atelier sur l'identification et la détermination des stades pour les oeufs de maquereau et de chinchard* | S. Milligan (UK) |
| **ICES/GLOBEC Workshop on Long-term Variability in SW Europe (WKLTVSWE)**<br>*Atelier CIEM/GLOBEC sur la variabilité à long terme en Europe du sud-ouest* | Co-Chairs:<br>M. F. Borges (Portugal),<br>Jürgen Alheit (Germany),<br>Alicia Lavin (Spain), and<br>Andres Uriarte (Spain) |

## Mariculture Committee
## *Comité sur la mariculture*

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|---|---|
| **Working Group on Marine Fish Welfare (WGMAFW)**<br>*Groupe de travail sur le bien-être des poissons marins* | Anders Mangor Jensen (Norway) |
| **Working Group on the Application of Genetics in Fisheries and Mariculture (WGAGFM)**<br>*Groupe de travail sur l'application de la génétique dans la pêche et la mariculture* | E. Eg Nielsen (Denmark) |
| **Working Group on Environmental Interactions of Mariculture (WGEIM)**<br>*Groupe de travail sur les interactions environnementales de la mariculture* | Edward Black (Canada) |
| **Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)**<br>*Groupe de travail sur la pathologie et les maladies des organismes marins* | Thomas Lang (Germany) |
| **Working Group on Marine Shellfish Culture (WGMASC)**<br>*Groupe de travail sur l'aquaculture des invertébrés* | Peter Cranford (Canada) |

## Marine Habitat Committee
## *Comité sur l'habitat marin*

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|---|---|
| **Benthos Ecology Working Group (BEWG)**<br>*Groupe de travail sur l'écologie de la faune benthique* | Heye Rumohr (Germany) |
| **Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT)**<br>*Groupe de travail sur les effets d'extraction des sédiments marins sur l'écosystème marin* | Jon Side (UK) |
| **Working Group on Biological Effects of Contaminants (WGBEC)**<br>*Groupe de travail sur les effets biologiques des contaminants* | John Thain (UK) |
| **Working Group on Statistical Aspects of Environmental Monitoring (WGSAEM)**<br>*Groupe de travail sur les aspects statistiques de la surveillance de l'environnement* | Richard Duin (Netherlands) |

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| **Working Group on Marine Sediments in Relation to Pollution (WGMS)**<br>*Groupe de travail sur les sédiments marins par rapport à la pollution* | Foppe Smedes (Netherlands) |
| **Marine Chemistry Working Group (MCWG)**<br>*Groupe de travail sur la chimie marine* | Robin Law (UK) and<br>Jacek Tronczynski (France) |
| **Working Group on Marine Habitat Mapping (WGMHM)**<br>*Groupe travail sur la cartographie de l'habitat marin* | David Connor (UK) |
| **Working Group on Integrated Coastal Zone Management (WGICZM)**<br>*Groupe de travail sur la gestion intégrée de la bande côtière* | Josianne G. Støttrup (Denmark) |
| **Study Group on the North Sea Benthos Project 2000 (SGNSBP)**<br>*Groupe d'étude sur le projet 2000 de la faune benthique en mer du Nord* | Hubert Rees (UK) |
| **Workshop on Fisheries Management in Marine Protected Areas (WKFMMPA)**<br>*Atelier sur la gestion des pêches dans les aires marines protègée* | Jake Rice (Canada) |

## Oceanography Committee
## *Comité sur l'océanographie*

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| **Working Group on Recruitment Processes (WGRP)**<br>*Groupe de travail sur les processus de recrutement* | Co-Chairs:<br>Tom Miller (USA) and<br>Richard Nash (UK) |
| **ICES/GLOBEC Working Group on Cod and Climate Change (WGCCC)**<br>*Groupe de travail CIEM/GLOBEC sur la morue et les changements du climat* | Co-Chairs:<br>Ken Drinkwater (Canada) and<br>Kai Wieland (Denmark) |
| **Working Group on Oceanic Hydrography (WGOH)**<br>*Groupe de travail sur l'hydrographie océanique* | Co-Chairs:<br>S. Bacon (UK) and<br>P. Hollliday (UK) |
| **Working Group on Marine Data Management (WGMDM)**<br>*Groupe de travail sur la gestion des données marines* | Co-Chairs:<br>Michèle Fichaut (France) and<br>Helge Sagen (Norway) |
| **Working Group on Zooplankton Ecology (WGZE)**<br>*Groupe de travail sur l'écologie du zooplancton* | A. Gislason (Iceland) |
| **Working Group on Phytoplankton Ecology (WGPE)**<br>*Groupe de travail sur l'écologie du phytoplancton* | Co-Chairs:<br>Lars Edler (Sweden) and<br>Francisco Rey (Norway) |
| **ICES-IOC Working Group on Harmful Algal Bloom Dynamics (WGHABD)**<br>*Groupe de travail CIEM-COI sur la dynamique des éclosions planctoniques nuisibles* | J. Silke (Ireland) |
| **Working Group on Modelling of Physical/Biological Interactions (WGPBI)**<br>*Groupe de travail sur le modelage des interactions physiques/biologiques* | Charles Hannah (Canada) |

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| **ICES/IOC Steering Group on GOOS (SGGOOS)**<br>*Groupe directeur CIEM/COI sur GOOS* | Co-Chairs:<br>W. R. Turrell (UK) and<br>David Mountain (USA) [IOC Representative] |
| **Planning Group on the North Sea Pilot Project NORSEPP (PGNSP)** *Groupe de planification CIEM-EuroGOOS du projet pilote de la mer du Nord (NORSEPP)* | Co-Chairs: Martin Holt, UK and Hein Rune Skjoldal, Norway |
| **Steering Group for the ICES/GLOBEC North Atlantic Programme and Regional Office (SGNARO)**<br>*Groupe directeur CIEM/GLOBEC pour le programme de la région atlantique nord* | Co-Chairs:<br>Ken Drinkwater (Canada) and<br>Fritz Köster (Denmark) |
| **Workshop on Indices of Meso-scale Structures in ICES Waters (WKIMS)**<br>*Atelier sur les indices de structures à méso-échelle dans les eaux du CIEM* | Co-Chairs:<br>Benjamin Planque (France)<br>and<br>Corinna Schrumm (Germany) |
| **Workshop on the Decline and Recovery of Cod Stocks throughout the North Atlantic, including Tropho-Dynamic Effects** (**WKDRCS)**<br>*Atelier sur le decline et la reconstitution des stocks de morue dans l'Atlantique Nord, y compris les effets tropho-dynamiques* | Co-Chairs:<br>Brian Rothschild (USA),<br>George Lilly (Canada), Svein Sundby (Norway), and Kai Wieland (Denmark) |
| **Workshop on Advancement in modelling physical-biological interactions in fish early-life history: recommended practices and future directions (WKAMF)**<br>*Atelier sur l'avancement de la modélisation des interactions physique-biologique chez les jeunes stades de poissons : pratiques recommendées et évolutions futures* | Co-Chairs:<br>A. Gallego (UK), E.W. North (USA), and P. Petitgas (France) |

## Resource Management Committee
## *Comité sur la gestion des ressources*

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|---|---|
| **International Bottom Trawl Survey Working Group (IBTSWG)**<br>*Groupe de travail sur les campagnes internationales de chaluts de fond* | Jean Claude Mahé (France) |
| **Working Group on Fishery Systems (WGFS)**<br>*Groupe de travial sur les systèmes de pêche* | Doug Wilson (Denmark) |
| **Working Group on Methods of Fish Stock Assessment (WGMG)**<br>*Groupe de travail sur les méthodes d'évaluation des stocks de pêche* | Carl O'Brien (UK) |
| **Regional Ecosystem Study Group for the North Sea (REGNS)**<br>*Groupe régional d'étude des écosystèmes pour la mer du Nord* | Andrew Kenny (UK) |
| **Study Group on Age-Length Structured Assessment Models (SGASAM)**<br>*Groupe d'étude sur les méthodes d'évaluation structurées en age et longueur* | Helen Dobby (UK) |

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| **Study Group on Multispecies Assessments in the North Sea (SGMSNS)**<br>*Groupe d'étude sur l'évaluation multispécifique dans la mer du Nord* | Co-Chairs:<br>Morten Vinther (Denmark)<br>and<br>J. Pinnegar (UK) |
| **Study Group on Redfish Stocks (SGRS)**<br>*Groupe de planification sur les stocks de sébastes* | Christoph Stransky<br>(Germany) |
| **Study Group on Risk Assessment and Management Advice (SGRAMA)**<br>*Groupe d'étude sur l'évaluation des risques et le avis poir la gestion* | Chairs to be appointed |
| **Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys (PGNAPES)**<br>*Groupe de planification sur les campagnes des écosystèmes pélagiques de l'Atlantique nord-est* | A. Krusdov (Russia) |
| **Workshop on Advanced Fish Stock Assessment Techniques (WKAFAT)**<br>*Atelier sur les techniques perfectionnées d'évaluation des stocks* | Co-Chairs:<br>Dankert Skagen (Norway)<br>and<br>Einar Hjörleifsson (Iceland) |
| **Workshop on Age Determination of Redfish (WKADR)**<br>*Atelier sur la détermination de l'âge du sébaste* | Co-Chairs:<br>F. Saborido-Rey (Spain) and<br>C. Stransky (Germany) |

## Names and Addresses of Chairs of Committees and Groups


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## International Organisations having Affiliate Status, Observer Status, and Cooperative Relations with ICES

1. Arctic Monitoring and Assessment Programme (AMAP)
2. Atlantic Salmon Trust
3. Arctic Ocean Science Board (AOSB)
4. Baltic Marine Biologists (BMB)
5. Baltic Marine Environment Protection Commission (HELCOM)
6. BirdLife International
7. Comisión Tecníca Mixta del Frente Maritimo
8. Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)
9. Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée (CIESM)
10. Commonwealth Scientific and Industrial Research Organization (CSIRO) (Australia)
11. Danish Institute for Fisheries Economics Research
12. European Commission
    - 12.1. Directorate-General for Fisheries (DG-Fish)
    - 12.2. Directorate-General for Science, Research and Development (DG-Environment)
13. European Environment Agency (EEA)
14. European Inland Fisheries Advisory Commission (EIFAC)
15. European Aquaculture Society
16. European Association of Fisheries Economists
17. European Association for Marine Science and Technology
18. European Global Ocean Observing System (EuroGOOS)
19. European Science Foundation
    - 19.1. European Marine and Polar Science Board (EMaPS)
20. Fisheries Society of the British Isles
21. Global Environment Facility (GEF)
22. Global International Water Assessment (GIWA)
23. Global Ocean Ecosystem Dynamics (GLOBEC)
24. Global Ocean Observing Systems (GOOS)
25. Institute for Fisheries Research and Development (INIDEP) (Argentina)
26. Institute of Marine Biology of Crete (Greece)
27. Instituto de Fomento Pesquero (IFOP) (Chile)
28. Instituto del Mar del Peru (IMARPE)

29. International Arctic Science Committee (IASC)
30. International Association for Biological Oceanography (IABO)
31. International Baltic Sea Fishery Commission (IBSFC)
32. International Center for Living Aquatic Resource Management (ICLARM)
33. International Commission for the Conservation of Atlantic Tunas (ICCAT)
34. International Council of Scientific Unions (ICSU)
35. International Institute of Fisheries Economics & Trade (IIFET)
36. International Maritime Organization (IMO)
    36.1. London Convention on Dumping
37. International Pacific Halibut Commission (IPHC)
38. International Union for the Conservation of Nature and Natural Resources (IUCN)
39. International Whaling Commission (IWC)
40. National Institute of Water and Atmospheric Research (NIWA) (New Zealand)
41. Nordic Council of Ministers
42. North Atlantic Marine Mammal Commission (NAMMCO)
43. North Atlantic Salmon Conservation Organization (NASCO)
44. North-East Atlantic Fisheries Commission (NEAFC)
45. North Pacific Anadromous Fish Commission (NPAFC)
46. North Pacific Marine Science Organization (PICES)
47. North Sea Commission Fisheries Partnership (NSCFP)
48. Northwest Atlantic Fisheries Organization (NAFO)
49. Organization for Economic Cooperation and Development (OECD)
50. Oslo and Paris Commissions (OSPAR)
51. Scientific Committee on Oceanic Research (SCOR)
52. Sea Fisheries Research Institute (South Africa)
53. Statistical Office of the European Communities (EUROSTAT)
54. United Nations Educational, Scientific and Cultural Organization (UNESCO)
    54.1. Intergovernmental Oceanographic Commission (IOC)
55. United Nations Environment Programme (UNEP)
56. United Nations Food and Agriculture Organization (FAO) Fisheries Department
57. World Wide Fund for Nature (WWF)

# Part V

## Annexes

## Acronyms

| Abbreviation | Title |
|---|---|
| ACE | Advisory Committee on Ecosystems |
| ACFM | Advisory Committee on Fishery Management |
| ACME | Advisory Committee on the Marine Environment |
| ADD | Acoustic deterrent devices |
| AFSC | Alaska Fisheries Science Center |
| AGLTA | *Ad hoc* Group on Long-term Advice |
| AHD | Acoustic harassment devices |
| ALA-D | Acid Dehydratase |
| AQC | Air Quality Criteria |
| ARCGIS | Server for Enterprise GIS Users |
| ARCMIS | Solution for delivering dynamic maps and GIS data and services via the Web |
| ASC | ICES Annual Science Conference |
| AUV | Autonomous underwater vehicles |
| BACOMA window | Highly size-selective 120-mm square mesh window |
| BALANCE | Global Change Vulnerabilities in the Barents Region: Linking Arctic Natural Resources, Climate Change and Economies (EU-funded project) |
| BAS | British Antarctic Survey |
| BCC | Baltic Committee |
| BEQUALM | Biological Effects Quality Assurance in Monitoring Programmes |
| BfN | Bundesamt für Naturschutz, Germany |
| BIFS | Biotechnology Information For Food Safety Database |
| BIM | Irish Sea Fisheries Board (Board Iascaigh Mhara) |
| BITS | Baltic International Trawl Survey |
| BMB | Baltic Marine Biologists |
| BODC | British Oceanographic Data Centre |
| BONUS | BONUS for the Baltic Sea Science – Network of Funding Agencies (ERA-NET) |
| BSRP | Baltic Sea Regional Project |
| BSE | Bovine Spongiform Encephalopathy disease |
| CCC | Cod and Climate Change programme |
| CD-ROM | Compact Disc-Read Only Memory |
| CEFAS | The Centre for Environment, Fisheries & Aquaculture Science (UK) |
| CEMARE | Centre for the Economics and Management of Aquatic Resources |
| CEMP | Coordinated Environmental Monitoring Programme (OSPAR) |
| CEN | European Committee for Standardization |
| CEPHSTOCK | Cephalopod Stocks in European Waters: Review, Analysis, Assessment and Sustainable Management |
| CFP | Coastal Fisheries Programme |
| CIESM | Mediterranean Marine Research Network |
| CITES | Convention on International Trade in Endangered Species of Wild Flora and Fauna |
| CLIVAR | Climate Variability and Predictability |
| CM | ICES Council Meeting |

| | |
|---|---|
| COMBINE | Cooperative Monitoring in the Baltic Marine Environment |
| CoML | Census of Marine Life |
| ConC | Consultative Committee |
| CONSSO | Committee of North Sea Senior Officials |
| COOP | Cooperative Observer Program |
| CPUE | Catch per unit of effort |
| CRP | Capital Reserve Fund |
| CRR | *ICES Cooperative Research Report* |
| CSIRO | Australian Commonwealth Scientific and Industrial Research Organization |
| CTD | Conductivity/temperature/depth |
| CWP | The Coordinating Working Party on Fishery Statistics |
| DATRAS | Database Trawl Surveys |
| DEL | ICES Delegate |
| DELASS | Development of Elasmobranch Assessments |
| DFC | Diadromous Fish Committee |
| DG | Directorate-General |
| DIADFISH | Network of European research institutes working on diadromous fish |
| DIFRES | Danish Institute for Fisheries Research |
| DKK | Danish Kroner |
| DNA | deoxyribonucleic acid |
| EAF | Ecosystem approach to fisheries |
| EAS | European Aquaculture Society |
| EBFM | Eco-Based Fisheries Management |
| EC | European Commission |
| ECOPATH | Software for the construction of mass balance models of aquatic ecosystems |
| EcoQO | Ecological Quality Objective |
| ECOSIM | Environmental management information system |
| EEAN | European Environment Agency |
| EEZ | Exclusive economic zone |
| EFAM | European Fish Ageing Network |
| EG | Expert Group |
| EMAX | Northeast US food web ecological network |
| EMMA | European Marine Monitoring and Assessment Group |
| EMPAFISH | European marine protected areas as tools for fisheries |
| EOI | Expression of Interest |
| EPA | Environmental Protection Agency |
| ERA-NET BONUS | Network of Funding Agencies |
| ERMS | European Register of Marine Species |
| ESRI | Environmental Systems Research Institute |
| EU | European Union |
| EUR-OCEANS | European Network of Excellence for Ocean Ecosystems Analysis (EU-funded project) |
| EuroGOOS | European association of agencies to further the goals of GOOS |
| EUROSTAT | Statistical Office of the European Communities |
| FAO | Food and Agriculture Organization of the United Nations |
| FISHTRACE | Database containing genetic and taxonomic data for more than 200 commercial species |
| FRS | Fisheries Research Services |

| | |
|---|---|
| FTC | Fisheries Technology Committee |
| GE-BICH | IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices, |
| GEF | Global Environment Facility |
| GEOHAB | Global Ecology and Oceanography of Harmful Algal Blooms |
| GESAMP | Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection |
| GIS | Geographical Information Systems |
| GKSS | German Research Centre |
| GLM | Glucosamine-6-phosphate activated ribozymea |
| GLOBEC | Global Ocean Ecosystem Dynamics Programme |
| GOMA | Gulf of Maine Area-Global Ocean |
| GOOS | Global Ocean Observing System |
| GOSUD | Global Ocean Surface Underway Data Pilot Project |
| HAB | Harmful algal blooms |
| HAC | Hydro acoustic |
| HAEDAT | Harmful Algae Events Database |
| HCR | High Chemical Resistant |
| HELCOM | Helsinki Commission (Baltic Marine Environment Protection Commission) |
| HERGEN | Conservation of diversity in an exploited species: spatio-temporal variation in the genetics of herring (*Clupea harengus*) in the North Sea and adjacent areas |
| HOMSIR | Horse Mackerel Stock Identification Research |
| HSMI | Heart and skeletal muscle inflammation |
| IA | Integrated Assessments |
| IAOCSS | ICES Annual Ocean Climate Status Summary |
| IAP | Integrated action plan |
| IBA | Important Bird Areas |
| IBMs | Individual-based models |
| IBSFC | International Baltic Sea Fishery Commission |
| IBTS | International Bottom Trawl Survey |
| ICCAT | International Commission for the Conservation of Atlantic Tunas |
| ICES | International Council for the Exploration of the Sea |
| IFREMER | Institut Français de Recherche pour l'Exploitation de la Mer (France) |
| IJMS | *ICES Journal of Marine Science* |
| IMARPE | Instituto del Mar del Peru |
| IMBER | Integrated Marine Biogeochemistry and Ecosystem Research project |
| IMR | Institute of Marine Research |
| IOC | Intergovernmental Oceanographic Commission |
| IODE | International Oceanographic Data and Information Exchange |
| IPIMAR | Instituto de Investigação das Pescas e do Mar (Portugal) |
| IPY | International Polar Year |
| IRD | Institut de recherche pour le développement (IRD) |
| ISI | Institute for Scientific Information |
| ISO | International Standards Organization |
| ITIS | Integrated Taxonomic Information System |
| IUCN | International Union for the Conservation of Nature |
| IWC | International Whaling Commission |
| JAMP | Joint Assessment and Monitoring Programme |

| | |
|---|---|
| JNRFC | Joint Norwegian-Russian Fisheries Commission |
| JRC | Joint Research Centre, Ispra, Italy |
| JTED | Juvenile and Trash Excluder Devices |
| LATFRA | Latvian Fish Resources Agency |
| LRC | Living Resources Committee |
| M74 | Fish disease |
| MARBEF | Network of Excellence on Marine Biodiversity and Ecosystem Functioning |
| MASDEA | Marine Species Database of Eastern Africa |
| MBS | Multibeam echosounder systems |
| MCAP | Management Committee for the Advisory Process |
| MCC | Mariculture Committee |
| MDM | Marine Data Management |
| MECC | Maastricht Exhibition and Congress Centre |
| MEDITS | An international bottom trawl survey in the Mediterranean |
| MERSEA | Marine Environment and Security for the European Area |
| MESH | Mapping European Seabed Habitats |
| MHC | Marine Habitat Committee |
| MoU | Memorandum of Understanding |
| MPA | Marine protected areas |
| MSA | Multivariate statistical analysis |
| MSS | *ICES Marine Science Symposia* |
| MSVPA | Multispecies Virtual Population Analysis |
| MSY | Maximum Sustainable Yield |
| MTA | Multi-trophic aquaculture |
| MUMM | Management Unit of the North Sea Mathematical Models (Gulledelle) |
| NAFO | Northwest Atlantic Fisheries Organization |
| NAMMCO | North Atlantic Marine Mammal Commission |
| NAO | North Atlantic Oscillation |
| NARMS | National Antimicrobial Resistance Monitoring System |
| NASCO | North Atlantic Salmon Conservation Organization |
| NATURA 2000 | A European network of protected sites which represent areas of the highest value for natural habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community |
| NEAFC | North-East Atlantic Fisheries Commission |
| NGO | Non-governmental organisation |
| NMFS | National Marine Fisheries Service (USA) |
| NOAA | National Oceanic and Atmospheric Administration (USA) |
| NODC | National Oceanographic Data Center |
| NORSEPP | ICES-EuroGOOS North Sea Ecosystem Pilot Project |
| OECD | Organisation for Economic Co-operation and Development |
| OMEGA | Development and Testing of an Objective Mesh Gauge (EC Project) |
| OSPAR | Oslo and Paris Commissions |
| PAH | Polycyclic Aromatic Hydrocarbons |
| PFA | Pre-fishery abundance |
| PICES | North Pacific Marine Science Organization |
| POF | Post-ovulatory follicles |
| POP | Persistent Organic Pollutants |
| PSR | Plankton Status Report |

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| PubC | Publications Committee |
| QA | Quality assurance |
| RAC | Regional Advisory Councils |
| RADIAIES | Spanish national monitoring programme |
| REGNS | Regional Ecosystem Study Group for the North Sea |
| RIVO | Netherlands Institute for Fisheries Research |
| RMC | Resource Management Committee |
| ROV | Remotely operated vehicle |
| SAHFOS | Sir Alister Hardy Foundation for Ocean Science |
| SALSEA | The Salmon at Sea programme |
| SAMS | Society of Accredited Marine Surveyors |
| SBS | Single-beam echosounder |
| SCOR | Scientific Committee on Oceanic Research |
| SG | Study Group |
| SLIME | Study for Informed Management of Eel |
| SMS | Stochastic MultiSpecies model |
| SPA | Special Protection Areas |
| SPICES | Senior People of ICES |
| SRP | Stock reproductive potential |
| SSB | Spawning-stock biomass |
| SSS | Sidescan sonar systems |
| STACFIS | Standing Committee on Fisheries Science |
| TAC | Total allowable catch |
| TACADAR | European Fish Ageing Network |
| TCM | Technical conservation measures |
| TCPMe | Tris(4-chlorophenyl)methane |
| TED | Turtle excluder devices |
| TIMES | *ICES Techniques in Marine Environmental Sciences* |
| ToRs | Terms of reference |
| TS | Target strength |
| UID | Unique Identifier |
| UNEP | United Nations Environment Programme |
| VLIZ | Flanders Marine Institute |
| VMS | Vessel monitoring systems |
| VOS | Voluntary Observing Ship |
| VPA | Virtual Population Analysis |
| WAS | World Aquaculture Society |
| WESTHER | A multidisciplinary approach to the identification of herring (*Clupea harengus* L.) stock components west of the British Isles using biological tags and genetic markers |
| WFD | Water framework directive |
| WG | Working Group |
| WHO | World Health Organization |
| WISE | Water Information System for Europe |
| WWF | World Wildlife Fund |
| XML | Extended Mark-up Language |
| YOY | Young-of-the-year |