

# **ICES Annual Report**

## **for**

## **2002**

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

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March 2003



The CD-ROM attached to the inside of the back cover contains most of the ICES CM 2002 Documents on which this Annual Report is based. This includes most Expert Group Reports. All of the paper abstracts as well as about 70% of the papers/posters presented at the 2002 Annual Science Conference are also included, as is the present Annual Report. In addition the CD-ROM includes copies of a number of basic ICES documents, including the ICES Strategic Plan, Action Plan, Rules of Procedure, Delegates' Handbook, Guidelines for Chairs, the Host Agreement, and the ICES Convention.

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## **Part I**

### **Centenary Day**









Amalienborg, 1st October 2002

Professor Pentti Mälkki  
President of ICES  
International Council for the Exploration of the Sea  
Palægade 2-4  
1261 København K

On the occasion of the 100<sup>th</sup> Anniversary of the International Council for the Exploration of the Sea I send my warm congratulations and best wishes for the Centenary Conference.







## Centenary Day

The General Secretary brought the audience through the programme of the Centenary Day:

- 10:00     Opening:  
Recital by the renowned choir Ars Nova, conducted by Tamás Vetö: *Fountain motet for Kronborg Castle*, by Leonard Lechner (1553-1606). Ars Nova is one of the most prominent choirs in the whole of Scandinavia, especially in the field of contemporary and renaissance vocal music. They were established in 1979 and they have produced many internationally acclaimed recordings and more than 1500 concerts and broadcasts throughout the world.  
The President of ICES welcomes the participants.  
The Minister for Food, Agriculture and Fisheries declares the Centenary Day open.  
Recital by Ars Nova: *Halleluja, vor Gud er forrykt* ("Hallelujah, our God is mad"), by Per Nørgaard (1932- ).
- 10:30     Centenary presentations:  
Pentti Mätkki, ICES President: *ICES Yesterday, Today and Tomorrow*  
Michael Sissenwine (First Vice-President of ICES): *The ICES Strategic Plan*  
Mariann Fischer Boel (Minister for Food, Agriculture and Fisheries): *The Copenhagen Declaration*
- 11:15     Signing of the Copenhagen Declaration:  
The Declaration will be signed by high-level representatives of the nineteen ICES Contracting Parties.  
Simultaneously, all ten research ships gathered at Amaliehaven in the Copenhagen harbour will sound their sirens.
- 11:45     Centenary Lecture:  
Dr Robert T. Watson, Chief Scientist of the World Bank and former Chair of the Intergovernmental Panel on Climate Change: *Climate Change – Time for Action*.
- 12:30     VIP gathering in an adjacent building, followed by lunch for all the participants at the Centenary Day conference.
- 14:30     Roundtable Discussion (by invitation)  
The signatories of the Copenhagen Declaration will have the opportunity to express views and priorities in relation to the ICES strategy.
- 18:30     Centenary Dinner at Base Camp, hosted by the Minister for Food, Agriculture and Fisheries.



The Danish Post Office Band marched through central Copenhagen on the Centenary Day, and continued playing as conference participants arrived at DGI-byen



**The President:**

Madame Minister, your Excellencies, Ladies and Gentlemen, it is my great honour and pleasure to welcome you all to this Centenary Day celebration. For this occasion, I have received a letter from Her Majesty Queen Margrethe of Denmark which reads: "On the occasion of the 100<sup>th</sup> Anniversary of the International Council for the Exploration of the Sea, I send my warm congratulations and best wishes for the Centenary conference".

A Centenary celebration is always a jubilee with two faces. We are grateful to past generations for their achievements but in particular we look forward to the coming decades. ICES endeavours to fill the need for knowledge on what is happening to our seas. We have the capacity to spoil them, our capacity to overexploit their living resources has been realised, and our ability to take remedial measures is to be tested. For this, sound scientific understanding of the complex mechanisms, and the possibilities to influence them in positive ways, is needed. This has been and will be the task of ICES as an organisation.

For ICES, underpinning of successful cooperation lies in the work at national level. The capacity of national laboratories to act, and their willingness to cooperate (the well known ICES spirit) are key elements for success.

ICES will face many challenges in the future. Worldwide there are increasing pressures on the marine ecosystem, including its living resources. The North Atlantic and its adjacent seas are no exception. Many international agreements and other diplomatic arrangements have been formulated to redress these problems. The success of these international agreements depends heavily on the quality of the scientific advice which ICES is expected to provide. Decision makers need advice that is unbiased, sound, and credible. The need for scientific advice to support more integrated management of the marine ecosystem has never been greater.

Our Centenary Day programme will culminate in the signing of the Copenhagen Declaration, which will hallmark the commitment of the Member Countries to our activities. It is my pleasure also to note that in this Celebration we have two people who were present 50 years ago in Copenhagen, celebrating the 50th Anniversary of ICES. I am glad that they are here. I am glad that you are all here. Let us start the celebration; you are all cordially welcome.

**Minister of Food, Agriculture and Fisheries:**

Dear colleagues, dear friends, distinguished guests from the Contracting Parties of ICES and the entire ICES community,

It is a great privilege for Denmark and myself to be part of this important day in the history of marine science and management. I am happy to welcome you to the ICES Centenary here in Copenhagen.

A hundred years ago, a handful of men with strong visions created an organisation of marine research and investigations in the North Atlantic. ICES has established itself as an organisation of proven performance and credibility in the field of marine science and provision of advice for fisheries managers. We are celebrating birthday number 100 of the oldest intergovernmental organisation. We also celebrate the day that marks the transition of ICES work into modern marine research and advice.

ICES and the advisory system is under great strain. The number of challenges that have to be met are numerous in the field of science and in the field of advice. ICES has taken the first step in developing the new strategy for its future work. The Contracting Parties of ICES have chosen this day to sign the Copenhagen Declaration to support the ICES Strategy and to give our guidelines for the priorities of ICES.

With these words and the best of hopes for the future, I congratulate ICES with its birthday and I declare the Centenary Day for open. Thank you very much.

**The President:**

Madame Minister, your Excellences, Ladies and Gentlemen,

We are gathered here to celebrate the Centenary of the International Council for the Exploration of the Sea. In fact, we are celebrating a cooperation which started decades earlier. A quotation of the prologue of former President Arthur Went's history book 30 years ago reads as follows "In the middle of the last century there was a firm belief in the inexhaustibility of the seas. So great were the resources of the sea, many people believed, that with his existing methods of capture, man could hardly make any impression on them. However, with the great expansion in the trawling fleet and the introduction of steam propulsion and the otter trawl many thinking scientists had other views. In fact, some were satisfied that overfishing was taking place". This gradually led to the conclusion of the North Sea Convention, other intergovernmental negotiations and, finally, in 1902 to the establishment of ICES.

A Centenary is a memorable occasion for any organisation, in particular for an intergovernmental one. ICES, with its mandate only slightly modified since 1902, has been able to survive two World Wars, the Cold War, tremendous change in societies which it supports, and tremendous developments in science.

The changes during the past century are so fundamental that one has to ask why ICES has survived and thus acquired a status as the oldest intergovernmental organisation in the world. Is it because it is of minor interest to the governments involved, thus not attracting their attention? Or is it the opposite: the importance has been so obvious that nobody has wanted to challenge it? One can only have a number of guesses which, from the point of view of a civil servant, seem to be possible. One



is the fact that even if the basic science is in focus, there has always been a practical need to understand the behaviour of the living resources of the ocean. For all countries involved, fisheries represented a substantial part of the national income in the first decades of the 20th century. Fisheries, as usual, have always aroused emotion within society, within each country, and between countries. This is a fact even today. While fisheries account for an important share in the national economy of a number of countries, the relative importance has changed in some. New needs have emerged, such as concern for the environment, concern about sustainability, and concern about global change which may dramatically influence our living conditions. We live on a limited globe, we significantly influence its development and we still have a long way to go in order to understand its behaviour. Even for a layman this motivates a joint venture on marine studies.

Another possible fact is that knowing the vastness of the object of study, no country can expect to be able to do adequate studies only by itself. The volume, the vastness of the object to be studied exceeds national capacities to study it. Moreover, the ocean is constantly changing, like the atmosphere above it. In my experience, geosciences and in particular marine sciences have always been among the most international branches of science. This was obviously one of the motivations behind the establishment of ICES. For me it still seems to be a relevant point. It does not diminish the fact that the Atlantic and its adjacent seas have different importance for different countries, but definitely there is an added value in cooperation.

Thirdly, the countries which charted ICES were a relatively homogenous set, being in the forefront of developments of that time. The initiative certainly came from a small number of people, but without a well developed scientific and political infrastructure nothing would have happened.

One can assume that the interest of the scientists, the needs of society, and political willingness for cooperation made a favourable match. Where cultural background, history and level of development have been different however, the survival of an international body has been more difficult. Even now the total number of Member Countries of ICES does not exceed 20 (to which we are pleased to add Affiliate countries), which is perhaps a suitable size for a regional organisation.

Definitely, one reason for success has been the clear limitation to the North Atlantic and its adjacent seas. Being within the interest of the North Atlantic rim countries also form a well defined entity for study, given the possibility for progress which can be affirmatively demonstrated. During the second half of the last century, this has also enabled the development of an ICES role which has been complementary in regard to those of other organisations, particularly UN bodies, and directly relevant to the scientific advice requirements of ICES Member Countries and the international community.

Certainly, ICES has had turbulent periods, partly due to the troubled history of the past century and partly (and this is unavoidable in any organisation), strong personalities in leading positions, who have sometimes expressed strong opinions on how to proceed. Without being a historian, it seems to me that those turbulent periods had more or less ended by the time of the 50th Jubilee meeting in 1952. Its inaugural ceremony took place at Christiansborg Slot at which H.R.H. Prince Axel of Denmark (as deputy for His Majesty King Frederik IX of Denmark) and H.R.H. Princess Margrethe were present, together with Ambassadors and Ministers of Member Countries, the President of the Landsting and the Folketing, as well as the Foreign Minister and the Minister of Fisheries of Denmark. During this meeting Dr Alban Dobson of the UK was elected to be the new President of ICES and he started discussions with the officials of the Danish Government as to the status of the Council. This ultimately led to the 1964 Convention which is still our basic constitution today. It laid a good foundation for effective work in science and in scientific advice.

For this occasion we have an excellent history book of ICES' achievements by Helen Rozwadowski, so I will limit my comments to just a few subjective remarks on the importance of ICES in international development.

It may not be an accident that the first large-scale survey of deep ocean life was carried out by *Galathea*, a Danish vessel, and that many of the people who designed the International Indian Ocean Expedition (and who would later work for the establishment of the Intergovernmental Oceanographic Commission) were active ICES scientists. Similarly, when the Food and Agriculture Organization of the UN was established much of its fishery expertise came from ICES scientists. The ICES community today (some 1600 scientists) has formed a stimulating atmosphere for collaboration. The availability of high quality scientists, and their willingness to use national resources for large-scale cooperative expeditions, have brought beautiful results and will continue to do so.

When looking to the future we can only guess at what kind of scenario awaits ICES. We know by hard experience that the sea plays an important role in the global climate, and in the production of both living and non-living resources. Here in Northern Europe we enjoy a positive temperature anomaly of some 5-10° from the latitudinal mean, due to the Atlantic currents which are subject to climatic variability.

We are living in a time of revolution in observation technology, for modelling and monitoring the behaviour of the oceans. Our task in ICES is to foster collaboration in studies to understand these phenomena, focussing ourselves on the branches we know best. Within this domain we can integrate the knowledge and know-how of all ICES disciplines from the beginning of the study process, not as an end product.



Living resources, their sustainable exploitation, and care for the environment will guide our activities in marine science. In order to be able to do so properly, we need commitment both from national institutions and from those working at ministerial level in the Member Countries. To focus our activities we have honed our tools in strategy and its implementation. For the required commitment we have the Copenhagen Declaration, which is a strong indication of the Member Countries' support for ICES. I am confident for the future.

**Mike Sissenwine:**

Ministers, Distinguished Guests, Colleagues,

Thank you for the opportunity to tell you about the ICES Strategic Plan this morning.

The world has changed tremendously in the 100 years since ICES was established. ICES realises that in a rapidly changing world, past successes and current strengths do not automatically translate into a bright future. ICES is as determined to be as relevant and productive in the future as it can be. A successful future requires a clear vision, a well defined mission and a strategy, which is what we refer to as the Strategic Plan.

ICES began developing its Strategic Plan several years ago. It adopted the plan last year in Oslo, and in the year leading up to this Centenary it has been preparing an integrated Action Plan to implement the Strategic Plan.

The process has involved a broad cross section of the ICES community. It has involved consultation with many interested parties within ICES member countries, and the stakeholders such as fishery and environmental Commissions. We are proud of the Plan and we think that it provides an excellent blueprint for fulfilling the Copenhagen Declaration which we will adopt later on today.

The ICES Vision captured in the Strategic Plan is an international scientific community that is relevant, responsive, sound, and credible, concerning marine ecosystems and their relationship to humanity.

In order to achieve this vision, ICES has defined its niche, its Mission, to advance the scientific capability, to give advice on human activities affecting, and affected by, marine ecosystems. I want to note two important words in the Mission, two important concepts – science and advice.

The ICES view is that science and advice are the two pillars on which the organisation is built; two equal pillars, the foundation of the partnerships that we have with the Member Countries, scientific institutions and with other international organisations. And ultimately the granite below the foundation is the Member Country scientists and all the other scientists that make up the ICES community. These, together, define ICES' contribution to society.

In order to fulfil our Vision and Mission, ICES has identified five critical Theme areas within its Strategic Plan:

- Building a foundation of science
- Producing the scientific advice decision-makers need
- Fostering partnerships
- The added value that ICES can bring to the activities of the Member Countries
- Informing the public

To achieve the Strategic Plan we have within each of the five critical Theme areas a number of goals, one or more for each Theme area, and within each of the goals, the plan illustrates critical activities. For example, under the Theme area of providing scientific advice that decision-makers need, we have Goal 4: Advice on the Sustainable Use of Living Marine Resources. To illustrate the types of activities that ICES does and will carry on in order to fulfil that goal we have a list of topics, including one which states: "maintain and enhance access to the best relevant scientific expertise"; this is, ultimately, probably the most important aspect of what ICES can bring to the table.

Going beyond the critical Themes and the goals, we have prepared an integrated Action Plan. The Action Plan specifies approximately 100 activities that are designed to fulfil the Strategy. I list only a few examples here:

- Develop a comprehensive approach to habitat classification
- Predict impacts of climate variability on marine ecosystems
- Develop systems for monitoring ecosystems (e.g. GOOS)
- Integrate and expand databases to support users need
- Update the Code of Conduct of practice associated with non-indigenous organisms
- Evaluate alternative fishery management strategies, and
- Develop an ecosystem approach to fisheries.

This is really a shorthand list of the extensive activities described, highlighted and discussed within the integrated Action Plan. I commend the document to all of you as information that you should be aware of in your future considerations in dealing with ICES.

In order to fulfil this plan, ICES will make use of its extensive network of scientists, 1500 to 2000 professional researchers in 200 institutions within our 19 Member Countries and also within Observer Countries. Within this pool of scientists, all fields relative to marine ecosystems including Living Marine Resources are studied.

The scientific assets are arranged within the ICES structure. The structure is lead by the Council (the ICES Delegates), which is also served by an Executive



Committee of seven people referred to as the Bureau. The scientific apparatus of ICES is overseen by the Consultative Committee. The Consultative Committee is really the arm that shapes the science, whereas the Council is the arm that is responsible for the business of ICES.

Under the Consultative Committee are the Advisory Committees and the Science Committees and ultimately the place where the real day-to-day work of ICES is conducted – the approximately 100 Working Groups, Study Groups, and Workshops that meet intersessionally throughout the year.

ICES is focussed on the North Atlantic, as our President noted, and maintaining that clear focus has been one of ICES' strengths. It is truly a global organisation in terms of influence. The map provided in the Strategic Plan highlights that fact by noting the vast area occupied by the ICES members, and the expansion of its influence as indicated by the addition of several Observer Countries of all corners of the world.

A key to measuring ICES' success lies in the publications, both electronic and printed. One can find out much more about these products by consulting the website ([www.ices.dk](http://www.ices.dk)).

ICES believes that the publication of its Strategic Plan and its integrated Action Plan are very important accomplishments. The process of self examination, internal and external dialogue and critical thinking that went into building these plans are what we think is really important in shaping ICES' future. The Plan will not be just a document to gather dust on the shelves. It needs to be a living document and we are committed to continuing these processes of critical thinking, of self examination, and of consultation.

Ultimately, ICES success depends on attracting outstanding scientists. They are the backbone of ICES. We are confident that our vision of a relevant, responsive sound and credible international community when it comes to marine ecosystems and their relationship to humanity, is a vision that outstanding scientists share. We are also sure that the scientific community that shares that vision is what society needs in the future. I hope that we can all work together to assure that this vision is reality.

#### **Minister of Food, Agriculture and Fisheries:**

Ladies and Gentlemen, Distinguished Guests,

We utilise some of the richest fishing grounds in the world. We have committed ourselves to manage and utilise the fish stocks on science-based knowledge and advice. The role of ICES is to help us, the managers, to explore and to exploit the marine resources. Reliable advice on management of fish stocks, methods to achieve sustainability and knowledge of ecosystem effects are crucial to fisheries management. The development in marine science is important in itself as it has a strong role

in defining the playing field for the utilisation of the marine resources in the future. The challenges in fisheries management have considerably increased demands for up-to-date scientific assessment and activities. Additionally, increased reliance on science as the principal ground for identifying and addressing problems has highlighted areas where advice should be clearer, more reliable, and more credible. The main concerns about scientific advice are, in my view, within the following areas:

First, the science itself. Do we have a scientific standard that matches that of other sciences? Do we support it? Do we support its direction and quality in the right way? We request ecosystem approaches, but do we support such a holistic way of thinking and of working? The lack of public review procedures gives the impression that provision of advice is a closed shop. The public domain becomes more and more important and science must relate to public views and to public needs. Advisory systems must be designed to provide a rapid and reliable response to management questions. Recent experience has been that the present advisory system is not able to do so or that it has severe difficulties in delivering the advice that is needed by the managers. I see a broad consensus on the need for improvement. I also see an acknowledgement by managers of the need to promote, first, greater commitment by countries to provide accurate fishery data, and improvements in the setting and in the organisation of fishery science and the country's ability to participate in international cooperation on the advisory work.

Advice should identify a recommended course of action, but it should also provide information on the consequences of taking other courses of action, thus leaving the decision and the responsibility of utilisation strategies to managers. It may be based on formal analyses, on expert opinion, or on a combination of the two. However, the advice should be transparent and clear about what is the role of expert opinion and it should be accompanied by statements about the impact and the risk of alternative options.

Advice will be needed in respect of setting appropriate catches and fishing effort in the short term, in order to match the chosen objectives in the longer term. Such advice will need to include considerations of the fish stocks and the biological risks associated with fishing them; the state of populations of non-commercial species and habitats and the effects of fishing activities on them; the long-term sustainable balance between the fishery and between the resources; how fish of different species are caught together, and avoidance and waste and discarding.

I am confident that ICES will still have many more years ahead for its very important work. At the same time, it is clear that modern times do support stable structures and working procedures. The ability to read the signs and to adapt to relevant demands has become a necessary skill.



Denmark as the Depositary Government for the ICES Convention has had the privilege to lead the negotiations regarding the Copenhagen Declaration on ICES Strategy. Given the variety of interests represented in ICES Member Countries, I am strongly aware of the fact that the positive participation of the Contracting Parties in the negotiations and their willingness to bend their views in a constructive way, is the reason why we can sign the Copenhagen Declaration today.

I thank you for your participation and collaboration to bring this Declaration about; a Declaration that is

comprehensive but also focussed on some very important points. The process of the formulation of the Copenhagen Declaration convinces me that the Declaration speaks of important issues relevant to all Contracting Parties. At the same time, we have learned in the process that we also have different opinions on these matters. I am looking forward to the discussion later on this afternoon, where Contracting Parties can expand their views regarding the role of future marine science and advice. These views will be minuted and distributed to ICES and all the countries.

Thank you for listening.



Signing of *The Copenhagen Declaration*, L to R: Normunds Riekstins, (Latvia), Jane Munch (Ministry of Food, Agriculture and Fisheries), Mariann Fischer Boel (Minister of Food, Agriculture and Fisheries), R.J.T. van Lint (The Netherlands), Peter Gullestad (Norway). Each signatory was presented with a copy of Helen Rozwadowski's history of ICES, *The Sea Knows No Boundaries*.



The research ships from ICES Member Countries gathered at Amaliehaven for the ICES Centenary, attracting wide interest from the public.



**Copenhagen, 4 October 2002**

**The Copenhagen Declaration  
on future ICES strategy**

**Déclaration de Copenhague  
sur la stratégie future du CIEM**



## THE COPENHAGEN DECLARATION ON FUTURE ICES STRATEGY

The Contracting Parties of the International Council for the Exploration of the Sea (ICES), meeting on the occasion of the ICES centenary in Copenhagen, 4 October 2002,

**Recalling** that the ICES Convention of 1964 states that it shall be the duty of the International Council for the Exploration of the Sea

- a) to promote and encourage research and investigations for the study of the sea particularly those related to the living resources thereof;
- b) to draw up programmes required for this purpose and to organise, in agreement with the Contracting Parties, such research and investigations as may appear necessary;
- c) to publish or otherwise disseminate the results of research and investigations carried out under its auspices or to encourage the publication thereof;

and that the Council shall be concerned with the Atlantic Ocean and its adjacent seas and primarily concerned with the North Atlantic,

**Mindful** of the need for a spirit of global partnership to conserve, protect, and restore the health and integrity of the Earth's ecosystems as agreed in the Rio Declaration of 1992,

**Concerned** about the increasing pressures on marine ecosystems worldwide, and in particular the increasingly precarious state of many living marine resources in the area covered by ICES,

**Recognising** that the need for scientific advice to manage living marine resources in an ecosystem context has never been greater, as is reflected inter alia in the UN Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, in the FAO Code of Conduct for Responsible Fisheries, and in other international instruments,

**Recognising** that a scientific understanding of the physical, chemical, and biological functioning of marine ecosystems is fundamental to interpreting and advising on human impact and dependence on them,

**Recognising** that understanding the effects of human activities on marine ecosystems is essential in order for scientists to provide advice that can improve societal decisions relative to living marine resources and marine ecosystems,

**Committed** to a strengthened role for scientific research on marine ecosystems as a basis for advice that is unbiased, sound, reliable, and credible, to the benefit of management and conservation of marine ecosystems and living marine resources,

### HAVING AGREED:

**to reaffirm** their commitment to maintain ICES as a strong and independent scientific organisation in order to improve its capacity to give unbiased, sound, reliable, and credible scientific advice on human activities affecting, and affected by, marine ecosystems;

**to endorse** the ICES Strategic Plan as a basis for future ICES scientific and advisory work;

**to stress** the need for ICES to develop and promote science-based knowledge of living marine resources and marine ecosystems;

**to stress** the need for ICES to strengthen working relationships with users of scientific information on living marine resources and marine ecosystems, including fishery management organisations and environmental commissions, and with stakeholders that are affected by, or have an interest in, ICES work, thus requiring that ICES:

apply a quality assurance scheme for its advisory function;



adopt procedures to ensure the full consideration of data from a wide range of stakeholders;

be flexible and timely in providing scientific advice to meet the needs of decision-makers responsible for the stewardship of living marine resources and marine ecosystems without compromising the quality or reliability of the advice;

ensure that ecosystem considerations, including the effects of human activities and climatic and oceanographic conditions, are taken into account;

frame advice in relation to fisheries management, giving full consideration to the ecosystem context;

**Commit** themselves to the implementation of this declaration through ICES and through the marine science institutes and universities of member countries that contribute to the work of ICES on marine science and advice.

## DÉCLARATION DE COPENHAGUE SUR LA FUTURE STRATÉGIE DU CIEM

Les Parties contractantes du Conseil international pour l'Exploration de la Mer (CIEM), réunies à l'occasion du centenaire du CIEM à Copenhague le 4 octobre 2002,

**RAPPELANT** que la Convention du CIEM de 1964 stipule que le Conseil international pour l'Exploration de la Mer est chargé :

- a) de promouvoir et d'encourager des recherches et enquêtes en vue de l'étude de la mer et, notamment, de ses ressources vivantes ;
- b) d'établir des programmes à cet effet et d'organiser, en accord avec les Parties contractantes, les recherches et enquêtes qui lui paraîtraient nécessaires ;
- c) de publier ou de diffuser par tout autre moyen les résultats des recherches et enquêtes effectuées sous ses auspices ou d'en favoriser la publication ;

et que les attributions du Conseil s'exercent dans l'Océan Atlantique et ses mers adjacentes et, en premier lieu, dans l'Atlantique Nord,

**Conscients** de la nécessité d'un esprit de partenariat mondial en vue de conserver, de protéger et de rétablir la santé et l'intégrité de l'écosystème terrestre tel que convenu dans la Déclaration de Rio de 1992,

**Soucieux** de la pression croissante sur les écosystèmes marins dans le monde entier et, en particulier, de l'état de plus en plus précaire de nombreuses ressources marines vivantes dans la région couverte par le CIEM,

**Reconnaissant** qu'il n'a jamais été plus nécessaire qu'aujourd'hui de disposer d'avis scientifiques pour gérer les ressources marines vivantes dans un écosystème, comme le reflètent entre autres la Conférence des Nations Unies sur la gestion des stocks chevauchants et des stocks de poissons grands migrateurs, le Code de conduite pour une pêche responsable de la FAO ainsi que plusieurs instruments internationaux,

**Reconnaissant** que la compréhension scientifique du fonctionnement physique, chimique et biologique des écosystèmes marins est fondamentale pour interpréter et donner des avis sur la dépendance et l'influence de l'homme sur ces écosystèmes,

**Reconnaissant** que la compréhension de l'influence des activités humaines sur les écosystèmes marins est essentielle si les scientifiques doivent donner des avis pour améliorer les décisions relatives aux ressources marines vivantes et aux écosystèmes marins,



**Résolus** à renforcer le rôle pour les recherches scientifiques sur les écosystèmes marins servant de base pour des avis impartiaux, bien fondés, crédibles et fiables en faveur de la gestion et de la conservation des écosystèmes marins et des ressources marines vivantes,

**SONT CONVENUES DE CE QUI SUIT :**

**réaffirment** leur engagement de maintenir le CIEM en tant qu'institut indépendant qui fait autorité dans le monde scientifique en vue d'améliorer sa capacité de fournir des avis scientifiques impartiaux, bien fondés, crédibles et fiables relatifs aux activités humaines qui affectent et sont affectées par les écosystèmes marins ;

**approuvent** le Plan stratégique du CIEM servant de base aux futures activités scientifiques et aux avis du CIEM ;

**soulignent** la nécessité pour le CIEM de développer et de promouvoir les connaissances scientifiques relatives aux ressources marines vivantes et aux écosystèmes marins ;

**soulignent** la nécessité pour le CIEM d'accroître le dialogue avec les utilisateurs de l'information scientifique sur les ressources marines vivantes et les écosystèmes marins, y compris avec les organisations de gestion de la pêche et les commissions de l'environnement ainsi qu'avec d'autres parties prenantes affectées par ou s'intéressant aux activités du CIEM, réclamant ainsi que le CIEM :

élabore des protocoles d'assurance de qualité à l'égard de ses avis ;

adopte des procédures en vue d'assurer une prise en considération complète des données fournies par tout une série de parties prenantes ;

soit flexible et ponctuel dans ses avis scientifiques pour répondre aux besoins des décideurs responsables de la gestion des ressources marines vivantes et des écosystèmes marins en veillant à ce que ne soit compromises la qualité et la fiabilité des avis ;

garantit que les réflexions relatives à l'écosystème y compris à l'influence des activités humaines et aux conditions climatiques et océanographiques soient prises en compte ;

formule des avis en matière de gestion de la pêche en les intégrant dans un contexte écosystémique ;

**s'engagent** à mettre en oeuvre la présente déclaration par le biais du CIEM, des instituts de la science marine et des universités des pays membres qui contribuent aux activités du CIEM en matière de science marine et d'avis.



SIGNED IN COPENHAGEN, 4 OCTOBER 2002, BY THE CONTRACTING PARTIES OF ICES

SIGNÉE À COPENHAGUE LE 4 OCTOBRE 2002 PAR LES PARTIES CONTRACTANTES DU CIEM

For the Government  
of Belgium

Pour le Gouvernement  
du Royaume de Belgique

For the Government  
of Canada

Pour le Gouvernement  
de Canada

For the Government  
of Denmark

Pour le Gouvernement  
du Royaume de Danemark

For the Government  
of Estonia

Pour le Gouvernement  
d'Estonie

For the Government  
of Finland

Pour le Gouvernement  
de la République finlandaise

For the Government  
of France

Pour le Gouvernement  
de la République française

For the Government  
of Germany

Pour le Gouvernement  
de la République Fédérale d'Allemagne

For the Government  
of Iceland

Pour le Gouvernement  
de la République islandaise

For the Government  
of Ireland

Pour le Gouvernement  
de la République irlandaise

For the Government  
of Latvia

Pour le Gouvernement  
de Lettonie

For the Government  
of the Netherlands

Pour le Gouvernement  
du Royaume des Pays-Bas

For the Government  
of Norway

Pour le Gouvernement  
du Royaume de Norvège

For the Government  
of Poland

Pour le Gouvernement  
de Pologne

For the Government of  
Portugal

Pour le Gouvernement  
de Portugal

For the Government  
of Russia

Pour le Gouvernement  
de Russie

For the Government  
of Spain

Pour le Gouvernement  
du Royaume d'Espagne

For the Government  
of Sweden

Pour le Gouvernement  
du Royaume de Suède

For the Government  
of the United Kingdom

Pour le Gouvernement  
du Royaume-Uni

For the Government  
of the United States of America

Pour le Gouvernement  
des États-Unis d'Amérique

Rudy De Clerck

Director of Sea Fisheries Department

St Peter Harrison

Deputy Minister of Fisheries and Oceans

Mariann Fischer Boel

Minister for Food, Agriculture and Fisheries

Alan Gronow

Deputy Secretary General

Seppo Havu

Director General

Jean-Marie Aurand

Directeur des Pêches

Johannes Döhmes

Germany's Ambassador to Denmark

Helgi Agústsson

Iceland's Ambassador to Denmark

Cecil Beamish

Director General

Normunds Riekstins

Director of National Board of Fisheries of Ministry of Agriculture

B.J.T. van Lint

Director, Ministry of Agriculture, Nature Management and Fisheries

Peter Gullestad

Director of Fisheries

Jerzy Pilarczyk

Secretary of State, Ministry of Agriculture and Rural Development

José de Freitas Ferraz

Portugal's Ambassador to Denmark

Boris Kotenev

Director of VNIRO

Alvaro Fernández

Director General of the Spanish Institute of Oceanography

Tommie Sjöberg

Director

Elliot Morley

Minister for Fisheries, Water and Nature Protection

William T. Hogarth

Assistant Administrator for Fisheries



## **Summary of the roundtable discussion following the signing of**

### **THE COPENHAGEN DECLARATION ON FUTURE ICES STRATEGY**

At the roundtable discussion the contracting parties of ICES (the representatives of the contracting parties are annexed) were given the opportunity to express views and priorities in relation to the ICES strategy.

The views expressed were much in line with the “Copenhagen Declaration on Future ICES Strategy”, and seemed to be very uniform with regard to important priorities.

The views are presented below, not in order of priority:

#### **A science based ecosystem approach**

It is becoming an increasingly complex task to take account of the dynamics of the production of the seas. At the same time, increased numbers and types of ocean users are affecting the system.

Management of fish stocks must be based on an ecosystem approach. We need to build a stronger knowledge foundation through ecosystem based research, and we need to know the ecological effects of various exploitation patterns in the fisheries.

Advice regarding human utilization of the oceans must be science based and knowledge of the effects of human activities other than fisheries must be improved.

The scientific communities must break down barriers between sciences in order to develop a holistic basis for an ecosystem based management. ICES, as an institution encompassing many sciences, must support such a development.

Fisheries are international. It is essential for good management that decisions are made on an independent scientific basis and with a common understanding between the countries involved in the issues at hand. Cooperation through ICES provides an important forum for such a common basis.

#### **Demands for advice**

Efficiency of the fishing fleets and the variety of the marine induced effects on the marine ecosystem puts even greater demands on marine science and its advisory function than ever.

Advice mechanisms must be flexible and up to-date in order to accommodate and reflect the needs and demands of management.

Advice must take the form of alternative scenarios in order to give managers the option to balance resource considerations with socioeconomic considerations. In providing the scenarios it is important to include estimates of uncertainties in order to facilitate an open risk based management.

Trend analysis which gives forecasts for the coming years are also required. Such analysis should take into account possible effects of the larger and global drivers.

A quality control mechanism is a natural integral part of the advice-giving functions.

The advice must be transparent and open with regard to the methodology and assumptions used as a basis for the advice.

#### **Dialogue and communication of advice**

Communication of scientific advice to managers and stakeholders is crucial, and the advice should be presented in a form that can be read by managers and by the stakeholders.

ICES must continue expanding dialogue with the fishing industry to increase transparency. There is a requirement for an open recognition that fisheries science is not a precise science, and ICES must make clear the uncertainties



when we communicate advice. An increase in the level of ownership and acceptance of the advice and decisions must be given high priority.

ICES as an international maritime organisation must see its work in the context of other International organisations dealing with maritime matters.

#### **Data**

One of the conditions for improved science and advice is good data collection. A sound data collection programme will produce more and better data to be used in the context of biological relevance. Data from the fisheries sector should be part of the collection programme

#### **Financing**

The ICES strategy is ambitious and the means limited. Thus it is in future important to put forward clear priorities. Some parties suggested that ICES should concentrate advice giving on fewer fish stocks.

Some parties pointed out that financing of the organisation should be kept within a programme system in order to relate the financing to the requests, the involvement, and the participation of countries and commissions.

#### **A follow up**

Contracting parties expect ICES to report back to member states on how it is addressing these issues.

### **Roundtable discussion at The ICES Centenary 4<sup>th</sup> October 2002 in Copenhagen**

#### **Spokesmen**

<b>Country</b>	<b>Spokesman</b>
Belgium	Mr. Rudy De Clerck
Canada	Dr. Peter Harrison
Denmark	Mr. Mogens Schou
Estonia	Dr. Robert Aps
Finland	Mr. Petri Suuronen
France	Mr. Jean-Marie Aurand
Germany	Mr. Peter Bradhering
Iceland	Mr. Jóhann Sigurjónsson
Ireland	Mr. Cecil Beamish
Latvia	Mr. Normunds Riekstins
Netherlands	Mr. R.J.T. van Lint
Norway	Mr. Peter Gullestad
Poland	Mr. Zdzislaw Gandera
Portugal	Ambassador to Denmark Mr. José de Freitas Ferraz
Russia	Mr. Boris Kotenev
Spain	Dr. Eduardo López-Jamar
Sweden	Mr. Tommie Sjöberg
UK	Dr. Joseph W. Horwood
USA	Mr. William T. Hogarth







## **Part II**

### **Annual Science Conference**







**General Assembly**  
DGI-byen, Copenhagen, Denmark  
1 October 2002

**Having been called to order by the General Secretary with a brief introduction, the assembly was addressed by the President of ICES, Pentti Mälikki:**

On July 22, 1902, delegates from eight countries, Denmark, Finland, Germany, The Netherlands, Norway, Sweden, Russia and the United Kingdom met in Copenhagen as the inaugural meeting of ICES. This meeting accomplished the endeavours which started in London in 1895 at the Sixth International Geographical Conference. There, Professor Otto Pettersson of Sweden took an initiative to establish cooperation in the study of the seas. We are honoured to have been invited by the Government of Denmark to celebrate the Centenary of the inaugural meeting here in Copenhagen today.

The purpose of this conference is to look forward, to consider what the oldest active intergovernmental organisation can and will do for the benefit of the countries involved, and also for the benefit of mankind. Before saying anything on that, I will compare some of the major changes and some of the similarities between the situation today and that of a century ago.

The scope and volume of marine science has multiplied during the past century. In the initial stages, ICES officers were in the forefront in developing methods for the new science which was taking its first steps. Our comprehension of the sea and its processes has grown enormously. Still, as stated (for example) by the European Science Foundation Marine Board one year ago: "An important task for future marine research will be to develop scientific foundations for the sustainable use of living and non-living resources of the oceans, focusing on the threatened coastal regions and continental slopes." If you look at yesterday's *Berlingske Tidende*, we can realise how relevant this quotation and the original idea of the ICES founding fathers was. It is not fair to say that we have not made any progress. Like in many other sciences, oceanographic problems remain, although partial solutions emerge.

What has changed considerably during the time is the number of actors, both in the science and in particular in the applications. The international marine science community has grown remarkably; many non-governmental organisations act in fields traditionally covered and dominated by ICES. A few decades ago, the role of ICES was more central and more visible. We can say that the biodiversity of marine science has increased. As a consequence, the attraction of ICES Working Groups, Committees, Symposia, and Annual Science Conferences is rivalled and challenged by that of other organisations, particularly for the university people.

At the same time, intergovernmental activities have increased as well, particularly in the fields of science-based regulatory actions. ICES is no more the dominant

player. Environmental issues have taken an increasingly demanding role. Many fish stocks are in decline, thus demanding increasing quality of advice. Demand for advice often comprises both fisheries and environment. Increasing expectations for advice (i.e. more of it, more complex issues, more quality assurance) and a broadening of scientific activity (e.g. ecosystem orientation, climate change issues) exacerbate the problem.

On a national level, increasing demands on the economy and deliverables have increased the work pressure on people active in ICES. Expansion of the need for information without a corresponding increase of people producing this information has increased the workload in all Member Countries. This is reflected in the reduced possibilities for active scientists to spend as much time on ICES issues as during earlier decades.

All this has produced a challenging environment for looking forward into a new century for ICES, into the new millennium. Nobody has an entirely optimal solution for the problem. We have based our design on some basic facts, which have endured the test of time. Firstly, our community is very committed and productive. The fact that ICES involves more than 1600 active scientists makes it a unique organisation. ICES forms a network, in which scientists feel comfortably at home and are willing to communicate in a constructive manner. Secondly, we trust on cooperation with like-minded organisations, which have similar goals. Thirdly, we are fully convinced that the best applications arise from high-quality research and, therefore, our advisory activities go hand-in-hand with the science. This means sometime contentious statements, and always an independent and neutral approach. We have limited our advice to facts of science, leaving aside many aspects which today must be taken into account in decision-making. A good example of this is the current European discussion on the exploitation of fish stocks. Obviously, there is a need for rethinking in regard to communication with our partners.

One of the facts that we have to accept is that no matter how good our advice – from a scientific point of view – may be, the decision-makers may decide otherwise. Advice on harvesting concerns more than scientific issues. We have, and we will, develop our internal working methods as well as our dialogue with the customers for better management of vulnerable resources. We have already improved our advisory structure but, at the same time, we know that a lot remains to be done to improve our performance in transparency, review system, and development of cooperation.

On the science side, the amount of interdisciplinary cooperation has increased and this has definitely brought



a new impetus to the activities. Like this Conference, we want to establish ICES conferences as places where scientists also from purely academic organisations find their homes again. We know that in order to do that, we have to limit ourselves to the central themes of our strategy. The established ICES Strategy enables and expands the possibilities for ICES to act with a focused but much wider programme than has been the case during the past decades.

Simultaneously, this will bring up themes which are of great importance in the advisory process. We live in an era which is hallmarked, not only by man-made changes in the ecosystem, habitat, and exploitation of resources. Climate change, of which we will hear more during the Centenary Day lecture, depends very much on what happens in the ocean: on its absorption capacity of carbon dioxide, its transport of heat, freshwater, and matter. These processes, which have traditionally been on the agenda of ICES, need to be there. ICES has been a hatchery of high profile cooperation in marine science, and we will do our best to keep it that way.

Science and advice are tools for professional cooperation with our stakeholders. Simultaneously, the wider audience needs relevant information in order to understand the problems of ocean resources and ocean processes. The need for information varies from country to country, since the sea areas are different and the problems influencing everyday life are different. Hence, the main responsibility lies on the national level. ICES as an organisation can do much in supporting the information flow. Our new newsletter, which you have certainly seen, is an example of high profile, sound information. We can find high quality authors for producing documents and we have a wide range of necessary information in our documentary system. We do have in the working groups, conferences, and symposia good opportunities for training people to participate in scientific dialogue and for explaining difficult problems in proper ways. As Albert Einstein said: "If you cannot explain it to a schoolboy, you do not understand it yourself."

Looking back at the last year's activities, we can notify that again we have had an active year of planning. After having adopted our new strategy in Oslo, our Committees and in particular the Consultative Committee have been working on an Integrated Action Plan to guide our work in the coming years. For each of the strategic goals they have analysed the needs for action, the added value ICES can give to these actions, and how these actions can be implemented. All this has been collected into a document, which will be carefully discussed here at this Conference by Scientific and Advisory Committees as well as by the Delegates. The scope is impressive, and for an outsider it may give an impression of a wide expansion of the activities. The truth, however, is otherwise. As we look at the past activities of our some one hundred Working Groups and their parent committees, the spectrum of action has been very diversified. The production of the present draft of our Action Plan has meant focusing on the essential, in

some cases also leaving aside something very interesting but not central for ICES. At the same time this analysis has also brought to the surface some gaps in our activities. We realise that these gaps should be filled in order to have an optimal output. At the same time we realise that this cannot be achieved without increased resources for doing so. It will be the task of the Delegates to debate how this dilemma can be resolved.

It is no wonder that one of the current activities that have been on the agenda of both the Secretariat and the Bureau has been how to cope with the limited resources available. We have been forced to take some very painful actions in order to manage. We have also had a small Working Group preparing for the Delegates a basis for discussion on the long-term design of the funding. Also this will be a highly relevant topic in the Delegates discussions during this week and next week.

Our advisory structure will also be debated at this Conference. An internal Working Group has made its proposals, and our cooperative Working Group with clients has considered how the advice could be obtained even more efficiently than today.

One of the standing activities of ICES is organising symposia on well-chosen topics annually. This year, we have had three symposia. In June we held a Symposium on "Acoustics in Fisheries and Aquatic Ecology", a highly relevant topic in all branches of ICES science, and one which is rapidly developing. No wonder it gathered a wide and competent audience and good talks and posters in the beautiful environment of Montpellier, France. Two other symposia were organised in cooperation with other bodies. In March, a Joint Meeting on the Causes of Marine Mortality of Salmon in the North Pacific and North Atlantic Ocean and the Baltic was held in Vancouver. A Symposium on "Elasmobranch Fisheries: Managing for Sustainable Use and Biodiversity Conservation" was held three weeks ago in Santiago de Compostela. Cooperation shown by co-sponsors of the Acoustics Symposium and other organisers of the two other symposia show the direction intended by the strategic goal on fostering partnership.

While the machinery of ICES has been busy with its own issues, the Member Countries and in particular the Danish Government have been working on preparations to make the Centenary memorable and meaningful. You will all find in the programme of this Annual Science Conference many items of importance. In particular, I would like to mention the Centenary Declaration, which will be signed by high-level representatives. All of Copenhagen will be aware of it as the research vessels gathering here will mark it loudly. We, the active officers of ICES, consider the Declaration to be an indication of the commitment of our Member Countries to the continuous and strengthened support for ICES.

It is my sad duty to inform you of the death of three former ICES colleagues.



Sir Cyril Lucas, former Director of the Marine Laboratory, Aberdeen, died on 14 January 2002, at the age of 92.

Graduating from the University of Hull in 1931, he worked under Alister Hardy on the relationships between plankton and fisheries, based largely on work with Hardy's Continuous Plankton Recorder which was first developed during the 1930s. In 1948, Cyril Lucas moved to Aberdeen as Director of the Marine Laboratory, a post he held for 22 years. He was not only a first-class director of fisheries science. His strong interest in international aspects of fisheries led him to play prominent roles in ICES, and in the fisheries work of FAO, ICNAF, and IOC.

Dr Lucas was appointed a Companion of the Order of St Michael and St George in 1956. This is a rare decoration outside the diplomatic service and reflected the contribution he made to the international management of fishery resources. He was elected a Fellow of the Royal Society in 1966. He was also a Fellow of the Royal Society of Edinburgh from 1939, and received its Neill Prize in 1959 in recognition of distinguished work for Scottish fisheries. He was knighted in 1976.

With regard to his ICES connections, Cyril Lucas was appointed as UK (Scotland) expert from 1948 to 1967. He also held the post of ICES Delegate in 1952 and 1954 and was Chair of the Northern North Sea Committee (1951 to 1954), Comparative Fish Committee (1955 to 1959), Statistics Committee (1959 to 1962). He also held the office of Chair of the Consultative Committee from 1962 to 1965.

The noted German Scientist Dr. Ing. Otto Gabriel, Director of the Institute for Fishing Technology and Fish Quality and member of the Fisheries Technology Committee, died on 13 July 2002 at the age of 57, after a long illness.

In 1969, Dr Gabriel graduated at Rostock University in fisheries technology and obtained a doctors degree in 1974. During the following years, he worked as scientific adviser both for the deep-sea fishing fleet of the German Democratic Republic and for coastal fishermen's cooperatives. His expertise in fishing technology covered a broad range of subjects, and the automatic long-line system developed by him and his colleagues in the last years of the GDR received so much international attention that it provided his income as a private entrepreneur for some years after the reunification of Germany. Following his appointment as Director of the Institute for Fishing Technology in 1995 his gentle personality enabled him to successfully meet the challenges of reunifying colleagues from two different political systems.

Dr Taivo Laevastu (born Erich Granfeldt) died on 11 March 2002 at the age of 79 years in Seattle, USA. Born

Estonian, Laevastu graduated in Sweden 1951 and in the USA in 1954, and defended his thesis on physical oceanography in Finland in 1960. He worked at the University of Gothenburg and the Swedish Migratory Fish Commission 1949–1953, in FAO 1955–1962, and after that in the United States.

Laevastu published in 1962, jointly with Ilmo Hela, the book "Fisheries Hydrography", which underwent revision some 14 years later and got a new title "Fisheries Oceanography". He published over one hundred scientific works, including more than 10 books. His specialities in hydrodynamic-numerical models and application of oceanographic forecasting to fisheries and other maritime uses made him known around the world. He was the observer for FAO at ICES at the Statutory Meetings of 1957, 1959, and 1961. After that he was guest, US observer, and expert in a number of meetings over three decades.

We offer our condolences to their families and our sincere thanks for their contribution to the ICES community. Please rise and join me in paying our respects with a minute of silence.

Ladies and Gentlemen, the few remarks I have made about ICES certainly are well known to most of you. We are here not to look backwards but to work for a better future for the North Atlantic Ocean and its adjacent seas. I wish you all once more cordially welcome; have a good Conference.

#### **The President introduced the Open Lecture speaker Dr Gunnar Kullenberg**

Gunnar Kullenberg graduated in Sweden and made his Ph.D. thesis on physical oceanography. His speciality at that time was diffusion and measurement of diffusion: its theoretical and in particular practical ways. He was Professor of Oceanography at the Gothenburg University and at the University of Copenhagen. During that time he was a member of the ICES Advisory Committee of Marine Pollution and Chair from 1978–1982. After that he was Chair of the ICES Consultative Committee, 1982–1985. In 1985, he moved to become Executive Secretary of the Intergovernmental Oceanographic Commission in Paris. After retiring from there, he became Director of the International Ocean Institute in Malta, a position which he still holds.

**Dr Mike Sissenwine** responded to Dr Kullenberg's lecture and proposed a vote of thanks which was passed by acclamation.

Abstracts of Dr Kullenberg's lecture and Mike Sissenwine's response, appear on the following pages. Dr Kullenberg's lecture is included in the CD-ROM.

**The President** thanked Dr Kullenberg for the Open Lecture and adjourned the session.



**Ocean Resources Management: Why and How****Gunnar Kullenburg****Former Chair of the ICES ACMP and the  
Consultative Committee**

The presentation gives an overview of the role of the ocean and its resources in the new global service-oriented economy and the globalisation. This is intended to present a case for the need for adequate ocean governance. Such must include an ocean observing system able to provide required data inputs for models. The models must also be an integral part of the ocean governance system. These models should be able to analyse various management and development scenarios at regional and sub-regional scales, feeding also into management models at local level. The models need to include the circulation and the ecosystem dynamics. The basis for development of such model tools is available and public models are being made. Society must ensure that adequate factual information about the conditions and observation data are regularly provided. The case for this has been made in context of the climate change analysis.

The economy today is a service economy, relying on services, distributions, and global connections and communications.

We operate now in a truly global situation. In the words of the Secretary-General of the United Nations: "Globalisation has been made possible by the progressive dismantling of barriers to trade and capital mobility, fundamental technological advances, steadily declining costs of transport, communication and computing". This has fostered an inter-dependency and inter-relationship between peoples and regions at the global scale not experienced before. We are now really all in the same ship. The situation provides for many potential benefits and opportunities, but also enhances the vulnerability. Decisions have to be made in conditions of uncertainty.

The global change has impacts everywhere. The most significant global change over the past 50 years is the rise of the human population from 2 to 6 billion people. The climate change is another issue of great concern, coupled to the first one. Both these global changes are irreversible – at least over the 100 to 1000 years timescale.

The ocean provides a multitude of services for our society and the economy. Perhaps the most important ones are: maritime transport; food production; the ocean role in the climate system; ocean and coasts for recreation and tourism; waste recipient services; other financial and product services, e.g. oil and gas; and poverty eradication. The presentation will briefly review all of these areas, with respect to the current situation and expected future development.

All sectors of society are influenced by the ocean and coastal services. In the case of the coast it has been realized that an integrated management approach is needed. However, this is the need also for the ocean as a whole. An accepted global ocean governance mechanism must be put in place. The legal and international agreements are in place through UNCLOS and the Conventions and agreements reached through UNCED 92. These give together an internationally agreed and comprehensive framework for the ocean governance: an ocean constitution. However, it must all be implemented and enforced. This has not yet been achieved. At the global level the General Assembly of the United Nations has established an open-ended and comprehensive consultative mechanism. This reports to the General Assembly, and has the potential to develop into a global ocean governance mechanism.

At the regional level we have the Regional Seas Conventions established through UNEP, and several other regional conventions e.g. for the Baltic and North Seas. The problem with all these is, however, that they are not comprehensive. They are focused on the environmental aspects. The fisheries management Conventions and bodies are also sectoral. This is not sufficient. A comprehensive mechanism is needed which can involve all relevant parties (or stakeholders) and sectors, as well as various parts of society, i.e. governments, private industry, the civil society including NGOs.

ICES comes quite close to being a comprehensive regional mechanism. ICES is, however, focusing on the scientific aspects and the application of the scientific results. Its national counterparts are primarily the national fisheries institutions, but involve also universities and environmental agencies. ICES has also established close links with the EU, as well as with the other regional Conventions in the ICES Area, including of course the fisheries management ones. However, this does not constitute a satisfactory comprehensive mechanism, such as the open-ended UN consultation mechanism represents. What ICES now could do on entering its second century of existence, is to work with the EU to establish a comprehensive ocean governance mechanism for all the European Seas. The ICES Area is larger – but the European Seas do need an accepted international governance mechanism and constitute an ocean matching to the EU. The mechanism should include all stakeholders as indicated above, and as in the case of the open-ended UN consultation mechanism. Such could be organized through the EU, with ICES fulfilling an advisory role, as a broad professional ocean organization open to all interests. The focus on science and its applications, and to some extent education, is a good argument in favour of a leading role for ICES,



since these elements and sectors under-write all others. ICES is also a basic organization for management of ocean observations and data, as well as for testing and advising on comprehensive ocean modelling with models that can be used for management and analyses of

development scenarios. ICES has experiences in all the relevant matters and can draw on resource institutions. The experiences must now be used to move to the next step: comprehensive ocean governance. ICES could be a very important lobbying mechanism for achieving this.



## Open Lecture

### Ocean Resources Management: Why and How

Thank you, Mr President, and thank you, Dr Kullenberg, for the stimulating lecture. It is an honour and a pleasure to be able to take a few moments to reflect on Dr Kullenberg's lecture on Ocean Resource Management. It is an honour because it is always an honour to comment on the work of somebody who is so knowledgeable and who has accomplished so much as Dr Kullenberg.

Dr Kullenberg builds a compelling case why ocean resource management is needed. It outlines how this approach might be conducted and it includes a very important challenge to ICES, which is very welcome at this particular point in time.

Most of us know Dr Kullenberg's roots in ICES. I actually recall him as the Consultative Committee Chair when I was first beginning my involvement with ICES many years ago. While he was the Chair, he was selected to the prestigious post as Executive Secretary of the Intergovernmental Oceanographic Commission. This change from Copenhagen to Paris actually provided a great opportunity for ICES and IOC to build a partnership which is still healthy and building today. Over the years, ICES and IOC worked together on many important themes such as Ocean Sciences for Living Resources, Harmful Algal Blooms, some of the early development of the GLOBEC programme, various activities associated with Large Marine Ecosystems and today is still working on important issues such as development of the Global Ocean Observing System. In each case, IOC provided a perspective at the global level, while ICES provided the know-how to actually conduct science programmes at the regional scale. I believe that this is a powerful lesson on the importance of having the substance at the regional level to actually carry out programmes, which can only be rather vaguely defined on a global scale.

However, this global perspective is one of importance and Dr Kullenberg builds a compelling case for why, as he puts it, we are all on the same ship. The statistics about the ship makes the importance of ocean stewardship clear. Let me reiterate a few of the important facts that we heard in Dr Kullenberg's lecture.

He started by reminding us that over the past 50 years, the world's population has grown from about 2 to 6 billion. About 50% of that human population lives on 10% of the land near the coastal areas. He reminds us of the importance of the ocean and the overall earth system. 60% of the freshwater available to us on land comes from evaporation in the seas. The oceans are not only the source of freshwater, but they play a tremendously

## Response by

**Mike Sissenwine**

**Director, NMFS Northeast Fisheries Science Center, Woods Hole, USA and ICES Senior Vice President**

important role in cleaning the air. 30-40% of the excess carbon that we generate from fossil fuel consumption is absorbed by the oceans. Unfortunately though, this is far too little to actually maintain the climate as we know it. As Dr Kullenberg points out this leads to the very important and significant problem of potential climate change in the future.

Of course, oceans are important for many users other than the role in cleaning the air and in providing moisture to us. They are also very important for providing food. We know about the huge role that the oceans play in feeding the human populations, particularly in developing countries where 20-30% of the protein supply to populations in many developing countries is from the oceans. There are other industries. We learn that they are extremely important to our societies. They depend on the oceans. Marine transportation is a huge industry with most commerce of the world depending on it. Amongst the interesting facts that Dr Kullenberg's lecture brought out was the importance of tourism and the size of that industry. It is by far the largest of all industries worth 500 billion USD a year and involving more than a quarter of a billion people. It is very obvious to all of us the significance of the oceans in that industry.

Because of the importance of the oceans, and the challenges we face, the ocean community has been very active in developing governance at the global level, following the Rio Conference some 10 years ago. We are all aware of the FAO Code of Conduct for Responsible Fisheries, the Convention for Biodiversity, the Straddling Stocks Agreement, the development of the Global Ocean Observing System, to name a few.

We can also be sure that, as we learn more about the outcome of the recent World Summit on Sustainable Development just completed in Johannesburg, there will be many more global challenges that will face us in the future in order to become even better stewards of our oceans and to move forward with the vision of Ocean Resource Management.

While all this global attention is good and necessary, I think that the key message from Dr Kullenberg's talk is that it takes a strong science-based regional organisation to put the teeth in the global case for action. That is the challenge to ICES. It is a challenge that we welcome from Dr Kullenberg. It is actually a challenge that we put to ourselves in our new Strategic Plan, which specifies our mission as to "advance the scientific capability to



give advice on human activities that affect, and that are affected by marine ecosystems.”

I thank Dr Kullenberg for his challenge to us and we welcome it, and we look forward to his future involvement with ICES and helping us bringing it to fruition. Thank you.



## **Invited Lecture 1**

### **Fish Stock Management is an Unsolved Ecological Problem**

**Delivered by**

**Alan Longhurst**

**Retired biological oceanographer and author  
of a recent book entitled "Ecological  
Geography of the Sea"**

It is widely believed that if only politicians and the industry would permit it to happen, sustained management of fish stocks is feasible by recourse to one or more of the well-known family of stock assessment models. But all these models ignore, as they must, some of the ecological consequences of a fishery both on the fish population and on its habitat. Generally, we believe that for a fishery to be successful, the exploited population should become younger, smaller, and faster-growing than in its pristine state. It is therefore a desired and inevitable consequence of industrial fishing that the age-structure of the target species should be truncated, sometimes heavily so.

That this process inevitably changes the natural relationship between the fish and its habitat, including its predators and prey, is generally ignored even in age-structured models. But in fish, as in all other animals, life history traits like longevity, fecundity, and age at maturity have evolved so that each population performs optimally in relation to the exigencies and possibilities of its specific habitat. Any departure from the natural values must, therefore, render the species less fit in some often unknown manner. Put another way, a successful fishery creates 'new' species, characterised by values for life history traits that may be appropriate to an entirely different habitat. We usually assume that specific fitness is not thereby degraded, but what if we are wrong?

In fact, study of many case histories from both cold and warm seas suggests that this assumption is indeed false except where the entire habitat, as in aquaculture, is under our control. Longevity, for example, has ecological significance far beyond its simple physiological relationships with temperature or growth rate. Species having high recruitment variability, where this is importantly a function of environmental variability, tend to live exceptionally long lives

apparently relatively independent of water temperature. The same is apparently true of those demersal fish that occupy territory as adults. Other relationships are less clear, but can be adduced.

For many species, recruitment appears to be the critical phase in the life cycle, for which retention of natural values for life history traits may be essential. This is suggested by the abandonment of planktonic larvae in favour of direct development in some very high latitude species where the planktonic phase would have an unusually high level of unreliability. In this, these species follow the example of many benthic invertebrates of the same regions. Industrial fishing also has indirect consequences for the fish fauna through habitat modification. It is increasingly understood that this is a non-trivial process, whose effects cannot yet be factored into any standard stock assessment procedure.

If my analysis is anything like correct, then fish stock management must be considered an unsolved ecological problem, and the use of any stock assessment model must be approached with great caution. Traditional mathematical simulations of fish population dynamics would perhaps perform impeccably for a farmed stock, isolated from the natural world, but they risk giving a false sense of rationality when applied to populations in their natural habitat. Models must be precise, they are comforting and they convince managers and politicians, but what if they lie? It is certainly timely to re-examine our assumptions about their use, but the real conundrum, of course, is that without them how are we to set catch quotas? In any event, my take-home thought must be that management procedures have suffered from an excess of mathematics, and insufficient simple ecological commonsense. It is time to redress the balance.



## Invited Lecture 1

### Fish Stock Management is an Unsolved Ecological Problem

It is a pleasure, but nonetheless a daunting task, to be invited to provide a short reflection upon Alan's paper from the perspective of fisheries assessment and modelling.

Alan reminds us that more than half the stocks in the ICES area have been described as over-fished, collapsed or closed and poses a number of questions:

ranging from the obvious ... *What went wrong with stock management?*  
through ... *Can we blame the institutions?*  
to ... *Were the models wrong?*

These questions are all to one extent or another complex and Alan argues that all stock assessment models lack two critical elements. Firstly, no consideration is given to any possible ecological consequences of the progressive modification of the naturally evolved life-history traits of species being exploited and secondly, there is no formal input from natural changes in the ocean environment.

The central tenet of the paper is the observation that fishing almost inevitably modifies the life history traits that were characteristic of the pristine population of the target species. Episodic recruitment failure is commonplace in marine fish and Alan throws down a challenge that: *it should now be possible to begin to predict the characteristic return time of unusual recruitment events or periods*. ICES is uniquely placed to pick-up Alan's challenge!

That fish stock management is an unsolved ecological problem (the title of his lecture) is indisputable, but the

## Response by

### Carl O'Brien

#### Chair of Resource Management Committee

main message is that management procedures have suffered from an excess of mathematics and insufficient simple ecological common sense. To a certain extent I must agree that this is true but mathematics merely provides a means to develop the systematic formulation of models that should (hopefully) provide a way to investigate ecological principles and hypotheses.

If a criticism is justified then it is that the mathematical models have not been vigorously examined and understood (and thereby improved) by ecologists. Further, the models and ecological thinking have not been improved through adequate consultation between all the interested parties.

In my view, the challenge to ICES is to ensure that sufficient dialogue does occur in the future and that a note of caution ought to be attached to any model-generated advice. There are three things that are obvious to all of us and especially, to modellers:

- any model is only as good as the assumptions made
- any analysis is only as good as the data used
- the gulf between models, simulations and the real-world must not be so great as to make our advice on fish stock management useless.

Alan has provided much upon which to reflect and as Jake remarked in his opening introduction, there will be plenty of time during the remainder of this Conference to continue the discussion and debate on the issues raised by Alan. Finally, I thank Alan for his thought-provoking lecture.



## Invited Lecture 2

### ICES and the Coastal Module of GOOS

Delivered by

**Thomas C. Malone**  
**Co-Chair of the GOOS Coastal Ocean**  
**Observing Panel (COOP) and**  
**the US GOOS Steering Committee**

The mandate to establish a Global Ocean Observing System (GOOS) was articulated and ratified as an international consensus in 1992 with the signing of the Framework Convention on Climate Change, the Convention on Biodiversity, and the Program of Action for Sustainable Development (Agenda 21) at the UN Conference on Environment and Development (UNCED) in Rio de Janeiro. In particular, Agenda 21 calls for the establishment of a global ocean observing system that will enable effective management and sustainable utilization of the marine environment and its natural resources. Achieving this broad and ambitious goal depends on the capability to repeatedly assess and anticipate changes in the status of coastal ecosystems and living resources on national to global scales.

The effort to respond to this mandate is led by the GOOS Steering Committee (GSC). Overall responsibility for the development of GOOS is delegated by the sponsors to the IOC, which is advised by the joint IOC-WMO-UNEP Intergovernmental Committee for GOOS (I-GOOS). I-GOOS is responsible for the formulation of policies and assists in gaining government approval of and support for implementation. GOOS is envisioned as a global network that systematically acquires and disseminates data and data-products in response to the needs of governments, industries, scientists, educators, non-governmental organizations, and the public for information on marine and estuarine environments and resources. To this end, the immediate objective is to develop an internationally accepted plan for coordinating, enhancing, and supplementing existing monitoring and research programs to provide the data and information required for more timely detection and prediction of changes in the condition of coastal ecosystems and the resources they support.

The observing system is being developed through two related and convergent modules: (1) a basin-scale module concerned primarily with the role of the ocean in the earth's climate system (Ocean Observations Panel for Climate, OOPC) and (2) a coastal module concerned primarily (but not exclusively) with changes in coastal environments and their impacts on society and the goods and services provided by coastal marine and estuarine ecosystems (Coastal Ocean Observations Panel, COOP). Coastal GOOS is intended to provide the data and information required to more effectively manage and mitigate the effects of human activities and climate variability on (1) marine services, (2) public safety and health, (3) the condition of coastal marine and estuarine ecosystems, and (4) living marine resources. Achieving

these goals depends on more timely detection and prediction of changes occurring in coastal ecosystems, from changes in sea state and coastal flooding to eutrophication and the sustainability of living resources. Successful implementation of coastal GOOS will increase the value to society of research and monitoring in marine and estuarine ecosystems, in part by providing the data and information required to meet the conditions of existing international treaties and conventions and in part by providing the means to routinely assess and predict the status of marine and estuarine ecosystems.

Since Rio '92, significant progress has been made in the design and implementation of the basin-scale, ocean-climate module of GOOS. In contrast, although a high priority of the international community, progress in the development of the coastal module has been slow. This is primarily a consequence of (1) the challenge of designing and implementing an internationally accepted system that will provide the data and information required to detect and predict changes in a wide diversity of phenomena that are occurring in a complex mosaic of coastal ecosystems; (2) inefficient data management systems that do not capture significant amounts of relevant data and do not enable rapid collation of diverse data from disparate sources; (3) the primitive state of our capacity to rapidly and routinely detect and predict changes in those phenomena of interest that require measurements of biological and chemical variables; (4) the absence of mechanisms (institutional and fiscal) for the selective transition of research activities and products into an operational framework based on user needs; and (5) the challenges of developing the regional and global partnerships needed to fund the implementation of the coastal module.

Meeting these challenges will require more effective coordination and collaboration among existing regional programmes, including Regional Seas Conventions, Regional Fishery Bodies, the Large Marine Ecosystem Programme, and Regional GOOS Alliances. ICES has a 100-year history of facilitating international collaboration in fisheries science and of providing data and information in support of fisheries management in the NE Atlantic, North Sea, and the Baltic Sea. With the restructuring of its science committees, the Council has recognized the need for more integrated, ecosystem-based approaches to fisheries management that consider both the effects of larger scale forcings (e.g., ENSO, NAO, and land use in coastal drainage basins) and the hierarchy of interactions that constitute marine ecosystems. Today ICES is at an important crossroad in



its evolution. On one hand, there is the growing need for sound, interdisciplinary science as the basis for formulating ecologically and economically sound management strategies for sustainable fisheries. On the other, there is a growing need for more timely and routine access to data, information, and advice as the means to manage fisheries for sustainability. By themselves, existing programs, including ICES, do not and will not have sufficient resources to engage in both regional-global scale and ecosystem-based approaches in both research and operational modes.

The successful development of the ICES-EuroGOOS North Sea pilot project has the potential to serve as a model for the regional development of integrated coastal observing systems worldwide. The purpose of this presentation is to stimulate discussion on how ICES can continue to build on its strengths while contributing to the implementation of a regional building block of the

coastal module of GOOS. Areas of emphasis will include: (1) enhancing the capacity to rapidly communicate, manage, and assimilate diverse data of known quality from disparate sources (ICES Oceanographic Data Centre-EuroGOOS Data Centres); (2) improving coupled physical-ecological models to make predictions with acceptable skill (ICES-GLOBEC); (3) developing technologies to rapidly measure and telemeter key physical, chemical, and biological variables synoptically in time and space with greater resolution (ICES-GLOBEC-EuroGOOS); and (4) fostering synergy between monitoring, modelling, and research. These will be addressed in the context of a status report on the effort to formulate design and implementation plans for the coastal module of GOOS on a global scale.



## **Invited Lecture 2**

### **ICES and the Coastal Module of GOOS**

Tom Malone has just given us an impressive and stimulating overview of the Coastal Module of the Global Ocean Observing System. He concluded by outlining the case for ICES taking a leadership role in implementation.

ICES is celebrating its centenary this year. One might argue that over the last hundred years ICES scientists have in fact already taken a lead in one of the early international systems for observing changes in the marine environment. This has been regional rather than global, and has certainly not been operational. However, the critical difference now, as Tom has emphasised in his talk is that the rate of change, particularly anthropogenically induced, is accelerating. At the same time a range of new technologies make some observation of change in near-real time a practical possibility.

The combined effects of climate and human alterations of the environment are especially pronounced in the coastal zone. This is the region where people and ecosystem goods and services are most concentrated, and inputs of energy and materials from land, sea, and air converge.

The ICES countries have an extensive coastal zone, and some of the phenomena of interest outlined in the talk are of special interest to this community. Particularly, the integrity of marine ecosystems, and the sustainability of the Living Marine Resources that they support.

Although much work has been done on observing the coastal ocean by ICES we still lack a capability for routinely and rapidly detecting changes in the environment and living marine resources, and to provide timely predictions of changes in, or the occurrence of, the phenomena of interest.

However, compared to our predecessors one hundred years ago we are in fact at the start of a revolution that may make this possible. This revolution is occurring on two fronts, advances in observing and modelling capabilities, and the emergence of operational oceanography. In the latter, observations, data management, and data analysis are routine and the provision of data and data-products is sustained in forms and at rates that are demanded by users.

**Response by**

**Roger Harris**

**Former Chair of the International GLOBEC Programme**

The use of new observing and modelling capabilities is becoming common in research programmes that use integrated synoptic measurements of physical, chemical and biological variables. A good example within the ICES community might be the US GLOBEC studies on George's Bank. However, all such research programmes are finite in duration and are certainly not routine.

Despite such research applications the relatively primitive state of our capacity to rapidly and routinely detect and predict changes that require near-real time measurement of biological and chemical variables remains a significant challenge to implementing an observing system. Tom Malone recognised that the list of common variables he presented was biased towards the measurement of environmental and biological variables associated with the bottom of the food web. The living marine resources, the plankton and the fish, the higher trophic levels which have been of interest to ICES scientists over the past 100 years, are much more difficult to incorporate into an operational observing system even with emerging technologies.

ICES should consider rising to some of these challenges and the leadership role that Tom Malone has proposed. ICES could play an active role in the design and implementation of GOOS by specifying requirements for data and information, and by contributing to the design and implementation of the coastal module. The North Sea pilot project (NORSEPP) provides such an opportunity.

Such a role would be consistent with the Strategic Plan that calls for enhanced "collaboration with organizations and programmes that are relevant to ICES goals". There has already been significant and productive collaboration between ICES and the international GLOBEC programme.

By taking a leadership role ICES would contribute to the goals of sustaining marine ecosystems and living marine resources, one of the motivations of the scientists who founded the organisation one hundred years ago.



## **Reports of Theme Sessions**







## Theme Session J

### The Use of Marine Research Vessels in ICES – Options for the Future

Co-Conveners: Micheal Ó Cinneide (Ireland), Ole Arve Misund (Norway), and Niels Axel Nielsen (Denmark)

#### Background

The aims of this Session were to: (a) promote cooperation among ICES Members Countries, in accordance with the Goals of the ICES Strategic Plan, (b) consider quality assurance and standards in research-vessel programmes, and (c) review new technologies and potential future applications for research vessels. The Session was well attended and met most of the above objectives.

#### Contributions

There were three types of contributions:

- two overviews on the issues of quality assurance, safety standards, and underwater radiated noise standards in research vessels;
- six technical papers on data management and new technologies in research vessels;
- four presentations from France (IFREMER), Norway, the UK, and Ireland on their current

research vessel fleet or proposed new builds.

#### Summary of presentations

##### Quality assurance, safety standards, and underwater radiated noise

The continuing importance of the *ICES Cooperative Research Report* No. 209 (1995) recommendation on underwater radiated noise standards was highlighted in a number of presentations. It was shown that many of the current larger research vessels exceed the ICES 209 standard (see Figure J1). The aim of this standard is to reduce noise and thus prevent changes in fish behaviour at a distance of 20 metres or more, as these can impact on the results of stock assessment made by using trawls or acoustic methods. Most of the newly built fisheries research vessels are seeking to meet or exceed this ICES 209 standard. It was estimated that it could cost between 10% and 15% extra at the design and construction phase to meet the 209 standard. It was clear that there was a need for a comprehensive set of protocols and standards for activities on board research

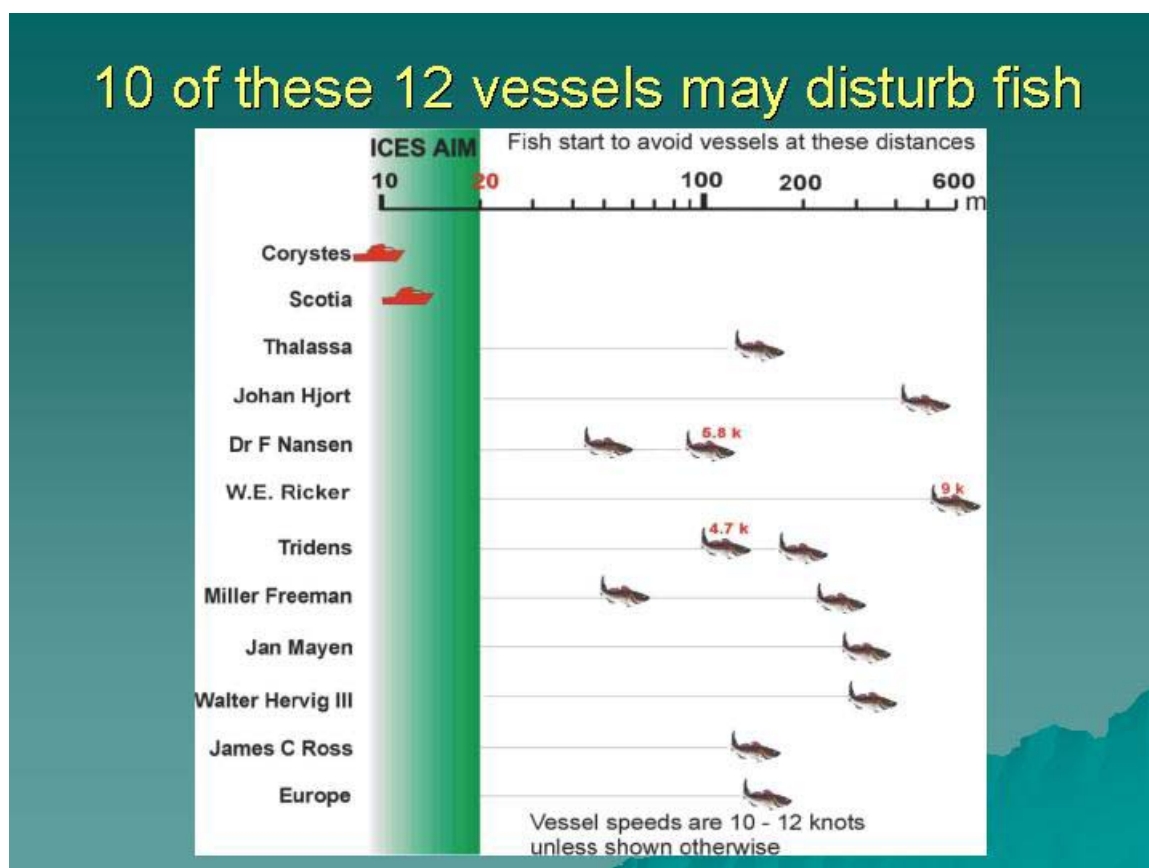


Figure J1. The distances at which various research vessels may cause fish avoidance behaviour. From "Research Vessel Standards: Underwater Radiated Noise" by Ron Mitson. Doc. J:10.



vessels. The current networks provide a valuable role in facilitating the exchange of ideas among research vessel operators, such as ISOM and ERVO (European Research Vessel Operators),

Survey design and sampling routines used on board research vessels were reviewed, with the aim of achieving economies while ensuring the best available data. Examples were provided of the principle of “diminishing returns” in the numbers of stations per boat or the numbers of fish sampled per batch. The lesson was to take smaller sample sizes from many batches. The increasing focus on ecosystem monitoring also pointed to the need for multipurpose surveys in the same geographical areas. The Institute of Marine Research in Bergen is seeking to incorporate some of these lessons in its research vessel programme with the rationalisation of its fleet and the arrival of the new “G. O. Sars” research vessel in 2003.

### **Data management and new technologies**

Data were presented from an EU project, IPROSTS, in 1999 and 2000, on the inter-calibration of research-vessel data. The paper concluded that fisheries data from different ships such as the “Celtic Voyager” and the “Thalassa” could be directly compared. The experience gained in this project showed the value of exchanging scientific personnel between vessels, in order to gain better insights into the detailed protocols used in fish survey operations. It was argued that greater use be made of hard-earned research vessel data in modelling the population dynamics of fish stocks. While most commonly used methods of stock assessment such as VPA rely principally on catch data from the commercial fisheries, this can lead to issues of bias due to misreporting of the commercial catch.

In a review of the new technologies for use with research vessels the benefits and the current limitations of Autonomous Underwater Vehicles (AUVs), which can be pre-programmed for remote navigation, were noted. Furthermore, estimates of towing time in surveys point to the advantage of using bottom contact sensors.

### **Research Vessel fleets**

The evolution of the French research vessel fleet was described. IFREMER has five ocean-going research vessels and six vessels in its coastal fleet, in addition to the remotely operated vessel “Victor”. He described the emerging themes in oceanographic campaigns:

- A shift towards partnerships and shared investment, particularly within Europe.
- Larger, multi-disciplinary research teams of up to thirty scientists.
- Longer term studies with a 10+ year time scale.
- More on-board processing and transmission of data.

Through the medium of the European Science Foundation Marine Board and similar initiatives, France sees the need for a coherent, quality-driven, European programme in research vessels.

The need for new mechanisms and leadership in Europe on the utilisation of research vessels was clear.

### **Discussion**

The closing discussion agreed on the need for greater collaboration among research vessel users in the fields of quality control, calibration, and operating protocols. The Session recognised that ICES has already played a useful role in defining the standard for underwater radiated noise and that ICES could contribute towards greater collaboration in the area of quality standards, data analysis, and vessel survey strategies. This would require achieving an ongoing balance between investing in the hardware (infrastructure) and the software (data analyses).

The Session welcomed the efforts made by research vessel operators in Belgium, Denmark, Germany, Finland, France/Spain, the Netherlands, Norway, Poland, and Sweden in bringing the flotilla of ten vessels to Copenhagen for the ICES Centenary. This was another practical example of ICES fostering collaboration between its member countries in the field of research vessel operations.



## Theme Session K

### The Integration of Acoustic and Optical Survey Techniques and Marine Biological Data for the Purpose of Seabed Classification

Co-Conveners: Jon Side (UK), Heye Rumohr (Germany), John Andersen (Canada), and David Reid (UK)  
Rapporteur: Heye Rumohr (Germany)

#### Background

In 2000 and 2001 a range of workshops took place, which considered issues such as seabed imaging and marine habitat classification in the North Atlantic. These workshops concluded that links needed to be established between rapidly developing imaging technologies and the sampling, identification, and classification of biota, in order to be able to produce standardised international habitat maps that will serve as a basis for sustainable management of the marine resources. This Theme Session was set up in order to establish the progress being made in developing these links, in particular to demonstrate:

- progress in linking biological sampling techniques with geophysical sampling techniques to prepare marine habitat maps;
- progress in developing an ICES marine habitat classification;
- progress in the production of large-scale (i.e. international) habitat maps;
- standardisation of data and the development of a joint database;
- habitat maps supporting the designation of marine protected areas or the implementation of management plans.

#### Summary of presentations

Tom Noji reported on mapping activities in the Gulf of Maine, which consist of an US-Canadian cooperative programme of five research projects. The GOMMI (Gulf of Maine Mapping Initiative) aims at multibeam video stills imaging together with sediment samplings and hydrographic recordings. Examples from Browns Bank and the Sable Bank and Gully illustrated the aim of the project to make undersea features visible to managers and the public. A strategic plan searches now for major future funding from federal sources.

Rosa Freitas presented single-beam acoustic imaging from coastal Portuguese waters with the Quester Tangent Corporation (QTC) ground discrimination system. She combined additional ordinated biological data and computed measures of affinity.

Alan Butler showed hierarchical imaging examples from the deep water (>50 m). He described the methodology being developed in response to management needs for seabed maps for offshore regions of the Australian marine jurisdiction. Its context is Australia's Ocean Policy, launched in 1998, which aims to develop an integrated and ecosystem-based approach to planning and management for all ocean uses. Methodologies range from single-beam technology to swath sonar to high resolution SAS sidescan sonar. Ground-truthing was done with video, grab, and dredge sampling to produce maps of the substratum, including the geomorphology and the epifauna, with the aim to identify valuable and vulnerable habitats.

Inshore monitoring of *Sabellaria spinulosa* reefs was described by Robert Foster-Smith. He used various imaging methods (single-beam, RoxAnn, video) and ground-truthing with grabs and dredges. He concentrated on similarity at different scales and spatial pattern analysis. An important conclusion of this work was that ecological patterns and their underlying processes cross scales from the very fine to the broad biogeographic. It is therefore important to appreciate how the available tools for observing the benthic environment limit our perceptions of pattern not only from the viewpoint of theoretical ecology, but also for the design of survey programmes for monitoring significant changes in the environment. Figure K1 further illustrates this point.

Alison Hewer presented CEFAS-integrated activities to map gravel biotopes in the Western North Sea with acoustics, video, and Hamon grab samples. The examples were gravel extraction sites near Hastings and the Isle of Wight. Dave Limpenny showed another case of anthropogenic disturbance from gravel extraction and the benefits of sidescan sonar technology to show how long the tracks stayed visible (>7 years). He showed that biotope mapping is a stepwise approach.

Alain Norro presented an example of the use of an AUV ("MAUVE") to record bathymetric data from the Belgian continental shelf. The study aimed at the measurement of extracted sediments from Kvintebank by means of AUV bathymetric measurements. The quality of the AUV data was adjusted to that of conventional vessel surveys and explored the specifics of the AUV.



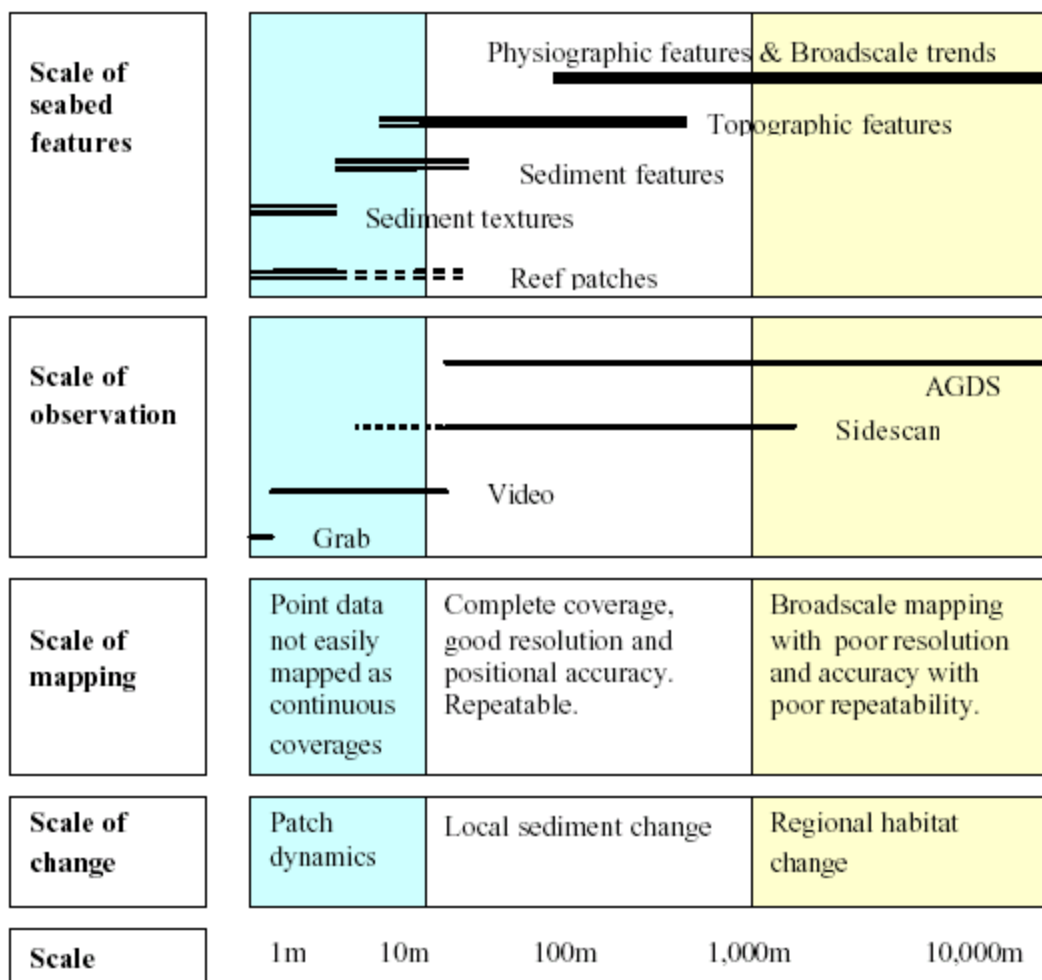


Figure K1. Summary of the correspondence of the scale of observation of the different remote sensing and direct sampling techniques and the scale of environmental features. From “Using acoustic remote sensing and point samples to map and monitor biota in the dynamic sediments of the Wash, UK.” by Robert Foster-Smith and Paul Gilliland. Doc. K:02.

Steve Mackinson demonstrated the use of combined employment of single-beam sonar (EK500) and QTC to maximise the quality (and overlap) of the data and save time and money during the cruises.

Steve Freeman showed the possibilities to demonstrate the diurnal migrations of *Ammodytes* by means of acoustic sensing in combination with QTC. They could also distinguish between sediments with sandeels and those without. He discussed further integration of acoustic devices with the aim to make these more cost effective. He also demonstrated that the acoustic identification of “essential fish habitats” with QTC as a proxy for special habitat features shows a cost-effective way for future investigations of that kind.

## Discussion

The Session concluded that it is important that ICES takes this topic up and collects new information. The discussion whether a new theme session or a symposium would be the adequate means for dealing with this topic in the future remained open.

Criticism came from the floor that this approach alone is too static and does not cover the seabed dynamics of the system. There is clearly a need for experimental research and the need for further technological development.

The Session noted the proposed establishment of a new Study Group on “Acoustic Seabed Classification” under the Fisheries Technology Committee. It was clear that this should work in close cooperation with the Working Group on “Marine Habitat Mapping” of the Marine Habitat Committee.



## Theme Session L

### Census of Marine Life: Turning Concept into Reality

Co-Conveners: John Pope (Norway), Colin Bannister (UK), Odd Aksel Bergstad (Norway), Jake Rice (Canada), and Ron O' Dor (USA)

Rapporteurs: John Pope (Norway) and Alasdair McIntyre (UK)

#### Opening

The Theme Session was held in four sessions chaired by Odd Aksel Bergstad, Ron O'Dor, Colin Bannister, and John Pope, respectively. During the opening of the first session, various staff representing the Census of Marine Life (CoML) Secretariat were introduced.

#### Background

The Census of Marine Life project aims to assess and explain the abundance and distribution of marine life globally by coordinating data mining, and the collection of new data, on the biomass distribution of the various trophic levels in a range of sea areas around the world. ICES has a large amount of current and historical data on the species composition and abundance of higher trophic levels in such major parts of the ICES area as the northeast Arctic, the Baltic, the North Sea, and the seas off Iberia. It also has a growing body of knowledge about deep-sea species. Contributions for the Session were invited which attempt to compile and collate such data as a first step in developing an ICES contribution to the global Census of Marine Life programme.

#### Summary of presentations

##### Activities in support of CoML

The CoML Programme Senior Scientist, Ron O'Dor, presented an overview of the CoML project. He explained that the project should be seen as a broad-brush global model complementary to and drawing on the work of bodies such as ICES. The project had a number of facets. This included "History of Marine Animal Populations", the "Ocean Biogeographic Information System", the "SCOR Technology Working Group", "Initial Field Projects", and "Future of Marine Animal Populations". He explained the structure of the organisation and sources of funding and the key people involved and finished by describing some of the diverse field projects the project is supporting.

This was followed by a more detailed description of the CoML database "The Ocean Biogeographical Information System (OBIS)" by Karen Stocks, presented on behalf of Rainer Froese and Phoebe Y. Zhang. This is the database component of CoML but also an international science programme to develop studies of what lives where. This information system, accessible at <http://www.iobis.org> provides biogeographical data

retrieval from distributed databases. It provides a scientific names, scientific synonyms, and common names service. It also provides a mapping service that will map species distribution relative to environmental data and provides a biodiversity modelling service. It also provides access to the NODC Plankton Database and to FAO data from FishBase. It is expected to be expanded soon to provide genetic information, expanded data links, integration of HMAP (the history part of the project), Gulf of Maine data, Southampton Ocean data, and more mapping and modelling tools. It is possible for other data sets to be linked to OBIS. It is considered that it will eventually provide a useful repository of information relative to the CoML programme.

Teresa Radziejewska presented work on acquiring marine life data while experimentally assessing the environmental impact of simulated mining in the deep sea. She explained that while life in the deep sea was rich it was difficult and expensive to access. She explained one approach, which was to use results from the environmental impact studies made as part of a feasibility study of the mining of poly-metallic nodules from the deep seafloor in the mid-Pacific Clipperton fracture zone. These studies provided photographic and video transect studies of Megafauna (sponges, holothuria, fish, etc.) and sediment core samples of Meiobenthos. These provided specimens from 14 Phyla and 53 genera, but in fact only 40% of the specimens were identifiable, suggesting there is considerable scope for the identification of new species. The presence of phytodetritus of recent origin was also very apparent in the samples.

In the first of three fascinating presentations on historical fisheries data, Brian MacKenzie reported on the results of a project to set up a network of marine fisheries historians in all Baltic countries, and to begin archival retrieval of relevant fisheries data. These include landings, effort, taxes, and regulations. The task is to interpret these data given modern ecological and historical knowledge. There were many interesting examples of landings data series from the 17th, 18th, and 19th centuries from a number of regions of the Baltic, including herring from Sweden and from St. Petersburg and Estonia. A particularly interesting series was that from the Limfjord, which extended from 1667 to the present (see Figure L1). There was also catch data for Baltic cod caught on Bornholm and exported to Copenhagen. These data were both in the form of a flesh tax and export statistics. There were also data on smack exports of live cod and data on fleet composition from about 1700. It is hoped that these various data sets might



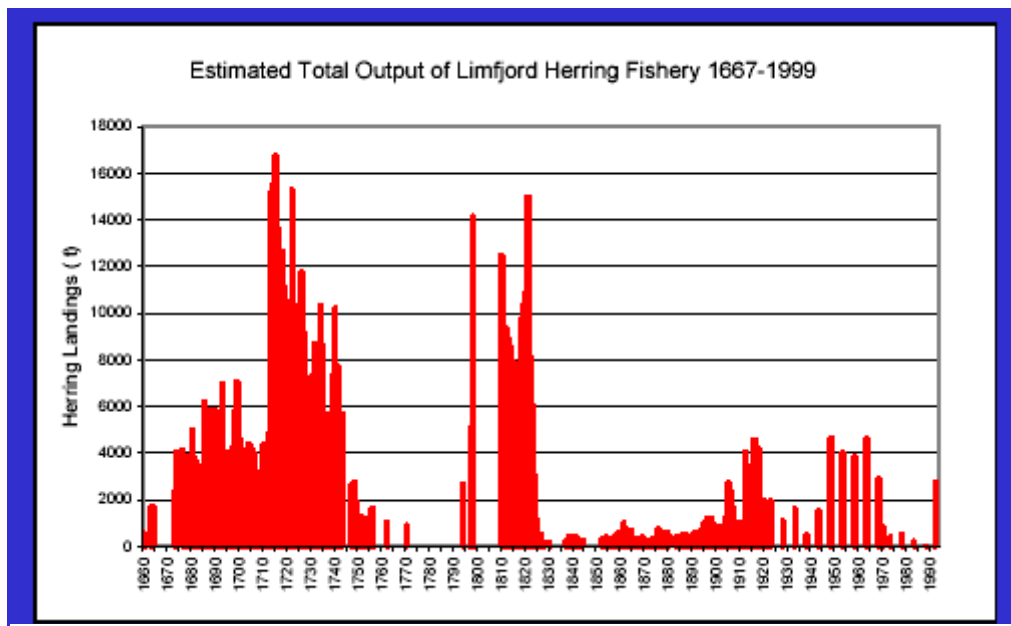


Figure L1. Herring landings in Limfjord, Denmark 1667-1999. From: “Baltic Fisheries in Previous Centuries: Development of Catch Data Series and Preliminary Interpretations of Causes of Fluctuations” by K. Awebro, M. Bager, P. Holm, J. Lajus, B.R. MacKenzie, A. Must, H. Ojaveer, B. Poulsen, and D. Uzars. Doc. L:02.

be linked to variations in the regional temperature and salinity of the Baltic, which are strong environmental signals in this area. There was also historical and archaeological evidence for a large abundance of sturgeon in the Baltic that comprises large percentages of medieval middens, but is now a threatened species. Fisheries regulations, which date back to 1280 in Russia and Poland, also provide another source of information since they might be expressing a concern about the sustainability of the resources in some cases. There were several questions concerning details and also a suggestion that regulations might be about controlling markets or sharing arrangements as well as, or instead of expressing concerns about overfishing.

The second presentation on historical fisheries data was provided by Tim Smith who described, on behalf of colleagues, the use of historical logbooks to determine cod abundance and distribution in the Gulf of Maine, Gulf of St. Lawrence, Labrador Coast, and Scotian Shelf. It concerned a series of logbooks collected by the US Government between 1852 and 1865 to establish participation in the cod fishery as a basis for compensation. They provide a wealth of fine-scale CPUE data and indicate hot spots of the fishing. There are also contemporary customhouse records that can be used to link these logbook records to the overall fleet results. The records indicate declines in CPUE and also technological and environmental changes occurring during this period. They provide evidence of the US practice of cod seining inshore in Newfoundland. They also appear to indicate a tendency for fleets to migrate further as local catch rates declined. It was noted that the novel “Captains Courageous” by Rudyard Kipling gave a good description of the latter days of the New England line fisheries for cod on the Scotian and Newfoundland banks.

In the third presentation on historical fisheries data, Tim Smith described the reconstruction of the humpback whale populations in the North Atlantic. Work had been done under the auspices of the International Whaling Commission (IWC) to provide environmental history of whaling worldwide. There was reasonable historical catch data for North Atlantic humpback whales from 1660 to 2001 both from the feeding grounds and from the breeding grounds. However, the earlier data could not be made to fit coherently with the more recent data and hence earlier data had been rejected by IWC. However, this was probably a wrong use of Occam's Razor and a counter dictum of William James suggested that the “dust clouds” of anomalous data points about a model frequently indicate a need to change the model rather than discard this data. Moreover, a new more satisfactory model may contain disproportionately higher weighting of the apparently anomalous data than the data which agreed with the earlier model. This was borne out by the results of more imaginative historical research, which suggested breeding and migratory behaviour for humpback whales that differed from the earlier model used. Differences included the probable existence of a northern breeding ground in the Norwegian Sea and an oceanic migration path from southern breeding grounds to northern feeding grounds. Evidence for the latter was provided by sighting observations of humpback whales obtained from fisheries for sperm whale reported in 1935.

## MAR-ECO

This Session focused on MAR-ECO, a field project of CoML concerned with the Mid-Atlantic Ridge (MAR).



Odd Aksel Bergstad introduced the Session by describing the aim of the MAR-ECO programme which is to improve the basic scientific information supporting management advice for deep-sea species and the North Atlantic Ridge ecosystem. The main tasks are:

- mapping species composition distribution patterns;
- identification of trophic interactions and food web patterns;
- analysis of life history strategies.

It has a planning stage 2001-2003, a field programme 2003-2005, and an analysis programme 2004-2008. It will be concerned with pelagic, bathypelagic, and epibenthic macrofauna. An important part of the programme involves public outreach to generate interest in deep-sea species and ecosystems. More details are available on <http://www.mar-eco.no/>.

Hein Fock described the results of an analysis of a 1982 Walter Herwig II cruise, which had sampled the MAR north of the Azores in an area of multiple fronts. Multivariate analysis identified 6 assemblages characterised by depth and by horizontal distance from the ridge and presented three complementary hypotheses to explain this distribution. These included linked down- and up-welling, production, and advection.

Maurice Clarke described work on the life history strategies of fish on the MAR. He noted that current ICES statistical divisions were not well suited to the MAR. It provided depth and areal associations of a series of typical species. He also noted that life history data on size, age, growth, maturity, and as a prey species. It is found on the MAR both at the northern end and off of the Azores.

Pablo Durán Muñoz's presentation described how the database of the Spanish Observer Programme in North Atlantic international waters could be used to investigate the composition and distribution patterns and biology of deep-water species. As a case study the round-nosed grenadier was chosen. Data available from the observer programme included length frequency, fish weights, and stomach contents. Data were available from the MAR and from Hatton Bank. There are a number of advantages to using observer data, particularly that it is comparatively cheap. But there are also disadvantages, particularly that data confidentiality is a problem and only aggregated data can be made available. It seems that at present it is not possible to make data confidentiality time-limited.

Verena Trenkel presented the first results of a quantitative study of deep-sea fish on the continental slope of the Bay of Biscay. She showed preliminary

results from the VITAL programme. Three sites were investigated using visual transects with a ROV, bait attraction studies, and swept-area methods with a trawl. Because of size selection effects the trawl and visual transect results differed substantially. Bait attraction worked well when there was a strong current, but not otherwise. Both the ROV and the trawl provided size composition data. The ROV provided smaller-scale details than the trawl could and was one way of getting deep-sea information for CoML. Data from this programme will eventually be placed on OBIS, the CoML database.

H. Hillewaert concluded the session with a description of the North Sea Benthos project, which was not part of MAR-ECO programme but may be considered an analogous project. He explained that its objectives were to augment the North Sea benthos programme of 2000 and to make comparisons with the 1986 programme. It also had the construction of a database as an objective. This required reconciliation of various data from different sources, particularly with respect to taxonomic classification. Outputs of the programme would include descriptive evaluation of North Sea benthos, which could be compared with the 1986 study.

### **Fisheries impact on biodiversity**

This session was opened with two presentations illustrating how the abundance and status of individual stocks and communities of species change as a result of exploitation. The first, by Rainer Froese and Kathleen Kesner-Reyes described the use of time-series of FAO production data from FishBase for 900 species to illustrate the high proportion of global stocks that are now overexploited or collapsed, and that have an average size that is below the size of first maturity (see Figure L2). Stocks are also moving more rapidly from the fully overexploited to the overexploited stage. The second, by Martial Laurans and others, used commercial statistics and surveys to show that, for the community of species fished off Senegal and Gambia, there has been a very rapid and marked depletion of biomass since the 1970s, and that this has been most marked for high trophic level species.

The results of these two presentations must be taken into account when using current fisheries data in the Census of Marine Life. They also suggest that as significant depletion takes place early on in the history of exploitation, fisheries will only be managed effectively if restrictive management regimes are introduced at the start, and then adapted as the effects on fish are monitored, rather than waiting until the signs of depletion occur.



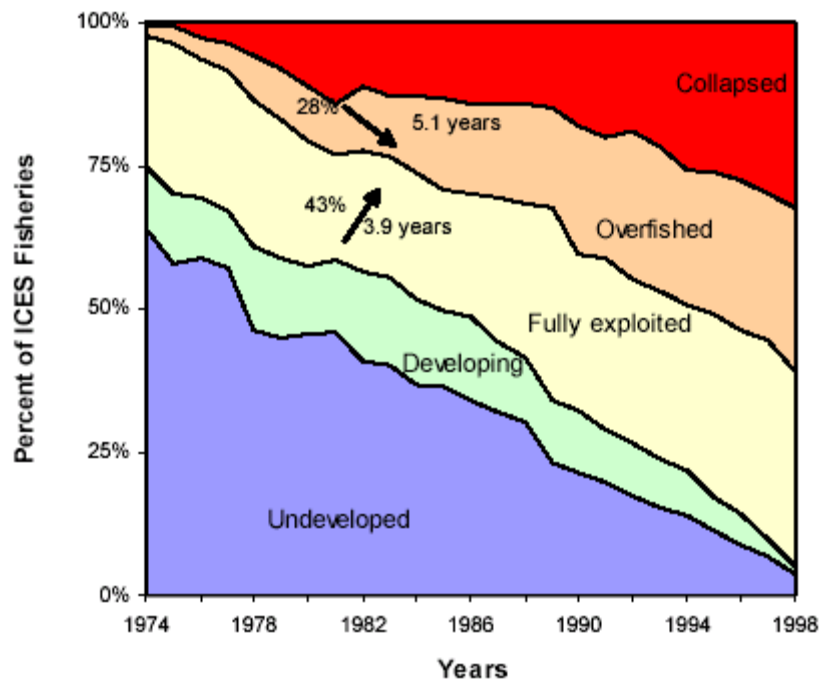


Figure L2. Trends in fisheries in the Northeast Atlantic, derived from ICES catch data 1973-1999. 46% of the species items were overfished within less than 10 years, with an average duration of 3.9 (s.e.  $\pm 0.37$ ) years. Only 28% of species items that had collapsed during this period recovered in less than 10 years, with an average duration of 5.1 years. From "Impact of Fishing on the Abundance of Marine Species" by Rainer Froese and Kathleen Kesner-Reyes. Doc. L:12.

Three papers provided information on the demersal fish resources off the coast of South America.

Two presentations provided important information on the distribution, growth, diet, and evolution of effort and catch of species fished by Spanish vessels on the Patagonian shelf. The area is particularly productive thanks to the mixing of the River Plata outflow with the Falkland/Malvinas and Brazil currents. Two species of hake and two cephalopod species make up the bulk of the resource, but several others, including the Patagonian toothfish, are also important. The third presentation by Portela described the results of exploratory fishing off Uruguay, using both longlines and traps, which found a variety of species, but none that appeared to be sufficiently abundant to exploit commercially. The two types of gear produced different catches. The traps yielded mainly crabs of the family Geryonidae and longer eels, while the dominant species in the longline catches were piked dogfish, wreckfish, tope shark, and hake.

The session concluded with a presentation by Hildrun Müller, who described the problem of trying to resolve the relative contribution of two sub-species of cod to the recruitment indexes used in the assessment of cod in the Baltic Sea. The identification of the 'Baltic cod' (*Gadus morhua callarias*) and the 'Belt Sea cod' (*Gadus morhua morhua*) was based on discriminate analysis of dorsal fin ray number. The paper illustrates the stock-structure problems that still affect the estimation of abundance and

recruitment of stocks in 'transition areas'. Even at this level biodiversity remains an important consideration.

### CoML future, synthesis, and prediction

Seven presentations were scheduled for this session. Two, by Michael Roman and Ed Houde, respectively, were concerned with spatial and temporal variability of plankton and fish in Chesapeake Bay. The work, supported by the CoML, is concerned with integrating a database of traditional optical and acoustical information to investigate how the production of zooplankton and fish are influenced by inputs from adjacent watersheds, from the oceans, and from the atmosphere. Annual variations in plankton were strongly influenced by freshwater discharge to the Bay, with a greater than ten-fold biomass occurring when these discharges were above average. Fish assemblages, sampled by a mid-water trawl, had a low diversity. Anadromous fish dominated the low-salinity upper Bay, but the middle and lower Bay area were dominated by marine/estuarine species. Fish biomass more than doubled following record freshwater inputs. In discussion, comparison was made with the Baring Sea, where the large inputs of freshwater did not contain nutrients but still had high primary production. It was suggested that increased stability of the water column was the relevant factor. It was also pointed out that it was easy to locate hotspots when 18 transects could be conducted as in the Chesapeake Bay, but there was a problem when less intensive surveys were available. It was suggested that



production hot spots might be indicated by concentrations of seabirds. In discussing the peaks in the size spectra in the Bay there was speculation that these might be filled if data on benthic species and 'jellies' were available.

Deval demonstrated the effect of salinity changes on the eggs and larvae of the European anchovy in the Black Sea and Aegean Sea, and he also outlined the distribution of eggs and larvae of the sprat in the Sea of Marmara.

Maria Fossheim described an investigation of the fish communities in the Barents Sea. The area studied included the Polar Front and it was shown that the assemblages and distributions of fish species differed between Arctic and Atlantic water masses. Temperature explained 22% of the variation and depth 12%. In discussion it was pointed out that capelin migrated from north to south across the front for spawning, but it was felt this did not affect the basic balance of the community.

In another study of fish communities Udemé Enin described the size structure in the Mecklenburg Bight and the Arkona Basin in the Baltic Sea was examined and the numerical size spectra analysed. The spectra were quite linear for pelagic species and demersal species separately and also when combined. Statistically significant trends were not detected and this was thought to be due to the small number of species in the Baltic, but also to the short time span (10 years) of the data. In the discussion, surprise was expressed at the small number of peaks in the spectrum. However, the analysis was preliminary, and a clearer picture was expected from a larger data set.

Emmanuel Chassot concluded the session by outlining an attempt to define "Fisheries Ecosystems Units". This was done by applying correspondence analysis to mean catches, over a 10-year period, to a selection of fish from the ICES fisheries database. It was possible to classify fishing units according to species, stocks, and biomasses. Among these units, variability in recruitment and productivity were analysed. It was suggested that this approach would be of use in management.

## Concluding discussion

### FMAP

Ron O'Dor opened the closing discussion with an account of the "Future of Marine Animal Populations (FMAP)". This final component of CoML aims to synthesize the data produced by the Census and assembled in OBIS and make it available for researchers in ICES and similar ocean management-oriented groups around the world. The presentation included slides provided by Ransom Myers from a recent workshop to establish and advance FMAP. The purposes of FMAP were outlined as:

- Statistical Design of CoML – Efficiency and cost of scientific surveys can be enhanced by careful statistical design.
- Data-Model Interface – Provide the data format and access standards required for complex models.
- Analysis – Be a clearinghouse for advancing in analysis of present and future CoML projects.
- Understanding – Formulate simple models to rapidly increase understanding of the global-scale science.
- Synthesis – Meta-analysis to expand interpretation of the scientific research based on CoML studies.
- Prediction – Combine these to help predict the future of marine life.

An example was given of initial analysis of forty years of Japanese fishing records that contradicts the long-held assumption that maximum marine biodiversity is at the equator and suggests that peaks occur both north and south of it.

### Final remarks

Reflecting back to discussions of biological hot spots, it was pointed out that the Tagging of Pacific Pelagics (TOPP) project of the CoML is particularly relevant since the predators tended to congregate in such situations. The value of using sea bird distribution in this context was again raised, referring to a good 20-year UK database, which would be available to CoML. It was noted that albatross is also one of the species tagged in the TOPP project. Although the various CoML initial projects like TOPP are currently dispersed around the world, the goal of the CoML is to demonstrate their effectiveness and encourage their broad application regionally by groups like ICES to provide a comprehensive record of what lives in sea. The high interest shown in this Theme Session is a good indication that a global Census on this basis is feasible.



## Theme Session M

### Oceanography and Ecology of Seamounts - Indications of Unique Ecosystems

Co-Conveners: Richard Haedrich (Canada), Manfred Kaufmann (Portugal),  
and Hein v. Westernhagen (Germany)

#### Background

The presence of numerous seamounts in the world's oceans, especially in the Pacific, has only become known to the scientific community in the last 50 years and has triggered a number of fundamental questions regarding the understanding of these ecosystems. Until today the questions regarding the mechanisms of their colonisation and species composition have not been satisfactorily answered and remain relevant today. It has been estimated that in the Pacific Ocean there are more than 30 000 seamounts, while only around 800 are found in the Atlantic. Seamounts have complex effects on ocean circulation because of their differences in size and shape. This directly influences the nature of the currents impinging on them and thus the transport mechanisms for potential settlers and dwellers on seamounts that rely on the seeding of their offspring in their vicinity to maintain and support their community.

#### Presentations

27 oral presentations were given. Eleven posters were also part of the theme session and were presented during the general poster session. All presentations, including the posters, were arranged under the following subheadings:

- Physical & Biological Oceanography;
- Zoo- & Ichthyoplankton;
- Fish Communities & Fisheries;
- Species Assemblages; and
- Marine Protected Areas & Management.

Out of these, the topic: 'Fish Communities and Fisheries' attracted most contributions, followed by 'Species Assemblages'. It is noteworthy that 15 oral presentations dealt with the Great Meteor Seamount in the subtropical eastern North Atlantic, a large (1465 km<sup>2</sup>) flat-topped 'guyot'. This seamount has been repeatedly visited in the past by research and commercial fishing vessels and in 1998 has again been the target for an expedition of RV "METEOR". The results of this last expedition was presented collectively by the cruise participants on the occasion of this session. It is for this reason that for only one system (the Great Meteor Seamount) the session covered almost the whole range of 'general and basic' topics in marine ecology, summarised under the above headings.

#### Conclusions

##### Retention and primary production

Using a numerical ocean circulation model based on measurements confirmed the widely accepted theory that seamounts increase the primary production in their surroundings – albeit only slightly – through the uplifting of isotherms into the euphotic zones. A passive tracer simulation confirmed that there is an area above the seamount, which is largely isolated from its surroundings. This leads to a retention of passive particles which may be an important feature in seamount community development, particularly in the reproduction of resident fish or invertebrate species.

##### Fish larvae

Although most of the fish larvae found at or above Atlantic seamounts belong to the oceanic or mesopelagic type, neritic taxa may at times present up to typically 15% over large seamounts. When looking at condition indices for fish larvae, there is no indication that waters above and around seamounts provide measurably better living conditions for larvae than waters of the oceanic realm. This finding is supported by the composition and availability of zooplankton and its biomass, which show no differences either above the mount or in the open ocean. There was, however, a significant trapping of zooplankton on the seamount plateau caused by a combination of both vertical migration and lateral advection through tidal excursions.

##### Species composition

The species composition of the fish and invertebrate macrofauna community on seamounts does not appear to be particularly rich or show increased endemism (invertebrates 6% for the Great Meteor Seamount), but resembles the faunal assemblages of the 500-1000 m isobath at the continental shelf at similar latitudes. This phenomenon is probably related to the fact that between 500-1000 m there is not much change in the ambient water temperature anymore, which is generally considered the basis for the worldwide distribution potential of many of the deep-water fishes (such as orange roughy and others). From stomach analyses of benthopelagic predatory fish species it appears that myctophids represent a substantial part of their diet.



It is interesting to note that in contrast to the macrofauna, the meiofauna on the Great Meteor Seamount shows a pronounced degree of endemism, probably caused and maintained by the rather 'low immobility' of this group that frequently lacks planktonic stages.

Another interesting phenomenon is that findings from roughly 70 seamounts off southern Tasmania have yielded totally different results from those reported from the Great Meteor Seamount in the Atlantic. Fish and macrofauna on these seamounts are characterised by a high degree of diversity and endemism throughout (31-48%). The question, why these systems are so different from the Atlantic ones could not as yet be resolved.

### **Management and protection**

In view of the apparent susceptibility of seamount systems to anthropogenic disturbances which has been shown for both Atlantic and Pacific seamounts (i. e. seasonal fishing in dense spawning aggregations, coral mining) and the slow rate of regeneration of damaged or even extinct macrofauna (including fish), due to a general scarcity of food, delicate trophic links, and the

lack of adjacent areas from which invaders could recolonise impoverished areas, methods to protect and manage seamount systems have been proposed and their implementation described (see contribution by Johnston & Santillo for Tasmanian seamounts). At current levels of knowledge Vinnichenko showed that, concerning the structure and energy flow in seamount systems, sustainable exploitation does not appear possible. Thus it was proposed that seamounts are globally declared marine protected areas (MPA) from which any kind of exploitation should be banned.

### **Discussion**

Overall the session on seamount oceanography and ecology met the expectations of the conveners. It was felt that a synoptic paper, which would have taken into account the different ecological settings in the Atlantic and the Pacific Ocean that appear to govern seamount processes was lacking. An attempt will be made to summarise retrospectively and, from what has been learned during the session, update present day knowledge on this topic.



## Theme Session N

### Environmental Influences on Trophic Interactions

Co-Conveners: Luis Valdés (Spain), Jean-Claude Therriault (Canada),  
George Hunt (USA), and Simon Greenstreet (UK)

#### Introduction

This Theme Session was conceived as an opportunity to examine the critical role of physical processes in the acquisition of energy by organisms differing in size from plankton to whales. Several sorts of hydrographic processes were discussed. At the largest scales, shifts of water masses affect the production regimes and the types and density of phytoplankton and zooplankton present. These changes can impact the types, biomass, and population dynamics of fish of commercial importance. Hydrographic processes can also influence the distribution and abundance of organisms by forcing aggregations when organisms change their rate of movement with respect to a physical gradient. Thus, physical processes interacting with biological processes are of paramount importance in understanding the distribution and abundance of organisms in the sea.

Within and at the edges of water masses, mobile organisms may use gradients in physical properties such as light, temperature, and salinity to select preferred habitats. These efforts at habitat selection may lead to dense aggregations of weakly-swimming organisms at the desired value of the property to which they are responding, or when they encounter currents that flow in directions opposite to those in which they seek their preferred habitats. Thus, floating objects (e.g. plankton) are concentrated at convergences and organisms seeking proximity to the bottom are concentrated in areas where currents are forced toward the surface by bathymetry. These aggregations provide foraging opportunities for planktivores from fish to whales, which are in turn vulnerable to their predators. Thus, in the coastal ocean, frontal regions and areas with steep bathymetry are regions of enhanced trophic transfer. In the open ocean, frontal processes may play a reduced role in trophic transfer as their area is small compared to ocean basins as a whole. In these vast regions, concentrated layers of prey may become particularly important for subsurface foragers and turbulence and Langmuir circulations may be of primary importance for near-surface foragers.

Ecosystem functioning is largely dependent of the above considerations. Thus the Theme Session was structured according with this vision. Twenty-two papers were presented and sessions were well attended with the meeting room filled to near capacity.

#### Summary of presentations

##### Variability at large scales

Classical approaches to plankton composition and its trophic structure include the study of water masses. Papers addressed the general issue of the effects of environmental changes or variability on the distribution and availability of prey and predators. For example due to warming, surface properties of water in the Baltic Sea suffered considerable changes in recent years. These were followed by changes in both the abundance and species composition of the zooplankton community, which has resulted primarily in a worsening of the herring forage base. This has affected competitive relations between herring and sprat with a consequential reduction of the individual weight of herring.

Shifts in the distribution of water masses were seen to have major effects on regional biotas. For example, changes in the distribution of water masses bordering the Faroe Islands (Atlantic Current (AC) warm water in the south and cold East Icelandic Current Water (EICW) water in the north) caused major changes in the ecosystem function in terms of both the timing of processes and their intensity. Thus, reproduction of *Calanus finmarchicus* starts significantly earlier in spring in the AC than in the EICW water mass, and two generations of *C. finmarchicus* are produced in the AC while only one is produced in the EICW. Differences in phytoplankton concentration, *C. finmarchicus* ingestion rates, proportion of mature females, and egg production were also noted. In addition, there is evidence that the availability to the fishery of several fish pelagic stocks, as well as of pilot whales and squids, is a function of annual and interannual variations in hydrographic characteristics around the Faroes (see Figure N1).

Likewise, intrusions of Labrador waters into the Gulf of St. Lawrence contributed significantly to the summertime coldness of the intermediate layer. Several changes in the plankton community were associated with this intrusion, including the occurrence of the diatom *Neodenticula seminae*, which is usually found in the North Pacific but not in the North Atlantic. Abundance of the amphipod *Themisto libellula* increased by two orders of magnitude in 2001 with respect to the annual mean, with this being the most important increase in abundance of this species in the last decade.



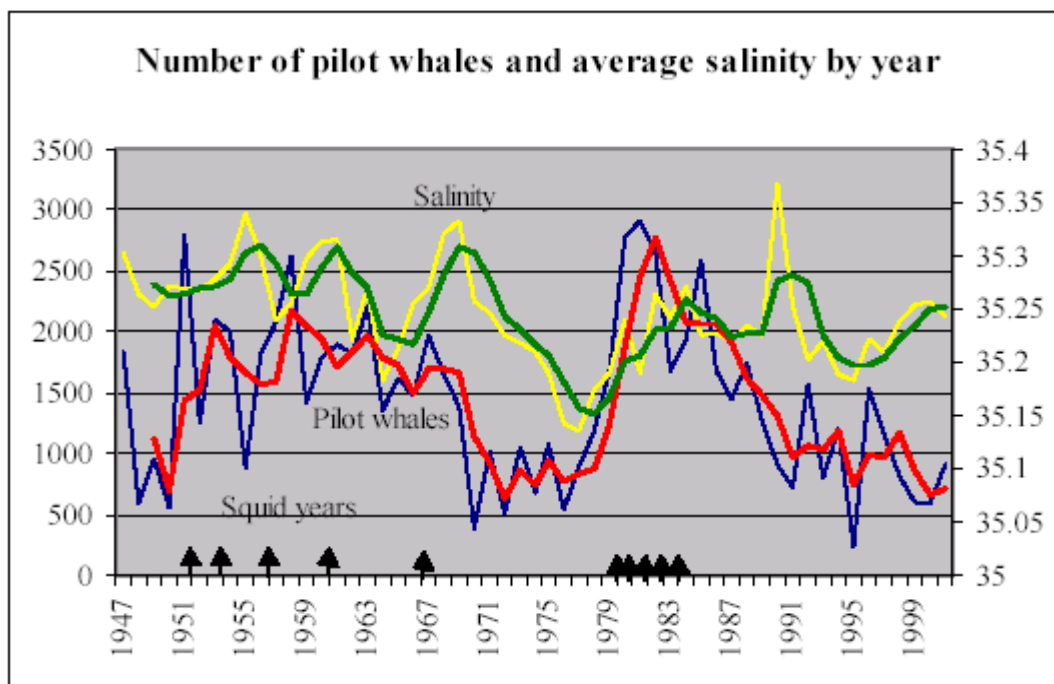


Figure N1. Salinity on the Faroe side of the Faroe Shetland Channel (yellow-individual years, green-3 years running mean), Number of pilot whales caught by year (blue-individual years, red-three years running mean) and years with significant catches of squid. From: "The pelagic fish stocks, pilot whales and squid in Faroese waters – migration pattern, availability to fisheries and possible links to oceanographic events" by Stein Hjalti í Jákupsstovu. Doc. N:07.

### Variability in mesoscale processes

Several presentations focused on the importance of tidal processes in creating frontal regions in which concentrations of planktonic organisms resulted in important foraging opportunities for upper trophic level organisms. Thus, in Chesapeake Bay, a tidal turbidity front resulted in concentrations of small zooplankton of importance to larval striped bass. In the St. Lawrence River estuary, tidal currents impinge on steep bathymetry and concentrate dense aggregations of euphausiids. Capelin forage on these aggregations and four species of whales migrate to this restricted area to forage either on the capelin, or directly on the euphausiids. In some cases, prey may be concentrated when predators force them against a steeply-rising bottom in the absence of tidal forcing. Evidence was presented that bottlenose dolphins in the east of Scotland may take advantage of tidal fronts for seeking prey. Birds are well known to forage at fronts, and areas of divergence or convergence may be selected depending on the behaviour of the prey and the depth at which it is sought.

Layers of prey and their depth from the surface are critical for the foraging success of seabirds in a number of locales. In the northern Bering Sea, seabirds take advantage of near-surface layers of prey to enhance foraging success. The depth of these layers may vary with the activity of internal waves and daily and monthly variation in tidal activity.

Subtle differences in substrate type that may define desirable spawning habitat can result in local concentrations (hot spots) of trophic transfer across multiple trophic levels. Thus, high-density aggregations of forage species such as spawning capelin allow maximization of energy transfer between upper and lower trophic levels. In particular, it was shown that the persistence of hot spots of capelin abundance allowed a bird predator (murre) to maximize prey encounter rates, while minimizing search effort for prey. These hot spots were also used for foraging by cod, and by people fishing for cod. It was considered that conservation and protection of hot spots is essential to ensure stability and sustainability of the food web.

### Turbulence scale

In shelf seas, but mainly in estuarine habitats, episodic river flow and wind events introduce turbulent motion in the water column that largely affects the structure of planktonic populations. Several presentations suggested that the scale of turbulence is critical for determining transport, retention, or re-distribution of particles within the water system. This turbulence may also affect the vertical distribution of forage fish and thereby the foraging opportunities of marine birds and mammals.

### Biological structuring of ecosystems

Several presentations examined the roles of biological interactions for structuring ecosystems. In one, an examination of the classical Volterra type predator-prey



model for the plankton community showed that more complex models with more components, besides the specific prey-predator components, are needed to answer specific and concrete questions concerning both natural and man-made changes in environmental forcing and loading. To do this, a size-dependant structure model was used to account for the whole spectrum of size in the plankton community. In a second instance, the problem of availability versus abundance of a fish resource as related to the sustainability of a fishery was discussed. This showed that past models have failed in defining levels of sustainability of a fishery (sandeel in the present case) because the emphasis has been put on the abundance rather than on the availability of the fish, which is directly related, on the long term, to long-lasting interactions in the bio-physical environment and, on the shorter term, to immediate events that drive the actual degree of aggregation and proximity to predators. In another example, a tropho-dynamic size-based model was used to look at the effect of environmental variability as it differentially affects the successive stages of fish and, hence, the structure of a fish community over the long term. The results indicated that the community has a better capacity to cope with environmental changes varying in a stochastic manner than with continuous environmental changes that vary in one specific direction.

The classical hypothesis that the variability in capelin stock biomass in the Barents Sea was linked to climate variability through periodic predation on capelin larvae by strong herring year classes born in warm years was also examined. This suggested that other fish predators may also have a strong influence on mortality of capelin larvae.

The potential for massive outbreaks of a single species, for instance one of the salps, to cause a dramatic change in the biota of a water mass indicated the need to learn more about the events that trigger these outbreaks or blooms.

## Overview

Various presentations presented the results of both field observations and modelling exercises. The recent introduction of high resolution sampling devices and the development of 3-D physical models as well as physical-biological coupled models have improved our capacity to understand the main patterns of ecosystem functioning. The main conclusion of the Session is that trophic interactions are strongly influenced by environmental variability at all spatial and temporal scales. It was even shown that within a specific spatial scale, the biology could further structure the environment (e.g., vacuum cleaning of plankton by salp swarms).

The concentration of predators and prey at fronts and other “hotspots” is a phenomenon well known to fishers seeking predictable, profitable aggregations of fish. In the ocean it is not the average biomass or distribution of plankton or fish that is important to birds and mammalian predators, including humans, but the extremes where concentrations of prey can be exploited profitably. These hotspots are also of critical importance to the continuance of diverse and productive marine ecosystems. Thus, their identification has important conservation implications as we try to manage fisheries for not only maximum exploitation, but also for the preservation and recovery of healthy marine ecosystems.



## Theme Session O

### Pelagic Fish Responses to Climate Variability – Consequences for Fisheries and Ecosystem Advice

Co-Conveners: Maria-de-Fatima Borges (Portugal), Dankert Skagen (Norway), Carmela Porteiro (Spain), and Brian Rothschild (USA)

#### Background

There is an increasing interest in the relationship between climate and the stock size of many important commercial fish species. A number of species show a clear correlation with climatic indices like the Global Temperature Index or the Atmospheric Circulation Index. Data reflecting climatic changes have been recorded for centuries. The processes linking such changes to changes in fish communities and fish stock dynamics are still a challenge to science. As the understanding of the links between climate and fish stock dynamics is growing, the question of how this should carry over to management also emerges.

The purpose of this Theme Session was to bring together scientists from both sides of the Atlantic, and globally, to consider how to incorporate decadal-scale productivity regimes in advice on pelagic stocks and ecosystems, and to identify priorities for further collaborative research. This would include both identifying physical processes, links between physical processes and stock dynamics in terms of e.g. growth, fecundity, and area distribution, and integrating this insight in stock assessment and management advice.

#### Contributions

Twenty-three paper and four poster presentations were put forward. These covered a wide variety of subjects and areas, both with respect to describing physical processes and their biological variations, and the possible link between them. Figures O1 and O2 are typical examples of the problem. Here, a marked change in the abundance of pelagic species on the Scotian Shelf in the Northwest Atlantic is shown, together with a marked change in environmental conditions as represented by a stratification index. It is quite likely that these signals are connected, but causal links are still by no means clear.

Six presentations considered various associations between environmental signals in the Bay of Biscay, expressed as upwelling and currents, and fish population variables like recruitment, migrations, and location of spawning grounds, in particular for anchovy. Altogether, these presentations provided a broad overview of the ongoing research on the links between the environment and the anchovy stock, which, being a short-lived species where the dynamics are very sensitive to environmental conditions, represents a stock where there is a clear need for environmental considerations in management.

Another group of presentations considered stock dynamics, in particular the distribution by area and in water masses, of pelagic stocks in the Baltic. This is also an area where the environmental signal is strong, but where the links to the population dynamics still are difficult to confirm.

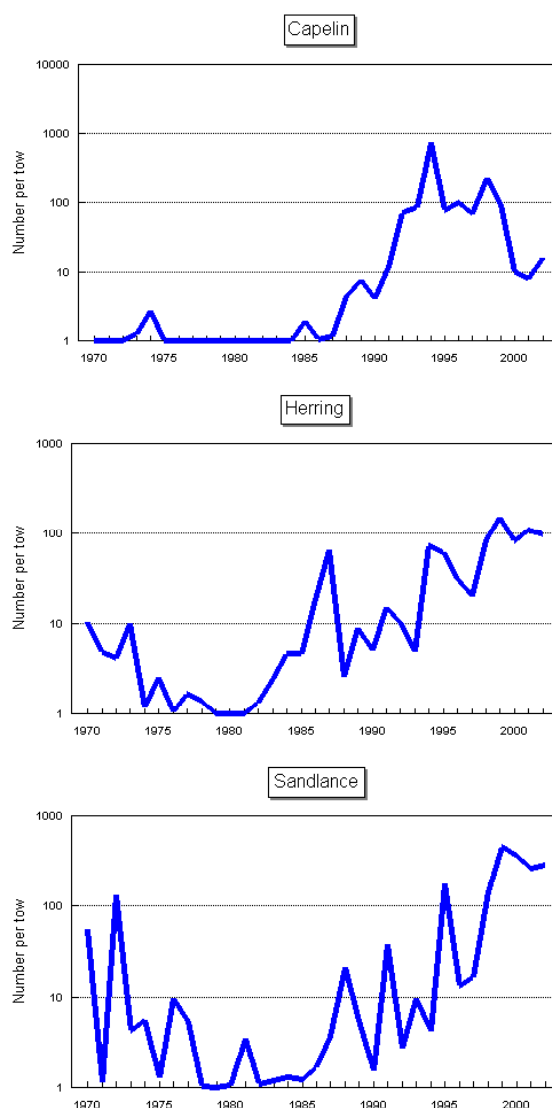


Figure O1. The time-series of capelin, Atlantic herring, and northern sandlance on the Scotian Shelf from the annual groundfish surveys. From “Links between the recent increase in pelagic fishes and environmental changes on the Scotian Shelf “ by K. T. Frank and K. F. Drinkwater. Doc. O:18.



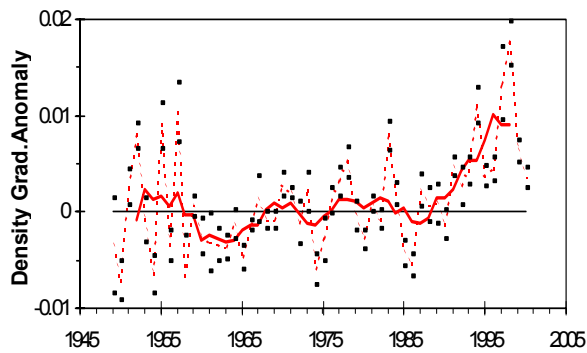


Figure O2. The annual and 5-year running mean of the anomaly of the stratification index on the Scotian Shelf, as measured by the density anomaly difference between 0 and 50 m. From same source as Figure O1.

The scale of the processes considered varied from large-scale physical phenomena, such as the NAO index or the sea level pressure gradient across the Denmark Strait and its possible influence on stock dynamics over wide areas, to very local phenomena such as the association between salinity and the distribution of herring in the Thames estuary or the association between wind fields and the distribution of herring larvae in the Gulf of Riga.

In addition, papers were presented covering a diversity of fields such as stock recruitment relations for Barents Sea capelin, by-catches of cetaceans in the Bay of Biscay, fish stock abundance and environmental conditions on the Black Sea, and seasonal variations in target strength for blue whiting.

## Discussion

The closing discussion concentrated on the impact of the known or assumed links between fish stock dynamics and environmental events on management advice. A common view was that environmental considerations would be particularly important with regards to advice on management strategies, and less so for the annual TAC advice that is the standard at present. There were diverging views as to whether identifying transitions and regime shifts would be the core aspect, or long-term trends and oscillations. A common view was that although causal links still are not fully understood, there is now sufficient insight to take environmental issues into account in fish stock management, and that the kind of advice that is given to managers needs to be adapted to this situation.



## Theme Session P

### Shelf Seas Processes: The Foundation for Ecosystem Understanding

Co-Conveners: Charles Hannah (Canada), Wolfgang Fennel (Germany), and Harald Loeng (Norway)

#### Introduction

The purpose of the session was to address physical oceanographic processes such as coastal ocean-circulation, turbulence, and upwelling. The focus was on modelling of circulation and transport; turbulence in the coastal ocean boundary layers and the water column; and measurements, comparisons, and validations. However, presentations on any topic in the field of shelf-seas processes were welcome.

#### Presentation of papers

##### Overview

The session attracted 18 papers and 1 poster. For various reasons only 11 papers were presented at the meeting. The papers covered a wide range of topics and geographical areas. Geographically the papers covered the Baltic Sea (5 papers), the Bay of Biscay, the Celtic Sea, the Faroe Islands, the western North Atlantic (2 papers). The topics covered the range from a new

instrument for measuring turbulence, to the application of a regional 3D ecosystem model to estimate the effects of nutrient load reduction in the Baltic Sea.

##### Turbulence and turbulent mixing

Turbulence and turbulent mixing are important shelf-sea processes. One paper described a new instrument for measuring the spatial and temporal structure of the small-scale velocity field associated with turbulence (the Submersible Particle Image Velocimetry System, or PIV, see Figure P1) and another provided a review of the available techniques for modelling the effect of turbulent mixing on neutrally buoyant particles. In addition, an analysis of the observations of the frontal location on the Faroe Shelf made use of tidal mixing models, while a study of sediment transport in the Baltic Sea required a model of the wave- and current-induced bottom stress for sediment resuspension.

##### Application and analysis of 3D circulation and ecosystem models

Several presentations made use of 3D circulation and/or ecosystem models (e.g. Figure P2). These were primarily applied to the Baltic Sea. There were applications to estimate the effects of nutrient load reduction in the Baltic, to map upwelling regions in the Baltic, to study sediment transport patterns, and to assess the response of blue-green algae in the Gulf of Finland to climate change scenarios. Using a regional model of the Bay of Biscay, one paper introduced a novel technique for the classification of circulation patterns in 3D models. The



Figure P1. Oceanic Submersible Particle Image Velocimetry System. From “Turbulent stress measurements in the coastal ocean using Particle Image Velocimetry (PIV)” by W. A. M. Nimmo Smith, Thomas Osborn, L. Luznik, W. Zhu, A. Fricova, and J. Katz (Doc P:02).

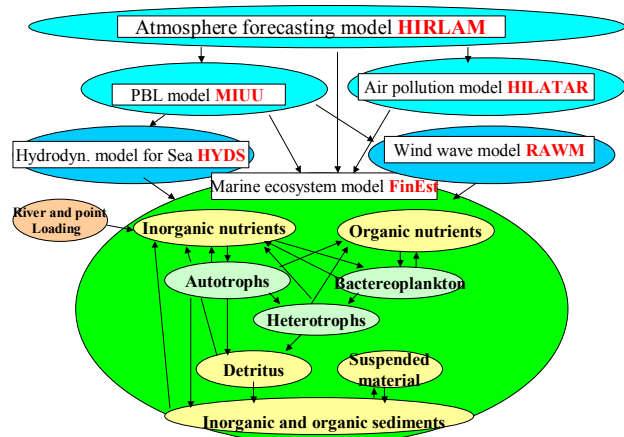


Figure P2. Schematic of the Atmosphere-Marine-Hydrodynamic-Ecosystem model (FRESCO). From “The influence of hydrodynamic processes on the marine ecosystem” by V. Zalusky, R. Tamsalu, P. Ennet, and H. Kuosa. Doc P:07.



technique should help with the general problem of characterizing the circulation patterns in numerical models and may provide a tool for relating circulation to biological processes.

### **Larval fish drift and retention**

The close linkages between physical and biological processes were highlighted by two papers focussed on the retention of larval fish on banks. One discussed a programme to define the gadoid spawning grounds and circulation patterns in the western Celtic Sea and another provided a retrospective study of spawning pattern variability of cod and haddock on Georges Bank (USA).

### **Field observations and monitoring**

Field programmes formed the basis for understanding the circulation of Cabo Frio (southeast Brazil), for monitoring the state of the Baltic Sea adjacent to Poland. Field programmes were also used for an analysis of observations to determine the structure and location of the front between the shelf and oceanic waters on the Faroe Shelf, for two presentations on larval fish and for the new turbulence measuring instrument.

## **Conclusions**

The session was well attended (40 - 60 people) and quite lively. There were usually several active discussions taking place during the breaks.

It is difficult to draw general conclusions from 11 papers in a field as diverse as shelf sea processes. However, from the presentations it was clear that the 3D ecosystem modelling being done in the Baltic Sea is of very high quality. Overall, the presentations were consistent with several important trends evident in the broader community:

- 3D circulation and ecosystem models have arrived as a practical tool for integrating our understanding of physical, chemical, and biological processes in a realistic geometry and with realistic forcing;
- the importance of observations is not diminished by the growth of numerical modelling. Observations are required to discover new processes, to improve our understanding (and models) of processes we know about, to calibrate and validate existing models, and to monitor the state of the ecosystem;
- models of the interactions of individual organisms with turbulence are still in their infancy.



## Theme Session Q

### Ocean-Shelf Sea Interactions: Implications for Biology and Fisheries

Co-Conveners: Philip C. Reid (UK), Maria-de-Fatima Borges (Portugal),  
and Einar Svendsen (Norway)

#### Background

Recent studies on both sides of the Atlantic, in the North Sea and Gulf of Maine/Scotian shelf regions, have demonstrated that inflows from the boundary currents at the shelf edge can have pronounced effects on adjacent shelf ecosystems. Changes in zooplankton communities appear to provide a good indicator of such inflow events. In the case of the North Sea a change circa 1988 associated with such inflows has been termed a regime shift. All trophic levels including fish were affected and the biomass of the benthos, at least at one time-series station doubled. Nutrients, oxygen, current speed, and other variables also appear to be associated with the change. Other work has shown that pulsed northerly movement of warm water in the slope current may be implicated in the biological changes. On the other side of the Atlantic, studies as part of US GLOBEC have shown a pronounced impact on the plankton and ecosystem through incursion of cold water from intermediate-depth Labrador slope water. The forcing mechanisms behind these events, their biological response, and their impact on fish stocks is poorly understood. The consequence of such events may be long-lived and likely to have major implications for fish stock management. The purpose of this session was to bring together scientists to examine in an interdisciplinary way the effects of oceanic inflows onto shelf seas with the aim of identifying priorities for future collaborative research.

#### Summary of presentations

The papers presented in this session provided examples of shelf-ocean interactions from a wide range of areas in both the South and North Atlantic (Patagonian and Falklands shelves, Namibian shelf, Mid-Atlantic Bight, North Sea, and Gulf of Finland). Inflow from the open ocean into coastal seas was clearly shown to have a major influence on shelf ecosystems. The inflows vary from year to year both in strength and scale leading to marked differences in the spatial distributions of water masses, and the effects may persist over a number of years. The nine papers presented described effects from such inflows evident in the distribution and abundance of plankton, fish, and cephalopods.

The abundance of the squid *Loligo gahi* on the shelf south of the Falklands was linked to varying inflow of the Falkland Current causing upwelling and increased productivity in certain years. A correlation analysis

between the spatio-temporal distribution of CPUE for the Argentine hake (*Merluccius hubbsi*) and a range of environmental variables suggested that high fish abundance was related to strong northward flows of the cold Falkland Current.

A very different presentation discussed the effect of lunar nodal cycles on long-term inflow and temperature in the Barents Sea and how these in turn might be related to the varying biomass of the Norwegian spring-spawning herring (*Clupea harengus*) over the last century. Through this analysis it was suggested that it is possible to predict total herring stock growth, reduction, and collapse in a total cycle period of about 55 years. An ecosystem model was demonstrated for the Baltic Sea with high resolution over the Gulf of Finland through nesting techniques.

For some stocks such as silver hake (*Merluccius bilinearis*), recent fluctuations in abundance within the Middle Atlantic Bight region appeared to be more strongly associated with changing oceanographic conditions than with changes in exploitation.

Two papers described results from the Continuous Plankton Recorder (CPR) survey. The first used oceanic plankton indicators to assess varying oceanic inflow and coupled these results to shifts in herring spawning grounds and recruitment. The second described alternations in the abundance of the copepods *Calanus finmarchicus* and *C. helgolandicus* associated with variability in inflow determined from the NORWECOM 3D model. Both papers demonstrated that oceanic inflow has a considerable effect on North Sea ecosystems and should not be ignored in the management of fish stocks. In the central west North Sea a long time-series of benthos and plankton, the Dove Time Series, was examined in relation to a number of measures of climatic/hydrographic drivers. They found no evidence for regime shifts in their data in contrast to other studies in the North Sea.

A striking example of the effect of oceanic incursions onto a shelf was demonstrated by the intrusion of Angolan water onto the Namibian shelf. Complex hydrographic and faunistic distributions were caused by the intense mixing that occurred at the edges of the intrusion. The resulting anticyclonic flow field was associated with larval transport both onshore and offshore. A conceptual transport model was presented (Figure Q1).



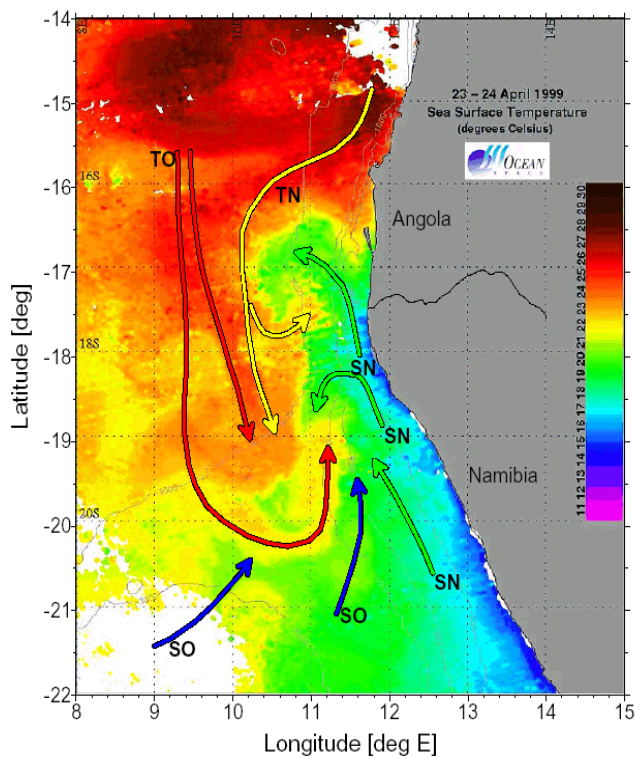


Figure Q1. A conceptual transport model suggesting advective paths of faunistic elements relative to the anticyclonic circulation at the tip of the Angola Current intrusion into northern Namibian waters. From “Intrusion of Angolan water into the northern Benguela and anomalous cross-slope distributions of fish larvae” by Hans-Christian John, V. Mohrholz, J. R. E. Lutjeharms, S. Weeks, R. Cloete, and A. Kreiner. Doc. Q:09.

## Conclusions

Marked effects of the incursion of oceanic inflow on shelf seawater mass distribution, planktonic productivity, and fish resources were clearly demonstrated in this session and the papers reflected an increasing awareness by the ICES community of the importance of oceanic forcing on the functioning of shelf sea ecosystems. The scale of the changes seen and their persistence, at times over many years, means that the effects of oceanic inflow into shelf seas should not be ignored in the management of fish stocks. Regrettably, there were no physical oceanographic or modelling presentations in the session examining the forcing mechanisms behind inflow events and the limited time available meant that a debate on priorities for future collaborative research did not take place.



## Immuno-Modulators and Probiotics: Alternatives to Chemotherapeutics?

Co-Conveners: I. Bricknell (UK) and F. J. Gatesoupe (France)

### Background

In the face of multi-drug antibiotic resistance, and vaccine limitations, working towards natural disease resistance, whether by genetic selection or other means, has turned to a crucial issue. The use of immuno-modulators and/or probiotics in marine aquaculture has the potential to provide many benefits to the industry. Immuno-modulators can, in theory, improve fish health by up-regulating the immune system, reduce the requirement for intervention with immuno-therapeutics and improve animal welfare. They also offer the potential to improve larvae and fry survival as judicious use of these compounds could protect larvae from endemic pathogens in the hatchery.

Probiotics may have a wide range of beneficial effects on animal health, but few have been documented in fish so far. They may act directly on the host by stimulating the immune response, and the ontogeny of digestive enzymes in larvae. They may fight against pathogens by secreting antagonistic compounds like antibiotics, surfactants, etc. They may also intervene in the host-pathogen relationship by competing for adhesion sites, nutrients, or by destroying toxins. This variety allows synergy, and probiotics could be also combined with immuno-stimulants.

Contributions that investigate the potential benefits and possible detrimental effects that the use of immuno-modulators and probiotics may have on marine fish culture were called. The session was arranged with ten highly relevant and constructive papers.

### Overview of the session

New infectious diseases have spread with the intensification of fish culture, and immuno-stimulants or probiotics are essential to check livestock loss, especially when vaccine is difficult to develop. Immuno-stimulants are non-specific, with a broad range of action. Most of them are conserved microbial polymers that are recognised by the immune system. Their effect is dose dependent, as excess may cause immuno-suppression. An alternative treatment may be the use of nutrients like nucleotides that may fuel the immune system. Probiotics are more specific than immuno-stimulants, and they need to be selected for a particular bacterial infection. If their effect is easy to observe *in vitro*, the demonstration is difficult *in vivo*. Their possible immuno-stimulating effect has not been convincingly proved yet. The efficiency against intra-cellular pathogens is questionable for both immuno-stimulants and probiotics.

Probiotics were further described and debated in several presentations. All of these presentations were devoted to cold-water fish, but there is an urgent need to extend applications to warm-water fish, especially as fish culture is developing mainly in the tropical and subtropical area.

The methodology to select probiotics was presented. Their efficiency was then tested within challenge experiments, stressing the importance of statistical analysis. The need for understanding the mechanisms that cause the effects observed *in vivo* was emphasised. Most studies have selected probiotics based on *in vitro* antagonism or mucus adhesion, but it is not known whether these reactions are efficient to prevent infection *in vivo*. Lactic acid bacteria, common in fish microbiota, are an important source of probiotics, though they are generally present at a relatively low level in the gastrointestinal tract. A remarkable exception is the hindgut fermentation chamber of cod, where high amounts of *Carnobacterium* spp. are present. Their location between gut microvilli suggested an important role in intestinal health and function. Probiotics should be developed with further research. For instance, dietary inulin could boost *Carnobacterium* spp. proliferation in the gut, but it caused tissue damages at high dose.

Besides probiotics originating in fish microbiota, the efficiency in fish of *Lactobacillus rhamnosus*, initially intended for human use was demonstrated. A particular interest of this methodology is the measure of respiratory burst activity that enables the assessment of the effect of probiotics on host immunity (Figure R1). The application of probiotics to fish larvae is promising, but it requires special methods of delivery. For instance, it was

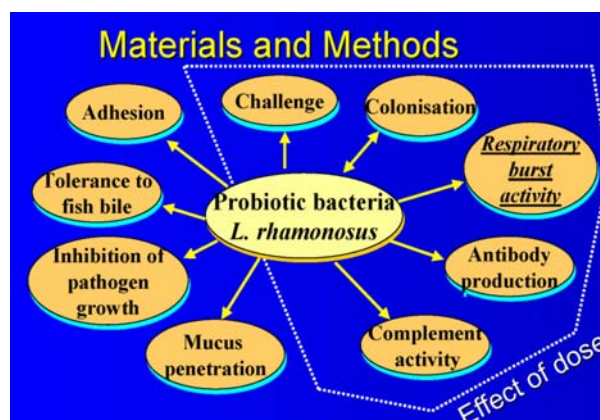


Figure R1. An example of methods to investigate the effect of a probiotic on fish health. From: "Benefits of a human divided probiotics for the rainbow trout (*Oncorhynchus mykiss*) health" by Sami Nikoskelainen. Doc. R:04.



demonstrated how to follow the fate of the probiotic from the enrichment medium of live food organisms up to the gut of halibut larvae thanks to immuno-histo-chemistry. Results obtained with larval Senegalese sole, with a promising quantification method of probiotic cells by immuno-colony blot, were also demonstrated. These two methodological approaches based on immunological tools are potent, but there are still some problems of specificity, which could be solved by using mono-clonal antibodies.

The possible effects of immuno-stimulants were summarised in a review (Table R1), but there are also limitations. It was shown that the efficiency of the treatment is highly dependent on dose, but also on duration, as a too long treatment may cause loss of efficiency, or even immuno-suppression. There are some instances indicating that the abuse of immuno-stimulants may promote resistance (e.g. levamisole), and restrictions are necessary. It is essential to treat at the right period, i.e. before the emergence of stress, which may reduce the

especially increase the survival of fish larvae and fry, whereas vaccination is difficult to apply on early developmental stages. It is noteworthy that the exact timing for the acquisition of immune responses is variable among fish species. Immuno-stimulants may be used in short-term non-specific preventive treatments, whereas probiotics are useful to prevent specific bacterial infections.

If the limitations of immuno-stimulants seem sufficiently described to allow a more rational use, further research is required for probiotics. In particular, the dose response and the effect of duration of probiotic treatments need to be investigated. This approach is difficult in many cases, due to the colonisation potential, which is one of the main features of probiotics.

Probiotic treatments raise the question whether it is really worth while to use viable cells, or whether cell components identified as active principles could work as well. The question applies to every expected probiotic

<i>In-vitro</i> effects	<i>In vivo</i> -effects
Phagocytosis	Survival after challenges with pathogens
Radical production	Antiparasitic effects
Enzyme activity	Growth
Migration activity	Induction of synthesis of antimicrobial substances
Production of cytokines	
NO production	
Bacterial killing	
Ab production	
Cytotoxicity	
Cell division	

Table R1: Effects of immunostimulants in fish. From "Immunostimulation of fish" by Roy A. Dalmo. Doc. R:09.

immune response. There is also a particular interest in immuno-stimulants for the larval stages, when the immune system is not achieved, though non-specific immune response may be induced yet. This was further illustrated by excellent results obtained with turbot larva fed a non-conventional immuno-stimulant, High-M-alginate.  $\beta$ -glucans seemed to have some adverse effects on the larvae, but these could have been caused by wrong administration of the stimulant. Another example of non-conventional immuno-stimulants involved the selection of seaweed extracts after their ability to stimulate chemotaxis and respiratory burst in Senegalese sole macrophages.

## Conclusions

Both kinds of treatments can reduce the need for chemotherapy. Immuno-stimulants and probiotics may

effect (e.g. antagonism due to bacteriocin-like compound, immuno-stimulation, etc.). One of the main advantages of live cells over cell components may be the possibility to deliver the active principle *in situ*, with the right dose at the right place, thus limiting adverse effects like toxic overdose or resistance spread. There may be disadvantages too, especially by considering safety regulation and the risk that a micro-organism with high colonisation potential may get out of control.

While further developing such treatments for commercial applications in hatcheries and fish farms, it is recommended to follow the actual settlement of approval procedures, mainly by the Center for Food Safety and Applied Nutrition of the U.S. Food and Drug Administration or the Scientific Committee on Animal Nutrition of the European Commission.



## Theme Session S

### Juvenile Fish Cultivation: Improvements in Quality

Co-Conveners: David Bengtson (USA), Karin Pittman (Norway), and Patrick Sorgeloos (Belgium)

#### Background

The rationale for this session was that many impediments to providing sufficient quantity of fry have been removed, but the quality of those fry may still not be optimal. This issue applies to fry produced both for commercial aquaculture and public aquaculture projects, such as stock enhancement or restoration.

#### Description of the Session

##### Overview

Only six papers were presented and they covered a wide variety of topics. This low number is partly due to several potential speakers being unable to attend due to commitments to attend other major aquaculture conferences this year in China, USA, and Italy, leaving them with insufficient travel funds to attend the ASC. In addition, for reasons which remain unclear, at least three abstracts which had been promised for submission did not appear in the final list of papers.

##### Syntheses of presentations

A mass culture system for polychaetes may provide an alternative to fish meal as a source of protein. However, more work must be done to identify the pathways of lipid utilization and transformation in this system, as brewer's yeast is provided as the only food, but the polychaetes contain good levels of highly unsaturated omega-3 fatty acids.

A recirculation system for culture of young seabass was described (see Figure S1) and growth results in this system were quite good; the use of a protein skimmer was considered to be a major beneficial addition to this system for clarification of the water.

The use of calcein as a fluorescing marker is being investigated in restoration programmes for Atlantic salmon in the United States. Initial results are promising, although it appears that there may be higher mortality of calcein-marked fish than other fish in the area studied.

Juvenile haddock, a new aquaculture species, grew better under 24 or 20 hrs of light than they did under 16 hrs, 12

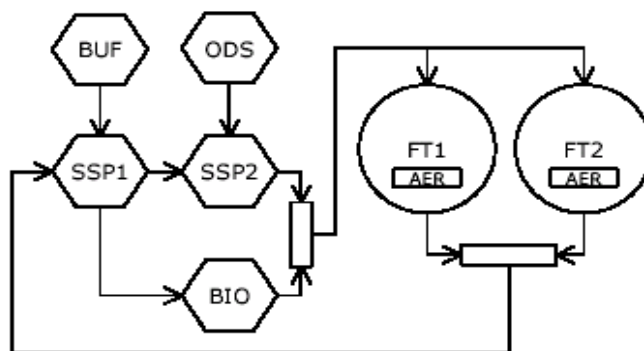


Figure S1: Schematic drawing of a re-circulation system for culture of young seabass. FT1 and FT2: fishtanks, AER: aeration, SSP1: swirl separator 1, SSP2: foam fractionator, BIO: submerged biofilter, BUF: CaO dosing system, ODS: ozone dosing system. From "The growth of young sea bass (*Dicentrarchus labrax*) in a new type of re-circulation system" by U. Waller, J. Orellana, A. Schiller, M. Sander. Doc. S:06.

hrs, or natural photoperiod, and a reduction in light intensity from 100 lux to 30 lux further improved growth, probably because locomotor activity was less at 30 lux than at 100 lux. Fast-growing individuals of juvenile cod appear to be metabolically more efficient than slower-growing individuals, but they also have lower condition factors. On the other hand, fast-growing individuals of larval and juvenile summer flounder appear to have no metabolic advantage, but simply consume more food than slow-growing individuals. Furthermore, there appears to be a specific time in larval development when certain individuals "turn on" an increased food consumption capability.

##### Conclusion

The production of high-quality fry for either commercial or public mariculture is clearly a complex issue, requiring consideration of both genetic and environmental influences in the biology of the organisms, of optimal design of the systems used to rear the fry, and of the economics involved in production. The success of these ventures will therefore depend on a multi-disciplinary team working towards a common goal.



## Theme Session T

### Salmon Aquaculture, Enhancement, and Ranching: are They a Threat to Wild Salmonid Stocks?

Co-Conveners: Jacqueline Doyle (Ireland), Árni Ísaksson (Iceland), and Terje Svåsand (Norway)

Rapporteur: Niall Ó Maoiléidigh (Ireland)

#### Background

The Theme Session was proposed to encourage interaction between aquaculture and wild salmonid fisheries interests and to address *inter alia*:

- Survival and behaviour of escaped Atlantic salmon;
- Ecological effects of escaped farmed salmon on the reproductive success of wild salmon;
- The geneflow between escaped farm salmon and wild stocks and the potential effects on genetic diversity and survival of wild stocks;
- Salmon lice: the influence of farming activity on the infection rate of wild salmonid stocks.

#### Presentation of papers

##### Overview

The session was divided into four main topic areas covering genetics, escapees, ranching, and sea lice. There was a high attendance at the session and the session generated a high level of interest.

##### Genetics

Two papers outlining the influence of hatchery-reared salmonids on wild populations were presented. In the first, a two-generation experiment spanning 10 years and based in the Burrishoole River in the West of Ireland, compared the fitness and life-history traits of the offspring of native, ranched, non-native, farmed, and “hybrid” Atlantic salmon. All groups, other than ranched, showed significantly reduced survival in both freshwater and marine phases compared with the wild fish. Relative to wild fish and taking the whole life-cycle into account, farmed fish performed at only 3% compared to the wild fish while the other groups, including a wild group from a neighbouring river performed at approximately 20% relative to the wild fish. Although the effects of a one-off incursion would be removed by the third generation, the effects of cumulative or repeated incursion were more likely to have irreversible effects, particularly where wild stocks were small or marginal.

An experiment carried out in Denmark showed differing results for admixing of populations of wild and cultivated (domestic) brown trout. Only a small (6%) contribution from domesticated brown trout was apparent in one river, while in a second river stocked over the same period and with a similar level of intensity, the contribution of the

domestic strain was much higher (57 to 88%). Explanations for the differences were discussed.

##### Escapees

There were two presentations relating to the escapement and distribution of escapees from aquaculture sites in Norway and Ireland. In Hordaland County, Southern Norway, the total reported catch of escaped farmed salmon was only 0.02% of the yearly production of farmed salmon in the region, while the total reported catch of rainbow trout corresponded to only 0.1% of the regional yearly production of rainbow trout. According to the experiences from mass escapements, high numbers of salmon are caught during the first few weeks, thereafter they seem to disappear. The most potent negative influence of escaped rainbow trout on the wild populations was reported to be their potential for producing salmon lice. Similarly, as shown in Figure T1, the incidence of escaped farmed salmon in the Irish commercial salmon catch was low (< 0.5% nationally and rarely greater than 2% in any district). While it was possible to relate the high number of reported escapes to a higher incidence in the commercial fisheries, the rate of recovery was always low, suggesting that farmed fish dispersed quickly out of the range of these fisheries and that their subsequent survival was probably low. The number of escapees entering monitored rivers (Burrishoole and Bush in Northern Ireland) is also low, but this does not rule out the possibility that escapees enter other rivers and may be largely unaccounted for.

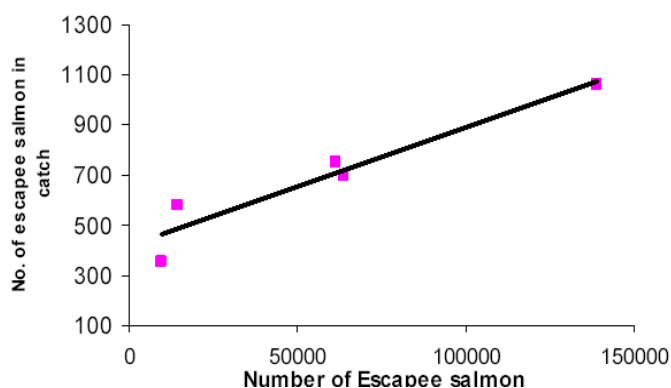


Figure T1. Relationship between reported escapes and estimated escapees in Irish catch (smolts are included with adults of the following year). From: “Review of Irish salmon aquaculture escapee data” by N. Ó Maoiléidigh, A. Cullen, T. McDermott, N. Bond, D. McLaughlin. Doc. T:10.



Work with trypsin levels in salmon showed that changes in the environment were sufficient to influence gene expression of salmon offspring regardless of the genetic expression of the parents.

## **Ranching**

A specific Irish ranching strain was used in a translocation experiment. Transport of the fish to the remote site resulted in a negative specific growth rate initially, but this improved after an acclimation period of 3 weeks. The distribution of the release groups in coastal fisheries was similar, but more of the translocated fish were taken in the region of release rather than in the region where they were produced. Similarly, none of the translocated fish appeared in the river where they were produced, indicating a high degree of imprinting success.

Despite large catches of over 200,000 ranched salmon in the early 1990s, commercial ranching in Iceland declined by 1996 and had completely closed down by 2001. The smolt releases have, however, been used to create extensive angling in Icelandic rivers. Any effects of the Icelandic ranching operations on wild populations are suggested to have been only short-term, and no longer-term effects have been noted. Several policy measures were proposed for the Icelandic situation regarding siting of the ranching stations, harvesting of returning salmon, tagging of smolts, and other measures aimed at reducing the environmental impact of ranching.

## **Sea lice**

Key aspects of the potential longevity of sea lice and hence their infective potential, were outlined. The influence of temperatures on infection rates showed that lice could remain infective for up to 30 days. This coupled with hydrographic investigations suggested that the potential rate of movement of water masses around the Norwegian coast could result in the parasite being transported over very long distances.

The infectious stage of the sea louse *Lepeophtheirus salmonis* could be successfully located close to river mouths in Lough Shildaig, Scotland by plankton sampling. Copepodids were present in high numbers over a sustained period and were particularly abundant in the early spring at times when salmon and sea trout smolts enter the sea. Plankton samples only contained sea lice copepodids when the local fish farms were in the second year of their production cycle. Early returning post smolt sea trout were more commonly found when the local fish farms were in the second year of their production cycle. The alternate year presence or absence information suggests that the source of sea lice found in the adjacent Loch Torridon in the plankton and on sea trout post smolts is not from wild fish, but is of fish farm origin.

Also in Lough Shildaig, a larval sea lice sampling programme indicated a possible relationship between gravid sea lice numbers on the fish farm and larval sea lice densities in the open water of the loch and in the sub-

littoral zone. To date, it has been difficult to demonstrate the scientific evidence for such a relationship.

It was shown that the reproductional disturbance known as the M74 syndrome, which may be attributed to deficiencies in astaxanthin, fatty acids, and thiamine, may cause over 90% mortality of the wild salmon fry in certain years in the Baltic.

## **Poster session**

Aspects of enhancing salmon populations using non-native stocks were presented. Two studies using microsatellite DNA analyses on historical scale samples from Spain and from the USA showed both positive and negative aspects of these enhancement programmes. Significant changes in both intra- and inter-population genetic diversity were detected.

## **Discussion**

### **Overall discussion**

During the main discussion a short presentation was made on the distribution of escapee farmed salmon in Norwegian coast fisheries based on tagging and release of adult farmed salmon. Tagged and released farmed fish did not appear in high numbers in local fisheries, but could be recaptured in distant fisheries to the north. The main vector for this was proposed to be the prevailing oceanic currents, which carried Norwegian escapees north into the Greenland sea and possibly resulted in escapees from Ireland and the UK appearing in Norwegian fisheries. However, it was also noted that the production of farmed fish in Norway was much higher than in any other European country, and therefore it was not surprising that the overall incidence of farmed fish in catches and rivers was also high in that country.

The question of the risk posed by escapee fish was raised in the context of the poor survival both in freshwater and in the marine. The main risk appeared to be in some populations and under some circumstances and could be due to displacement of wild fish and loss of production rather than a direct genetic intrusion. Also, there had been no information presented on freshwater escapes of hatchery fish and this could be an area of concern.

### **Discussion – Genetics session**

New data had been presented at the Theme Session relating to survival and fitness of wild, farmed, and hybrids, and this was an excellent starting point for further research. The techniques presented in each of the papers were clearly very powerful and could be applied to many aspects of salmon biology.

- Stocking with farmed salmon was strongly discouraged and even stocking with wild stocks from neighbouring rivers could be equally disadvantageous. It was recommended that only native stocks be used for enhancement where this was necessary.



- The question of genetic intrusion of farm escapees into wild populations was discussed. Based on studies in individual rivers in Ireland where the actual genetic contribution of the escapees to the wild population had been estimated, the percentage of the population examined showing genetic intrusion ranged from 23% to 70%. No specific reasons for differential or poorer survival in farm and hybrid groups of fish was suggested. In general, it seemed very likely that the results from the Burrishoole regarding the poor performance of farmed fish could reasonably be expected to occur in any other system. It was also noted that the spawning success of escapees was likely to be very low and reduce the threat to some degree.
- It was suggested that stocking programmes had taken pressure off managers to understand declines in stocks or tackle the root causes of declines, and it was generally agreed that stocking had become a means of “treating the symptom rather than the disease”.

#### **Discussion – Escapees session**

- A number of presentations had indicated that the incidence of escapees in local catches was low in many areas despite the proximity of large-scale production sites. This suggested a rapid dispersion away from the farms and probable low survival of escapees but did not rule out the possibility that escapees could enter some rivers and interact with wild stocks.
- As dispersion of escapees could be over long distances, it was clear that this was an international problem and should be dealt with as such. It was also clear that some way of identifying the origin of these escapees was required if we were to effectively limit the risks posed by escapees.
- Despite the possibility of taking late-running wild salmon in late summer, a fishery targeting escaped salmon could be considered as a management tool in Norway where escapees are numerous compared with wild salmon. Alternatively, it was suggested that trapping of adult salmon in the estuary or in-river to remove escapees would also reduce the impact of escapees on wild stocks.

#### **Discussion – Ranching session**

- The main conclusion was that ranching had proven to be a good way of improving rod catches but should only be carried out in instances where there was a full trap in place (such as the Burrishoole), or where it was carried out in areas remote from wild salmon rivers.
- The definition of ranching was raised and it was suggested that ranching implied harvest of all of the returning fish.
- It was pointed out that returns of wild Icelandic salmon had also been lower in recent years and that the problem for both wild and ranched stocks appeared to be occurring at sea.
- Concerns were also expressed about using non-native strains in enhancement programmes and the high level of restocking and returns in commercial fisheries, which could be masking declines in wild populations.

#### **Discussion – Sea lice session**

- The importance of temperature, region, and longevity of lice was clearly crucial in the estimation of infection rates. The inclusion of natural rates of mortality of sea lice in some of the analyses presented and particularly the modelling studies was highlighted as being of major importance.
- It was clear that declines in sea trout had occurred in the major farmed salmon producing countries. Two of the presentations had brought us closer to establishing a link between lice production on farms and lice on wild sea trout.
- Protocols on treating lice were in place in Ireland and Norway, which had a trigger level of 0.5 ovigerous lice per fish, and this was seen as a crucial step in preventing excessive lice burdens on salmon farms. It would also appear that the chemical treatments were very effective, but if sea lice developed resistance to these chemicals it could cause significant problems in future. The ongoing research and development of chemical treatments and particularly vaccines should be supported within member states.



## Theme Session U

### New Developments and Applications of Genetics in Fisheries and Mariculture

Co-Conveners: Sheila Stiles (USA), Einar Eg Nielsen (Denmark), and Michael M. Hansen (Denmark)

#### Background

The aim of this Theme Session was to highlight the many new developments in genetics, both in terms of molecular genetics and statistical methods, which have provided numerous new research opportunities and improved possibilities for practical applications in aquaculture and fisheries management and conservation of populations. Contributions were invited ranging from developments in selective breeding and genetic modifications in aquaculture to studies of the genetic structure of wild populations and use of molecular markers for species and population identification.

#### Presentations

The session attracted 11 oral presentations and 5 posters. The presentations fell within three broadly defined areas:

- applications of genetics in aquaculture (2 oral presentations);
- marine fish and shellfish molecular genetics (6 oral presentations);
- genetic structure of salmonid fish populations (3 oral presentations).

#### Applications of genetics in aquaculture

One presentation on transgenesis in fish focused on assessing and applying exogenous genetic traits that may confer resistance to infectious pathogens in fish such as rainbow trout. The results were remarkable in that very high degrees of disease resistance were observed in transgenic fish.

A study on bivalve molluscs highlighted current genetics issues such as selective breeding and population genetics and reviewed trends in chromosome manipulations relevant to advances in genome mapping and linkage.

#### Marine fish and shellfish molecular genetics

Species-specific genetic markers have been developed in order to distinguish between species with eggs similar to hake, cod, mackerel, and horse mackerel, and for distinguishing between three species of the genus *Trachurus*. Such tools will enable managers to improve stock biomass assessment and to control fraud.

Genetic methods have been applied to determine the wild origin of hatchery populations of gilthead seabream, where the history of the broodstock was unknown. A large part of the hatchery populations in the

Mediterranean actually consisted of fish of Atlantic origin.

The population structure of marine fish and shellfish was described in order to establish management units and precautions better reflecting the biology of the species. It was demonstrated that the European flat oyster has a high degree of genetic differentiation among populations, in particular using the maternally inherited mtDNA as a genetic marker. This highlighted that sex differences in dispersal could be important for the species. Further, comparisons between adult and larval groups of individuals revealed that few adults successfully contributed to the next generation, thereby lowering the effective population size.

In a large-scale geographical study of the genetic structure of European lobster, a small but statistically significant differentiation was observed among most populations, except for a few genetically very distinct population groupings. The study was based on microsatellite analysis.

Individual admixture analysis of the cod populations in the Belt Sea/Baltic Sea area, where two distinct groups of cod meet (North Sea and Baltic), revealed a hybrid zone between the two groups. This is in contrast to previous beliefs that interaction among groups only consisted of “mechanical” mixing. In another study, the horizontal and seasonal variation in scnDNA allele frequencies and maturity in a Norwegian fiord, where two groups of cod were present, showed that mature spawning coastal cod were found in the inner parts, whereas immature Northeastern Arctic cod were found in the outer parts of the fiord. No interactions in terms of hybridisation between the two groups were apparent.

A study of the population structure of two species of anglerfish found very low levels of genetic differentiation, suggesting limited genetic differentiation for these species.

#### Genetic structure of salmonid fish populations

The genetic structure in Pacific salmon species, deduced from selectively neutral microsatellite markers, was compared with results obtained by analysis of Major Histocompatibility Complex genes, which are (among other things) directly involved in immunity responses and may be subject to strong selection. The combination of the two classes of markers allowed for defining units for conservation (Evolutionary Significant Units) and for conducting highly efficient Genetic Stock Identification (GSI). The study was based on an impressively large data set from different Pacific salmonid species and provided



an excellent illustration of the usefulness of genetic markers for efficient management of populations.

A study of the spatiotemporal genetic structure of anadromous brown trout populations was described. This was based on analysis of microsatellite DNA markers from contemporary and historical samples, the latter consisting of archived scales from the 1910s and 1950s. The genetic composition of populations was very stable over time, and estimates of effective population sizes (a measure of the number of individuals that actually pass on their genes to the next generation) were high, well in excess of 500. The presence of local adaptation was congruent with these results, but the study pointed to the need to focus not only on adaptations in individual populations, but also on larger geographical scales.

A study of genetic differentiation in Atlantic salmon in the Barents and White Sea areas showed distinct differentiation among the populations analysed. The study was based on RAPD (Random Amplified Polymorphic DNA) analysis.

In an examination of whether brown trout juveniles actively aggregate with kin under natural conditions,

possibly resulting in kin-selection, results were not unequivocal. In one river kin-biased distribution of individuals was evident, whereas this was not the case in another river, and the possibilities for kin-selection probably depend strongly on local conditions, such as population densities.

## **Discussion and conclusion**

The Theme Session covered quite diverse topics within genetics. Whereas several good questions were asked, the questions and discussions were in all cases targeted specifically at the talks, i.e. for clarifying specific points or for discussing techniques and statistics.

The talks provided good examples of cutting-edge science within the field. Overall, the Session demonstrated the vastly improved possibilities for using genetics methods for development of high-quality aquaculture strains of fish and shellfish. It also demonstrated the feasibility and vast potential for integrating population genetics in fishery management, such as to provide stock discrimination that corresponds to biologically meaningful population units.



## Theme Session V

### Unaccounted Mortality in Fisheries

Co-Conveners: Mike Breen (UK), Alain Fréchet (Canada), and Aud Vold Soldal (Norway)

#### Background

For the effective management of any fishery, the overall mortality associated with that exploited population of fish should be fully understood. This is essential if the state of the exploited stock is to be properly monitored, so that accurate and meaningful decisions about the future of that fishery can be made. Deaths occurring in the population ( $Z$ ) of an exploited species will consist of two components: natural ( $M$ ) and fishing mortality ( $F$ ) (or  $Z=F+M$ ).

The ICES Study Group on Unaccounted Mortality in Fisheries (1995) defined fishing mortality ( $F$ ) as “The sum of all fishing-induced mortalities occurring directly as a result of catch or indirectly as a result of contact with or avoidance of the fishing gear”. They further recognised definable sub-components of  $F$ , where mortality may result from: illegal, misreported, and unreported landings; discarding; ghost fishing; habitat degradation; and escaping, avoiding, or dropping out of fishing gear. Thus it is clear that considering landed catch as the only source of fishing-induced mortality has the potential to significantly underestimate  $F$ , resulting in inaccurate estimates of stock size and biological reference points for that fishery.

The aim of this Session was to review the current status of understanding the unaccounted mortality in fisheries and to discuss its implications to stock assessments and fisheries management in general. There were a total of 26 oral presentations and 3 posters from 14 countries presented, which were organised into four sub-sessions:

- Discard mortality
- Escape mortality
- Considering natural mortality
- Ghost fishing, black landings, and other mysterious sources of unaccounted mortality.

#### Discard mortality

Discarding as a source of unaccounted fishing mortality has been identified as a problem in fisheries management for some time. Indeed, examples from the nine presentations in this sub-session show that the discarded catch (in numbers) for some fisheries can equal, or even exceed the landed catch. For example, discarding rates in the Southern four-spot megrim (*Lepidorhombus boschii*) fishery have been shown to be as high as 73.5%. The factors leading to and influencing discarding practices were discussed and modelled by three papers. The key causes of discarding were identified as: limits on landable catch due to quota restrictions and the setting of

minimum landing sizes, as well as low commercial value for the catch due to a lack of market for the species or the poor quality of the target catch. Furthermore, the magnitude of discarding from these sources is influenced by a combination of biological, economic, and sociological factors, including choice of fishing gears, compliance with regulations, and fishing season. Management decisions such as minimum landing size, ITQs, and quality gradings may increase discards. The lack of information on the amount of discards may bias the stock assessment. This would mean that the assumed benefits of such management decisions would actually be more harmful to the stock than beneficial.

Investigations of the survival of discarded fish and crustacea demonstrated that mortalities can be high (e.g., 32-66% in haddock (*Melanogrammus aeglefinus*) discarded during longlining). It was shown that several factors may influence this mortality, especially the handling of the fish before being returned to the water. Also, physiological experiments concluded that the survival of *Nephrops norvegicus* would be greatly compromised during periods in the Kattegat/Skagerrak fishery when the surface waters have a reduced salinity.

Inclusion of estimates of discarding in stock assessments does happen for a small number of fisheries (e.g. haddock and whiting in the North Sea). This requires direct monitoring/observer programmes to provide the necessary discard data, which can prove costly. The merits of these programmes were discussed and the importance of fisher self-sampling highlighted, as a means of both reducing management costs and promoting awareness of the unaccounted mortality problem in the fishery.

#### Escape mortality

One of the main strategies for reducing the magnitude of discards in a fishery, particularly using towed fishing gears, has been the introduction of more selective gears. This allows the unwanted fish to escape at source, the assumption being that fish encountering fishing gear and escaping will survive. This sub-session primarily considered the field studies to estimate escape mortality of trawled fish and the consequences of escape mortality for stock development and stock assessment. The impact of hydraulic dredging on quahog (shellfish) populations was also presented. It was recognised that efforts should be made to expand the knowledge in this field to include other gear types.

Estimates of escape mortality for a number of fish species (red mullet, walleye pollock, Baltic and N.E. Atlantic cod, haddock, and saithe) were provided. The



survival figures for red mullet, cod, and saithe were found to be high (90-95%, 100%, and 100%, respectively), although it was observed that high seawater temperatures had a negative effect on cod survival in the Baltic. The estimates of the mortalities both of walleye pollock and haddock were found to vary considerably, ranging from 40 to 80% for pollock on the west coast of USA, and from 2 to 50% for haddock in the Barents Sea. The survival of haddock seemed to be higher for fish escaping through sorting grids than for those escaping through codend meshes.

It was noted that escape mortality was shown to be length-dependent in a number of studies, in that the smallest fish had the highest mortality rate and showed the largest external injuries. However, one paper describing measurements of water flow around a covered codend and inside the survival cover combined with measurements of swimming capabilities of small haddock, demonstrated that the smallest fish would not be able to withstand the water flow in the cover for a prolonged time. When exhaustion occurs, the fish will fall back and rest against the back wall of the cage, with the risk of external damage and increased mortality rate. It was agreed that there is still an urgent need for improving the methodology for survival studies, and that it is still difficult to identify what proportion of the observed mortality is due to escape from the fishing gear and what is caused by the experimental procedure.

Concerns have been raised that earlier survival experiments do not reflect true commercial fishing

conditions. However, the papers presented at this session showed that in the latest investigations, care is taken to conduct the experiments as close as possible to commercial conditions, i.e. onboard commercial vessels during active fishing and with normal towing time and towing speeds.

A method for including discard and escape mortality estimates in stock assessment models was described. This is based upon the Mesnil-Cook model (Figure V1) which provides a method of adjusting “total catch” based on estimates of escape and discard mortality, thus enabling the inclusion of these unaccounted mortalities in the stock assessment process. It demonstrated that exclusion of discard and escape mortality from stock assessments can significantly underestimate  $F$  for the youngest fish, which can substantially bias estimates of stock size and biological reference points. The consequences of this to fisheries management were discussed. This approach was appreciated among stock assessment scientists attending the session.

### Natural mortality

If a truly accurate estimate of  $Z$  is available, it may be argued that the unaccounted components of fishing mortality can be assumed to be intrinsically incorporated in estimates of natural mortality for the exploited stock. However, this assumes that the estimates of natural mortality are accurate in the first place. Two of the four papers presented in this session addressed the possible mis-specification of natural mortality. In both examples,

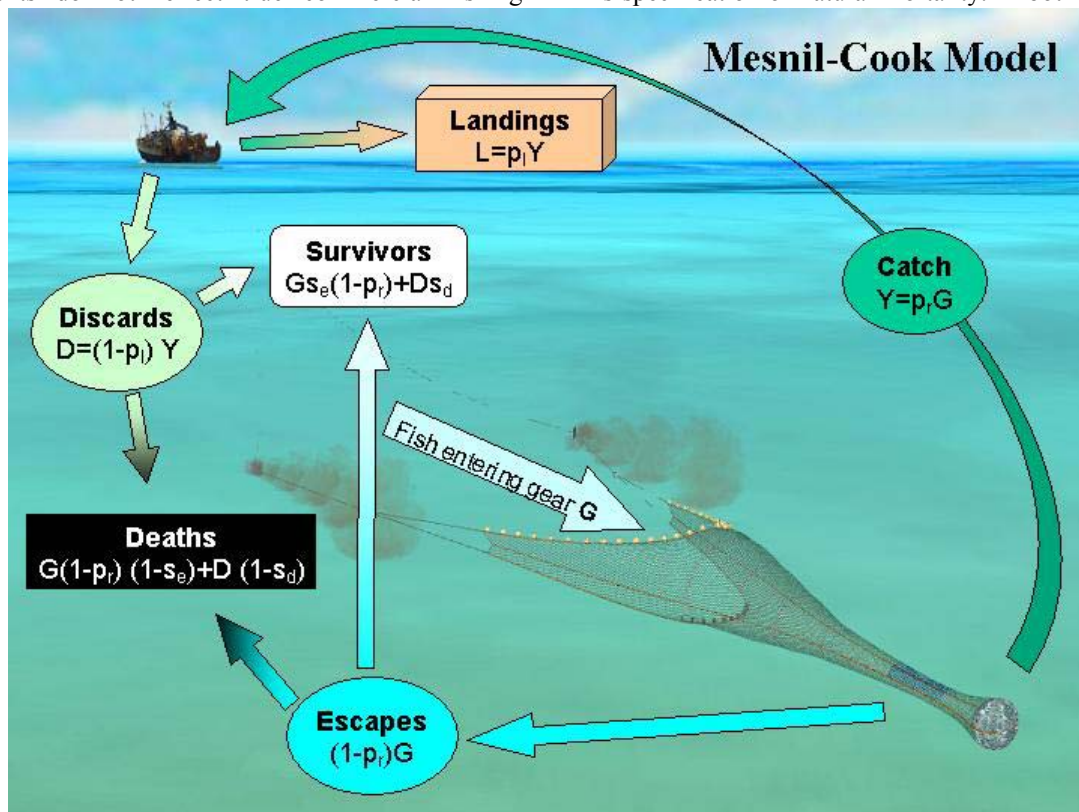


Figure V1. The Mesnil-Cook model for inclusion of discard and escape mortality estimates in stock assessments. From: "Inclusion of Escape and Discard Mortality Estimates in Stock Assessment Models and its Likely Impact on Fisheries Management – a Sensitivity Analysis" by Mike Breen and Robin Cook. Doc V:27.



discrepancies between the biomass from an index of abundance and from the VPA estimates were reduced when the assumed natural mortality was corrected from the nominal value of 0.2. These techniques could be used in stock assessments to improve estimates of natural mortality, allowing for variation with respect to both year and age. Improved estimates of  $M$  will lead to more accurate estimates of population size and biological reference points, removing biases due to unaccounted fishing mortality. However, this mis-partitioning of the unaccounted fishing mortality will undermine the decision-making process in the management of the fishery, particularly when consideration of changes in fishing activities is required.

Ghost fishing, black landings, and other mysterious sources of unaccounted mortality

Two of the six papers submitted to this session dealt with the problem of ghost fishing (Fg) of lost and torn gillnets. In both cases, the main cause of gear loss was accidental interception by otter trawls. The level of gear loss was not particularly high, especially since the advent of GPS navigation, enabling easier recovery of lost nets. However, given that these gears have been seen to fish for as long as ten years, the impact of such losses on the target species and others may be great. These conflicts are generally addressed by separating the fishing grounds. The inshore grounds are being dedicated to gillnet activity, while the offshore grounds are left to the mobile fleet. The area between is designated as a no-fishing zone. However, considerable conflict remains where offshore gillnet fisheries exist.

One interesting contribution looked at previously unconsidered sources of unaccounted fishing mortality in a herring fishery. For example, the presence of sub-populations with different biological characteristics and productivity may be inappropriately managed in a situation where only a single population is considered. This is equivalent to a mis-specified stock management unit. Another potential source of unaccounted mortality may arise through erroneous estimation of total removals. This can occur in the case of an extrapolation of total catch by using herring fillets and multiplying by two. This simplistic method may be biased by seasonal

variations in fillet to fish weight. Finally, poor monitoring of the landings for scientific assessment of the resource may lead to over/underestimation of the stock. Inadequate spatio-temporal sampling of a fishery will give biased indices of the fishery and affect the estimation of the stock size.

## Conclusion

The Session attracted contributions on this rapidly evolving area of research, from gear technologists, social scientists, stock assessment biologists, students, mathematicians, and managers. This reflects the multidisciplinary nature of this topic which, coupled with the number of sub-components of unaccounted mortality in fisheries, number of stocks and gears, makes the unaccounted mortality problem a task of daunting proportions. Collecting such information for all gear types in a fishery could eventually lead to more informed management decisions concerning the overall impact that these gears may have on the resource. This Session examined only a few sub-components of unaccounted mortality in fisheries and these proved to be significant in many instances. Although it would be ideal to estimate all sub-components for all gears in a given fishery on a regular basis, this may not be practical or cost effective.

The impact of these various unaccounted mortalities on the stock assessment process was addressed and has been shown to have a significant effect. These affect both the estimation of stock size as well as the estimation of fishing mortality. A better understanding of the role and influence of unaccounted mortality on stock estimation is the key to the calculation of adequate reference and limit points in the context of the precautionary approach. In the current situation, where there is a virtual absence of information on the importance of unaccounted mortality, there is added justification to err on the side of conservation in many management decisions.

It is clear that a fundamental change in the perception of what defines fishing mortality is now required. Much more work in this field will be warranted in the future in order to appropriately assess the full scope of the problem. ICES has a role in coordinating such activities.



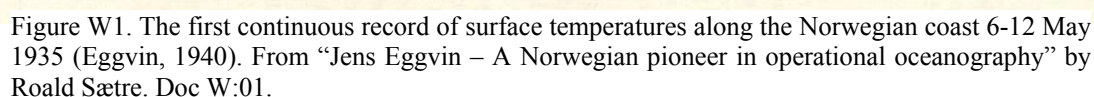
## **Fishery and Environmental Management – Is There a Role for Operational Oceanography?**

## Background

A major challenge in the coming years is to incorporate environmental parameters and their assessment into management protocols applied to commercial fisheries and the marine environment. The move towards an "ecosystem approach" in both fishery and environmental management will require the routine delivery of well-tailored specific products derived from comprehensive and rigorous environmental assessment and monitoring. Such monitoring in the 21st century may involve synoptic observations of physical, chemical, and biological variables with data streams that are operationally linked with process models to provide timely and skilful predictions of such important statistics as sustainable fish yields. Questions which arise include:

- Which key processes or properties should be monitored in regional operational oceanographic observing systems that are relevant to fisheries and environmental management?

- Oceanographers and managers from all relevant disciplines were invited to contribute to this debate, in order to help build a consensus view of how to proceed towards providing the new tools for ecosystem-based management in the coming decade.





## Presentations

The Theme Session was comprised of twelve oral and three poster presentations organised under three broad headings: (1) general or concept presentations, (2) presentations focussed on international experiences, and (3) presentations describing applications specific to the North Sea.

### General Introduction

ICES was founded 100 years ago to, *inter alia*, implement an operational system to monitor fish stocks and the marine environment in the NE Atlantic. It was soon realized that operational fisheries assessments should also be accompanied by operational oceanographic information, and the Norwegian Jens Eggvin was a pioneer in this field. He initiated long time-series from regular monitoring along the Norwegian coast (Figure W1), as well as organising a pilot project in the North Sea during which research vessels rapidly sent in their results by telegraphy during coordinated surveys, and attempted predictions of the impact of physical conditions on cod. Telegraphy and forecasts were attempted for some discrete cod stocks.

From these early starts, the requirement for an ecosystem approach to fisheries management has been generally recognized, and there are many international initiatives established to promote this approach and the use of operational systems throughout the world's oceans and coastal seas. The Large Marine Ecosystem is one such initiative, and is designed around discrete ecosystems rather than around other managerial or political zones.

Within ICES, the incorporation of environmental parameters into stock assessment processes is being considered by several groups of experts. The ICES Study Group on Process Information into Stock-Recruitment Models (SGPRISM), has held three meetings since 1999, and has made significant progress in this area. Its work will be continued by the Working Group on Recruitment Processes and the Working Group on Fishery Systems.

More fundamental issues about the impact of climate variability on fisheries has also been addressed in many groups internationally. One study in Canada, using new monitoring techniques such as remote sensing, is progressing our understanding of the basic biology linking climate and fish stocks (see e.g., Figure W2).

### International experiences

A number of examples were provided from both sides of the Atlantic of operational oceanographic monitoring programmes (e.g. AZMP in Canada, the Ferry Box Project in European coastal waters, the White Sea project) or planned programmes (e.g. MONCOZE in Norwegian coastal waters). However, only a few examples were discussed where environmental information is presently being considered in the context of fisheries variability (e.g. NORSEPP) and even fewer

examples where environmental information is now used, albeit in a limited way, in stock assessment (e.g. Regional Assessment Process, RAP, in Atlantic Canada). One poster presentation provided an example of how environmental data are being used in fish catch forecasting in the Barents and Norwegian Seas.

The integration of environmental/ecosystem information into resources management protocols appears to be at about the same level of development in the programmes described in the Theme Session. One significant impediment to progress in ecosystem-based fisheries management is the lack of an understanding on the part of oceanographers (and resources managers for that matter) of what “custom” data products are required to improve fish stock assessments. To address this problem, efforts are currently underway in the science community to engage stakeholders and resources managers in discussions aimed at producing environmental data products with potential use in management protocols and more workable management systems (e.g. the European Fisheries Ecosystem Plan, EFEP).

### Application to North Sea

Operational ocean observing systems in the North Sea, both underway and planned, were highlighted (as mentioned above). The most ambitious undertaking will be the ICES-EuroGOOS North Sea Ecosystem Pilot Project (NORSEPP). The overall objective of NORSEPP is to demonstrate the efficacy of the concept of

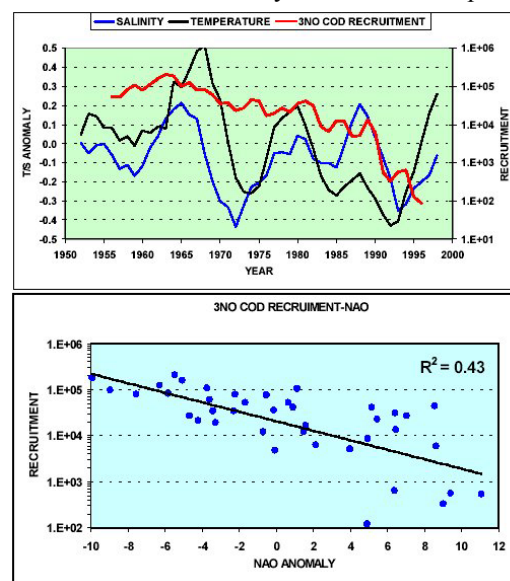


Figure W2. Recruitment in Grand Bank (Div. 3NO) cod from Sequential Population Analysis (defined as abundance estimated at age three years) and the time-series of Station 27 temperature and salinity (top panel) and recruitment versus the NAO anomaly (bottom panel). From “The current status of operational oceanography and its integration in fishery resource stock assessments in the Newfoundland Region of Atlantic Canada” by Colbourne et al. Doc. W:10.



operational fisheries oceanography by integrating existing ocean monitoring programmes and models to improve advice to fisheries managers. The products and services generated by this project will be designed specifically to underpin ICES advisory functions; initially fisheries will be targeted, but broader environmental management issues will be addressed ultimately. If successfully implemented, it is anticipated that NORSEPP will serve as a model for addressing global-scale issues of ecosystem/ environment variability and resources management.

## Summary and conclusions

It is clear from the presentations (and accompanying discussion) that the answer to the question posed in the title of this Theme Session, “Is there a role for operational oceanography in fishery and environmental management?” is “YES”. Equally clear is the fact that progress in integrating oceanographic information into resources management decision-making is a priority for ICES member nations but is in its very earliest stages of development. ICES, as articulated in its new Strategic Plan, is in a position to take a leading role in this important endeavour.

There were a number of issues arising from the general discussions:

- There is a need for more data in fisheries and better understanding of the conceptual basis of fish linkage to environment.
- There is a need for data on fluxes as well as state variables.
- There is a danger that the more variables/parameters (i.e. environmental) we add to fisheries models, the more uncertainty we are likely to generate. Thus, we need to determine what are the major sources of uncertainty in present models and consider how they can be reduced.
- The understanding of recruitment variability has advanced little. To progress, we need to make observations (environment and fisheries) on the same spatial/temporal scales.
- NORSEPP needs a “marketing plan” to engage partners/stakeholders for product development and this plan should be in place up-front in the programme development.
- Consideration should be given to developing NORSEPP from the product end rather than from the data end. Product boxes, shown as “blank” in the NORSEPP presentation, need to be filled very quickly to facilitate partner/stakeholder buy-in.
- An assessment of the state of the North Sea ecosystem is the primary goal of NORSEPP, but large natural variability complicates the picture; a better description of the “baseline” conditions is required.
- Data-use policies are still a potential problem area (particularly on the fisheries side) and need to be reviewed/resolved. Otherwise, operational mode cannot be achieved. A data-use policy statement is required at the outset of programme development.
- An examination of the major policy drivers is warranted since they may tend to diffuse/impepe progress in NORSEPP development.

The nomination of a similar Theme Session within the next 3-5 years should be encouraged. This would provide the opportunity for integrated environmental monitoring/fisheries projects that have been operational for a number of years to report on their status: successes, failures, and recommendations for future developments in operational fisheries oceanography. The title of this session could be something like, “Integrating Operational Oceanography into Fishery and Environmental Management – Is it Working?”



## Theme Session X

### Biological Effects of Contaminants in Marine Pelagic Ecosystems

Co-Convenors: Ketil Hylland (Norway), Thomas Lang (Germany), and John Thain (UK)

#### Background

The Session was the second follow-up meeting on the results of an ICES practical workshop with the acronym BECPELAG. The first follow-up meeting was held at EEA in Copenhagen in August 2002. There were more than 50 attendees at the Session, which consisted of 13 presentations.

The objective of BECPELAG was to bring together scientists involved in relevant work in a practical workshop in order to assess the ability of selected methods to detect biological effects of contaminants in pelagic ecosystems under uniform and standardised conditions. The methods are now being assessed for their applicability in monitoring programmes. A full overview of the methods and strategy can be found at <http://www.niva.no/pelagic/web>.

#### Presentations

The current Session reported on the progress of the workshop and the results of chemical and biological analyses. The results support an integrated chemical and biological approach. There were presentations on chemistry, biological effects in field-collected organisms and caged organisms as well as from bioassays on water and SPMD extracts. The chemistry results showed that there were clear PAH gradients in both areas studied (an oil rig transect and the German Bight – see Figure X1). There were also gradients in some other determinands, e.g. organotins and organochlorines. Field-collected organisms ranged from bacteria to adult fish. Exposure-related responses were seen for zooplankton and fish in both areas for some of the methods, but not for all methods or organisms. No differences were seen between sites for PAH-metabolites in bile of field-collected fish (saithe, herring, mackerel), but there were clear gradients in caged cod. As mentioned, blue mussels and cod were caged at four locations in each area and subsequently analysed for exposure-related responses. Clear responses were seen for various endpoints in both blue mussel and caged cod. Results from bioassays on extracts (water, SPMDs) were presented; some of the methods indicated the presence of estrogenic and carcinogenic substances in both produced water and water extracts from close to the oil rig. There were no clear effects of contaminant enrichment in the sea surface microlayer or combined effects from contaminants and UV.

The selection of methods obviously depends on the objective, whether it is local/regional monitoring, general effects, or identification of specific substances and, finally, whether ecosystem relevance is important. Monitoring and research programmes should include chemistry, biology and modelling components (they are not mutually exclusive). Furthermore, *in situ* extraction combined with bioassays, caging and field sampling are complementary approaches. *In situ* extracts are useful to identify mechanisms of toxicity, caging provides a direct link to local exposure, whereas field sampling is ecologically relevant.

#### Conclusion

The overall outcome of the workshop will define a platform for future monitoring and management of pelagic ecosystems and research to understand the impact of oil production in the North Sea on such systems.

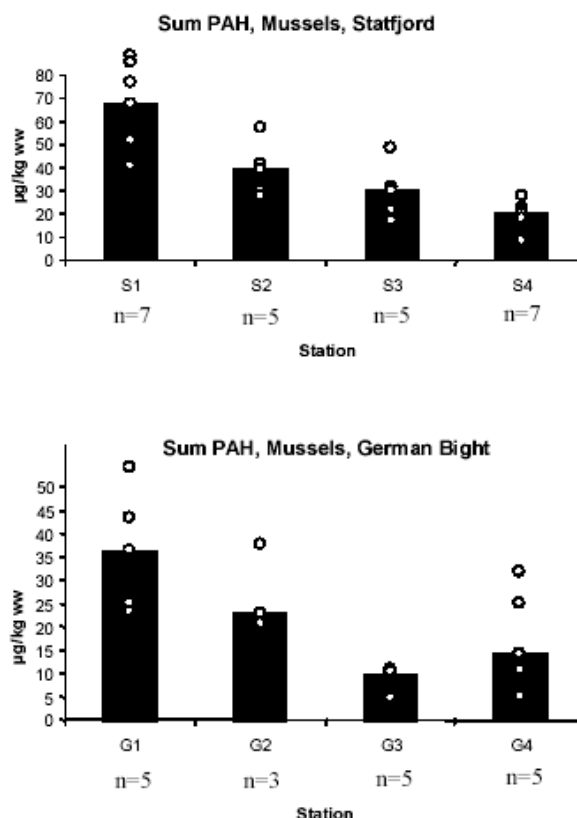


Figure X1. Median concentrations of Sum PAH (24 components) in caged mussels from the Statfjord area and the German Bight. Individual observations are superimposed. From: "Bioaccumulation of contaminants in pelagic organisms, caged blue mussels and cod" by A. Ruus and J. Klungsøyr. Doc. X:04.



## Theme Session Y

### The Effects of Fishing on the Genetic Composition of Living Marine Resources

Co-Conveners: Olav Rune Godø (Norway), Adriaan Rijnsdorp (the Netherlands), Ulf Dieckmann (Germany), and Mikko Heino (Finland)

#### Background

Fishing mortality generally well exceeds natural levels of mortality. For that reason, evolutionary change in life-history traits – such as the onset of sexual maturity, growth rate, or reproductive effort – may occur as adaptations to the mortality regimes induced by fishing. Even though the idea that fisheries-induced adaptive change may occur has already been recognised for several decades, it has largely been ignored in fisheries management. Recently the topic and its implication for the management of marine living resources have received a renewed interest. Objectives for this Theme Session, which is based on an ongoing international project led by the International Institute for Applied System Analysis (IIASA), were to bring together the scientists actively involved in relevant studies and the fisheries scientist involved in providing management advice, to review the recent developments in the field, and to evaluate the implications of these findings for fisheries management.

#### Summary of presentations

A total of 16 papers and 2 posters were presented at the meeting. The papers dealt with the theory of evolutionary adaptive change, empirical studies of fisheries selection, case studies on evolutionary changes in life-history traits, and with management implications.

#### Evolutionary adaptive change

It was noted that most work in the literature has focused on changes in production-related traits such as maturation and growth. It was argued that there now is compelling evidence that adaptive evolutionary change has occurred in exploited populations and that a reversal of this change may take a long time after fishing mortality rates are reduced. On this basis a Darwinian perspective in fisheries management was called for. Practical suggestions included reduced mortality on large individuals and the establishment of marine reserves.

In a review of case studies on long-term trends in the growth and maturation of exploited fish stocks, the shortcomings as well as strengths of correlation analyses in the study of environmental and genetic factors governing population changes in phenotypic traits were noted.

#### Empirical studies of fisheries selection

Results from a mesocosm experiment on Atlantic silversides, an annual pelagic species, demonstrated that

fisheries-induced change in the rate of somatic growth in response to different harvesting schedules has occurred over only four generations.

A major challenge in the search for evidence of fisheries-induced adaptive change is to disentangle evolutionary change from changes that are result from phenotypic plasticity. The method of the ‘probabilistic reaction norm’ has been applied to tackle this problem for fisheries-induced adaptive change in maturation. This method describes the transition from the immature to the mature state through curves in the size-age plane along which the probability of becoming mature is constant. The maturation reaction norm itself is insensitive to environmentally induced differences in growth rates. Hence, a shift in the reaction norm suggests genetic change. The method was applied to a long-term data set on Northeast Arctic cod: results supported the conclusion that a part of the observed decrease in size and age at maturation was due to evolutionary change.

The probabilistic reaction norm approach was also applied to long-term data sets on two cod stocks in the western Atlantic North Sea plaice, and Norwegian spring spawning herring. In cod and plaice, the decline of length and age at maturation turned to be partially caused by a shift of the maturation reaction norm, suggesting genetic change. These changes are compatible with those expected from the observed fishing mortality patterns. No change in the reaction norm was observed in herring: in this stock, changes in size and age at maturation appeared to be solely related to phenotypic plasticity due to changes in growth. Differences were shown in size and age at maturity among isolated populations of grayling that had originated from a single ancestral population. A comparison between different lakes showed that size and age at maturity were negatively correlated with the level of fishing mortality. Also temporal changes in size at maturity could be related to changes in mesh sizes, thus suggesting adaptive changes in response to fishing. Relaxation of fishing pressure led to a reversal of the change in size at maturation.

#### Case studies on evolutionary changes in life-history traits

An analysis of the effect of a declining proportion of late-maturing Northeast Arctic cod on stock-recruitment dynamics were presented in a three-dimensional stock-recruitment plot in which spawning stock biomass was characterized by two dimensions, representing the early- and late-maturing components of the population.



An analysis of the relation between fishing and changes in the number of vertebrae in walleye Pollock showed that the number of vertebrae was related to swimming performance. It was demonstrated that mobile gears selected 'small-tailed' pollock, whereas fixed gear predominantly caught 'long-tailed' fish. Comparison of the current proportion of small- and long-tailed pollock with historical proportions in samples taken between 1968-1970 suggested that the observed decline in the proportion of short-tailed fish could be the evolutionary outcome of selection pressures imposed by the trawl fishery.

A study of the fisheries-induced adaptive change in an age-structured population in which a prey species is exposed to both fishing and predation showed that the potential evolutionary response to fishing could be ambiguous: fishing may cause either earlier or later maturation, depending on the type of species interaction and on the relative strength of such interaction compared with fishing pressure.

The population dynamical consequences of fisheries-induced adaptive change in maturation in an age-structured population exploited under different management regimes (fixed quota (FQ), constant harvest rate (CHR), constant stock size (CSS)) have been explored (see Figure Y1). This has shown that while the fisheries-induced response often did not differ much between the three management regimes, the fixed-quota regime had the potential for collapsing the entire stock through continual fisheries-induced change in maturation. Population dynamical models that do not account for evolutionary change in maturation cannot predict such a collapse.

A model for the evolution of probabilistic maturation reaction norms that allowed for the integrated assessment of changes in the ecology and genetics of exploited stocks was applied to Northeast Arctic cod. It was found that the changes in age and size at maturation observed for this stock could occur within just 40 years when a heritability of 0.2 was assumed. By contrast, about 250 years would be needed for natural selection to take the life history of Northeast Arctic cod back to the state it had around 1950.

The evolution of growth and maturity in North Sea cod using a model including a reaction norm for maturation and assuming that growth declines after maturation showed that simulation results compared to observed changes in size at maturation in North Sea cod as documented by survey data.

### Management implications

In addressing the management implications of fisheries-induced adaptive change a number of considerations concerning genetic diversity should be taken into account. There are various possible management objectives for conserving genetic diversity (maintaining the number of populations, maintaining the relative size of populations, maintaining the abundance of individual

populations, minimising fisheries-induced selection), giving rise to the possibility of establishing reference points related to these objectives.

The risk of stock collapse is the basis for the reference points used within ICES under the precautionary approach to fisheries management. In considering the relationship between the risk of adaptive evolutionary change and the risk of stock collapse a critical question is therefore whether the current management objectives are already sufficient to prevent an unacceptable risk of adaptive evolutionary change. Unfortunately, current knowledge is not yet sufficient to address that question conclusively. It was argued that even if management objectives would prove sufficient for commercially exploited species, this might not necessarily be the case for non-target by-catch species.

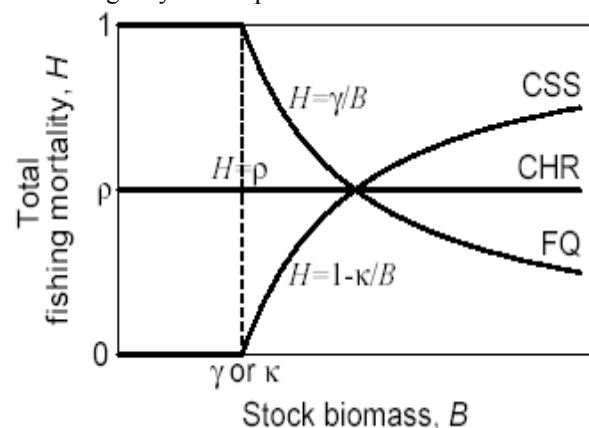


Figure Y1. Variation of total fishing mortality with stock biomass for the three alternative management rules. From "Fisheries-Induced Changes in Age and Size at Maturation and Understanding the Potential for Selection-Induced Stock Collapse" by Bruno Ernande, Ulf Dieckmann, and Mikko Heino. Doc. Y:06

### Summary of discussion

The reliability of heritability estimates for production-related traits was questioned, and it was concluded that there is an urgent need to estimate such heritabilities in natural environments in order to evaluate whether current estimates based on aquaculture experiments can be carried over to natural systems. The discussion showed that there is a need for further experiments on fisheries-induced adaptive change, using species with life-history patterns that are closer to those of the average commercial species, such as the gadoids and flatfishes. It was recognised that maturation is intricately linked to growth and reproductive investment. Hence, more theoretical and experimental work is needed to explore the effects of fisheries-induced change on the combination of maturation, growth, and reproductive investment. In principle quantitative genetic methods are available for this purpose.

With regard to management implications there was some disagreement about the practical feasibility of developing



reference points for maintaining genetic diversity and for minimizing undesired fisheries-induced selection. It was argued that claiming practical relevance for such reference points might not be wise, given the current lack of information on several key questions and the wide range of different life histories affected by fisheries. Developing such reference points might suggest a level of knowledge that is not yet achieved, which could jeopardise the credibility of the scientific advice. One option could be to restrict advice to more general recommendations, such as protection of large fish, use of marine reserves, or restrictions on the size range harvested. Another opportunity would be first to develop quantitative models for specific stocks and then to gradually generalise these into more widely applicable templates. Such templates could aim at specific types of

fishes such as annual species (like anchovy), highly fecund age-structured species (like herring, gadoids, or flatfish), and less fecund age-structured species (like elasmobranches). Using such a bottom-up approach, robust guidelines for fisheries management could be developed.

It was concluded that actions to counteract undesired fisheries-induced adaptive change are needed and that this objective required more attention both within science and within management. A possible avenue to pursue this goal would be to establish an ICES Study Group on Fisheries-induced Adaptive Change and its Implications for Fisheries Management. Moreover, given the currently ongoing research in the field, a follow-up Theme Session may be advisable.



## Closing of the Scientific Sessions

DGI-Byen, Copenhagen, Denmark  
5 October 2002

The **General Secretary** informed the Session of the elections and appointments of Chairs that were made during the ASC, including the appointment of the Chair for the Diadromous Fish Committee which had been established at this Conference:

Tom Sephton (Mariculture Committee)  
Niall O'Maoileidigh (Diadromous Fish Committee)  
Paul Degnbol (ACFM)

The outgoing Chairs (Tony Calabrese and Tore Jacobsen) were warmly thanked for their contributions so far to the work of ICES.

The **General Secretary** also informed the Session about the creation during this Conference of an ICES honorary members club. Following its inaugural meeting, it decided that it should be known as SPICES (Senior People of ICES). Former Vice President of ICES, Jørgen Møller Christensen (Denmark), is the first Chair of SPICES.

The **Chair of the Consultative Committee** then introduced the winners of the best paper, best newcomer, and best poster awards who, in addition to a certificate also received a voucher for free admission for next year's ASC.

### Best Paper:

The winner was the paper presented in Theme Session W by Trevor Platt, César Fuentes-Yaco (presenter), and Kenneth T. Frank on "Ecosystem variation and fisheries: Operational test of the match-mismatch hypothesis" Doc. W:12.

### Best Paper Presented by a Newcomer:

The winner was Sandrine Vaz of IFREMER in Nantes, France. She presented the paper Doc. O:07, co-authored by P. Petitgas on the "Study of the Bay of Biscay anchovy population dynamics using spatialised age-specific matrix models".

### Best Poster:

This award was won by M. E. Cagigas, G. Blanco, E. Vázquez, and J. A. Sánchez for Doc. U:04 – "The population structure of two species of anglerfish". The award panel's criteria for the selection of this poster was that it was "visually striking and a good story told simply".

Bouquets and other gifts were then presented by the General Secretary to three people who, he informed the session, had ensured the success of the Centenary events by their sustained hard work since the beginning of the year – Görel Kjeldsen (Meetings- & Conference Coordinator), Neil Fletcher (Communications Officer), and Vibeke Jensen (Personal Assistant to the Director of the Danish Institute for Fisheries Research).

The **President** then addressed the Session and commended all those who had contributed to the success of the Conference and the Centenary Day. He then passed the symbolic "torch", a vase, to the Delegate of Estonia who would be hosting the 2003 ASC in Tallinn.

The **President** then declared the 2002 ASC closed.







### **Part III**

#### **90th Statutory Meeting**







## **Reports of Committees**







## Consultative Committee (A)

Chair: Jake Rice

### 1 Opening

The Chair noted the efforts by the Secretariat in preparing the material to be used during the course of the three meetings of the Committee. He noted that most members of the Committee would be available for all the Sessions.

The incoming Chair of the Diadromous Fish Committee attended the Monday session.

### 2 Adoption of agenda and timetable

Apart from a request from the Chair of the Fisheries Technology Committee for two items under "Any other business", the agenda as drafted was adopted (Annex 1).

### 3 General arrangements for Annual Science Conference and Centenary Day (including arrangements for selection of awards, poster session, instructions to conveners)

The Committee re-convened the "Awards Nominations Group (ANG)" with John Ramster again as its Chair. The purpose of the ANG was to help in the identification of the winners for the best paper, the best poster and the best newcomer. This procedure has been quite successfully executed at the preceding two ASCs and it was considered appropriate to use the same formula this year. Each Science Committee Chair was asked to nominate one representative from his Committee to participate in the Group and to inform John Ramster evening. Four Committees subsequently made nominations to John Ramster. The winners were presented with their certificates at the Closing Session. Vouchers for free admission to next year's meeting and certificates were also presented to the winners.

The Committee noted that this was the first Statutory Meeting and Annual Science Conference which has not accommodated a "Documents Room". Consequently, this was the first real test of the concept of a "paperless" meeting. Chairs were made aware that paper copies of their agendas were not available, although early drafts of them were published in the Conference Handbook. Unfortunately these will be available only to registered participants of the Conference. Many of the Committees had re-drafted their agendas since the publication of the Handbook, and copies of these re-drafts were sent by e-mail to all Committee members and the Chairs of the respective Expert Groups prior to the meeting.

The CD-ROM of CM2002 documents contains most of the documentation for the Statutory Meeting and Annual Science Conference. This CD-ROM was distributed to all registered participants. It is much more complete than last year's CD-ROM, partly due to improved procedures

in the Secretariat, and partly due to the lateness of this year's conference and its more convenient location. It contained some 330 separate documents which include all but five of the Expert Group documents, and also included most of the documents in support of the Publications Committee and Delegates meetings. In addition, some 73% of the papers and posters submitted to the Annual Science Conference are also included, double the amount achieved last year. The decision to publish a follow-up CD-ROM following the Conference as was the case last year will be made by the Secretariat later.

Following last year's Conference an increasing trend towards presentations using PowerPoint and PC projectors was noted, but the way this was handled from session to session was rather arbitrary. As a result the Committee had requested that future guidelines to conveners should provide information on how to organise this. It also recommended that the Secretariat should provide at least one laptop for each session and encourage contributors to provide presentational material on diskette or CD-ROM.

The Secretariat accepted in full the need for improvements in the technical aspects of presentations and has attempted to meet the Committee's wishes in full. In addition, an innovation this year is the use of a more advanced technical support system for displaying presentation material in each of the four Conference Rooms. All presenters have been encouraged to submit their Powerpoint® presentations in advance to be pre-loaded into a database which will serve each of the meeting rooms. It was anticipated that this would result in slicker and more professional presentations, with reduced "downtime" due to presenters' fumbling with connections and loading their material. All speakers were asked to report to a Speaker's Table where they were able to confirm the receipt of their presentation material, or deliver it at least one session before the start of the session when they are scheduled to make a delivery. Conventional presentations are also possible, and this capability served as a backup should the technology fail. Some members of the Committee expressed concern that overhead projectors would not be available at all Committee Sessions and asked the Secretariat to ensure this would not be the case at future meetings.

The Committee was informed of the arrangements for the completion and submission of reports from the Committee and Theme Sessions, the deadline for which was, as usual, the Sunday following the end of the ASC. Conveners of all sessions had been provided with the "Guidelines on the Preparation of Reports of Scientific Sessions held during the ICES Annual Science Conference" which had been put into use for the first time two years ago in what seems to be a successful attempt to improve the quality of these reports.



The arrangements for two invited plenary lectures to be delivered by Alan Longhurst and Tom Maloney were noted. Both of these Sessions were chaired by Jake Rice and responses to the lectures were provided by the Chair of the Resource Management Committee, and Roger Harris, former Chair of the International GLOBEC programme. In addition, the First Vice-President responded to Gunnar Kullenberg's Open Lecture. At its second session, the Committee expressed satisfaction that these lectures generally met expectations and objectives. It was agreed that these abstracts and responses be published in the Annual Report, and if possible, the full text of the presentations will be included on the ICES website.

The Committee recalled its recommendation following last year's meeting that future Conferences should have improved e-mail/Internet facilities for use by all participants. This recommendation has been met by a sponsor providing an Internet café with four PCs. These are located in the Poster Room area, located at the far end of the main meeting hall (Idrætshallen). Users of this area will have to be aware of the need to keep relative silence whilst sessions in Idrætshallen are underway.

#### **4 General arrangements for Statutory Meeting (including draft resolutions, requests to Science Committees, and preparation of Committee reports)**

The Committee noted that its advice of last year concerning the conflicts created by scheduling Delegates and Bureau meetings in parallel with Annual Science Conference scientific sessions had been acted upon by Delegates. The Committee, however, remained of the opinion that the only way to create a top-rate Annual Science Conference is to have a Conference completely separate from any business elements, save perhaps the sessions of the Science Committees.

Meeting arrangements for the Science and Advisory Committees were similar to those of recent years. In particular all Science Committees were scheduled to have sessions on Monday 30 September and Thursday 3 October. The Chair drew specific attention to the Joint Session on Salmon Issues which he would chair. He explained that this session has arisen from recommendations by the Bureau who have proposed the formation of a Diadromous Fish Committee. Details of this recommendation are in Doc. Del:3. The Joint Session subsequently made slight modifications to the proposed Committee's Terms of Reference included in the Addendum to Doc. Del:3. The Committee noted that Delegates subsequently endorsed the formation of this Committee, and its revised Terms of Reference, at its session on Wednesday 2 October.

The Chair reminded the Committee of the procedures for handling draft resolutions. He explained that each Science Committee and relevant Expert Group Chair has been provided with a set of draft resolutions pertaining to the Committee. He also reminded the Committee that

they had been given access to all of the Committee's resolutions which had been made available from the Secretariat's FTP site in early September. These had produced some useful feedback, eliminating most of the most serious shortcomings. Updates and revisions should be provided to their relevant Secretariat contact as soon as they become available. These resolutions will be considered in detail at next Monday and Tuesday's sessions. He noted that the Committee had had a much more difficult job to do this year because of the absence of a mid-session meeting of the Committee.

The Committee was asked to consider the arrangements for intersessional activities as another fairly difficult year for the Committee was anticipated, given that financial pressures on ICES made it uncertain that an intersessional meeting would be sanctioned. This issue is returned to under Agenda Item 14.

The Committee noted the arrangements for submitting their reports described in the previous section.

During the third session, the Committee discussed a variety of concerns regarding the current status of Science Committees in the overall ICES structure and programming. Several points of consensus and recommendations emerged from these discussions:

#### Problems

- a) Attendance at the meetings of many Science Committees has been poor, and many discussions have been boring to most attendees.
- b) Attendance by both official Committee members and Chairs of Subsidiary Groups is unreliable, and this impeded effective action by Science Committees.
- c) The timing of Advisory Committee meetings relative to Science Committee meetings requires that material in WG and SG Reports has to be used as a basis for advice without effective peer review / quality control by the Science Committees.
- d) Peer review of Expert Group Reports by correspondence works in some cases, but in the majority of cases, even replies of Committee members to direct e-mail are infrequent and slow. The peer reviews of Expert Group Reports delivered orally at Science Committee sessions are likely to be considered quite boring by attendees.
- e) Scheduling all the Science Committee meetings at the same time during the ASC impedes the integration desired by members and promoted in the Strategic Plan.
- f) Having the full day of Committee meetings on the day before the announced beginning of the ASC may also contribute to poor attendance.



## Proposals for improvement

- a) Abandon the myth that Science Committees can undertake formal quality control of the full report of their Expert Groups. Where Advisory Committees have to use contents of Expert Group Reports as the basis for advice, it is the Advisory Committee, not the Science parent Committee, who are responsible for ensuring reliability of the material which is used.
- b) When an Expert Group Report contains highly technical material that an Advisory Committee needs but lacks expertise for conducting an internal quality check, the Advisory Committee Chair will contact the Chair of the appropriate Science Committee. They will agree on a strategy for quality control that meets the circumstances of the particular case (expertise of the Expert Group, time available, etc).
- c) At the Statutory Meeting, each Expert Group Chair will report orally to its parent Science Committee, presenting the highlights of findings, conclusions, recommendations, etc. The ensuing discussion in the Science Committee:
- ensures that Expert Group results are widely and rapidly promulgated, and gives Groups an opportunity to increase their profile and appeal among their peers;
  - allows quality control of the Expert Group on a coarse scale, by ensuring that Expert Groups do not stray too far before their results are discussed among peers, who can address perceived problems with further Terms of Reference;
  - ensures that Expert Group chairs attend the Statutory Meeting and the meetings of their parent Committee;
  - makes the Science Committees the forum for discussion of new science ideas and implications of work done in Expert Groups.
- d) As *ex officio* members of one or more of the Advisory Committees, Science Committee Chairs are well informed of the current and future needs for science support by the Advisory Committees. A primary activity of the Science Committees during their meetings is to identify the science that will be needed by Advisory Committees in 3–5 (or more) years and ensure that the necessary work is done to have the science support ready when needed. This role ensures that:
- Science Committees have their focus on far-sighted and forward-looking science goals, and how to make such science goals a reality;
  - Science Committee Chairs have the opportunity to apply their experiences on Advisory Committees in their roles as Committee Chairs;
  - Science Committees apply their science knowledge directly to future ICES advisory needs, fulfilling a key item in the Action Plan;
  - planning of Theme Sessions and Symposia is organised around future needs.
- e) At the Statutory Meeting and ASC, the Science Committees are to conduct an annual audit of progress for the elements of the Action Plan, using procedures to be developed over the coming year by the Consultative Committee. This audit ensures that:
- important components of the Action Plan are not neglected;
  - new areas of marine scientific inquiry are brought into the Action Plan as they emerge from the work of Expert Groups and Science Committee discussions;
  - the Action Plan remains the focus for discussion at Science Committee meetings.
- f) Scheduling of Science Committee meetings at the Statutory Meeting and ASC and expectations for attendance will be modified to ensure:
- ALL Science Committee meetings are part of the ASC;
  - more opportunities for joint meetings of Science Committees will be presented, to facilitate greater synergy among disciplines within ICES;
  - national delegations include all Committee meetings and Chairs (or when clearly justified a delegate for the Chair) of all Expert Groups.
- Over the coming year, the Consultative Committee and the Publications Committee will explore opportunities for Science Committees to focus their work on generating products, and specifying the nature of such products.

## **5 Elections of new Committee Chairs (Doc. Gen:3)**

### **5.1 Mariculture Committee**

The Committee noted that Tom Sephton of the St Andrews Biological Station, New Brunswick, Canada, was elected as Chair of the Mariculture Committee. Tom Sephton was not present at the Conference so was unable to attend the final sessions of the Consultative Committee. The Committee expressed its warm appreciation of the great contribution of the outgoing Chair, Tony Calabrese.

### **5.2 Diadromous Fish Committee**

Niall O'Maoileidigh of the Marine Institute, Abbotstown, Ireland, was elected first Chair of the newly established Diadromous Fish Committee at its initial meeting held on Saturday 5 October. Niall O'Maoileidigh attended the Committee meeting on Monday 7 October.



## **6 Implementation of integrated Action Plan/Committee Action Plans**

The Chair reviewed the intersessional work on developing an integrated Action Plan. An outline of this work is included in Doc A:02 and the draft Integrated Action Plan is contained in Doc. Del:7.

The Chair congratulated the Committee on their skill and hard work in helping to put together the integrated Action Plan. He noted late additions and amendments proposed by the Chair of the Publications Committee. The Committee endorsed these, and on its request an addendum was provided to Delegates. It was noted that the integrated Action Plan would be published after final approval by Delegates had been provided, and it would be distributed widely.

The Committee were asked to re-examine their own Committee Action Plans and revise and update these as necessary. In particular they should be brought in line with statements in the integrated Action Plan. The Chair explained that the Committee Action Plans should be living documents which respond quickly to evolving needs and improved science and technologies. In time these documents would form the basis of a revised integrated Action Plan. Committees also need to ensure that they maintain their efforts in implementing their action plans, in particular in relation to the work of their Expert Groups.

The Committee is aware that an important follow-up activity of the Committee after the publication of the integrated Action Plan was the need to keep track of how this Plan was being implemented, in particular to flag the areas that are not being implemented. In due course such shortcomings would be brought to the attention of Delegates.

During the second session, the Committee was informed by the Chair that Delegates had been invited to provide any final modifications to the text of the Plan in the following weeks. Only minor changes had been submitted, and these had now been incorporated. The Council had approved the Plan and agreed that it would be published and widely disseminated beyond the ICES community.

## **7 Development of programme for the 91st Statutory Meeting and 2003 Annual Science Conference (Tallinn, Estonia) (Doc. Del:6, Del:14)**

At its first session, the Committee noted that plans for the scientific programme for this meeting were still incomplete, and that a great deal of work was still necessary in order to get finalised proposals for the consideration and approval of the Delegates.

The Committee agreed that the practice of seeking invited speakers from outside the usual ICES community should be retained, but used as a guideline, not a rigid

constraint. It also agreed to increase efforts to find speakers who were young scientists and from under-represented groups (particularly women). It also agreed that speakers should be reminded that they are expected to ensure that their presentation is of a pace and clarity that make it accessible to audience members whose first language is not English. \*

At its second session, the Committee finalised this programme, taking into account experiences gained at this year's meeting. In particular it was anxious to inject new life into the open and invited lectures by identifying talks by innovative scientists who had new ideas.

The Secretariat had already identified a possible presenter of the 2003 Open Lecture. The Committee endorsed this proposal. It also accepted proposals for three invited plenary lectures. Two of these could not be confirmed, as the persons involved have not been approached, or had not yet responded to initial approaches. The Committee also decided that, building on this year's experiences with regard to providing responses to these lectures, relevant Committee Chairs would be asked to present rejoinders to these talks. The rejoinders would address critically the relevance of the talks to ICES, and not just offer contrasting ideas on the subject of the lecture. In order to facilitate this the presenters would be asked to provide publication quality manuscripts at least two weeks prior to the ASC. The Committee also recalled its earlier decisions that the presenters should be informed that the *ICES Journal of Marine Science* should have the opportunity to publish the presentation, subject of course to its usual review procedures.

Late on the final day, the Committee was notified that two Committee members of the Council were interested in identifying a speaker for the Open Lecture who would be of high international stature, and address an issue of global concern, comparable to the Lecture during the Centenary Day. The Committee welcomed the interest of the Council members in the ASC Open Lecture, and agreed that the Chair should work with them on this proposal. The Committee acknowledged it had substantial flexibility in its proposed list of invited lectures, but new proposals should more appropriately be discussed first by the Committee by correspondence rather than going directly to the Bureau.

In reviewing the long list of Theme Sessions that had been proposed, the Committee noted with concern the lack of sessions dealing with Mariculture issues. The Committee was satisfied with the explanation of the Chair of the Mariculture Committee that the absence of mariculture issues from the proposal list was by design as his Committee considered that the 2004 venue (Vigo) would be a more appropriate location to discuss such issues. The Committee also transferred a Fisheries

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\* It was later decided, following discussion at a subsequent Delegates' meeting, not to include invited lectures in the programme for the Tallinn meeting.



Technology session from the 2004 list in order to provide at least one session in this area.

After several modifications and amendments to the list of sessions, the Committee finally agreed to it. This consists of some 18 sessions which it recommends be categorised as follows:

Measurement and Observations (5 sessions)  
Process-Based Studies (3 sessions)  
Property-Based Studies (4 sessions)  
Human Uses (6 sessions)

The Committee noted the relative under-representation of sessions on Process-Based Studies, and noted that this may be an imbalance in ICES programmes. The Chair encouraged the Science Committees to pay particular attention to this matter in the coming year. The Committee also agreed to review titles and synopses for the 2003 sessions, seeking opportunities for explicit mention of zooplankton as well as fish.

The Committee also agreed that it was desirable to have more time for discussion during Theme Sessions. As 18 Theme Sessions may be too many to accommodate comfortably in the Conference timetable the Secretariat was asked to ensure that the guidelines to conveners included a request to them to get as many contributions as possible as posters, rather than as paper presentations. The poster session should be scheduled as early as possible during the ASC so that at least the majority could be seen before their corresponding session of papers and general discussion. It was agreed that posters should be available for viewing during as much of the ASC as possible, and that the poster panels be spaced out well enough to ensure ample room for viewing them, discussion with authors, and to accommodate the flow of people.

## **8 Development of programme for the 92nd Statutory Meeting and 2004 Annual Science Conference (Vigo, Spain) (Doc. Del:14, )**

Many proposals for Theme Sessions were submitted during the course of the Conference, with the provisional list expanding from 4 to 19. A number of amendments and further actions were agreed and these would be examined further at the next meeting of the Committee. Concerning the Open Lecture, the Committee supported a proposal that this should be on the topic of Climate Change and Oceanographic Processes and Fisheries. The proposed lecturer was fully endorsed by the Committee as being a person who satisfied most of the criteria for an open lecturer. Further details are in Annex 2. Additional ideas will be followed up by Committee members. These include one on mariculture perhaps presented by a stakeholder representative, and one on Deep Water Coral Reefs or, more generally, on Fragile Marine Habitats.

## **9 Status of ICES Symposia**

### **9.1 Symposia in 2002 (Doc. Gen: 4)**

The Committee noted the reports of the ICES/NAFO/CSIRO Symposium on “Deep-Sea Fisheries” and the ICES Symposium on “Acoustics in Fisheries and Aquatic Ecology”.

The Committee noted in particular the success of the “Deep-Sea-Fisheries” in spite of the fact that the event was held soon after 11 September 2001. The Acoustics Symposium attracted 230 papers and posters and 310 scientists. The Committee was gratified to learn that a large number of excellent contributions were presented. About 80 papers from the Symposium will be published in 2003 in the *ICES Journal of Marine Science* and *Aquatic Living Resources*. The Committee expressed their great appreciation to the Conveners (François Gerlotto and Jacques Massé) for their very hard work in bringing this Symposium to an excellent conclusion.

### **9.2 Symposia for 2003 onwards**

The Committee noted the developing plans for the following ICES Symposia:

ICES/PICES/GLOBEC Symposium on “The Role of Zooplankton in Global Ecosystem Dynamics: Comparative studies from World Oceans”: Gijón, Spain, 20–23 May 2003. Co-Conveners: Roger Harris (GLOBEC) and Tsutomu Ikeda (PICES), and Luis Valdés (ICES). Website:

<http://www.pices.int/meetings/gijon/gijon.asp>

ICES/FAO Symposium on “Fish Behaviour in Exploited Ecosystems”, 23–26 June 2003, Bergen, Norway. Co-Conveners: Å. Bjordal (Norway) and S. J. Walsh (Canada). Website: [www.imr.no/fishbehave/](http://www.imr.no/fishbehave/). 130 abstracts have been accepted for this.

ICES Symposium on “The Influence of Climate Change on North Atlantic Fish Stocks”, 11–14 May 2004, Bergen, Norway. Co-Conveners: R. Cook (UK), K. Drinkwater (Canada), and H. Loeng (Norway). Website: <http://www.imr.no/2004symposium>

[The title of the above Symposium is new. The title given in the Resolution was “The Influence of Climate Change on North Atlantic Fisheries”.]

ICES Symposium on “Gadoid Mariculture: Development and Future Challenges”, 20–23 June 2004, Bergen, Norway. Co-Conveners: O. S. Kjesbu (Norway), G. L. Taranger (Norway), and E. Trippel (Canada).

In all cases the Committee was satisfied that preparations are well in hand for each Symposium.

The Committee noted with regret that the Symposium under ICES Resolution CM 2000/2DSY01 (“The Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions”) would not now



take place owing to a number of difficulties (especially the resignation of the principal (only) convener). However, the Committee was pleased to receive a revised proposal from the Resource Management Committee. See next section for details of this.

### 9.3 Prospects and proposals for additional future symposia

The Committee supported a Draft Symposium to be co-sponsored with FAO on the precautionary approach. Details are:

- An ICES/FAO Symposium on “The Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions” will be held in Chile for four days in 2005 (Frans van Beek, Netherlands, Olle Hagström, EC).
- The Committee also endorsed a draft resolution from the Diadromous Fish Committee:
- A Symposium on “The Interactions between Cultivated and Wild Diadromous Fish Species” will be held at a venue to be decided for three days in 2005 with Lars Peter Hansen (Norway), and others as co-conveners.

Both of these Symposia have requested publication of a selection of their contributions in the IJMS, and the conveners have been advised to contact the Editor and the Publications Committee to make the necessary arrangements.

The Committee is also aware of the interest of the organisers of an upcoming SCOR symposium in Paris (summer 2004) to publish its proceedings in the IJMS. This symposium is a follow-up to the recent ICES/SCOR Symposium on “Ecosystem Effects of Fishing” in Montpellier. An invitation to ICES to co-sponsor the Symposium was received on the final day of the meeting, and the Committee recommends acceptance of this invitation.

## 10 Matters arising from the Publications Committee

At the 90th Statutory Meeting, the Publications Committee met for the first time under the amended Rule 27, and the Chair reported directly to the Consultative Committee. A summary report is available as a Committee document, and covers in full the conclusions and recommendations resulting from each Term of Reference as established by Council Resolution CM 2001/2PUB01.

During the subsequent discussion following its presentation by Bill Turrell, Chair of the Publications Committee, the Chair encouraged members of the Committee to carry four messages back to their Committees. Theme Session Conveners must ensure that full CM papers are submitted in the correct electronic format to the Secretariat by the appropriate deadline so that they are included on the CD-ROM issued at the

ASC. In 2002, 73% of papers were published on the CD-ROM. The target for 2003 is 90%. The Chair of the Publications Committee was asked to investigate whether this short fall in submission was likely to lead to a substantive amount of information being lost.

The ICES community is encouraged to respond quickly when requested to provide peer reviews of IJMS papers, in order to support the work of the Journal Editors. When the Publications Committee issues the 2003 Readership Survey, Committee Chairs are asked to encourage their members and associated Working Groups to respond. Consultative Committee members are asked to distribute the description of the IJMS Editor-in-Chief position, which will be issued by the Publications Committee, to all Expert Group Chairs and encourage them to pass nominations for this post to the Secretariat in order that Niels Daan may be replaced upon the completion of his term of office in December 2003.

The Consultative Committee then went on to discuss in more detail three substantive issues:

1. The release of Working Group reports on the ICES Website: Reports from the ACFM and its Working Groups are released in a timely way, and are peer reviewed prior to release. Reports from Science Committee Working Groups cannot always be reviewed prior to inclusion on the public Website, but carry a standard disclaimer on the first page of each report. The Committee recommends that this disclaimer is repeated at a suitable point on the Website to be read prior to the download of each Expert Group Report.
2. Hosting etc. of Working Group home pages: Increasingly Working Groups are requesting that the Secretariat host Working Group home pages on which they can display a variety of material to be supplied by themselves. This is beyond the resources of the Secretariat, and the Consultative Committee agrees that all Working Groups should be asked to host their own home pages, either at home institutes or at co-sponsoring organisations. Appropriate links from the ICES Website should be maintained by the Secretariat, with an associated warning that each link leads out from the ICES site.
3. The publication of the results from the Advisory Process: At present Advisory Committee reports are published in the *ICES Cooperative Research Report* series. This Series is hence a mixture of scientific research results and ICES advice, which the Consultative Committee viewed as unhelpful to both sources of information. The Committee agreed with the view of the Publications Committee and its consultees, that a new ICES Advice Series should be initiated, positioned appropriately within the new coordinated ICES publication style. The Committee requested the Publications Committee to conduct further consultation with respect to the implications of such an initiative, and the Secretariat to advise on cost and resource implications of introducing this



method of publication for the 2003 Advisory Committee Reports.

The Consultative Committee noted the content of the Publications Committee report, and endorsed the remainder of the recommendations it contains.

## **11 Matters referred to the Committee by the Bureau or Council**

The Bureau has asked the Committee to identify those planned Theme Sessions and other activities that could be co-sponsored by Partner Commissions, and initiate the contact. They are also concerned about the continuing decrease in input to ICES meetings from the university sector. Ways to reverse this trend should be considered by the Committee.

The Committee noted these requests and agreed to bear them in mind whilst reviewing the Theme Sessions for 2003 and 2004 (Agenda Items 8 and 9 respectively) and the Draft Resolutions (Agenda Item 13)

## **12 Advisory Committee Matters**

No specific matters beyond those related to the discussion of the Draft Resolutions (Agenda 13) were raised.

## **13 Draft Resolutions from the Committees**

### **13.1 Draft Resolutions**

The Committee considered all Draft Resolutions that were passed to it by the Publications, Science and Advisory Committees.

A number of detailed comments and technical alterations with made with regard to many of these. The Committee's main concern was the large number of proposals for new Expert Groups (see Table 1). Each of these was examined and debated at length, and this resulted in a small reduction in the number of new proposals, mainly by transferring the proposed work to existing Groups. The Committee accepted, however, that most of the new proposals were well intentioned and to some extent reflected the additional demands on ICES to produce high quality advice, as well as the need to absorb new ideas and techniques, as highlighted by the Copenhagen Declaration and the integrated Action Plan. The Committee is, however, concerned about the dilution of the expertise available to existing Groups, which requires a continuing close scrutiny of the overall number of Groups.

The Committee agreed to monitor closely Expert Groups which were expressing concern over adequate participation in the Supporting Information to their Draft Resolutions. In coming years the Committee will have to

deal seriously with the issue of combining or dissolving Expert Groups that do not attract enough participants to ensure their viability and that they have the appropriate expertise.

### **13.2 Study/Working Groups to be renamed, established, or dissolved**

Details are provided in Table 1.

### **13.3 New Study/Working Group Chairs**

Details are provided in Table 2.

## **14 Review of 2002 intersessional activities and Terms of Reference for 2003 intersessional activities (Doc/. A:2)**

The Committee discussed its terms of reference for a mid-term meeting of the Committee at Council expense. It recognised that the success of the current Conference meant that its role of designing the Conference could be done by correspondence, relying heavily on work delegated to the Secretariat. However, it considered that, in the wake of the development of the Science and Action Plans, the Committee had an important strategic role which demanded time for debate. The Committee therefore endorsed a draft resolution to meet mid-term, preferably at a date which ensures some respite from the early summer Advisory Committee meetings. This is because a number of the members of the Committee find it impractical and exhausting to have such meetings back-to-back with the Advisory Committees.

## **15 Any other business**

### **15.1 Recognition for Symposium Conveners**

It was agreed that any exceptional work by Symposium conveners, Committee and Expert Group Chairs etc., should be acknowledged in a formal recognition using a procedure to be developed by the Secretariat in consultation with the Committee.

### **15.2 Recognition of authors of Expert Group Reports**

A proposal requesting the acknowledgement of authorship of Expert Group reports and *ICES Cooperative Research Reports* was referred to the Publications Committee.

## **16 Close**

The Chair thanked two outgoing Chairs, Tony Calabrese (Mariculture) and Tore Jakobsen (ACFM), for their contribution to the work of the Committee.



## **Annex 1**

### **Consultative Committee**

Monday 30 September, 09:00–10:00 (DGI-Byen, Room 6)

Monday 7 October, 09:00–18:00 (DGI-Byen, Room 6)

Tuesday 8 October, 09:00–18:00 (DGI-Byen, Room 6)

### **Agenda**

- 1 Opening
- 2 Adoption of Agenda and Timetable
- 3 General Arrangements for Annual Science Conference and Centenary Day (including arrangements for selection of awards, poster session, instructions to conveners)
- 4 General Arrangements for Statutory Meeting (including draft resolutions, requests to Science Committees, and preparation of Committee Reports) (Doc. Del:3)
- 5 Elections of New Committee Chairs (Doc. Gen:3)
  - 5.1 Mariculture Committee,
  - 5.2 Diadromous Committee
- 6 Implementation of Integrated Action Plan/Committee Action Plans (Doc. Del:7)
- 7 Development of programme for the 91st Statutory Meeting and 2003 Annual Science Conference (Tallinn, Estonia) (Doc. Del:6, Del:14)
- 8 Development of programme for the 92nd Statutory Meeting and 2004 Annual Science Conference (Vigo, Spain) (Doc. Del:14)
- 9 Status of ICES Symposia
  - 9.1 Symposia in 2002 (Doc. Gen: 4)
  - 9.2 Symposia for 2003 onwards
  - 9.3 Prospects and Proposals for Additional Future Symposia
- 10 Publications Committee
  - 10.1 Consideration of Draft Report of the Publications Committee
- 11 Matters Referred to the Committee by the Bureau or Council
- 12 Advisory Committee Matters
  - 12.1 ACFM (Doc. A:2, Doc. A:3)
  - 12.2 ACME (Doc. A:4)
  - 12.3 ACE (Doc. A:6)
    - 12.3.1 Proposal for a Second Environmental Dialogue Meeting (Doc. Del:10)
- 13 Draft Resolutions from the Committees
  - 13.1 Draft Resolutions
  - 13.2 Study/Working Groups to be Renamed, Established or Dissolved
  - 13.3 New Study/Working Group Chairs
- 14 Review of 2002 Intersessional Activities and Terms of Reference for 2003 Intersessional Activities (Doc/. A:2)
- 15 Any Other Business
  - 15.1 Recognition for Symposium Conveners
  - 15.2 Recognition of authors of Expert Group Reports



## **Annex 2**

### **Provisional List of Theme Sessions for 2004**

- 1) Closing the Life Cycle and Predicting Recruitment: Use of Hydrodynamic Models and their Coupling to Early Life History
- 2) New Developments in Fisheries Acoustics: Applications in Bottom Trawl Surveys and Multi-Frequency Species Identification
- 3) Mortality and Linkages between Fish Eggs/Larvae and Their Predators in Marine Ecosystems – A Multidisciplinary Approach
- 4) Stock Identification Methods
- 5) Session J/2001 Revisited
- 6) Towards Sustainable Aquaculture
- 7) Modelling Marine Ecosystems and their Exploitation.
- 8) Fishers' Perceptions And Responses in Management Implementation
- 9) Shellfish Culture in the ICES Area: Perspectives and Limitations
- 10) Baltic Sea Ecosystems – Big Changes from Small Causes – Consequences of Environmental Variability.
- 11) Water Treatment in Intensive Fish Cultures.
- 12) Regime Shifts in the North Atlantic Ocean: Coherent or Chaotic?
- 13) Recruitment Processes: Applying New Tools to Solve Old Problems
- 14) Experience With and Perspectives on Marine Protected Areas as a Tool For Conservation of Biodiversity and Improvement of Sustainability of Fisheries.
- 15) Non-High Seas Habitats and the Way that Different Diadromous Fish Use These
- 16) Acoustic Seabed Classification – Applications in Fisheries Science and Ecosystem Studies
- 17) How Useful are Biological Effects Measurements in Marine Ecosystem Management?
- 18) The Effects of Human Activity and Disease on Marine Fish Populations
- 19) Darwinian Fisheries Management: Turning Concepts into Practice



**Table 1**

Lists of the various Working Groups, Study Groups, and other Groups and Workshops that were dissolved, established, or renamed by virtue of Council Resolutions at the 2002 Annual Science Conference.

<b>Type of Action</b>	<b>Name</b>
Dissolved	<p><b>Study Groups</b></p> <p>Study Group on Ecosystem Assessment Monitoring [SGEAM]  ICES/AMAP Study Group for the Assessment of AMAP POPs and Heavy Metals Data [SGPOP]  Study Group on Discard and By-catch Information [SGDBI]  Study Group on Baltic Herring and Sprat Maturity [SGBHSM]  Subgroup of ICES/FAO Working Group on Fishing Technology and Fish Behaviour [WGFTFB]  Study Group on the Incorporation of Process Information into Stock Recruitment Models [SGPRISM]</p>
Established/Re-established	<p><b>Working Groups</b></p> <p>Working Group on Fish Ecology [WGFE]  Working Group on Marine Shellfish Culture [WGMASC]  Working Group on the Recruitment Updates of Demersal Stocks in the North Sea and Skagerrak 2 [WGRECNSSK]  Study Group on Elasmobranch Fishes [SGEF] will be re-established as the Working Group on Elasmobranch Fishes [WGEF].</p> <p><b>Study Groups</b></p> <p>Study Group on Biological Reference Points for Northeast Arctic Cod [SGBRP]  Study Group on Precautionary Reference Points for Advice on Fishery Management [SGPRP]  Study Group on the Revision of Data for North Sea Herring [SGREDNOSE]  Study Group on Acoustic Seabed Classification [SGASC]  Study Group on Growth, Maturity and Condition in Stock Projections [SGGROMAT]  Study Group on Information Needs for Coastal Zone Management [SGINC]  Study Group on the North Sea Benthos Project 2000 [SGNSBP]  Study Group on Management of Integrated Data [SGMID]  ICES/NSCFP Study Group on the Incorporation of Additional Information from the Fishing Industry into Fish Stock Assessments [SGFI]  Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas [SGSTG]  Study Group on the Review of the Structure of the Fisheries Technology Committee [SGRSFTC]  Regional Ecosystem Study Group for the North Sea [REGNS]  Study Group on Multispecies in the North Sea [SGMSNS]  Study Group on Salmon Scale Reading Problems [SGSSR]  Study Group on ACFM, ACE and Working Group Working Protocols [SGAWWP]</p> <p><b>Planning Group</b></p> <p>Planning Group on Implementation of the Baltic Sea Regional Project [PGIBSRP]</p> <p><b>Workshops</b></p> <p>Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice [WKDIMP]  A Workshop on Catch Control, Gear Description and Tag Reporting in Baltic Salmon [WKCGTS]  Workshop on Zooplankton Taxonomy [WKZT]  Workshop on a Synthesis of the Cod and Climate Programme [WKCCP]  Workshop on Real-time Coastal Observing Systems for Ecosystem Dynamics and Harmful Algal Blooms [WKHABWATCH]</p>



Type of Action	Name
	Workshop on Fish Stock Assessment Techniques [WKCFAT] Workshop on Mackerel and Horse Mackerel Egg Staging and Identification [WKMHMES] Workshop on Lobster Reference Points for Fishery Management [WKRPFM]
	<b>Working Group</b>
	Working Group on Marine Mammal Population Dynamics and Habitats [WGMMPH] will be renamed the Working Group on Marine Mammal Ecology [WGMME]
	<b>Study Groups</b>
Renamed	Study Group on Ecosystem and Multispecies Predictions [SGMPB] will be renamed the Study Group on Multispecies Assessment in the Baltic [SGMAB]
	Study Group on an ICES/IOC Checklist of Phytoplankton and other Protists [SGPHYT] will be renamed Study Group for Phytoplankton and Protist Taxonomy [SGPPT]



**Table 2**

New Chairs of Advisory Committees, Working Groups, Study Groups, and other Groups and Workshops

Chair	Group
	<b>Advisory Committee</b>
P. Degnbol, Denmark	Advisory Committee on Fishery Management [ACFM]
	<b>Working Groups</b>
G. Waring, USA	Working Group on Marine Mammal Ecology [WGMME]
V. Trujillo, Spain	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim [WGHMM]
A. Ikauniece, Latvia	ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea [SQAB]
J. Martin, Canada	ICES-IOC Working Group on Harmful Algal Bloom Dynamics [WGHABD]
A. Lavín, Spain	Working Group on Oceanic Hydrography [WGOH]
G. Ottersen, Norway (Co-chair)	ICES/GLOBEC Working Group on Cod and Climate Change [WGCCC]
T. Miller, USA (Co-chair)	Working Group on Recruitment Processes [WGRP]
H. Rumohr, Germany	Benthos Ecology Working Group [BEWG]
D. Connor, UK	Working Group on Marine Habitat Mapping [WGMHM]
T. Lang, Germany	Working Group on Pathology and Diseases of Marine Organisms [WGPDMO]
A. Mangor-Jensen, Norway	Working Group on Marine Fish Culture [WGMAFC]
E. Kenchington, Canada	Working Group on the Application of Genetics in Fisheries and Mariculture [WGAGFM]
D. Reid, UK	Working Group on Mackerel and Horse Mackerel Egg Surveys [WGMEGS]
S. Flatman, UK	Working Group on the Assessment of Southern Shelf Demersal Stocks [WGSSDS]
S. Munch-Petersen, Denmark	<i>Pandalus</i> Assessment Working Group [WGPAND]
I. Perä, Sweden	Baltic Salmon and Trout Assessment Working Group [WGBAST]
R. Officer, Ireland	Working Group on the Assessment of Northern Shelf Demersal Stocks [WGNSSDS]
W. Crozier, Northern Ireland	Working Group on North Atlantic Salmon [WGNAS]
S. Hay, UK	Working Group on Zooplankton Ecology [WGZE]
R. Gelfeld, USA and L. Rickards, UK	Working Group on Marine Data Management [WGMDM]
R. Fryer, UK	Working Group on the Statistical Aspects of Environmental Monitoring [WGSAEM]
J. Ellis, UK	Working Group on Fish Ecology [WGFE]
A. Bodoy, France	Working Group on Marine Shellfish Culture [WGMASC]
M. Pastoors, Netherlands	Working Group on the Recruitment Updates of Demersal Stocks in the North Sea and Skagerrak 2 [WGRECNSK]
M. Clarke, Ireland	Study Group on Elasmobranch Fishes [SGEF] will be re-established as the Working Group on Elasmobranch Fishes [WGEF]
	<b>Study Groups</b>
R. Fonteyne, Belgium	Study Group on Mesh Measurements Methodology [SGMESH]
M. Viitasalo, Finland	ICES/IOC/SCOR Study Group on GEOHAB Implementation in the Baltic [SGGIB]
Y. A. Kovalev, Russia	Study Group on Biological Reference Points for Northeast Arctic Cod [SGBRP]
P. Degnbol, Denmark	Study Group on Precautionary Reference Points for Advice on Fishery Management [SGPRP]
C. Zimmerman, Germany	Study Group on the Revision of Data for North Sea Herring [SGREDNOSE]
J. Anderson, Canada	Study Group on Acoustic Seabed Classification [SGASC]
C. L. Needle, UK and C. T. Marshall, Norway	Study Group on Growth, Maturity and Condition in Stock Projections [SGGROMAT]
J. G. Støttrup, Denmark	Study Group on Information Needs for Coastal Zone Management [SGINC]
H. Rees, UK	Study Group on the North Sea Benthos Project 2000 [SGNSBP]
P. Wiebe, USA and C. Zimmermann, Germany	Study Group on Management of Integrated Data [SGMID]
H. Anderson, Sweden (nominated by NSCFP) and A. Rijnsdorp, Netherlands	ICES/NSCFP Study Group on the Incorporation of Additional Information from the Fishing Industry into Fish Stock Assessments [SGFI]



Chair	Group
(nominated by ICES)	
F. Velasco, Spain	Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas [SGSTG]
S. Walsh, Canada	Study Group on the Review of the Structure of the Fisheries Technology Committee [SGRSFTC]
A. Kenny, UK	Regional Ecosystem Study Group for the North Sea [REGNS]
M. Vinther, Denmark and E. D. Bell, UK	Study Group on Multispecies Assessments in the North Sea [SGMSNS]
E. Ikonen, Finland	Study Group on Salmon Scale Reading Problems [SGSSR]
C. Bannister, UK and M. Azevedo, Portugal	Study Group on the Further Development of the Precautionary Approach to Fishery Management [SGPA]
<i>Ex-officio</i> ACFM and ACE Chairs, i.e. Poul Degnbol, Denmark and Hein- Rune Skjoldal, Norway	Study Group on ACFM, ACE and Working Group Working Protocols [SGAWWP]

### Planning Groups

A. Richardson, UK and M Holt (UK/EuroGOOS)	ICES/EuroGOOS Planning Group on the North Sea Pilot Project (NORSEPP) [PGNSP]
B. MacKenzie, Denmark and J. Thulin, BSRP Coordinator	Planning Group on Implementation of the Baltic Sea Regional Project [PG-IBSRP]

### Workshops

R. Merrick, USA	Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice [WKDIMPH]
S. Pedersen, Denmark	Workshop on Catch Control, Gear Description and Tag Reporting in Baltic Salmon [WKCCTS]
J.A. Lindley, UK	Workshop on Zooplankton Taxonomy [WKZT]
K. Drinkwater, Canada and K. Brander, ICES/GLOBEC	Workshop on a Synthesis of the Cod and Climate Programme [WKCCP]
M. Babin, France and J. Cullen, Canada	Workshop on Real-time Coastal Observing Systems for Ecosystem Dynamics and Harmful Algal Blooms [WKHABWATCH]
C.L. Needle, UK; and C. D. Darby, UK	Workshop on Fish Stock Assessment Techniques [WKCFAT]
S. Milligan, UK	Workshop on Mackerel and Horse Mackerel Egg Staging and Identification [WKMHMES]
M. Comeau, Canada and O. Tully, Ireland	Workshop on Lobster Reference Points for Fishery Management [WKRPFM]



## Advisory Committee on Fishery Management (ACFM)

Chair: Tore Jakobsen (Norway)

The Advisory Committee on Fishery Management (ACFM) met twice in 2002 (21 to 30 May) and (9 to 17 October). The advice on North Atlantic salmon was formulated by an ACFM subgroup, 24 to 26 April, and this advice was, in early May, confirmed through a mail procedure involving the full ACFM. Furthermore, ACFM dealt with several non-recurrent requests from DG Fish (European Commission) and Finland during the spring of 2002 through mail procedures. The advisory reports covered the full range of stocks according to the MoUs between the Fisheries Commissions and ICES. The reports were produced according to schedule. The combined reports were published in January 2003 as *ICES Cooperative Research Report No. 255*.

Key topics in 2002 were the assessment of several cod stocks (Eastern Baltic cod, North Sea cod, Division VIa cod and Irish Sea cod). Also herring stocks in the Central Baltic Sea held a prominent place on the May agenda. Finally the assessment of northern hake was reviewed throughout. Figure ACFM:1 shows the total number of stocks assessed by area in 2002.

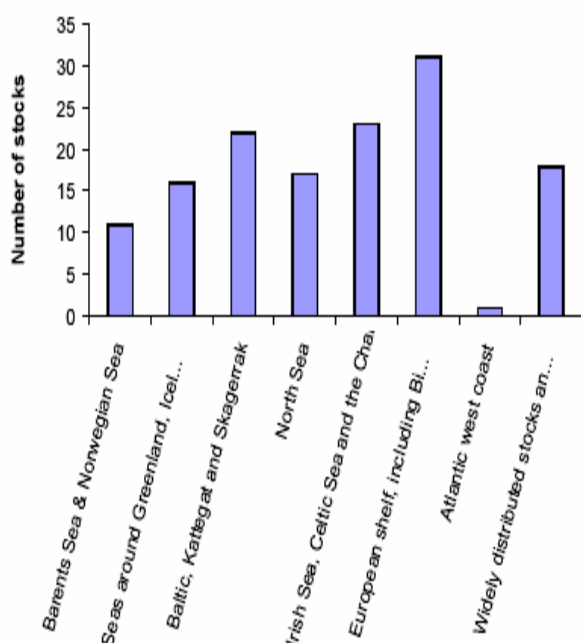


Figure ACFM:1 Total number of stocks assessed in 2002 by area.

The assessed cod stocks span a wide range of ecological conditions ranging from Northeast Arctic cod in the Barents Sea and cod in Icelandic waters to cod stocks around the British Isles and in the Baltic Sea. Cod is in general under heavy exploitation pressure, in particular the cod stocks around the British Isles (Irish Sea, West of Scotland, North Sea, and Skagerrak) together with the Eastern Baltic Sea cod stock, which are all severely

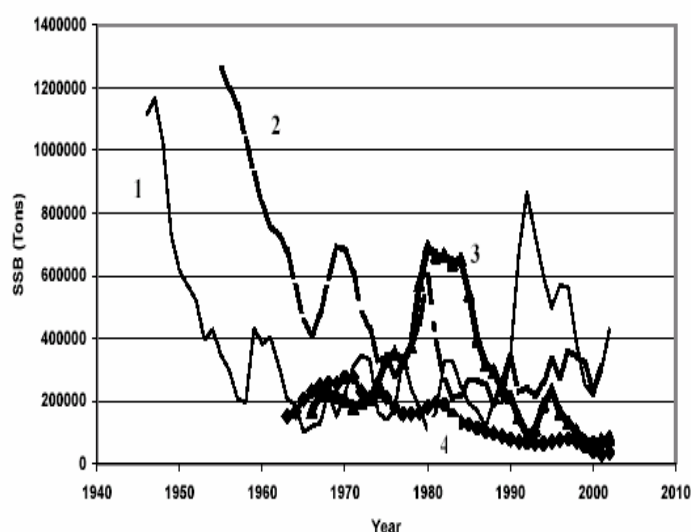


Figure ACFM:2 Spawning stock biomass for the (1) Northeast Arctic, (2) Icelandic, (3) eastern Baltic, and (4) North Sea cod stocks.

depleted (Figure ACFM:2). It was advised that fisheries on these stocks be closed or severely restricted in order to rebuild the stocks. As cod outside the Baltic Sea is usually taken in mixed fisheries such restrictions also affect the catch possibilities of other species, e.g. haddock.

In particular, the cod assessments and advice had to be explained in detail and repeatedly to many forums. This added significantly to the work burden of the Chair, the Committee members, and the Secretariat.

ACFM defined a process for revising the biological reference points used in formulating the advice. This process was implemented at the Statutory Meeting. It is expected that ACFM will provide an overall review of the reference points in 2003.

MCAP and ACFM reviewed the proposals made by the Study Group on ACFM Working Procedures. MCAP and ACFM decided to change the assessment strategy to a system that involves a distinction between update assessments (keeping the assessment procedure unchanged) and benchmark assessment (reviewing the assessment procedure). This system will be gradually implemented starting from 2003.

Tore Jakobsen's three-year term as Chair ended with the October 2002 meeting. ACFM elected Poul Degnbol (Denmark) as the incoming Chair to take over from 1st January 2003. The Committee thanked Tore Jakobsen for leading the Committee through a difficult period. The Secretariat also thanked him for a very smooth and efficient cooperation.



## Advisory Committee on the Marine Environment (ACME)

Chair: Stig Carlberg (Sweden)

The ICES Advisory Committee on the Marine Environment (ACME) met at the ICES Secretariat from 3 to 7 June 2002. As part of its work during this period, the ACME prepared responses to the requests made to ICES by the OSPAR Commission and the Helsinki Commission. In addition the Committee reported on topics for which advice was not directly requested but which were considered to be of interest to the Commissions, ICES Member Countries, and others.

The 2002 Report of ACME has been published as *ICES Cooperative Research Report No. 256*.

### Monitoring and quality assurance

In 2002, the Committee continued the development of advice on biological effects monitoring programmes, particularly in relation to pelagic biological effects methods, biological effects measures to complement EU Water Framework Directive monitoring, and potential new effects techniques in molecular biology.

The Committee also gave initial consideration to procedures for monitoring temporal trends of contaminants in sediments and continued its review of national schemes for setting sediment quality criteria.

In terms of statistical considerations relative to monitoring programmes, further advice for OSPAR on trend analysis of monthly monitoring data on inputs of nutrients and contaminants to the marine environment was prepared. Further advice on appropriate sampling schemes for the detection of hotspots of contamination in the marine environment was also provided.

Summaries of progress in the North Sea Benthos Project and progress in studies of phytoplankton responses to enhanced nutrient inputs, zooplankton responses to climate change, and harmful algal bloom dynamics were reported. The scientific and operational merits of including primary production measurements and zooplankton studies in eutrophication monitoring programmes were considered, but the Committee concluded that such measurements should not be included in monitoring programmes in relation to regulatory requirements at the present time.

In relation to the quality assurance of biological measurements in the Baltic Sea, the Committee reviewed the results of the work on this topic during the past year and provided advice for the Helsinki Commission. This advice included the recommendation that QA measures for biological monitoring procedures be implemented and harmonized in the institutes and countries around the Baltic Sea.

For the OSPAR Area, the “Guidelines for Quality Assurance of Biological Measurements” were accepted for

use in ICES and transmitted to OSPAR for use within the OSPAR Area. These guidelines describe the QA system in relation to survey objectives and design, and contain detailed QA guidance for every step in sample treatment from sampling to data handling. They cover the monitoring of chlorophyll *a*, phytoplankton, macrozoobenthos, and macrophytobenthos. Consideration was also given to accreditation schemes for the quality assurance of biological studies and the applicability of analytical quality control criteria for evaluating the acceptability of biological monitoring data.

The outcome of the EU-funded project “Biological Effects Quality Assurance in Marine Monitoring” (BEQUALM) was reviewed in relation to the quality assurance requirements of the biological effects monitoring techniques that have been selected for ultimate inclusion in the OSPAR Coordinated Environmental Monitoring Programme (CEMP). Advice was provided identifying the methods for which limits of variability have been attained that are acceptable to allow adoption of the method in the CEMP.

With regard to chemical measurements, further progress has been made in the development of additional technical annexes for the “Guidelines on Quality Assurance of Chemical Measurements in the Baltic Sea”, for the monitoring programmes carried out under the Helsinki Commission. One additional Technical Note, on “Measurement Uncertainty of Analytical Methods”, was completed and adopted. Work has also continued in response to requests from OSPAR and HELCOM on the development of quality criteria to be employed in reviewing monitoring data prior to their use in the preparation of data products for environmental assessments.

### Contaminants in the marine environment

In regard to the OSPAR “List of Chemicals for Priority Action”, initial advice was prepared on the state of the analytical methodology for analysing each of these chemicals in marine environmental samples. A brief review of other priority lists from international or regional organisations was also provided.

New information or advice was provided on the following contaminants: 1) dioxins, furans, and dioxin-like CBs; 2) *tris*(4-chlorophenyl)methanol (TCPM) and *tris*(4-chlorophenyl)methane (TCPMe); 3) polybrominated diphenylethers (PBDEs); and 4) toxaphene. The Committee considered that there is a need to obtain additional data on the occurrence of these contaminants in the marine environment. Consequently, OSPAR has been advised to consider the inclusion of PBDEs in their JAMP programme, as validated methods for their determination are now available.



An overview of the outcome of a temporal trend assessment of AMAP data on heavy metals in Arctic biota was provided. This assessment evaluated possible temporal trends in the concentrations of mercury, cadmium, and lead in a number of species of Arctic biota, including terrestrial mammals, freshwater fish, and marine fish, birds, and invertebrates.

Preliminary advice covering the initial work done on a pilot assessment integrating input data and environmental concentrations was prepared for OSPAR. To further develop this work, OSPAR has been advised to organise a meeting of policy-makers and relevant experts (chemists, statisticians, and modellers) to discuss the objectives of such joint assessments and develop a statistical framework for them.

## Environmental assessment tools

In response to a request from OSPAR, the Committee considered the issue of data products for trace metals, organic contaminants, and eutrophication in relation to environmental state indicators. While there is a clear need for the development of indicators of environmental status to present complex data in a more understandable way for the public and politicians, it was considered that the aims of such indicators first need to be clearly stated. As this has not yet been done, the Committee was unable to conclude on this item.

Advice in relation to data products for developing the OSPAR Common Procedure for Identification of the Eutrophication Status of the Maritime Area was presented. This includes a proposal that consideration be given to the usefulness of calculating nutrient budgets based on the approach being developed within LOICZ (Land-Ocean Interactions in the Coastal Zone).

An overview of progress in relation to the establishment of ecological quality objectives on nutrients and eutrophication effects in the North Sea was provided, along with advice concerning further work that will be needed in relation to the development of operational ecological quality elements and objectives on these issues.

Two approaches were considered in relation to the estimation of background concentrations of contaminants in the marine environment. As both of these approaches have drawbacks, the further investigation of a hybrid approach was advised, including the use of appropriate data and clearly stated goals for statistical assessments. These should be provided by HELCOM to be able to complete a response to this request.

## Environmental assessments

Contributions to the ICES Environmental Status Report for 2002 have been made concerning:

- oceanographic conditions (<http://www.ices.dk/status/clim0001>),

- zooplankton, harmful algal blooms (<http://www.ices.dk/status/decadal/>),
- fish and shellfish disease prevalence ([http://www.ices.dk/status/fish\\_and\\_shellfish\\_diseases/index.htm](http://www.ices.dk/status/fish_and_shellfish_diseases/index.htm)).

## Fish diseases

An overview of new trends in the occurrence of diseases in wild and farmed fish and shellfish stocks was provided. Viral Haemorrhagic Septicaemia virus has been isolated from a large number of marine fish species in the North Sea, the Skagerrak, the Kattegat, and the Baltic Sea, as well as along the Pacific coast of the USA and Canada. Outbreaks of this virus in sea-reared rainbow trout in Finland and the Åland Islands occurred in 2001, but apparently the sources of the two outbreaks are different.

The M74 syndrome in Baltic salmon continues to occur at high levels, with the average prevalence in Swedish and Finnish rivers during 2001 at nearly 31%. Nodavirus infection has caused serious problems in many fish species that are of importance for aquaculture; much work needs to be done before effective control measures such as vaccines are developed. Infectious Pancreatic Necrosis, a viral infection affecting the pancreatic tissue of fish, is having a significant impact on salmon aquaculture in Scotland and Norway; research is required on preventive measures and improved management strategies.

The Committee considered the results of studies on the relationship between environmental contaminants and shellfish pathology. With the exception of data on imposex/intersex conditions in marine gastropod species following exposure to tributyltin compounds, information on the relationship between environmental contaminants and pathological disorders in marine shellfish is limited.

## Introductions and transfers of marine organisms

Information on the imports of live aquatic species in ICES Member Countries for aquaculture, restocking, and live food sales was reviewed. The most commonly moved species in 2001 were Atlantic salmon (*Salmo salar*) and Pacific oysters (*Crassostrea gigas*). Selected examples of current invasions of non-indigenous species, such as the red king crab in northern Norway and the toxic alga *Pfiesteria piscicida* on the east coast of the USA, were also assessed.

A revised Code of Practice on the Introductions and Transfers of Marine Organisms, to update the 1994 Code of Practice, was considered but not adopted. It is anticipated that this will be completed in 2003.

Issues relevant to the transfer of organisms via ships' ballast water and hulls were reviewed. This material includes an assessment of the types of ship vectors in relation to the introduction of non-native species, and a review of ballast water control and management technologies.



## **Issues related to mariculture**

With regard to the potential environmental interactions of mariculture, information and advice concerning the need for proper regulatory management and monitoring of mariculture operations were prepared. The Committee adopted interim guidelines for the preparation of Environmental Impact Statements and Environmental Reports for use in relation to the development of large-scale marine shellfish farms.

Information and advice were provided concerning issues in relation to the sustainability of mariculture, including interactions between mariculture and other users of resources in the coastal zone. It was recommended that ICES Member Countries (who have not yet done so) adopt Codes of Conduct for responsible aquaculture.

An overview of chemicals used in mariculture was provided, with a review of the trends in use of these chemicals in several ICES Member Countries.

## **Effects of extraction of marine sand and gravel on marine ecosystems**

The Committee reviewed marine extraction activities in ICES Member Countries during 2001 and the results of assessments of the environmental effects of marine extraction activities. Progress on the development of methods to assess localized impacts from aggregate extraction on fisheries was also reviewed.

New “ICES Guidelines for the Management of Marine Sediment Extraction” were adopted, which replace the previous “ICES Code of Practice on Commercial Extraction of Marine Sediments” and the “ICES Guidelines for Environmental Impact Assessment of Marine Aggregate Dredging”.



## Advisory Committee on Ecosystems (ACE)

Chair: Hein Rune Skjoldal (Norway)

The Advisory Committee on Ecosystems (ACE) met at the ICES Secretariat from 7 to 11 June 2002. During this meeting, the Committee prepared responses to requests from the European Commission Directorate General for Fisheries on the by-catch of small cetaceans in fisheries and on the occurrence of cold-water corals that may be impacted by fisheries; the Committee also provided some preliminary material on issues of concern to the European Commission in relation to the impacts of fishing on the ecosystem. Furthermore, the Committee provided a preliminary response to the Helsinki Commission with regard to a request on marine habitat classification, and, at the request of the OSPAR Commission, reviewed the evidence for the justification for the proposed OSPAR Priority List of Threatened and Declining Species and Habitats.

The 2002 Report of ACE has been published as *ICES Cooperative Research Report No. 254*.

### By-catch of small cetaceans in fisheries

The Committee reviewed the information available on the by-catch of small cetaceans, such as dolphins and harbour porpoises, in fishing gear in fisheries in the Northeast Atlantic. Although data are not available for all fisheries, the information available indicated higher by-catches in the Danish gillnet fisheries for cod, turbot, and other species in the North Sea, as well as some by-catches in fisheries in the Irish Sea. It advised that reduction in overall fishing effort is likely to reduce by-catch and, therefore, be an effective mitigation measure for cetacean by-catch. The Committee considered that there was no scientific basis to support spatial or temporal closures to fishing of areas on a small scale, without overall effort reduction, as an effective mitigation strategy.

As a short- or medium-term measure, the use of pingers (acoustic deterrent devices) on fishing gear may successfully reduce cetacean by-catch. Thus, the Committee considered that the use of pingers should be made mandatory in several specific bottom-set gillnet fisheries. More research needs to be conducted in relation to by-catches in pelagic trawl metiers and potential means of decreasing such by-catches.

### Cold-water corals in the Northeast Atlantic

The Committee summarised the available information on the distribution of cold-water corals, mainly *Lophelia pertusa*, in the Northeast Atlantic. These reef-forming corals occur in oceanic waters with a temperature between 4 °C and 12 °C with relatively high water flow; they may occur at depths from 40 m in Norwegian fjords to depths greater than 1000 m off the continental shelf of Norway, off the northwest coast of the United Kingdom

and the west coast of Ireland, and around the islands of Madeira and the Azores. The largest *Lophelia* reef complexes have been found off the coast of Norway. An area to the northwest of the United Kingdom contains a field of some hundreds of small (100 m diameter, 5 m high) seabed mounds (called the Darwin Mounds) located at about 1000 m water depth in the northeast corner of the Rockall Trough. These mounds are covered with living *Lophelia pertusa*.

Effects of fishing on the cold-water corals arise when fishing gear physically impacts the corals or through indirect effects such as wash or sedimentation. The most obvious impact of trawling is mechanical damage caused by the gear itself, which kills the polyps and breaks up the reef structure. Trawling also causes resuspension of sediments that could affect corals growing downstream. The only way of completely preventing damage by fishing activities to areas of cold-water corals is through accurate mapping and then closing them to towed gear that potentially impacts the bottom.

### Potential impacts of current fishing practices

Initial consideration was given to the issue of sensitive habitats in relation to the impact of current fishing practices. As the scientific information presently available was inadequate to evaluate the impact of fishing practices on sensitive habitats, the Committee identified the types of activities that are required to provide the scientific basis for advice on this subject. It then conducted a brief overview of selected habitat types (e.g., deepwater biogenic habitats, intertidal mudflats) that may be impacted by specific types of fishing methods, such as trawling, longlining, and dredging.

The Committee prepared background information concerning an evaluation of the impact of current fishing practices on non-target species. There was a lack of information on discards of non-target species; however, progress is being made with regard to a review of information on sharks and rays, which, owing to their life history characteristics, are sensitive to additional mortality.

The Committee reviewed the threats to the genetic diversity of exploited fish stocks and means for protecting the full genetic diversity within and among populations of fish affected by fishing. Management objectives for maintaining genetic diversity within a species was also described and initial advice to meet these objectives was prepared.



## **Ecological dependence in fisheries management advice**

As an initial response to a request concerning consideration of ecological dependence in management advice, an overview of the issue in this context was prepared. This included when ecological dependence is likely to be significant in management decisions, and how ecological dependence affects management advice. Examples were given of situations where ecological dependence is already considered in management advice, including Barents Sea capelin and sandeel in the Shetland area. Several stocks were identified for which ecological dependence may need to be considered in the preparation of management advice.

## **Marine habitat classification and mapping**

The Committee prepared a brief overview of the issues that need to be addressed in the further development of a classification system for marine habitats and in the preparation of marine habitat maps. This relates also to the considerations in relation to the need to classify and map “sensitive habitats” with regard to fishing practices. Based on a request from the Helsinki Commission, indication was given of a way forward to adapt and extend the current habitat classification systems to the Baltic Sea area.

## **Threatened and declining species and habitats**

OSPAR requested ICES to review the data on which the justification of the OSPAR Priority List of Threatened

and Declining Species and Habitats will be based. The Committee summarised its advice on the adequacy of the evidence for the existence of actual declines or threats to most of the species and habitats on this list.

## **Ecological Quality Objectives**

In the light of the provisions of the Bergen Declaration of the Fifth International Conference for the Protection of the North Sea agreeing to use the ecosystem approach to management in the North Sea, the requirements of the Bergen Declaration and their implications in relation to the development of Ecological Quality Objectives (EcoQOs) were reviewed. This review restated the criteria for good Ecological Quality metrics set forth in the 2001 ACE report (*ICES Cooperative Research Report* No. 249) and evaluated the ten EcoQOs selected in the Bergen Declaration for a North Sea pilot project according to these criteria. Advice was provided on possibilities for improving the performance of the EcoQ metrics, where applicable. Scientific advice was also provided on the medium-term development of additional EcoQOs that have been requested in the Bergen Declaration.

## **Ecosystem approach to management**

There are a number of national and international programmes to develop an ecosystem approach for the management of marine resources, both within the ICES area as well as globally. While there is a general consensus as to the intent of the expression “ecosystem approach”, the actual definitions can vary from programme to programme. This must be considered when interpreting reports on the implementation of the “ecosystem approach”.



## **Fisheries Technology Committee (B)**

Chair: Stephen J. Walsh (Canada)  
Rapporteur: David Somerton (USA)

### **Opening**

The Committee met on 30 September from 14:00 to 18:30 and October 3 from 16:00 to 18:30, with 21 and 26 participants at the respective sessions. These included 17 Committee members at each session. The Committee dedicated the meeting to the memory of Otto Gabriel of Germany, a long-time member of the Working Group on Fishing Technology and Fish Behaviour and the Fisheries Technology Committee, who passed away in July 2002.

### **Reports of Working/Study Groups/Planning Groups**

#### **Working Group on Fishing Technology and Fish Behaviour (WGFTFB)**

The report of the 2002 meeting of the Working Group on Fishing Technology and Fish Behaviour is in Doc. B:01. It considered research on five Terms of Reference. In addition, reports were reviewed from: a) the Study Group on Mesh Measurement Methodology, b) the subgroup reviewing the size selectivity of Baltic cod trawls, and c) the subgroup compiling a manual on the selectivity of static fishing gear.

Trawl performance modelling was reported to have progressed to such an extent that software is now commercially available that allows graphical visualization of a trawl using geometry, construction details, and operational parameters specified by the user. Although it was recognised that trawl simulation could reduce the need for field trials, some members were sceptical about the ability of the models to include sufficient realism to capture the performance variability seen in field trials. The use of archival tags on ground fishes was reviewed with emphasis on determining the timing and extent of daily and seasonal depth migrations, which were considered as possible factors affecting the catchability of trawl surveys. One of the talks presented a new approach for geo-location using archival tag data with a tide height prediction model. The use of technical measures, such as codend mesh size and selection grids, and the use of codend protection bags on size and species selectivity was reviewed. Although technical measures are usually demonstrated to be effective under actual fishing conditions, concern was expressed that fishers alter their gear in ways that thwart the intent of the technical measure or that inadequate enforcement allows fishers to ignore legally required measures. Effectiveness of technical measures will be addressed again as a Theme Session at the 2003 ASC. The use of codend strengthening bags was shown to reduce the size of 50% selection and hence the effectiveness of any specified minimum codend mesh size. In some cases, strengthening bags are truly justified (e.g. to prevent seal

damage or the bursting of netting with large catches). However, other cases may be an attempt by fishers to intentionally reduce the effective codend mesh size.

A WGFTFB subgroup working on a manual for the measurement of the selectivity of static gears, similar to the ICES manual for the selectivity of towed gears (*ICES Cooperative Research Report No. 215*), reported that they expect to have a draft within one year. A WGFTFB subgroup that reviewed the report of the IBSFC scientific meeting on technical measures reported that, for Baltic Sea cod, trawls with diamond mesh codends made of 4-mm double strand polyethylene twine having a mesh size of 140 mm would produce the same L50 as trawls fitted with 120-mm BACOMA windows. This represents an increase of 10 mm above the minimum mesh size for polyethylene codends. The Group found that there is currently insufficient data on polyamide codends to allow a similar type of analysis.

#### **Working Group on Fisheries Acoustics Science and Technology (WGFAST)**

The Working Group on Fisheries Acoustics Science and Technology (WGFAST) met following the Symposium on "Acoustics in Fisheries and Aquatic Ecology". Its report is in Doc. B:05. Fifty-one participants attended the meeting. The agenda included: a) a discussion on the results of the ICES Symposium on "Acoustics in Fisheries and Aquatic Ecology" held in Montpellier during the previous week; b) decisions on items discussed at the 2001 meeting; c) an initial discussion on the 2001 resolution concerning the evaluation of the possibilities and limitations of getting hydroacoustic data from commercial fishing vessels; d) a discussion on acoustic seabed classification; and e) the review of the work of the PGHAC Planning Group on the HAC standard data exchange format.

The 2002 WGFAST recommendations resulting from this meeting are that: A Study Group on Acoustic Seabed Classification (SGASC), reporting to FTC and making its report available to WGFAST, is to evaluate acoustic seabed classification technologies and applications, its underlying physics, theoretical basis, and empirical practices with reference to scales of observations, data quality and standards, classification methods and criteria, ground-truthing means, sampling design, and the combination of this ancillary information in studies on fish distribution, abundance and ecology. This Study Group should include members of other Committees or Working Groups interested in acoustic seabed classification. A Study Group on the Assessment of the Feasibility of using Fishing Vessels for Acoustic Data Collection (SGFAD), chaired by William Karp and reporting to WGFAST, should be created for the prompt evaluation of the possibilities and limitations of using



fishing vessels to collect acoustic data for fish stock assessments and recommend guidelines and standards.

#### **Study Group on Methods for Mesh Measurement Methodology (SGMESH)**

In 2001 and 2002 (Doc. B:02), activities of SGMESH were concentrated on defining new measuring forces for mesh-opening measurements. Study Group members performed a series of mesh measurements on selected netting materials representative of that currently used in commercial codends in the ICES Area. The ICES 4-kg mesh gauge underestimates the mesh openings for most of these nettings. Based on these results and on the availability of an inventory of netting materials currently in use for codends (collected by the Study Group), the Study Group proposes to test new measuring forces for specific groups of nettings. The proposed new measuring forces were increased to 100 or 130 N (approx. 10 or 13 kg) for larger meshes (e.g. > 55 mm), but remained at 40 N (approx. 4 kg) for smaller meshes made of thinner twines. Before formulating final advice, these measuring forces will be tested on the previously measured netting samples and compared with the results obtained by other mesh measurement methodologies. These tests are imperative to assure that transition to the new measuring forces will not be detrimental to codend selectivity and should, therefore, deliver results similar to the present procedures set down in technical measures legislation.

The Study Group reaffirmed its earlier conclusion to maintain the definition of mesh size as given in the international standards (ISO/CEN). The Study Group drafted specifications for a suitable mesh measurement methodology. The Study Group further recommends the use of one single methodology, using a longitudinal gauge, for scientific, enforcement, and industrial purposes. A standardization of mesh measurement practices will eliminate bias due to different methodologies.

An *ICES Cooperative Research Report* on the Study Group's activities, results, and recommendations will be drafted for the 2003 meeting. An EU project, aimed at producing and testing an improved instrument for mesh measurement by fisheries inspectors, scientists, and the industry, starts on 1 October 2002. The new instrument should become available in 2005. R. Fonteyne (Belgium) was reconfirmed as Chair for a second term.

#### **Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB)**

The Study Group did not produce a written report. Specific recommendations emerging from this meeting were presented orally to the Committee. These were:

- each country conducting acoustic surveys in the Baltic Sea should store TS values of herring and sprat on all available frequencies (i.e. 38, 120 kHz);
- cage experiments should be conducted to compare TS length distribution with *in situ* measurements of herring;

- herring and sprat should be collected for radiography from other areas and seasons to be included in the backscattering models, as they become available;
- the suggested protocol for TS measurements should be applied during all 2002 acoustic surveys in the Baltic Sea;
- a Term of Reference should be included in the 2003 meeting of WGBIFS to investigate the TS distributions and length-frequency distributions from the 2001-2002 surveys.

The new Chair of SGTSEB will be B. Lundgren (Denmark). In addition, members of SGTSEB will meet during the April 2003 meeting of WGBIFS to discuss target-strength matters with Baltic acoustic colleagues and to prepare for the 2003 meeting of SGTSEB.

#### **Planning Group on the HAC Data Exchange Format (PGHAC)**

Progress on the development of new platform attitude tuples (41 & 10140), assigned for developers in 2001, was reviewed (Doc. B:04). Unfortunately, the new tuples did not allow for the use of attitude sensor systems to relate the position of a towed system to a vessel. Two new tuples were defined: a "sub-channel" tuple (42) and a "ping style" tuple (10142) for the data flow. The use of these tuples will be reviewed in 2003.

The latest state of development of Single Target Information Tuples (4000 & 1009) was approved. However, it was determined that there was no field available for the inclusion of the TS Gain figure available from SIMRAD systems. It was agreed that this should be included in the channel tuple 2001. It was agreed that there was no need for the use of both Big and Little Endian format and that software could be coded in Little Endian only. It was agreed that the HAC standard should be modified to allow only data files written in Little Endian format. As there is no single agreed international structure for 8-bit characters, which could result in confusion between countries, developers, and software, only 7-bit characters will be specified. In principle, the use of variable length tuples would be desirable. However, it was recognised that this would be a major re-coding task.

It was therefore agreed, subject to a two-month approval period that:

- there would be no rewrite for existing tuples,
- new tuples (after this meeting) would be variable in length and any software should read the tuple for length prior to use.

Where small modifications need to be made to existing fixed-length tuples, this would be carried out using "patch tuples". These would be small, variable-length tuples. The original tuple to which the patch refers will indicate the presence of the patch using an entry in the "attribute" field.



The new EK60 tuples were presented by the SIMRAD developers, but are not yet finalised owing to a number of unresolved questions. It was agreed that a solution to the problem of increasing amounts and volumes of data to be archived was to store the data in 16- rather than 32-bit form. As a result, it was agreed that the C16 tuple for storing compressed 16-bit data (10040) should now be included in the standard.

The report also includes an updated list of the tuples required for HAC compatibility, and the current abilities of the main software packages to read and write these tuples.

## **Consultative Committee and Fisheries Technology Committee business**

### **ICES Strategic Plan and integrated Action Plan**

The Chair covered the highlights of the Action Plan as they apply to the Terms of References of the Fisheries Technology Committee and its Working Groups. Cross-Committee collaborations were evident in many of the components of Goals 1 to 5 showing the Committee's links with the Resource Management, Living Resources, and Marine Habitat Committees, and with ACE and ACFM. The Chair stressed that this document, along with the FTC Action Plan and the Strategic Plan are "living documents", and they will all continue to evolve with the shifting priorities in research. As a result, these documents will be updated accordingly to reflect these shifts.

### **Review of the structure of the Fisheries Technology Committee**

An informal group of Committee members had been assembled by the Chair during the past six months and worked by e-mail to review the structure and activities of the Committee; an interim report was given. The group had focused on the request coming to all Committees from the Strategic Plan to review and rationalize its Working, Study, and Planning Groups and areas of priorities.

The following issues were raised and discussed: Requests for scientific information from Advisory Committees may best be handled by the formation of *ad hoc* sub-groups of experts who work on the issue during the year, then present their results in a plenary session for a wider input. If there is an urgent request from other Science Committees then this can also be handled in a similar manner. Otherwise, a Study Group would be formed if the topic is substantial. The format of the Working Group meetings is more like a mini-symposium than the classic ICES Working Group format. This was considered justified because much of the actual work of WGFTFB and WGFASST is done elsewhere and the meetings are simply a clearing house for that work. However, the format of the meetings needs to be more focused on specific topics (i.e. reduce the number of them) by making use of such techniques as a panel of experts set

up to investigate the background of a particular area of interest, reducing the number of presentations, and using posters to convey information.

The Committee stressed that more time should be allocated to the Working Group business, especially the topics for succeeding meetings, Theme Sessions, symposia, and workshops. There was a concern about the attendance at Working Group meetings increasing to the point that hosting them together would become a logistic problem; however, the Committee agreed that with sufficient planning this should be easily dealt with accordingly. The FAO co-sponsorship will not substantially increase the membership of WGFTFB and will tend to focus the agenda on technical measures and development of environmentally benign fishing gears.

The Committee reaffirmed their need to continue with Joint Session meetings of the WGFASST and WGFTFB during their annual meetings to cover scientific issues of overlapping interest. The Terms of Reference for the Joint Session meetings should be developed at the Working Group level and then ratified at the Committee level the year before the annual meetings. The joint meetings will be co-chaired by the Chairs of both Working Groups who will decide prior to the start of their meetings the final topics that will go into the joint session.

After assessing the structure and activities of the Committee, members concluded that there was probably a need to form another Working Group in the near future to deal with the ever-increasing demands of survey design and analysis. Some of this work is currently being handled by the Committee's two Working Groups, and the Committee also recognised that some other Working Groups in the Resource Management and Living Marine Resources Committees were dealing with this issue as well. As a first step in assessing the need for this new Working Group, the Committee recommended that the Term of Reference of the proposed Study Group on Survey Trawl Gear for the ITBS should be expanded to include some of the objectives dealing with survey design and analysis.

The Committee requested that the Chair discuss with the Consultative Committee a request to permit the names of the Chair and Rapporteur to be cited as authors of the Working/Study and Planning Group reports instead of the conventional "ICES". This arose because many members are evaluated for promotion in their respective countries based on the number of publications they list. In addition, the Committee agreed that all contributors to *ICES Cooperative Research Reports* should be included as authors.

The Committee proposed that the informal review group, assembled by the Chair, should continue its work during the next year and recommended that it be formalized into a Study Group consisting of the Chairs of both Working Groups, Chair of the Committee, and one other member from each Working Group and from the Committee. This



Study Group would work by correspondence to finalize its report.

### **FAO co-sponsorship of the Working Group on Fisheries Technology and Fish Behaviour (WGFTFB)**

The topic of joint ICES/FAO sponsorship of WGFTFB was summarized by Wilfried Thiele, FTFB member representing FAO. He reported that from the FAO perspective, the newly established joint FAO/ICES sponsorship of WGFTFB will probably not result in much change in the scientific areas considered at present. Many of the current areas of emphasis such as the environmental effects of fishing and by-catch reduction and technical measures are of prime concern to FAO. He reiterated that the formal relationship is based on an MoU that is now being reviewed by the FAO legal department. One concern of FAO is to ensure that joint sponsorship does not commit FAO to a financial responsibility. Initially, FAO will invite to the next FTFB meeting a total of approximately 3 to 5 people from the various countries associated with FAO. FAO will investigate the hosting, in Rome, of the 2005 meeting of both Working Groups.

The Norwegian Committee member proposed a new organisational structure for WGFTFB to better accommodate the needs of FAO, the elements of which are:

- the Terms of Reference for each meeting will be chosen by a Committee, presumably with input from WGFTFB membership, consisting of one representative from each of Europe, North America, and FAO.
- once the various proposed draft Terms of Reference are approved, the Committee will oversee the intersessional work on the overall draft Terms of Reference that will lead to more focused examinations of the individual draft Terms of Reference. In addition, FAO could contribute to various secretarial duties of the Working Group and possibly host the Working Group Website.

The Committee concluded that WGFTFB should consider this proposal at its 2003 meeting in Bergen.

### **Forthcoming ICES symposium and Theme Sessions**

The Committee agreed that as a result of the discussions at the 2002 Theme Session on “Integration of Acoustic and Optical Survey Techniques and Marine Biological Data for the Purpose of Seabed Classification”, the proposed Theme Session for the 2003 ASC on “Acoustic Seabed Classification Bottom Typing” should be shifted to the 2004 Annual Science Conference.

The Committee endorsed a proposal for a 2003 Theme Session on “The Historical and Current Use of Conservation Measures and an Evaluation of their Effectiveness with Special Emphasis on North Atlantic Demersal Fisheries”, with Andy Revill (UK), Bob van Marlen (Netherlands), and Phil Kunzlik (UK), as

conveners. The Committee endorsed a proposal for a 2004 Theme Session on “New Developments in Fisheries Acoustics: Applications in Bottom Trawl Surveys and Multi-frequency Species Identification” with Nicolas Bez (France), Dave Reid and Paul Fernandes (UK) as co-conveners.

The Committee was informed that the 2003 ICES Symposium on “Fish Behaviour in Exploited Ecosystems” is on schedule with its activities. The Steering Group met twice during the ASC. It has finished reviewing 160 abstracts and has selected 130 for oral or poster presentation. The conveners will be sending out notification to the authors before the end of October. Further details will be announced on the Symposium Website ([www.imr.no/fishbehave](http://www.imr.no/fishbehave)).

### **Draft resolutions**

All existing resolutions for the continuing work of the present Working, Study, and Planning Groups were approved. Five new Study Groups were proposed as follows:

- Study Group on the Review of the Structure of the Fisheries Technology Committee [SGRSFTC].
- Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas [SGSTG].
- Study Group on Acoustic Seabed Classification [SGASC]<sup>+</sup>. The Terms of Reference for this Study Group were considered after the 2002 Theme Session on this topic. Although the original intent was to include representatives from the Marine Habitat Committee, no consensus was achieved at the Theme Session. However, members of WGFAST felt that sufficient interest exists among its own membership to warrant the formation of this Study Group.
- Study Group on Assessment of the Feasibility of using Fishing Vessels for Acoustic Data Collection (SGFAD);<sup>+</sup>
- The Committee also considered a request for a Study Group on Survey Standardization. Considerable discussion was generated by this proposal. It was reported that this need was identified at Theme Session J on “The Use of Marine Research Vessels in ICES – Options for the Future”. This suggested that there may be a need to address the problem of survey standardization in a Study Group. The Committee was not unanimously in support of this Study Group, given the present workload.

The Committee also noted that:

- the issue of standardization should instead be considered by those Working Groups already supervising international surveys such as IBTS and BITS, and
- although the objectives of the proposed Study Group are somewhat different from those of the Study

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<sup>+</sup> This proposal was later merged by the Consultative Committee into the Terms of Reference of WGFAST as a subgroup.



Group on the IBTS Survey Trawl [SGSTG], many of the same people would be needed at both Study Groups to address the issues, putting a strain on limited financial budgets for travel. The travel issue could be partly resolved by coordinating the meetings of the two Study Groups in back-to-back sessions in Vigo, Spain. Two days would be required for the STSTG and three days for the Study Group on Survey Standardisation.\*

## Other business

### New Working Group Chairs for 2004–2006

The Committee noted that the term of office for the Chairs of WGFTFB and WGFASST will end in 2003. Due to the confusing nature of the 2000 selection process in choosing a candidate for appointment as Chair, the following procedure was adopted. At the beginning of the 2003 Working Group meeting, the Chair will appoint a three-member committee, one of whom will be designated Chair, to coordinate the selection process. The task is to develop the selection criteria, seek out potential candidates, and host an election (paper ballot only) if necessary. The selection and announcement of the successful candidate will be made on the last day of the meeting. The appointments of new Chairs will take effect from 1 January 2004, subject to confirmation by the Committee at next year's meeting.

### 2004 Expert Group meetings

A proposal from the Polish member to host the meetings of both WGFTFB and WGFASST and the joint session in Gdynia in 2004 was gratefully acknowledged.

### Remits of WGFASST and WGFTFB

The Committee discussed a suggestion that the remits of both WGFASST and WGFTFB, first developed in 1983 at the inaugural setting up of both Working Groups, should be updated to reflect the new millennium. It endorsed the following new remits of both Working Groups and recommended that they appear at the beginning of each annual report and also on the web pages of each group. The new remits are as follows:

**WGFTFB:** *The Fishing Technology and Fish Behaviour Working Group shall initiate and review investigations of: scientists and technologists concerned with all aspects of the design, planning, and testing of fishing gears used in abundance estimation; selective fishing gears used in by-catch and discard reduction; and benign environmental fishing gears and methods used to reduce impact on bottom habitats and other non-target ecosystem components, including behavioural, statistical, and capture topics.* The Working Group's activities shall focus on all measurements and observations pertaining to

both scientific and commercial fishing gears, design and statistical methods and operations, including benthic impacts, vessels, and behaviour of fish in relation to fishing operations. The Working Group shall provide advice on application of these techniques to aquatic ecologists, assessment biologists, fishery managers, and the industry.

**WGFASST:** *The Fisheries Acoustics Science and Technology Working Group shall initiate and review investigations by scientists and technologists concerned with the design, planning, and execution of all forms of acoustic and other related measurements and observations pertaining to: abundance estimation and distribution of fish and plankton, fishing operations, and the classification and mapping of the seafloor; including behavioural, statistical, and capture topics. The Working Group's activities should stimulate advances in theory, technology, standard methodology, survey design, and fish behaviour and provide advice on application of these techniques to aquatic ecologists, assessment biologists, fishery managers, and the industry.*

## Close

The Chair thanked everyone for their excellent contributions and support for his first meeting. He reminded everyone that the historical synthesis of the work of WGFTFB and WGFASST has been published in the *ICES Marine Science Symposia* series "100 Years of Science under ICES", Vol. 215, 2002.

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\* The Consultative Committee later rejected this proposal, preferring to place the issue on the agenda of various of the survey Working and Study Groups.



## **Oceanography Committee (C)**

Chair: Franciscus Colijn (Germany)  
Rapporteur: Ken Drinkwater (Canada)

The Oceanography Committee met on Monday 30 September from 14:00 to 18:00 (29 present including 7 members) and on Thursday 3 October from 16:00 to 18:00 (41 present including 8 members). In addition there was an informal meeting of the Chair and 8 Expert Group Chairs or incoming Chairs held on Tuesday 1 October from 11:15 to 12:00.

### **Appointment of Rapporteur**

Ken Drinkwater was appointed Rapporteur.

### **Adoption of agenda**

The Chair opened the meeting by welcoming the members and reviewed the main items of the agenda, which included consideration of the ICES integrated Action Plan and future Committee activities.

In accordance with last year's decision by the Committee, a detailed review was undertaken only on a limited number of Working Groups (3) and Study Groups (1). This was because the Committee decided that detailed reviews of all Working Groups every year was not required, plus problems of obtaining the necessary number of reviewers.

The draft agenda was adopted with no changes or additions.

### **Matters referred by the Consultative Committee**

The ICES Action Plan was discussed briefly. Bill Turrell (UK), Chair of the Publications Committee, noted that some additions and modifications had been made to strengthen the section relevant to publication activities.

The Five-Year Action Plan for the Oceanography Committee was discussed and no changes were needed at this time. Discussion centred on the Committee's input to the Advisory Process, which has traditionally been of a minor nature. Direct requests from the Advisory Committees have been few, and few products developed by the Committee are presented to them. Recent exceptions include the annual status summaries on ocean climate, zooplankton, and harmful algal blooms. Although ACME uses the Ocean Climate Status Report, those preparing the Status Report are unaware of how it is being used and have had no feedback from ACME, which is needed if improvements are to be made. The Chair agreed to seek such feedback. Late submissions of the Working Group and Study Group reports hamper efforts to present the work of the Committee to ACME. The Chair emphasized the importance of ensuring that

the reports be submitted by the deadline specified in the Resolution for the meeting.

### **ICES/IOC GOOS activities**

#### **ICES/IOC EuroGOOS Planning Group on the North Sea (PGNSP)**

The Chair of the Planning Group, H. Loeng (Norway), reported on the meeting held in Bergen during February (Doc. C:02). The principal task for the Group was the planning of a North Sea Ecosystem Pilot Project (NORSEPP) under GOOS. They proposed that the ICES/GLOBEC office coordinate the project. NORSEPP's objectives are to integrate existing monitoring and modelling of the physical, chemical, and biological environment to improve advice to fisheries managers. The report was presented to the SGGOOS, whose remit is to oversee the plans.

The proposed terms of reference of PGNSP were reviewed and adopted with minor changes. The Committee noted that this project is principally producer-driven as opposed to user-driven. It considered that the pilot project needed to generate useful products and to promote their use. The Committee noted that EuroGOOS co-sponsors this Group, ensuring that good contact is maintained between them and ICES.

#### **ICES/IOC Steering Group on GOOS (SGGOOS)**

Bill Turrell (UK), Co-Chair of SGGOOS, presented the report (Doc. C:10). Members from ICES and IOC attended. Talks highlighting monitoring activities throughout the North Atlantic were presented. The Steering Group moved to renew PGNSP under a new Chair and to propose NORSEPP as an ICES Project. Support for submission of an Expression of Interest to the European Union Framework 6 Programme on NORSEPP was given and help requested from the ICES/GLOBEC office to carry this out. Glen Harrison (Canada), Co-Chair, noted that three pilot projects are being planned: the North Sea, Bay of Biscay, and the Gulf of Maine. A meeting on the latter was held last month between the US and Canada. Next year's meeting of SGGOOS is scheduled for Nantes, France, in order to promote the Bay of Biscay pilot project.

The Committee concluded this item by discussing GOOS and its relation to other international programmes such as JCOMM (Joint Technical Commission on Oceanography and Marine Meteorology) and Coastal Ocean Observing Programme (COOP). The Co-Chairs made the point that one of their goals was not only to explain to ICES what GOOS is doing, but also to explain to GOOS what ICES



can do. The Terms of References and recommendations of the SGOOS were reviewed and approved by the Committee.

## **Reports from other Working Groups, Study Groups, etc.**

### **Study Group on Modelling of Physical/Biological Interaction (SGPBI)**

The Committee Chair provided the review of the SGPBI report (Doc. C:09). He noted the extensive range of models that the Study Group was dealing with and felt the workload was very ambitious. He was pleased that the Group was seeking potential applications of these models for management purposes, with eutrophication models already providing results. Present ecosystem models, it was noted, usually only include phytoplankton and perhaps zooplankton but seldom fish, owing to a lack of our understanding of the linkages. The report demonstrates the capability of present models, discusses their strengths and weaknesses and provides the reader with numerous references. The comparison of different ecosystem models (7) for the North Sea was considered particularly useful. The report was considered understandable and useful, even for non-modellers. One problem identified in the report was the lack of repeat participants, which delayed progress of the Group and efforts should be made to stabilize the membership.

The Chair, Charles Hannah (Canada), commented that the meeting brought several new people into ICES. Attendees found presentations and discussions of new techniques, models, and results useful, and the Study Group Chair felt that it must continue in order to attract members. Although the Study Group identified numerous tasks, he was confident that the members would carry them out. The Study Group is concerned with both present models and future models. More biological data, especially on life history strategies of key species, was identified by the Study Group as a high priority need.

The Terms of Reference for 2003 were reviewed and adopted.

### **Workshop on Contrasting Approaches to Understanding Eutrophication Effects on Phytoplankton (WKNUP)**

The Committee Chair gave a very brief summary of the report of this Workshop (Doc. C:05). The Workshop was well attended (43 attendees from 13 countries) and feedback from participants was highly favourable. The Workshop presentations will be published in a special issue of the *Netherlands Journal of Sea Research*. Abstracts and conclusions from the workshop are in the report.

### **Working Group on Phytoplankton Ecology (WGPE)**

The Committee Chair presented the reviews of this Working Group (Doc. C:06). The overall impression of

the reviewers was that it was a good report. The recommendations to measure primary production had not been adopted by ACME, as they had not been convinced by the Working Group's arguments. While the Working Group has links to other Groups (e.g., WGZE, WGHAB, OSPAR), it would be useful to have attendees from at least the other ICES Working Groups at the WGPE meeting, and a joint meeting of WGZE and WGPE was recommended. The reviewer agreed strongly with the Working Group in stressing concern over the potential termination of the 30-year time-series of phytoplankton from Marsdiep in the southern North Sea.

Lars Edler (Sweden), Chair of WGPE, noted that the Workshop attracted several new people to ICES and many attended the WGPE meeting. The Working Group discussed a Theme Session or Symposium on new techniques and will contact the WGHABD to explore the possibility of a joint proposal. Deep concern was again expressed over the termination of the long time-series of phytoplankton, not only at Marsdiep but at other sites in Europe and the US as well. In regards to primary production measurements, many nations (e.g. Norway) or Groups are no longer conducting them because of uncertainty about what is being measured, however, HELCOM continues to call for such measurements.

The Committee suggested that the WGPE explore the primary production estimates now being estimated routinely from satellite imagery. The Working Group Chair indicated that no one currently in WGPE has such expertise but one will be sought. The Committee Chair stated that in Germany ground-truth data on primary production are being collected along ferry routes. The Committee felt this was highly valuable in determining the accuracy of the satellite estimates at high latitudes. The Terms of Reference for 2003 were reviewed and adopted.

### **Study Group on an ICES/IOC Microplankton Protist Phytoplankton (SGPHYT)**

Due to the illness of the Chair little was accomplished this year and no report was available. The WGPE Chair noted that the Study Group had succeeded in developing a checklist. The proposed Term of Reference recommending a new Study Group as part of the SGPHYT was not supported. It was felt that the appointment of a new Chair should eliminate this need, as the work proposed was not significantly different than that of the SGPHYT. However, the Committee did agree to renaming the Study Group as the Study Group for Phytoplankton and Protist Taxonomy [SGPPT]. The Committee recognised that there was a strong need to finalize the phytoplankton checklist problem, as the HELCOM and OSPAR phytoplankton database is now about to go into operation. Also, a comprehensive phytoplankton checklist is the basis for a proper evaluation of possible changes in the phytoplankton dynamics of the ocean.



### **ICES/IOC Working Group on Harmful Algal Bloom Dynamics (WGHABD)**

Charles Hannah (Canada) presented a review of the report of this Group (Doc. C:03). With the resignation of the previous Chair, the meeting was chaired by Alan Cembella (Canada) and a new Chair nominated: Jennifer Martin (Canada). The report was well organised. The Working Group was encouraged to publish their comprehensive reviews on HAB for the broader scientific community and to maintain the HAB database. The proposed Workshop on Real-Time Observations (WKHABWATCH, Villefranche, France in June 2003), designed to provide observational and modelling experience was encouraged. Given the attendance (13), the ten Terms of Reference seemed overly ambitious. The Working Group needs to address their plans for the large datasets that they have collated.

The Committee noted that this Group was originally established to consider HAB dynamics. While concerned with HAB, the Working Group no longer seems to be addressing the dynamics. One of the reasons is that physicists no longer participate in the Working Group. It was suggested that some of this responsibility for the dynamics be transferred to SGPBI. The Committee was informed that some of this work has been taken up by GEOHAB so the WGHABD may not have to deal as much with this issue. Nevertheless, some members of the Committee felt that this Working Group should again address the issue of HAB dynamics. The Committee Chair will discuss this with the new Chair. The Terms of Reference for 2003 were reviewed and adopted.

### **Working Group on Zooplankton Ecology (WGZE)**

This report (Doc. C:07) was reviewed by Lars Edler (Sweden). It was well written and the Terms of Reference addressed. The summary status report on zooplankton produced by the Working Group was considered particularly important, although there was concern regarding the heavy workload it entails. Continued examination of long-term time-series of zooplankton and development of indices in relation to climate forcing and global warming was encouraged. Wider distribution of the "Plankton Identification Leaflets" through electronic media was also considered appropriate. The lack of monitoring of zooplankton within the EU Water Framework Directive was noted.

Luis Valdes (Spain), Chair of WGZE, reported that there were an increased number of attendees, including data management people to help with zooplankton databases and one member working on gelatinous zooplankton. The Working Group decided to separate the production of the annual status report from the functions of the Chair. Problems have developed in combining the status reports of WGZE and WGPE but these are being worked out. The lack of zooplankton monitoring in the EU Water Framework Directive is a concern but there is little that the Working Group can do to encourage this at this stage. The Committee also noted that preparations for the ICES Symposium on "The Role of Zooplankton in Global

Ecosystem Dynamics" in May 2003 in Spain is on schedule. The Working Group is proposing a second workshop on Zooplankton Taxonomy in June 2003. Finally, the Chair of WGZE commented on the late availability of the review, which he would like to have had before the meeting to prepare comments in advance.

The Committee stressed the importance of the status report and the development of indices. It suggested that there was a need to distil data products and only present the most critical activities. The Working Group Chair acknowledged these problems and undertook to make modifications to accommodate these concerns where possible. Problems such as common units and developing anomalies are now being addressed. It was unclear to the Committee who was using the status report and the Committee Chair agreed to seek feedback from the Advisory Committees. It was reported that ACME was negative towards the incorporation of zooplankton and phytoplankton in OSPAR monitoring programmes, and the reasons why are needed. It was felt that the Committee and the Working Group should be proactive in promoting their status reports. Questions arose on the objectives of the Taxonomy Workshop. Management and biodiversity issues will not be addressed. Ways of synthesizing the data should be considered. Terms of Reference for 2003 were reviewed and adopted with slight modifications to wording.

### **Working Group on Seabird Ecology (WGSE)**

Mark Tasker (UK) presented Doc. C:04. Many seabirds have shown a decline in abundance in recent years, but this is not currently a perceived problem. For example, fulmars have generally been increasing over the last 200 years and have now either slowed down this rate of increase or possibly declined slightly. This may be due to a loss of *Calanus* or by-catch in the fisheries or increased vulnerability to oil pollution. The Working Group examined the possibility of integration of seabird research with other Working Groups. Data loggers are being fitted on seabirds and offer potential for greatly increasing data collections. The seabird communities and their prey consumption are being compared between the eastern and western North Atlantic. The Working Group is also studying the effect of wind farms on seabirds. The Terms of Reference for 2003 were reviewed and adopted without change.

### **Study Group on the Development of Marine Data Exchange Systems using XML (SGXML) and Working Group on Marine Data Management (WGMDM)**

Bob Gelfeld (USA), Co-Chair of SGXML, presented the SGXML report (Doc. C:12) and the WGMDM report (Doc. C:11). XML (Extensible Markup Language) is a markup language for documents containing structured information, such as data sets. The XML specification defines a standard way to add markup to documents, thus removing the current complexities of data exchange. This Group is co-sponsored by IOC, in a particular with IOC's Group of Experts on the Technical Aspects of



Data Exchange (GETADE). The Group is developing a guide on how to use XML for exchanging and receiving data, thus facilitating and encouraging its use within ICES. Most important is the construction of a common data dictionary to define the terms and structure of the data. The Working Group is evaluating generalized approaches and how they may work across various types of data, including physical, chemical, and biological. This work is being coordinated with other data management groups in Europe and around the world. The Terms of Reference for SGXML were reviewed and adopted.

Bob Gelfeld (USA) noted that an important item for the WGMDM was ITIS (Integrated Taxonomic Information System), which is a source of authoritative taxonomic information on plants, animals, fungi, and microbes of the world. The ICES Secretariat intends to adopt ITIS as its standard for its databases. Guidelines for CTD, ADCPs, current meter, Batfish, underway surface samplers, XBTs, etc. have been established. Information on receiving data, value added service, and providing data and information products were also discussed. The Committee was informed that Anthony Isenor, current Chair of WGMDM, had resigned owing to a job transfer and Bob Gelfeld (US) and Lesley Rickards (UK) agreed to their nomination to co-chair next year's meeting. Anthony Isenor will remain as Co-Chair of SGXML for one more year.

During the discussion, the addition of a Term of

Reference on ITIS for the appropriate Working Groups should be added. The Working Group Co-Chair indicated that conversion to ITIS is not easy but its selling point is that the information comes from experts. Some Committee members consider that ITIS is difficult to use and the version on the ITIS Website has not been recently updated and has several mistakes. The Co-Chair reported that the Website is being worked on to correct the mistakes and to make it more user friendly. The Terms of Reference for 2003 were reviewed and adopted.

#### Working Group on Oceanic Hydrography (WGOH)

Bill Turrell (UK), Chair of WGOH, presented Doc. C:08. The Group had a one-day special meeting on Arctic and Sub-Arctic Hydrography. National reports were delivered; these form the basis of the ICES Annual Ocean Climate Status Summary, which is available on the ICES Website and published as an *ICES Cooperative Research Report*. An update on the Edinburgh Symposium indicated that 90% of the posters and 80% of the papers are ready for publication. Completion of the remaining documents should be attained by October 31, 2002. The publication date at this stage is uncertain. An update on the Arctic Surface Ocean Fluxes (ASOF) programme was also presented at the meeting. Various components of ASOF were submitted to EU and NSF for funding. Terms of Reference for 2003 were reviewed and adopted, as was the proposal to publish the 2002/2003 ICES Annual Ocean Climate Status Summary as an *ICES Cooperative Research Report*.

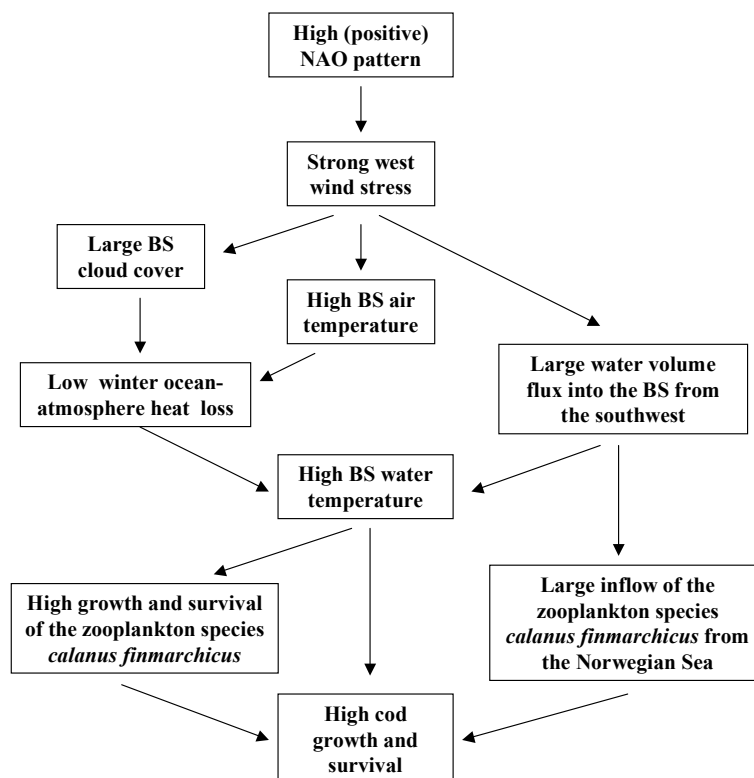


Figure C1. A conceptual model linking the NAO to recruitment of Northeast Arctic cod.



## **Workshop on the Transport of Cod Larvae (WKTCL)**

Keith Brander (ICES/GLOBEC Office) presented Doc. C:13. The Workshop considered four main topics including background information required for transport studies, modelling, consequences of variability in transport, and incorporating information into stock assessments.

Amongst many issues reviewed at the Workshop was the role of the North Atlantic Oscillation in influencing variability in Barents Sea (BS) oceanography and ecology by means of a conceptual model (Figure C1). A high (positive) NAO phase is connected to increased westerly winds over the North Atlantic. This affects BS water temperature by increasing the volume flux of relatively warm water from the southwest, cloud cover and air temperature. Increased BS water temperature influences growth and survival of cod larvae both directly, through increasing the development rate, and indirectly, through regulating the production of nauplii of their main prey – the copepod *Calanus finmarchicus*. Increased inflow from the zooplankton-rich Norwegian Sea further increases availability of food for the cod larvae. High food availability for larval and juvenile fish results in higher growth rates and greater survival through the vulnerable stages when year-class strength is determined.

Much new information was gathered. While strong associations between variability in transport and recruitment could not be established, it was clear that transport models suggest more interconnection between adjacent stocks than is presently thought. A large number of self-directed recommendations were produced. The 18 working documents from the Workshop are posted on the ICES Website.

## **Working Group on Cod and Climate Change (WGCCC)**

Ken Drinkwater (Canada), Chair, presented Doc. C:15. The future activities of the Working Group were the main items of discussion. They firmed up their synthesis activities including updating *ICES Cooperative Research Report* No. 205 on “Spawning and Life History Information on North Atlantic Cod Stocks”, a book on cod, and an ICES symposium. The latter, on “The Influence of Climate Change on North Atlantic Fish Stocks” is scheduled for Bergen in 2004, with planning well under way. Activities beyond the synthesis were discussed, including fisheries management issues and the response of cod to CO<sub>2</sub>-induced climate change, but no firm decisions have been finalized. Hal Batchelder, Co-Chair of the PICES/GLOBEC Working Group on Climate Change and Carrying Capacity, made a presentation on possible cooperation and joint work at the invitation of the WGCCC. He also expressed interest in discussing potential cooperation in other areas, including harmful algal blooms (WGHABD), biophysical modelling (SGPBI), CPR transects (WGZE),

and studies on herring (LMRC). An outcome of the Workshop was a proposal for a Theme Session on Transport in 2003. Several members of the WGRP attended the Workshop and first day of the WGCCC meeting to discuss joint activities between the two Working Groups. The Terms of Reference for 2003 were adopted as proposed.

## **Steering Group for the ICES/GLOBEC North Atlantic Programme and Regional Office (SGNARO)**

Ken Drinkwater (Canada) presented Doc. C:17. Discussion centred on the development of pan-Atlantic research on *Calanus* and cod with a decision to submit an Expression of Interest for EU funding that subsequently was carried out. A role for the ICES/GLOBEC Office has been proposed for NORSEPP and the implications for the office were discussed. Discussions were also held on the relationship between the ICES/GLOBEC Office and the international GLOBEC Office. The external funding for the Office was reviewed and is mostly in place to the end of 2004. The present shortfall of 15% will be sought through a variety of sources. The Terms of Reference for 2003 were adopted as proposed.

## **Study Group on Incorporation of Process Information into Stock-Recruitment Models (SGPRISM) and Working Group on Recruitment Processes (WGRP)**

These reports (Doc. C:01 and Doc. C:14) were presented by Pierre Pepin (Canada), Chair of WGRP. SGPRISM held its third and final meeting. Their investigations into incorporation of environment into the assessment process have been taken as far as single-species models would allow. Further work would need to consider multispecies models. There was sufficient basis to examine fecundity and reproduction, which resulted in a recommendation for a new Study Group called the Study Group on Growth and Maturity (SGGROMAT). It will be linked to a Northwest Atlantic Fisheries Organization (NAFO) group doing similar work. There have been many responses to the call for interest in the Study Group. The Committee agreed to the formation of SGGROMAT and accepted the proposed Terms of Reference for 2003.

The meeting had 17 attendees, up from previous meetings. They reviewed the significant progress being made in numerous recruitment projects. They held one day of workshops to discuss recruitment processes. They are considering joint activities with WGZE on fine-scale processes, possibly in a couple of years. Proposals were put forward to publish the results from SGPRISM and one reports entitled “Precision and Accuracy of Tools in Recruitment Studies” by E. Moksness (Norway) and other as *ICES Cooperative Research Reports*. The latter was reviewed by the Working Group and felt to be a valuable source of information. These two proposals and the Terms of Reference for 2003 were reviewed and adopted by the Committee.



## **Discussion of review procedure**

The Committee endorsed the present review procedure to provide extensive reviews only every three to four years, with the choice of Working Groups being reviewed in a particular year at the discretion of the Chair. The Chair agreed to try to send the reviews to the appropriate Working Group Chairs two to three weeks prior to the meeting. The reviews should be of the present year's report, but the reviewers will also be asked to look at the past year's reports as well. The Committee confirmed that reviewers would be from within ICES. The Working Group Chairs will be responsible for most of the reviews, either personally or through finding a reviewer from among their members.

## **Proposal for Theme Sessions for 2003 and 2004 ASC**

The Committee decided to delay the Theme Session submitted by the WGRP entitled "Recruitment Process: Applying New Tools to Old Problems" until 2004. No other changes to the Theme Session topics were made although suggestions for minor wordings were provided to the Chair. Views were expressed that the Theme Session on the State and Stability of the Northern North Atlantic should be strongly supported to help attract physical oceanographers. The Chair noted that he is proposing an invited lecture on eutrophication and if

accepted, a Theme Session on that subject should also be supported.

## **Informal meeting between Expert Group Chairs and the Committee Chair**

The Chair informed the Committee that he had expressed concern about the limited participation of the Committee Members at the business meeting of the Committee. Moreover, very little help is obtained during the process of reviewing the Working Group reports and activities. As main items for future work he mentioned the GOOS-relevant activities and operational oceanography, and modelling of marine systems.

## **Election of new Expert Group Chairs**

The Oceanography Committee endorsed the following new WG/SG Chairs and Co-Chairs: Steve Hay (WGZE), Lesley Rickards and Bob Gelfeld (WGMDM), Tom Miller (WGRP), Alicia Lavin (WGOH), Geir Ottersen (WGCCC), Jennifer Martin (WGHABD), Anthony Richardson (PGNSP), and Harri Kuosa (SGPPT).

## **Close**

There being no other business the Chair closed the meeting by thanking the participants.



## **Resource Management Committee (D)**

Chair: Carl O'Brien (UK)  
Rapporteur: Nick Bailey (UK)

The Resource Management Committee met on Monday 30 September from 10:00 to 13:00 (21 in attendance), and on Thursday 3 October from 16:00 to 18:00 (34 in attendance).

### **Opening**

The Chair opened the meeting and welcomed the participants, and the Rapporteur was appointed. The Chair outlined the agenda and timetable for the two sessions of Committee business. These were adopted. Attention was drawn to two Joint Committee Sessions involving the Resource Management Committee as follows:

- a Joint Session on Surveys with the Living Resources Committee and the Baltic Committee held on Monday 30 September between 14:00 and 16:45; and
- a Joint Session on Salmon Issues with the Living Resources Committee and the Mariculture Committee held on Monday 30 September between 17:00 and 18:00.

The Chair reminded the Committee of tasks outlined in the Committee's Action Plan distributed in January 2002 and highlighted the five priority areas, namely:

- to improve the scientific basis for the precautionary approach;
- to define and develop the scientific basis for an "ecosystem approach to management";
- to establish a framework for evaluation of management regimes and alternative management strategies;
- to promote the development of methods for resource evaluations and forecasts; and
- to establish and maintain links with scientists in other disciplines, fisheries management agencies and other interested parties.

Progress in tackling these areas has included the re-convening of the Workshop on MSVPA in the North Sea (WKMSNS) and the re-establishment of the Working Group on Methods of Fish Stock Assessments (WGMG), the work of the Study Group on the Further Development of the Precautionary Approach to Fishery Management (SPGA), and the Workshop on Fish Stock Assessment Techniques (WKCFAT).

### **Committee business**

#### **Matters referred by Consultative and Advisory Committees**

The Consultative Committee raised a number of items for consideration by the Resource Management Committee. A request was passed on from the Awards Committee (Chair: John Ramster) for a nominee to assist in the judging of awards for Best Paper Presentation, Best Poster Presentation, and Best Paper by a Newcomer. There was a general reminder of the importance of the Committee's support of the poster session and a request from the Consultative Committee to consider the extensive list of Theme Session proposals for next year and for 2004. The Chair provided an update on the status of the FAO/ICES Symposium on the "Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions". This will now take place in Chile in 2005, providing adequate time to identify co-conveners and finalise arrangements for the Symposium.

The Chair reminded the Committee that its Action Plan provides a way of ensuring that its scientific work remains relevant to the ICES Strategic Plan. Furthermore, the Consultative Committee has asked that the work of each of the Science Committees be aligned with one another. So far, this has been achieved by directly mapping the science work of Committees into the ICES integrated Action Plan.

#### **Speakers and Theme Sessions for ASC 2003 and 2004**

The Committee strongly supported current plans for open lectures and invited lectures for next year's Conference.

The Committee noted various suggestions concerning talks in 2004, which included speakers who are well known in the ICES community. The Chair advised that the normal protocol is to have invited speakers from outside the ICES community, but agreed that these suggestions should be forwarded to the Consultative Committee for consideration.

The Committee noted that, in the recent past, ASC meetings had not contained many Theme Sessions suggested by the Committee, and the Chair felt that early consideration of the 2004 meeting was particularly important. At the start of the 2002 ASC, there was already an extensive list of 23 proposals for 2003 and four for 2004. Numerous other proposals were tabled during this ASC. The Chair drew attention to two proposals of special interest: one from John Simmonds (UK) and Martin Pastoors (Netherlands) on "Evaluation of Management Scenarios and Supporting Data through Simulation", and one from Sakari Kuikka (Finland), Poul



Degnbol (Denmark), and Svein Jentoft (Norway) on “Fishers’ Perceptions and Responses in Management Implementation”. The Committee discussed both of these suggestions but concluded that the “Fishers’ Perceptions” Theme Session might best be deferred until 2004.

Discussion of the “Evaluation of Management” proposal raised the question of whether this session should consider issues raised by the precautionary approach (PA). It was agreed that since this might require answers to more fundamental questions regarding whether to refine the current ICES implementation of the PA or to develop a new approach, this really merited a Theme Session of its own in 2003. During this ASC, a subgroup of the Committee – Per Sandberg (Norway), Frans van Beek (Netherlands), Carmela Porteiro (Spain), and Henrik Sparholt (ICES) – was formed to develop a proposal for a Theme Session in 2003. The draft proposal from this subgroup on “ICES Experience with the Precautionary Approach” was discussed by the Committee. There was some discussion of the proposal, particularly in relation to the FAO/ICES Symposium in 2005. It was felt that any pre-empting of the symposium should be avoided and that the proposed Theme Session should perhaps concentrate on the implementation of the PA rather than considering the evaluation of any benefits. Robin Cook (UK) pointed out that the use of reference points had proved particularly difficult, and the Chair suggested that the title “Reference Point Approaches to Management within the Precautionary Approach” for the Theme Session might be more appropriate. The Session was unanimously proposed by the Committee for 2003 and given second priority.

Further, it was suggested that the “Evaluation of Management” proposal might consider including bio-economic considerations, but several felt that this would create too large a Theme Session and that proposals incorporating these aspects should be developed for 2004. The Committee agreed that since there was considerable recent work to report on, the “Evaluation of Management” proposal should be given the highest priority for next year’s ASC.

Two other suggested Theme Sessions for 2003 were considered to be of special interest. “The Scope and Effectiveness of Stock Recovery Plans in Fisheries Management” was viewed as timely, and if its single-species focus could be shifted to something which incorporated multispecies issues, it would form the third priority area for 2003 in the Committee’s view. However, additional co-conveners from the USA or Canada might benefit this Theme Session. The proposed session on “Experience with and Perspectives on Marine Protected Areas as a Tool for Conservation of Biodiversity and Improvement of Sustainability of Fisheries” also attracted some support, but it was felt that input from the Canadian experience would be valuable.

## **Presentation and adoption of Reports and Draft Resolutions**

### **Planning Group on Surveys on Pelagic Fish in the Norwegian Sea (PGSPFN)**

Jan Arge Jacobsen (Denmark/Faroe Islands) presented Doc. D:07. Iceland, Faroes, Norway, and Russia participated in this work, but the EU were no longer involved. Some interesting observations were reported on temperature regimes, zooplankton distribution, and fish distributions in the Norwegian Sea. A predominant feature of 2002 was the strong inflow of the Atlantic Current and much warmer waters giving rise to higher concentrations of zooplankton and a more northerly distribution in the centres of density of herring. Terms of reference for 2003 were presented, similar to those of previous years.

### **Planning Group on Redfish Stocks (PGRS)**

Thorir Sigurdsson (Iceland) presented Doc. D:08. A report on the 2001 survey of redfish was supplied to ACFM in May 2002. Iceland, Germany, Russia, and Norway participated in the biennial surveys that take place in the Irminger Sea. Results were not promising, with acoustic data showing a downward trend. Environmental conditions at the time were, however, very unusual, with temperatures higher by 2°C. The survey is made difficult by the need to cover such a wide bathymetric range, with the acoustic approach not working in deeper water. Attempts are being made to correlate acoustic and trawl data so that in deeper areas (>400 m) trawl data can be used instead. Terms of reference for 2003 were presented similar to those of previous years.

### **Workshop Course on Fish Stock Assessment Techniques (WKCFAT)**

The Committee Chair provided a brief summary of Doc. D:02. The Workshop was a teaching exercise for young scientists to help them become familiar with assessment techniques employed within ICES. Coby Needle (UK) and Chris Darby (UK) presented the course. Terms of Reference were tabled for 2003 that allow for a second meeting and the provision to establish a third Workshop in 2004. There was a discussion of the need for this frequency of training exercises and the Chair pointed out that the first Workshop in 2002 was heavily oversubscribed. The funding arrangements for 2003 will require participants contributing DKK 1000 each towards the running expenses of the Workshop; previously ICES had covered this. It was agreed that consideration could be given to a more specialised/advanced Workshop in 2004 depending on need. A question was asked by members of the Committee about feedback from the recipients of the training. The Chair reported that nothing formal was available but the general response has been very favourable.



### **Workshop on MSVPA in the North Sea (WKMSNS)**

This Workshop was chaired by Morten Vinther (Denmark) and Carl O'Brien (UK). The latter presented Doc. D:04. The main tasks performed at the Workshop were to produce a new key-run of MSVPA and to consider establishing a new Study Group on Multispecies in the North Sea (SGMSNS). Terms of Reference were tabled for SGMSNS to be held in August 2003. One of these will require output from the Study Group on Growth, Maturity, and Condition in Stock Projections (SGGROMAT), which is due to be established at this ASC and meet in December 2002. There was some discussion of what the expectations of this meeting to examine growth and maturity parameters actually are. The Committee Chair indicated a need for the membership of SGGROMAT to be mindful of the needs of the assessment process rather than simply discussing interesting biology. The Terms of Reference of this Group are, ostensibly, rather demanding and it was suggested that a different choice of words might be used to indicate that compilation of data will be prioritised for cod, and that availability of data for other species should be summarised. Data will be summarised by age in the first instance, but length could also be considered in future.

### **Study Group on the Incorporation of Process Information into Stock-Recruitment Models (SGPRISM)**

The Chair of the Study Group, Carl O'Brien (UK) presented Doc. C:01. He reported that the third and last meeting of this Group had taken place in Lowestoft in January 2002. Some of the work of this Study Group would be continued with the establishment of a new Study Group (SGGROMAT), discussed above under the report of WKMSNS.

### **Working Group on Methods of Fish Stock Assessments (WGMG)**

The Chair of this Working Group, Carl O'Brien (UK), presented Doc. D:01. He presented Terms of Reference for a second meeting of this Group. There were a number of proposals for re-wording to clarify some of the suggestions, and a request was made that in addition to examining the latest versions of TSA, XSA, and MedAn, attention should also be paid to some of the newer methods which are appearing in other stock assessment working groups, such as AMCI used by the Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy (WHMHA). A proposal that a simulated data set be established with known properties against which different methods could be tested was widely supported. The Chair suggested a Term of Reference to encourage the development of general-purpose software. It was suggested that some of the simulated data produced at the 1988 Reyjavik meeting of WGMG might be looked at, and that spatial and temporal aspects might be incorporated into any future data sets.

### **Working Group on Fishery Systems (WGFS)**

Poul Degnbol (Denmark), Co-Chair of the Group, presented Doc. D:09. He explained that the Group was setup to evaluate fishery system performance. The Group met in 2000 and 2001 and developed a framework for the work. Two case studies have been identified – North Sea cod and the Georges Bank mixed fishery – which will illuminate issues and problems. Since institutes are generally short of funding for this kind of work, the North Sea case study is proceeding through an EU 5th Framework project, "Policy, Knowledge and Fishery Management" (PKFM). The Georges Bank Study has stalled but progress is expected through a case based on the literature, of which there is plenty available. The linkages between the collection of knowledge, management systems, monitoring and control, and adaptations and responses by fishers were discussed and the focus of PKFM was outlined. Poul Degnbol stated that it is hoped that the project will be able to send observers to meetings of the Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) and the Advisory Committee on Fishery Management (ACFM) in order to track how the system is working. The workplan for 2003 includes development of PKFM and report preparation, development of further Terms of Reference, and the beginning of a pertinent *ICES Cooperative Research Report*. In 2004 this will be finalised. The Terms of Reference for a four-day meeting in early May 2003 were proposed and there were no comments.

### **Planning Group on North Sea Cod and Plaice Egg Surveys (PGEGBS)**

Doc. D:05 was unavailable from the Chair (John Casey, UK) of this Group and in the absence of this report, Colin Bannister (UK) and Henk Heessen (Netherlands) were requested to draft a resolution for the pursuance of further work under this Group. The resolution will propose that the Planning Group be parented by the Living Resources Committee.

### **International Bottom Trawl Survey Working Group (IBTSWG)**

The Committee Chair introduced an issue raised by Andrew Newton (UK), Chair of IBTSWG, relating to the suitability of the GOV trawl when conducting IBTS surveys in areas of harder ground; a suggestion had been made that perhaps a BACA trawl might be more suitable. Furthermore, IBTS coverage in the more westerly and southerly areas, e.g. southwest of UK, is maintained using a variety of gears and there is a question whether these should be replaced with one gear. David Somerton (USA), Chair of the ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB) was invited to provide some insight on factors for consideration when altering survey gears. He pointed out that although suggestions could be made and technical



support provided it was important that key users of the survey data, such as assessment biologists, had an input on any proposal for change. There was an interesting debate on the issue of calibration and intercalibration and the merits of maintaining series of independent data or seeking to integrate the data to produce a coherent picture. Maintenance of credibility with the fishing industry is also a factor, and developing “one size fits all” trawls for all types of ground almost certainly results in loss of small fish under the net. There was a suggestion that a new Study Group would be worth while, bringing together expertise from a number of disciplines (technological, stock assessment, statistical) to discuss the problem. It was pointed out that factors other than gear design such as survey design or timing, might be more fundamental in improving the utility of the survey data than gear changes and should therefore be considered by any meeting of experts. A proposal to establish a Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas (SGSTG) was developed, but it remained unclear what level of priority this work had and the Chair agreed to consult more fully before taking the proposal further\*.

#### **Study Group on the Development of Fishery-Based Forecasts (SGDFF – ACFM)**

A proposal from ACFM was tabled for the establishment of this Study Group. This Draft Resolution had resulted from the initial ACFM response to an EU request for fishery information to be made available from each of the constituent ICES stock-assessment Working Groups, but it was felt that this Draft Resolution might not achieve the desired ends. A dedicated Study Group was seen as the best way forward, and it was hoped that Delegates could be encouraged to ensure that the most suitable people were sent from each country. Key skills include fleet-based expertise, national database expertise, and stock-assessment experience. The initial focus for the Study Group’s work will be European Community waters, and provisional descriptions for the kinds of data expected were tabled. A suggestion was made that individual tow data might be more informative than trip data, but this is unlikely to be routinely available in the short term.

#### **Study Group on Age-Length Structured Assessment Models (SGASAM)**

This year’s meeting was postponed until next year. The Committee approved the original Terms of Reference but with a broadening of the first Term of Reference.

#### **Workshop on Female Lobster (*Homarus americanus* and *Homarus gammarus*) Maturity and Reproductive Cycle as a Reference Point for Fishery Management ♦**

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\* A Draft Resolution for the establishment of this Study Group, submitted by the Fisheries Technology Committee, was later supported by Delegates.

♦ The Consultative Committee renamed this as the Workshop on Lobster Reference Points for Fishery

A Draft Resolution was presented to the Committee and the Chair agreed to forward it to the Chair of the Living Resources Committee for further consideration.

### **Any other business**

#### **ASC**

The Committee acknowledged the improvements in both facilities and the organisation of this year’s ASC and there was, in addition, general agreement in the Committee that the quality of the presentations had improved.

#### **Format of Science Committee meeting**

There was a short discussion of the new ICES paperless meeting approach. The Chair indicated that he had not found this easy given the facilities provided, and members agreed that for the Science Committee meetings either printed copies of papers were needed or a PC with a projection system so that live changes to resolutions and documents could be tracked. In addition, the meeting room for the second session was considered to be far too large for the productive conduct of business. After some discussion, it was felt that two Committee sessions were probably needed but that the first should concentrate on completing Committee business, whilst the second could involve presentations of reports and documents which are of more general interest to the wider ICES audience. It was agreed, however, that Science Committee business sessions should not be allowed to run in parallel to relevant Theme Sessions. In the future, the Chair might provide a short update on what had been decided at the first meeting and throughout the ASC, but it was recognised that given the volatile nature of Resolutions this is by no means an easy task.

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Management, parented by the Living Resources Committee. It considered this title to be more consistent with the Workshop’s Terms of Reference.



## **Marine Habitat Committee (E)**

Chair: Paul Keizer (Canada)  
Rapporteur: Mike Waldock (UK)

The Marine Habitat Committee met on Monday 30 September from 14:00 to 18:00 hours, and on Thursday 3 October from 16:00 to 18:00 hours. Thirty-two participants from 12 ICES Member Countries were present, the vast majority attending both sessions. They included 15 members of the Marine Habitat Committee and five Chairs of Expert Groups reporting to the Marine Habitat Committee. The Committee Chair welcomed the participants.

The Chair noted the length of the meeting time was quite short, a total of six hours for the two days, giving little opportunity for discussion. The primary goals of the meeting were to discuss the reports of the Expert Groups and consider the Committee's Draft Action Plan.

### **Appointment of Rapporteur**

Mike Waldock (UK) was appointed Rapporteur.

### **Adoption of the agenda**

The agenda was adopted with no changes, but some items were re-scheduled, and items 6, Scientific Progress, and 7, Draft Resolutions, were combined. A report from the cold-water coral Study Group was added to item 6.

### **Overview of the Committee planning process**

#### **Initial consideration of Workplan and Draft Action Plan**

The Chair explained that the Consultative Committee has drafted the science and advisory component of the ICES integrated Action Plan that is being brought to the Delegates for their approval during this Statutory Meeting. Once Delegates have accepted the Action Plan then the Science and Advisory Committees will have to ensure that the appropriate actions are taken to achieve the goals. This will be a substantial item for the 2003 Committee Meeting since there is a long list of items allocated for the Committee's attention in this Action Plan.

#### **Scientific progress and Draft Resolutions**

The following procedure was adopted for the review of the work of the Expert Groups. Committee members had undertaken reviews of the Expert Group Reports based on a list of questions that had been developed by the Oceanography Committee. The questions focus the review on the functioning of the Expert Groups for the purpose of identifying any difficulties that the Groups might be experiencing. These reviews were presented to the Committee and were followed by a brief discussion and, where possible, a response from the Expert Group

Chair or member. The draft terms of reference for the Expert Group were then presented and discussed.

#### **Study Group on Cold Water Corals (SGCOR – ACE)**

This Study Group is parented by ACE. However, the Committee welcomed the offer from the Chair of the Group, Mark Tasker (UK), to present its Report (Doc. ACE:05). He recalled that the Study Group was formed in 2001 to respond to a request from EU DG Fish to provide information on the distribution of cold-water corals. Its Term of Reference was to map the occurrence of cold-water corals in the OSPAR region. The Study Group has completed this task and has also reported on trawling damage to corals.

Additional information on corals is being provided by two EU projects, ACES and ECOMOUND. There is also an initiative under way to create a North Atlantic coral research programme.

It was noted that the lifespan of any Study Group should be no more than three years and any continuing work that was required would then be dealt with as appropriate. In subsequent discussion of the operations of the Group the need for links to WGMHM was highlighted.

#### **Benthos Ecology Working Group (BEWG)**

Doc. E:07 was reviewed by Frank Almeida (USA). This Group met in Tromsø in 2002 and attracted 29 representatives. However, there was little input from the Baltic States. The lack of representation from Baltic countries is a problem for many of the Working Groups and has a major impact on their ability to respond to requests for work that specifically relates to the Baltic.

The work on the North Sea Benthos Project was proceeding satisfactorily, but in order to facilitate more activity on this Project the formation of a new Study Group has been proposed. Initial progress on the project has been slow owing to taxonomic problems. Solutions have been found to these problems.

#### **Marine Chemistry Working Group (MCWG)**

In presenting the review of Doc. E:01, Josianne Støttrup (Denmark) noted that the meetings of this Working Group continue to be well attended although there has been a noticeable decline in the participation of chemical oceanographers. The Working Group maintains good linkages with other relevant Working Groups such as WGBEC and WGMS.

The issue of operational EcoQOs for eutrophication is a task that could benefit from input from this Working Group in the future. The challenge is to develop data



products that would be more useful than the present focus on concentrations of nutrients and expression of eutrophication status as numerical values.

#### **Working Group on Biological Effects of Contaminants (WGBEC)**

The review of Doc. E:02 was presented by Lars Føyn (Norway). He commented that the meetings of this Working Group continue to be well attended, but participation from Canada and USA has declined. The focus on OSPAR requests narrow the deliberations of the Working Group to the point where scientists from North America may feel that they have little to contribute to or gain from the meetings. This is a situation that is common to a number of the Working Groups. Furthermore the amount of work referred to this Working Group seems to be excessive so that the members have had to defer some work and other work is not treated as fully as it could be.

It was also noted that while the report of the Working Group was well organised and written its contents were highly technical in nature. The document would benefit from an executive summary that would be understandable to a more general audience. This is a common problem with all of the Working Group reports. A request will be made to all Working Groups to include an executive summary in their reports in the future.

There is a need to develop links between this Working Group and some of the fisheries Working Groups, e.g. with respect to potential population level impacts of observed biological effects. Proposals for two Theme Sessions for the ASC 2004 should help to address this concern. There are also specific requests in 2003 for the Working Group to undertake some collaborative work with the BEWG and the WGPDMO in 2003.

#### **Working Group on the Effects of Extraction of Marine Sediments on Marine Ecosystems (WGEXT)**

Santiago Lens (Spain) presented the review of Doc. E:06. He noted that this Group continues to function effectively in providing new information on the structure of marine sediments and usefully drawing from national reports on marine extraction activities, research, systems for permits, and environment monitoring. The Working Group meeting is well attended, but it should be noted that there was only one representative from the Baltic Member Countries, and contributions from North America were by correspondence. The adoption of an electronic form for the national reports has greatly facilitated both the reporting and the consistency of the national reports. This is allowing the Working Group to devote more of its time to the consideration of impact assessment and the development of a risk-assessment approach.

#### **Working Group on Statistical Aspects of Environmental Monitoring (WGSAM)**

Hans-Stephan Jenke (Germany) and Robb Fryer (UK) provided the review of Doc. E:04. They noted that this is a small Working Group, only six members, that has a large amount of work referred to it every year and whose work is critical to many other Working Groups. In fact there are many instances where the work of Working Groups requires assistance with statistical analyses, but the resources are not available.

The present method of operation of this Working Group is not likely to be sustainable. Its activities have become less relevant to the members as they become more involved with monitoring activities directly through other agencies such as OSPAR / MON, the European Water Framework Directive, and national programmes such as the UK National Marine Monitoring Programme. There is a very real possibility that it may have to cease operation. The challenge is to make the work of the Group more relevant for the members and to clarify the role of ICES in international monitoring initiatives.

It is likely that both this and other of the Committee's Working Groups would benefit from overlapping meetings. This would allow Groups such as MCWG to discuss their problems with the members of WGSAM and at the same time it would provide a better context and sense of relevance for the WGSAM members. This approach will be discussed with the WGSAM Chair with a view to implementation in 2004.

#### **Working Group on Habitat Mapping and Classification (WGMHM)**

Jeremy Collie (USA) presented the review of Doc. E:05. This newly formed Group enjoyed good participation from most Member Countries. However, to date it has not been able to deal effectively with the HELCOM request for the Baltic Sea owing to lack of representation from Baltic Member Countries. The Group found it difficult to respond to the request to review EcoQOs given the nebulous nature of those currently developed.

Activities have matured to the point where stronger integration with the activities of other Groups is needed. The Group's North Sea habitat mapping initiative is complicated by the plethora of mapping-related activities under way in that area. There are a wide range of techniques being used and a similar wide range in the interpretation and presentation of the data. A major step forward will be the OSPAR-sponsored workshop on habitat mapping in the North Sea in October 2002. ICES needs to be more proactive on these initiatives and following on the comments under WGSAM above, co-sponsorship of this workshop by ICES would have affirmed the ICES role in habitat mapping and classification.



## **Working Group on Marine Sediments in Relation to Pollution (WGMS)**

In reviewing Doc. E:03 Eivind Oug (Norway) and Heye Rumohr (Germany) remarked that this Working Group had not been functioning well for a few years but appears to have been revived under the leadership of a new Chair. Eighteen scientists attended the meeting in 2002. The Chair and participants are commended for their hard work. Similar to other Working Groups the attendance from Baltic Member Countries was very limited, with only two scientists from Finland. There were no participants from North America. The Working Group made excellent progress during its meeting but suffered some “start-up” problems.

Similar to other Working Groups this Group had difficulty in addressing the OSPAR request on EcoQOs. There seems to be a need for a dialogue with interested parties to develop a consistent and workable approach to defining EcoQOs. The proposed 2nd Environmental Dialogue Meeting may provide the opportunity.

This Working Group has developed a Website (<http://home-3.tiscali.nl/~fsmedes/wgms/>) to facilitate the exchange of documents and information for intersessional work. ICES needs to give a high priority to providing this service for the Working Groups.

The Working Group is tackling the important, but difficult, problem of bioavailability of contaminants in sediments. This work would benefit from collaboration with other Groups such as WGBEC, BEWG, and WGSAM. This general issue of the need for more collaboration should be addressed. The simplest approach would be to encourage overlapping meeting times and common venues for Working Groups and the scheduling of some joint sessions.

## **Study Group on Environmental Assessment and Monitoring (SGEAM – ACE)**

The Chair of the Study Group, Lars Føyn (Norway), presented Doc. ACE:04. Having completed its work, this Study Group has recommended that it should be dissolved. The SGEAM had been tasked with reporting to ACE to help develop the ecosystem approach to management, and a conceptual framework for this was developed. The Group also made strides forward in the area of adaptive management, and as a result of work to date, suggested the way forward was to develop a regional ecosystem approach that compiled relevant material from all Group reports to provide regional ones. Also it was deemed that there was a need for an ongoing ICES forum to exchange views on development of the ecosystem approach to management. A new Working Group should be responsible for compiling ICES data for annual reports.

It was urged that the role of ICES in preparing regional assessments be carefully considered since any approach needs to take into account the limited resources available in existing Groups. There is also a concern that if the

dominant activity becomes the generation of regional assessments then participation by scientists from Canada and the USA will diminish further.

## **Proposals for new Study Groups**

Proposals were received for two new Study Groups:

**A Study Group on the North Sea Benthos Project 2000 (SGNSBP)** to be chaired by H. Rees (UK). Heye Rumohr (Germany) presented this proposal. It was noted that this proposal fits well with the NORSEPP initiative (see Other Business). There is a need to be explicit about the QA issues, the interaction of ICES with the project database, and links to WGMHM and BEWG activities. The Committee agreed that the proposal should be forwarded for consideration.

**A Study Group on Sustainable Exploitation and Conservation of Living Natural Resources of the Coastal Zone (SGSEC)** to be chaired by Josianne Støttrup (Denmark). It was noted that the Terms of Reference as proposed were too broad and did not acknowledge the work already done by other ICES Expert Groups in this area. It was agreed that the Committee Chair would work with J. Støttrup and other interested members to prepare a revised proposal that would take these comments into consideration.\*

## **Other business**

### **BIOMARE**

Carlo Heip (Netherlands) gave a presentation on BIOMARE. This is a three-year programme looking at large-scale and long-term changes in biodiversity. The project uses a network of flagship sites with conditions ranging from reference, largely natural, to other categories of sites that have a current monitoring focus and a variety of other reasons. The scope of the project ranges from Arctic to Black Sea and Mediterranean. The output will have a strong link to management practice and has a wide range of science priorities. Further details can be found on the [www.biomareweb.org](http://www.biomareweb.org) Website.

As a result of BIOMARE, one area where improvements have been made is in the presentation of the classification for sediment habitats. A new approach has been used, which has linked the communities defined from the data analyses with different sediment types, as reflected in the Folk trigon system used by marine geologists, and with various depth bands. This, together with other major influences, such as the salinity regime, the presence of stones and shells on sediment surfaces (enabling epibiota growth), and the presence of macrophyte and biogenic reef communities, has led to the restructuring of the classification to largely follow the EUNIS system. A

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\* The Study Group was later renamed as the Study Group on Information Needs for Coastal Zone Management [SGINC], at the request of the Delegates.



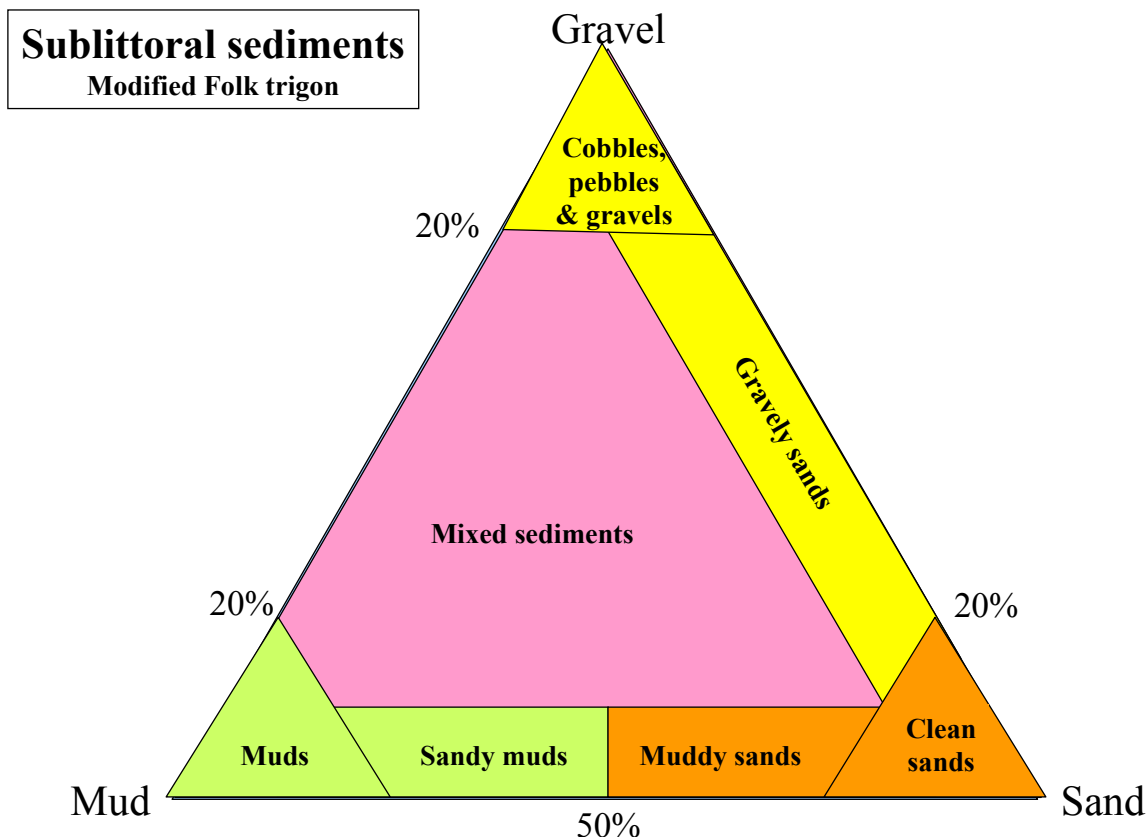


Figure E1. A modified Folk trigon showing main sediment type categories (from the 2002 Report of the Working Group on Marine Habitat Mapping (Doc. E:05))

modified Folk trigon, showing the main sediment type categories, is shown in Figure E1.

#### **ICES/EuroGOOS North Sea Ecosystem Pilot Project (NORSEPP)**

Bill Turrell (UK), Chair of the ICES-IOC Steering Group on GOOS (SGGOOS), provided a short overview of the joint activities of EuroGOOS and ICES. A North Sea Ecosystem Pilot Project (NORSEPP) is in hand to demonstrate the utility of ecosystem-based approaches in ICES work. The programme will be based on operational measurements and models to underpin predictive work on ecosystems in much the same way that fisheries managers are already doing for stocks. He will be approaching Chairs of Working Groups to stimulate involvement. He stated that there is a need to capture the plethora of ecosystem initiatives that have started, and focus on deliverables.

#### **Report on activities during ASC 2002**

##### **The Integration of Acoustic and Optical Survey Techniques and Marine Biological Data for the Purpose of Seabed Classification (Session K)**

The papers in this session demonstrated the rapid evolution of methods, applications, and interpretative approaches in this area. It will be critical for the Committee and ICES in general to keep current on this

topic. Plans are being made to form a new Study Group to prepare an *ICES Cooperative Research Report* that will provide much-needed guidance to potential users of this technology.

##### **Census of Marine Life: Turning Concept into Reality (Session L)**

This session included a diverse collection of papers. Of most relevance to the Committee were the presentations on the North Sea Benthos Project. The ICES participation in this project will be facilitated by the proposed formation of a Study Group.

##### **Biological Effects of Contaminants in Marine Pelagic Ecosystems (Session X)**

Most of the papers in this session described results from the ICES Sea-going Workshop. Many of the results presented were preliminary but demonstrated a wide scope in the approaches to investigating biological effects. Important work remains to be done on finalizing the analyses and interpretations and in determining the power of the tests used for detecting effects. The overall outcome of the Sea-going Workshop will be the development of a platform for future monitoring and management of pelagic ecosystems and an understanding of the impact of oil production in the North Sea on these systems.



## **General issues**

### **The role of the Science Committees**

There is only a limited time for the Committee to meet during the ASC. Almost all of that time is required to review the progress and future activities of the Working and Study Groups that report directly to the Committee. Even then these discussions have to be abbreviated. The coming year will see the addition of two or three Study Groups that will also have to be reviewed. The Committee has not reviewed the work of those Groups that report primarily to another Science or Advisory Committee, but that also report to this Committee. Currently, the Committee does not have time to discuss the overall direction of the work of the Groups in support of attaining the goals of the Action Plan.

Under the present conditions the Committee is only fulfilling one small part of its role as stated in the Action Plan. Its primary means of effecting coordination or change is through the Terms of Reference for its Expert Groups. Usually only a minority of Expert Group Chairs attend the Committee meeting, and often there are no members of some of the Groups present for the meeting. While intersessional work by e-mail could be used to do some of this work, experience with this Committee and discussions with some other Science Committee Chairs suggests that such an approach is unlikely to be effective.

There are two actions that could potentially result in the Committee playing a more effective role:

- Allow for an additional half-day for the Committee to meet during the ASC.
- Invite all Expert Group Chairs or their representative to attend ACME. This would facilitate a meeting of the Committee Chair with a member of each of the Expert Groups.

It is believed that this situation is not unique to the Committee but is also shared by at least the Mariculture and Oceanography Committees.

It was agreed to change the operating procedure of the Committee meeting to accommodate more discussion of the direction of science in the Groups. The Expert Group reviews conducted at present will be dealt with by correspondence and only items requiring action by the Committee will be brought to the meeting. The discussion of the Expert Group Reports will focus on the scientific advances and challenges.

### **Election of Chairs**

The Marine Habitat Committee accepted the nomination of David Connor (UK) as Chair of WGMHM, Robb Fryer (UK) as Chair of WGSAM, and Heye Rumohr (Germany) as Chair of BEWG.

### **Close**

The Chair expressed his gratitude to Committee members, and to Expert Group Chairs and their members.



## **Mariculture Committee (F)**

Chair: Tony Calabrese (USA)  
Rapporteur: David Bengtson (USA)

The Mariculture Committee met on Monday 30 September, from 10:00 to 14:00 and on Thursday 3 October from 16:00 to 18:00.

David Bengtson (USA) was proposed as Rapporteur and accepted by the Committee. Twenty-one participants attended the meetings.

### **Opening and approval of agenda**

The Chair reviewed the agenda for the two scheduled meetings. This year's ASC was a watershed for the Committee in that one of the four "umbrellas" for Theme Sessions was "Aquaculture: New Trends and Developments" and the Committee had four individual Theme Sessions under that umbrella: Session R – "Immuno-modulators and Probiotics: Alternatives to Chemotherapeutics?"; Session S – "Juvenile Fish Cultivation: Improvements in Quality"; Session T – "Salmon Aquaculture, Enhancement, and Ranching: Are They a Threat to Wild Salmonid Stocks?"; and Session U – "New Developments and Applications of Genetics in Fisheries Management and Aquaculture". The Chair mentioned that efforts are under way to determine whether some of the Committee's Working Groups might be able to meet in conjunction with meetings of the European Aquaculture Society (EAS) or the World Aquaculture Society, as the EAS has approached ICES to establish a more formal working arrangement.

### **Committee business**

#### **Discussion of Mariculture Committee workplan**

The Working Group on Marine Fish Culture (WGMAFC) in their report (Doc. F:01) felt that the ICES Strategic Plan reflects a possibly negative view of mariculture and specifically requested the following changes to the goals of the Committee (even if these goals are only modified in the Committee's workplan): (1) Change the first goal to "Evaluate the interactions of mariculture with ecosystems", and (2). Change the third goal to "Develop mariculture methods and protocols that are sustainable both environmentally and economically".

Jacqueline Doyle (Ireland) noted that the work of the Committee increasingly emphasized finfish and as a result there was a risk of losing molluscs from consideration. Several participants expressed support for the view that molluscs should be given more emphasis in the Committee. Suggestions were made that a Theme Session on shellfish be proposed for the 2004 ASC in Vigo and/or that WGMAFC be expanded

to include shellfish production. This issue was eventually resolved by the proposal for a new Working Group (see below).

#### **Election of new Committee Chair**

The three-year term of Tony Calabrese ends in December, so an election was held for a new Committee Chair, with the General Secretary, David Griffith, presiding. Thomas Sephton (Canada), Ole Torrissen (Norway), Uwe Waller (Germany), and Aad Smaal (Netherlands) were nominated. (Smaal withdrew). Eleven voting nations were present, so six votes were required for election and Thomas Sephton achieved that total on the second ballot.

#### **Proposal for new Working Group on Marine Shellfish Culture**

A formal proposal was made to form this Working Group. Although some details remained to be worked out, the Committee wholeheartedly approved this action. The Committee thanked Alain Bodoy (France) for taking on the responsibility of being the first Chair of this Group.

### **Working Group Reports**

#### **Working Group on Marine Fish Culture (WGMAFC)**

David Bengtson (USA) presented the Report (Doc. F:01) on behalf of the Chair, John Castell (Canada), who was unable to attend. They produced their annual report on production of both juvenile and ongrown marine finfish and noted that constraints to aquaculture in various countries included difficulties in obtaining:

- sites in coastal waters due to user conflicts, water quality, and potential environmental impacts;
- capital investment; and
- sufficient numbers and/or quality of fry, especially of desired new species.

The Working Group has also produced a report on recent developments in recirculation system technology and an electronically available annotated bibliography on the use of alternative protein and lipid sources in diets for marine finfish. They also reviewed the use of ICES standard reference diets and emulsions and decided that it would be permissible to modify the reference materials based on new knowledge, as long as a direct comparison was made between the old and new reference materials. It was also decided that they could not recommend any microdiets at present for



evaluation as potential ICES reference diets, but will continue to examine developing diets over the next year. The Working Group compiled a report on the various fish welfare policies in Member Countries and request the help of the Mariculture Committee to make sure that proper information on fish welfare is available to national and regional bodies preparing regulations on animal welfare in agriculture. Some individual members of the WG are preparing review articles on state-of-the-art in larval fish culture. The Working Group made little progress in establishing interactions with the WGPDMO and WGAGFM and also did not receive reports from any countries on methods for monitoring of feeding regimes. John Castell will be retiring in December 2002 and the Working Group proposed that Anders Mangor-Jensen (Norway) be the new Chair. The Committee agreed to this.

Further discussion ensued on the desirability of giving mariculture in general and marine finfish culture in particular a higher profile in ICES. Members noted that the Committee should be proactive in raising that profile, and that it should seek to develop a client base in the EC/EU. It was also considered that the Committee would gain credence by sponsoring strong Theme Sessions at ASCs, and that it should also seek ways to provide ICES with mariculture statistics, in a manner somewhat akin to the provision of fisheries statistics.

#### **Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)**

As Stig Møllergaard (Denmark) has stepped down as Chair, Thomas Lang (Germany), who has been serving as Acting Chair, presented this report (Doc. F:02). The Group proposed Thomas Lang as its new Chair, which the Committee supported.

The meeting reviewed disease trends in wild and cultured marine organisms with the following major observations:

- the host range of VHS virus is still increasing and four different genotypes of the virus have been identified;
- the mortality and skin ulcerations in menhaden in the USA are probably not solely attributable to *Pfiesteria piscicida*;
- ISA is still a major problem in farmed fish;
- shell disease in the American lobster, *Homarus americanus*, is quite likely not due to bad water quality because it also occurs in clean waters.

The Working Group also reported that few studies have apparently been carried out recently on the relationship between environmental contaminants and shellfish pathology (mostly work with TBT). Information from an EU project on *Marteilia refringens* was also considered. This indicated that two different genotypes have been identified, one in oysters

and one in mussels, and French scientists have found transmission from oysters to calanoid copepods.

Progress in the EU-funded BEQUALM project was reported on. There was considerable variation in the abilities of different laboratories to identify liver pathologies in a recent ring test. Thomas Lang noted that viruses, including nodavirus, had been isolated from imported ornamental fish and that these may be a major transmitter of viruses. He also reported that *Ichthyophonus* in herring is still a problem, that M74 syndrome in Atlantic salmon is increasing in prevalence, and that IPN virus is now increasing in prevalence in Atlantic salmon post-smolts (it was formerly a problem mostly in fry). Figure F1 illustrates this trend.

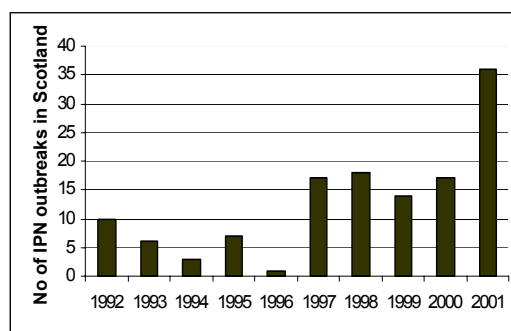


Figure F1. Number of Infectious Haematopoietic Necrosis (IPN) outbreaks in Scotland, 1992-2001. (From 2002 Report of the Working Group on Pathology and Diseases of Marine Organisms (Doc. F:02)).

The Working Group also assessed the effectiveness of control methods for sea lice, finding that chemotherapeutics led to a decline in the incidence of sea lice, but that use of wrasses had diminished because they had not been very effective.

An *ICES Cooperative Research Report* entitled "Important Trends in Disease Problems in Finfish and Shellfish Culture in the ICES Area 1997-2001" has been prepared by the Group, and it proposed that it be published as a Web-only document. However, ICES has not established a policy on such Web-only publications, so the document will have to be published both as a hard copy and a Web publication.

The Working Group is also preparing:

- a report on diseases and parasites of wild and cultured species as an ICES Environmental Status Report;
- a manuscript on methods for the statistical analysis of fish disease data for the ICES TIMES series;
- several new and updated leaflets for the series *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish*.



### **Working Group on Environmental Interactions of Mariculture (WGEIM)**

Alain Bodoy (France) presented Doc. F:04 for the Working Group Chair, Ed Black (Canada), who could not attend.

A detailed report of mariculture production by country has been prepared. This indicates that production is still increasing in most countries; methodologies for the collection of production data vary by country and only Norway has a mechanism for data collection on consumption of aquaculture feeds by fish farms.

The Group also reported on technological changes, including:

- onshore, controlled systems, ongrowing of shellfish in saline groundwater, and development of offshore systems;
- sea ranching (few projects successful);
- integrated aquaculture systems (EU Genesis project);
- use of alternative ingredients to reduce the cost and environmental impact of fish feeds;
- genetic improvement (selective breeding, polyploidy, and sex manipulation);
- improvements in animal health; and
- development of new species (sole, tuna, cod, haddock, halibut, and meagre).

The Working Group feels the need for development of sustainability-criteria, giving emphasis to environmentally friendly aquaculture, feed formulation, transfer of non-endemic species, and integrated systems.

The published results of the 1999 ICES Symposium on “Environmental Effects of Mariculture” were considered. This identified the need to assess aquaculture impacts through Environmental Quality Standards, to define zones with differing levels of allowable impacts, and to use modelling and monitoring strategies to minimize the impact of aquaculture.

The value of monitoring shellfish farms in a way similar to finfish-farm monitoring was also considered. This concluded that shellfish farms are often a one-person operation and it is too much to ask that person also to monitor and report. The emphasis should be on examining the carrying capacity of a bay if several farms are operating in the same area, but this examination should be done by a higher authority.

The Group also reviewed issues of mariculture sustainability in a broad sense, including use of antibiotics, contaminants in fish feeds, social interactions, and multiple uses of the coastal environment.

### **Working Group on Applications of Genetics in Fisheries and Mariculture (WGAGFM)**

Michael Hansen (Denmark) presented Doc. F:03. The Working Group proposed that Ellen Kenchington (Canada) be appointed the new Chair. The Committee approved this proposal.

The provisions on genetically modified organisms (GMOs) in the ICES Code of Practice on Introductions and Transfers of Non-Indigenous Organisms have now been updated:

- to exclude chromosome-manipulated organisms from the definition (only recombinant DNA is now included);
- to indicate that GMO's should still be of concern; and
- to list points to be addressed in risk assessment.

The Group also reported on developments in the use of DNA from archived samples and recommended:

- use of appropriate extraction methods, genetic markers, and PCR conditions;
- adjustment of non-destructive processing protocols for hard parts; and
- comparison of DNA information with data and records from other sources on biology, life history, etc., of the species.

The Working Group reviewed and reported on the utility of molecular genetic methodologies for assessing the biological effects of contaminants, recommending that:

- research in this area be encouraged;
- adequate sample sizes be used;
- population migrations and gene flow which could mask the effects of contaminants be accounted for; and
- both contaminated sites and control sites be included in the study.

Minimal kinship breeding strategies for preserving genetic diversity in hatcheries were also reviewed. This established that there is a new statistical approach with which microsatellite DNA can be used to estimate relationships of broodstock.

The Working Group also prepared a position paper for WGBEC on the use of gene array techniques in the detection and quantification of responses of fish to pollution, in which they found that this technology may be useful, but it requires a huge investment.

### **Working Group on Introductions and Transfers of Marine Organisms (WGITMO – ACME)**

Jacqueline Doyle (Ireland) presented Doc. ACME:06 for Stephan Gollasch (Germany), who could not attend.



A major task for this Group is the updating and finalizing for publication of the revised Code of Practice on Introductions and Transfers of Non-Indigenous Organisms. Some editing is still needed, particularly the completion of annexes, and the final version should be ready after the next meeting.

A Report on *Rapana* was also prepared. *Rapana* is a Korean gastropod spreading through Europe. Risks from world-wide trade in live aquatic organisms were also reviewed. Certain types of live organisms (baitfish, live foods, and ornamentals) are trade issues and the EU cannot ban them just on the basis of ecological impact.

The Report on Status of Introductions of Non-Indigenous Marine Species to North Atlantic Waters, 1992-2001 is now being finalised. This will assess the implications of non-deliberate introductions. There is also a need to examine how many introductions actually become established over time.

The Committee also noted that the Group is preparing a draft of an *ICES Cooperative Research Report* entitled "Directory of Dispersal Vectors of Exotic Species".

### **Approval of Working Group Terms of Reference**

Terms of Reference for the WGAGFM were approved with the exception of the deletion of a proposed Term of Reference as the Committee considers that they do not have the expertise to take on this issue.

Terms of Reference for the WGMAFC were approved with the exceptions of the deletion of a proposed Term of Reference which was already being addressed by WGEIM and another Term of Reference that it was considered irrelevant to ICES. Other small editorial changes were made to this resolution.

Terms of Reference for the WGPDMO were approved with the exception of one which was considered irrelevant. An item requested by ACME was also included.

Terms of Reference for the WGEIM were approved after some rewording of various details.

### **Proposals for Theme Sessions for 2003 and beyond**

A proposal was received for a Theme Session entitled "Water Treatment in Intensive Fish Cultures" for the 2003 ASC in Tallinn, Estonia. A second proposal has been received for a Theme Session entitled "Towards Sustainable Aquaculture" for the 2004 ASC in Vigo,

Spain. In line with the proposal to establish a Working Group on Marine Shellfish Culture, the Committee agreed to propose a Theme Session entitled "Shellfish Culture in the ICES Area: Perspectives and Limitations" for the 2004 ASC. In addition, Hans Ackefors (Sweden) suggested that a Theme Session exploring the relationship between fisheries and aquaculture should be held in 2004. The point was made that the "umbrella" strategy employed this year with four aquaculture Theme Sessions had worked very well and that we might consider postponing the proposed "Water Treatment" Theme Session from 2003 to 2004 and try to have three to four aquaculture Theme Sessions for the Vigo meeting, since Vigo is in a very aquaculture-rich region.

### **Report on Symposium on Gadoid Mariculture: Development and Future Challenges**

Ed Trippell (Germany) reported on the planning for the ICES Symposium on Gadoid Mariculture: Development and Future Challenges, which will be held in Bergen, Norway on 13 to 16 June 2004. Announcements were available at the registration desk during the ASC in Copenhagen and information is available on the ICES Website.

### **Consultative Committee and ACME referrals**

There were no referrals to consider at this time.

### **Committee interaction and other business**

Hans Ackefors (Sweden) made the following suggestions for the Committee:

- It would be useful to have a listing of the Committee members and their specialties;
- Working Group Reports should have an extended summary that could be made available for wide distribution;
- The Committee should allow 1 to 2 hours at each meeting to discuss recent trends in mariculture;
- The Committee should prepare a review of mariculture development in Europe and North America for the last ten years for distribution. Hans Ackefors volunteered to do this, at least for Europe.

### **Close**

The Chair thanked the Committee for the tremendous support he had received from them during his three years as Chair. He wished his successor well.



## Living Resources Committee (G)

Chair: Henk J. L. Heessen (Netherlands)

Rapporteur: Maurice W. Clarke (Ireland)

The Committee met on Monday 30 September from 10:00 to 12:30 and on Thursday 3 October from 16:00 to 18:00.

The Chair welcomed the participants and a rapporteur was appointed. The agenda was adopted without amendment.

### Committee business

The Chair explained the main purpose of the business sessions:

- To approve reports of Working, Study, and Planning Groups;
- To review and approve their Draft Resolutions.
- To propose and review Theme Sessions and Open Lectures for the 2003 and 2004 ASCs.

### Reports

#### Working Group on Cephalopod Fisheries and Life History (WGCEPH)

U. Piatkowski (Germany) presented Doc. G:04. This meeting was held in Rome and was well attended by scientists from outside the ICES Area. Cephalopod landings in the ICES area have increased from 47 000 t in 1995 to 57 000 t in 2000. This trend is illustrated in Figure G1, which is an example of a GIS application developed by this Working Group. These applications are designed to display trends by species and ICES Divisions (or groups of Divisions) on a series of maps. Cuttlefish is the most important component of these landings. The Group has continued to make progress on assessments, but there is a concern that though data availability is improving there is still need for further improvements. The provisions of current EU data collection schemes do not reflect the importance of these valuable species, according to the Group.

#### Study Group on Elasmobranch Fishes (SGEF)

Doc. G:08 was presented by M. Clarke (Ireland). The Group met in Copenhagen and was very well attended, mainly because of funding from the EU-funded DELASS project. Much progress was made on assessing seven elasmobranch species in the ICES Area, and several methodologies will be applied in future years. The main problem is the lack of good data. The Group identified the data types that are most important. A momentum has been achieved in assessment methodologies, but it may be lost if new funding is not secured for data collection and to allow the continued participation of specialists.

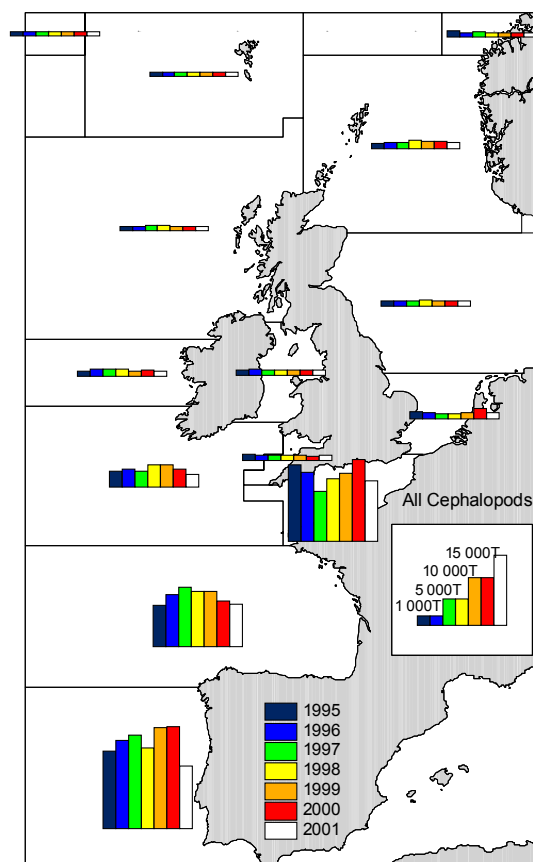


Figure G1. Annual landings of all cephalopod species during the period 1995-2001 (2001 is provisional). From 2002 Report of the Working Group on Cephalopod Fisheries and Life History. (Doc. G:04).

#### Study Group on the Estimation of Spawning Stock Biomass of Sardines and Anchovies (SGSBSA)

Doc. G:01 was presented by A. Uriarte (Spain). The main issues were designing the 2002 daily egg production method programme, standardisation of methodologies and review sample design. Much progress has been made on the use of GLMs for modelling egg production estimates, and GAMs have been explored too, with more work planned. The Group was complimented on the quality of its work, and it was recommended by the Committee that next year's report be published as an *ICES Cooperative Research Report*.

#### Study Group on the Biology and Life History of Crabs (SGCRAB)

In the absence of any representative from this Study Group, Doc. G:10 was not discussed by the Committee.



## Open Lecture proposals

The Committee was informed about a proposal for the 2003 Open Lecture, which was under consideration, by the Consultative Committee. The response to his talk could come from a stakeholder, perhaps a fishing industry representative. However, it is important to be aware of the perceived north–south divide in fishing industries, so care should be taken in making the choice.

The Committee also considered possible proposals for 2004 and agreed to submit these for the consideration of the Consultative Committee.

## Theme Session proposals

The Committee reviewed its three proposals currently on the list of Theme Sessions for the 2003 ASC.

With regard to the proposed session on “Stock Recovery Plans”, P. Connolly (Ireland) proposed that there should be a series of keynote addresses in this Theme Session, and that it will be necessary to have a North American scientist to give a perspective on the experience there. J.J. Maguire (Canada) was proposed as a good candidate for a keynote address. There should also be a keynote speaker from the European Commission.

For the Session on “Marine Protected Areas” Paul Hart (UK) offered to be a Co-Convener. In addition the Committee agreed that the Session on “Evaluation of Management Scenarios” should be combined with the “Fleet-Based Predictions” Theme Session.

The Committee noted that the Theme Session for 2004 on “Acoustic Seabed Observations” has been expanded to include multi-beam work and will include Paul Fernandes as a Co-Convener.

## Draft Resolutions

The Committee reviewed the Draft Resolutions proposed by the Expert Groups, and all were accepted with minor revisions.

J. Ellis (UK) was proposed as Chair of the newly formed Working Group on Fish Ecology. At present WGECO has a problem in that it spends much time on subjects such as community metrics. Specific requests for advice from ACE or OSPAR on rarer species need the attention of a separate Group. This Group was proposed by ACE with the recommendation that this Committee be its parent.

It was agreed to change the Study Group on Elasmobranch Fishes to a Working Group. It was considered that this change would reflect the importance of the Group’s work in the long term. M. Clarke (Ireland) will be the Chair of this Group.

It was recommended that a Workshop on Female Lobster Reproduction be established and meet to review the utility of using biological reference points, including eggs per recruit, for management purposes.

Papers from the recent Census of Marine Life H-MAP workshop were considered to be a good addition to a selection of papers from Theme Session L. The Committee supported the proposal that these be published together as an *ICES Cooperative Research Report*.

The Committee supported the Draft Resolution from the Working Group on Mackerel and Horse Mackerel Egg Surveys that there be a Workshop on Mackerel and Horse Mackerel Egg Staging and Identification.

## Other business

No peer review of reports was possible this year owing to the late production of the reports. Chairs were asked to submit their reports in a more timely way, and take heed to the submission deadline given in each Meeting Resolution.

## Close

After thanking the members and the Rapporteur, the Chair closed the sessions on Thursday 3 October at 17:30.



## Baltic Committee (H)

Chair: Brian MacKenzie (Denmark)  
Rapporteur: Nils Hammer (Germany)

The Committee met on Monday 30 September from 10:00 to 14:00 and on Thursday 3 October from 16:00 to 18:00. The meetings included six scientific presentations and presentations of four Study Group reports. Short summaries of the scientific presentations and discussions of Study Group reports are given below. These provide an overview of issues relevant to the Baltic ecosystem and fisheries.

### Scientific presentations

#### Baltic environmental conditions

Wolfgang Fennel (Germany) informed the Committee that, in general, there were no significant changes in hydrographic conditions from the previous year. Winter 2001/2002 was the warmest in 50 years. As a consequence there was very little ice. The presence of hydrogen sulphide in the bottom waters of the Baltic Sea during this summer indicates that the current period of bottom water stagnation is continuing (see Figure H1). However, there were small saltwater influxes in December 2001, which reached the Bornholm Basin and which temporarily reversed the summer anoxic conditions. Anoxic conditions in the Gotland Basin were not greatly affected by these small inflows. The Committee agreed that the very low frequency of major inflows since the late 1970s was probably related to changes in the large-scale atmospheric circulation over

northern Europe.

#### Baltic fish stock status

Maris Plikshs (Latvia), Chair of the Baltic Fisheries Assessment Working Group, presented a concise summary of the status of Baltic fish stocks. The cod stocks in the Western and Eastern Baltic are now outside safe biological limits. In addition, all herring stocks except for the stock in the Gulf of Riga are outside safe biological limits. Only sprat and the Gulf of Riga herring are considered to be within safe biological limits.

Several biological and ecological issues were raised in the ensuing discussion. In conclusion it was noted that it was not yet clear why the weight-at-age of cod has decreased. It was further noted that strong recruitment is allowing the Gulf of Riga herring stock to increase markedly in spite of increased landings. This conclusion is supported by the hydroacoustic surveys.

#### EuroGOOS subproject BOOS (Baltic Operational Oceanographic System)

Hans Dahlin (Sweden), Director of EuroGOOS, introduced this item. He explained that BOOS constitutes a regional Task Team under the European component of the Global Ocean Observing System – EuroGOOS. The main task for the five-year period 1999–2003 of the project is to integrate the existing oceanographic systems into a uniform entity in order to meet the users' demands for a high quality operational oceanographic service and to minimise the production costs. BOOS will be implemented by the accomplishment of nine activities.

The project will develop a sustainable operational oceanographic network. Further details about BOOS, including a copy of the “BOOS Plan”, are available from the project's Website at [www.boos.org](http://www.boos.org). The overall BOOS project contains different subcomponents which address water levels, sea surface temperature, waves, zooplankton monitoring, harmful algal blooms, transport, and coupling of biological and physical processes with models.

#### Advances in modelling phytoplankton algal blooms

Developments in modelling phytoplankton blooms in the Northern Baltic and in continuous shipboard monitoring of phytoplankton were presented by Tapani Stipa (Finland). He described promising possibilities for developing forecasts for the cyanobacterial bloom development based on hydrographic structure and nutrient concentrations. The Operational Monitoring System “Alg@line” is a data collection protocol used by ferries. Sampled variables include:

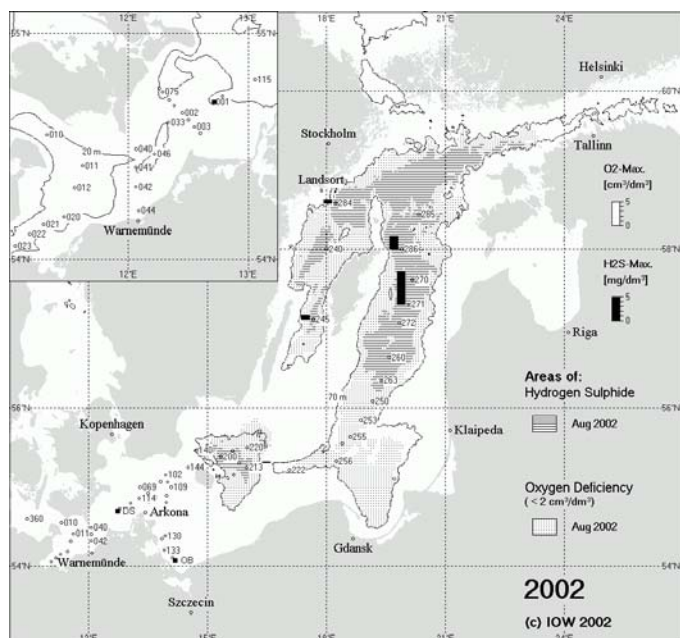


Figure H1. Concentrations of oxygen and hydrogen sulphide in the bottom water of the Baltic Sea during July/August 2002. Data source: Rainer Feistel, Baltic Sea Research Institute, Warnemünde, Germany (see additional plots at [http://www.io-warnemuende.de/projects/monitoring/en\\_home\\_tf.html](http://www.io-warnemuende.de/projects/monitoring/en_home_tf.html)).



- chlorophyll *a*;
- phytoplankton species composition and relative abundance;
- phosphate and total phosphorus;
- ammonium, nitrate and total nitrogen;
- silicate.

The system provides large-scale high-frequency coverage of oceanographic data for phytoplankton monitoring.

### **Baltic Sea Regional Project (BSRP/GEF)**

The status of the BSRP was presented by Jan Thulin (ICES). This project is expected to start on 1 January 2003. There will be participation by nine countries (five recipient countries, four supporting). The first phase will last 2.5 years (budget 12 million USD). Five coordination centres will be established in the recipient countries and the work will be administered and coordinated by HELCOM, IBSFC, and ICES. It is expected that this Committee will become further involved in the project.

A kick-off meeting for the BSRP will be held in January 2003. An assistant coordinator has now been recruited. He will coordinate the activities in the five recipient countries, and memoranda of understanding for contributions by donor countries are being developed. This will ensure additional income and project support. The GEF homepage ([www.un.org.tr/undp/gef.htm](http://www.un.org.tr/undp/gef.htm)) contains all relevant documents, with implementation plans, etc. More information is also available on the ICES homepage ([www.ices.dk/projects/balticsea.asp](http://www.ices.dk/projects/balticsea.asp)). The project will be evaluated after 2.5 years. If positive then another 18 million USD or more will be provided. Technical matters related to the appointment of personnel in the coordination centres were discussed, as were operational aspects of how the project would be implemented.

### **Baltic Action Plan, future of the Committee and relationship to GEF/BSRP project**

Pentti Mälkki (Finland), President of ICES, gave a brief presentation on the ICES Strategic Plan and outlined the roles that the Baltic Committee would play in its implementation. He explained that the Action Plan is a guide to the activities of the Committees and the cooperation between the individual Committees. The plans are also intended to be living documents and should be reviewed and renewed in response to evolving requirements.

## **Study Group reports**

### **Study Group on Salmon Scale Readings (SGSSR)**

Erkki Ikonen (Finland), presented Doc. H:01. He explained that the purpose of this year's meeting was to identify the variation in the scale reading of the individual age readers. The central problem is the formation of the core zone and the first annulus,

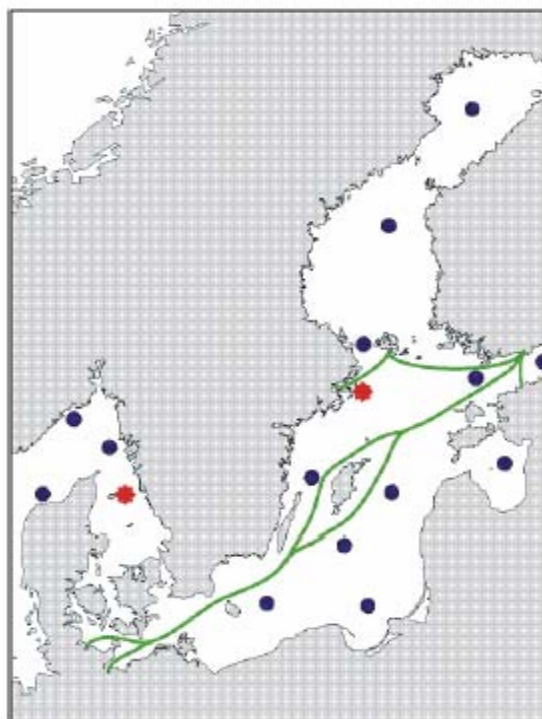


Figure H2. Positions of proposed buoys for real-time *in situ* data acquisition. Stars (red) indicate buoys deployed in 2001. The lines are Ships of Opportunity transects. (From the 2002 Report of The Study Group on GEOHAB Implementation in the Baltic. Doc. H:04).

depending on the freshwater phase and the river habitat and identification of fish from reared or wild habitats. This Study Group will hold its next meeting in October 2002.

### **Study Group on GEOHAB Implementation in the Baltic (SGGIB)**

The Committee was informed that Kaisa Kononen (Finland), Chair, had resigned intersessionally and that no Chair had been found to replace her. Members of the Study Group were reminded of this situation in mid-September by the Chair of the Baltic Committee and were asked to find a replacement so that the Group could continue. A new Chair (Markku Viitasalo, Finland) was nominated and this was accepted by the Committee.

The Committee encouraged the Study Group to pursue its development of a proposal on a cooperative HAB study in the Baltic Sea. It was hoped that this could be accepted as a GEOHAB project and that it would be possible to secure adequate funding. Amongst a number of activities being promoted was the development of high resolution monitoring of HABs in the Baltic. The objective of this would be to develop more effective early warning systems of HABs covering the spatial and temporal scales of blooms in the Baltic Sea. This would be achieved by implementing the state-of-the-art technologies for real-time *in situ* observations. The resulting high quality data would also be used to develop and verify models for forecasting of blooms. Several



complementary observation systems, such as that shown in Figure H2, would be required in order to fulfil these objectives.

### **Study Group on Ecosystem and Multispecies Predictions in the Baltic (SGMPB)**

Eero Aro (Finland), Chair of SGMPB, presented Doc. H:03. The Group had made progress in fulfilling its Terms of Reference although it realized that it must be reorganised if it is to be fully successful. Membership was low and two of the three nominated Co-Chairs were unable to assume these positions. The Study Group felt that its Terms of Reference should be integrated more clearly with the ICES Strategic and Baltic Committee Action Plans, and that the work of the Group should be made more attractive to a wider group of scientists. The Study Group had recommended installation of the 4M software on the ICES Secretariat's computers. At present it is installed only at DIFRES (Charlottenlund).

It was noted that the previous Study Group had not fulfilled the Terms of Reference which were set up in Bruges in 2000. It was intended that these tasks would be carried out over a period of several years. The Study Group now suggests that the old Terms of Reference should be included as part of its current Terms of Reference.

Given these difficulties it was agreed that the current Study Group should be renamed and given new Terms of Reference. A resolution to this effect was prepared and forwarded to the Consultative Committee for consideration.

### **Study Group on Herring Assessment Units in the Baltic (SGHAUB)**

In the absence of any representative from this Study Group, Doc. H:04 was not presented to the Committee.

The Committee noted that the tasks for this Group in 2003 included the finalization of the compilation of the assessment data for herring in Subdivisions 25 to 27 (coastal and open sea herring separately) and in the Subdivisions 28, 29, and 32. It will also carry out the assessments for coastal herring in Subdivisions 25 to 26, for open-sea herring in Subdivisions 25 to 27, and for herring in Subdivisions 28, 29, and 32. Central Baltic herring is currently assessed as one stock unit. However, there are many indications of the existence of several local populations having different stock development trends and biological characteristics. The assessment of Central Baltic herring by biological units should be a more effective tool for management of herring in the main basin of the Baltic Sea.

### **Proposals for new Working and Study Groups**

During the discussion of activities of the Study Group on Ecosystem and Multispecies Predictions in the Baltic, the

Committee addressed how and to what extent that Study Group and the Baltic Committee should consider wider aspects of ecosystem predictions and more generally the ecosystem approach to management. This discussion was also stimulated by a suggestion from the Advisory Committee on Ecosystems (ACE) that a Regional Ecosystem Group for the Baltic Sea be established. The new Group proposed by ACE would have the following tasks:

“Prepare the first of an anticipated series of annual status reports on the Baltic Sea. This should include the following:

- a) consider the requirement for integrated assessments and data provision to underpin the ecosystem approach and to specify the structure and content of such assessments;
- b) consider the mechanism by which periodic (annual) assessments of the status and trends in fish stocks and environmental conditions in the region could be most effectively achieved, drawing mainly from the disciplines of:
  - climatic/physical driving forces;
  - biological (e.g. multispecies) interactions.”

The Committee decided that status reports of the Baltic Sea are already being planned by other organisations (BOOS, HELCOM) and that it should not assume responsibility for activity (a).

Regarding item (b), the Committee realized that this issue needs to be discussed and planned, and that there are potential means by which this could be achieved. The Committee discussed this issue, and more generally the integration of existing ongoing physical, biological, and chemical oceanographic studies and fisheries assessment, at length (i.e., during formal Committee sessions, at an extra Committee session, and informally outside Committee sessions). There was generally a desire to move towards an integration of activities which could improve the scientific basis for ecosystem and fisheries management and give added value to ongoing existing activities (e.g., BOOS, fisheries assessments, algal bloom monitoring, contaminant and biological effect monitoring). In particular, the Committee recognises the need to develop a structural and institutional framework for an ecosystem analysis of the Baltic Sea. Moreover, an improved linkage between the ongoing scientific activities within physical, chemical, and biological oceanography as well as fish stock assessment is a pre-requisite for the development and implementation of a holistic approach to ecosystem management in the Baltic.

However, other opinions were also expressed; the Committee should consider a much broader view of the ecosystem approach, including issues related to all trophic levels, ecosystem health, the translation of the scientific knowledge into advice and management action, and the socio-economic consequences of these actions.



The Committee agreed that developing a holistic approach to ecosystem management (including fisheries) would be consistent with the long-term objectives stated in the ICES Strategic Plan but that there was an urgent need to consider how such objectives could be met in an operational and pragmatic way. Given the diverse views on the topic and the limited time to discuss them, the Committee proposed to establish a Study Group on the Baltic Sea Ecosystem (SGBSE). It would have the following tasks:

- a) arrange a Workshop on the “Scientific Basis for Fisheries and Ecosystem Management in the Baltic Sea” to be co-sponsored by EUROGOOS, HELCOM, BMB, CBO, IBSFC and BSRP. The purpose of the Workshop would be to develop ways to strengthen and implement an ecosystem approach for the management of the Baltic Sea with an emphasis on the scientific bases for advice, monitoring, and assessment;
- b) as a preparatory activity for the Workshop, SGBSE would review the state-of-the-art, methodology, data availability, and resource allocation in this field. This review could include *inter alia* literature summaries and meetings of experts on specific topics.

This proposal was submitted with appropriate supporting information to the Consultative Committee for their consideration.\*

## Theme Session suggestions for 2003 and 2004

The Chair invited participants to submit suggestions for Theme Sessions and Conveners for the next Annual Science Conference. Contributions to the ASC are part of the Baltic Action Plan. These are an important way to illustrate Baltic activities to a wider audience and to encourage others to take part in Baltic scientific activities.

There were six suggestions for 2003 and one for 2004. After considering these, the Committee agreed to submit them to the Consultative Committee for possible inclusion in these ASCs.

## Close

The Chair thanked all members for their hard work and contributions to the discussion.

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\* As a result of discussions following this meeting it became clear that there was need for an urgent consideration of how the GEF project would relate to the activities of the Baltic Committee and how these could be integrated and used by ICES. As a result, both the ACE and Baltic Committee Draft Resolutions were laid aside in preference to the formation of a Planning Group on the Baltic Sea Regional Project.



## Diadromous Fish Committee (I)

Chair: Niall Ó Maoiléidigh (Ireland)  
Rapporteur: Niall Ó Maoiléidigh (Ireland)

The Committee met on 5 October 2002 from 10:30 to 12:00 with approximately 20 participants.

### Election of Chair

Niall Ó Maoiléidigh (Ireland) was elected as Chair.

### Opening

The Chair welcomed the participants and outlined the new Terms of Reference for the Committee:

1. to be a forum for the exchange of views on conservation, restoration, and management of diadromous fish species;
2. to stimulate international scientific cooperation on diadromous fish issues;
3. to propose Terms of Reference for, and review reports from Working Groups and Study Groups (or, when necessary, the establishment of such Groups), annual Theme Sessions or Symposia on scientific issues concerning diadromous fish, including resource management.

The Chair stressed the importance of the diadromous nature of the Committee and the need to identify specific participants who were expert in both the diverse range of species issues to be dealt with (salmonids, eels, lampreys, shads, etc., freshwater and marine, interactions with cultured fish species).

It was also noted that the Committee should:

- encourage diadromous fish biologists to make use of the ICES structures to promote specific scientific and research issues;
- act as a bridge between existing Committees, rather than as a stand-alone Committee and facilitate two-way interactions and dialogue on issues common to all of the Committees;
- provide an easily accessible source of information and expertise for ICES scientific deliberations and advice;
- act as a contact point for other Committees, international groups, agencies, and institutes.

In order to fulfil the above, the Committee would need to be both recognisable and active, and in the initial stages this would require a high level of communication and dialogue.

### Committee business

The first main issue to be dealt with concerned suggestions for Theme Sessions and ICES Symposia.

The following recommendation from Theme Session T (Salmon Aquaculture, Enhancement and Ranching: Are They a Threat to Wild Salmonid Stocks ?) was noted and discussed:

“It is recommended that the incoming Diadromous Fish Committee establish a full Symposium in 2005, between ICES and NASCO entitled:

“Interactions between Cultivated and Wild Diadromous Fish Species”.

This would complement a number of symposia (notably in 1991 and 1997), which have led to the publication of significant proceedings. The Symposium could also be open to a broader mariculture and marine fisheries audience to provide a wide scope for papers and participation”.

The meeting noted that there were a number of Symposia other than the ICES Symposia already arranged for 2004, which would make full participation difficult. Also, it was noted that ICES was already committed to support Symposia and Theme Sessions up to and including 2004. In the interests of obtaining the best participation and to allow sufficient progress on new research on interaction issues, the meeting endorsed the proposal to have a joint Symposium, and participants agreed to investigate this initially with NASCO to seek their endorsement and support.

The Committee also noted the following recommendation from Theme Session T:

“It is recommended that the Working Group on North Atlantic Salmon (WGNAS) review the appropriateness, and possible development, of an experimental tagging programme for investigating the behaviour of escaped farmed salmon.”

The need for such a review was evident from a number of papers presented in Session T (see, e.g. Figure I1). While the opinion was expressed that such initiatives in the past had not met with favourable responses from the industry, it was also broadly endorsed by the Committee.

The suggestion was made that the initial Theme Session topic to be proposed by the Diadromous Fish Committee should be inclusive of all or as many as possible of the diadromous fish species. It was noted that a Theme Session for 2003 relating to the management and provision of scientific advice for mixed stock fisheries was already proposed, and should accommodate diadromous fish issues. Such a session might also be appropriate to highlight postsmolt by-catch issues in pelagic fisheries. The idea of a Theme Session also



fulfilled the aim of bringing salmon issues back into the broader ICES arena.

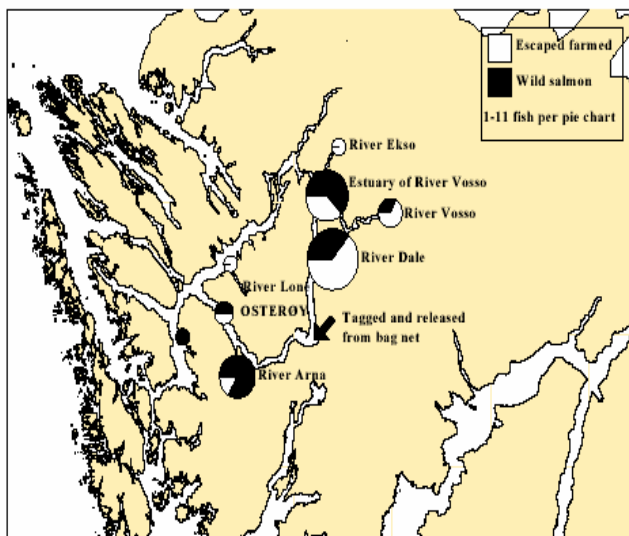


Figure I1. Recaptures of adult salmon that were caught, tagged, and released from bag-nets during July/September 2001. Based on analysis of scales the salmon are classified as wild, escaped, farmed, or stocked as juveniles. From “On distribution of escaped farmed salmon and rainbow trout in the sea and possible effects of salmon lice on wild stocks” by Ove T. Skilbrei (Norway). (Doc. T:08).

Consideration was also given to another proposed Theme Session for 2003 relating to stock-rebuilding. Again, it was felt that the experiences in stock-rebuilding for many diadromous species would be a useful contribution to this session and would again serve to integrate rather than isolate diadromous fish issues.

### Review of Working Group reports

It was noted that the Reports of the Working Group on North Atlantic Salmon, parented by ACFM, often contained well-reasoned recommendations and new advances in research, which were often not germane to the provision of catch advice but were still extremely valuable elements of these reports. A suggested role for the Diadromous Fish Committee should be to identify and highlight these for discussion at future meetings.

### Establishment of a “baseline” status report on all diadromous fish

This suggestion was made in response to the query on the scope and diversity of species which should be handled by the Committee. It was agreed that this could be done as a specific input for the next Diadromous Fish Committee.



## **Joint Session of Living Resources, Resource Management, and Baltic Committees**

### **Survey Reports**

Chair: Carl M. O'Brien (UK)

Rapporteur: Henk J. L. Heessen (Netherlands)

#### **Opening**

This Session was held on 30 September 2002 from 14:00 to 16:45. The Chair opened the meeting by explaining that the first Joint Session on Survey Reports in 2001 had helped to improve the treatment of survey Working Group reports.

#### **Presentation of Expert Group Reports on surveys**

The Report of the Planning Group for Herring Surveys (PGHERS) (Doc. G:02) was presented by Paul Fernandes (UK). He noted that data for the acoustic survey of North Sea herring are now available back to 1994. Redistribution of vessel time is being considered, taking the biomass distribution as a starting point for the reallocation of research-vessel effort. Because of a possible increase in gravel extractions in the Channel, it was questioned whether the Group could provide information on the exact spawning areas of herring in this area. Since a database is available for herring larvae surveys, the occurrence of the smallest larvae could easily be used to locate the spawning areas.

The Report of the Baltic International Fish Survey Working Group (WGBIFS) (Doc. G:05) was presented by Peter Ernst (Germany). Until now both an acoustic survey and a trawl survey have been carried out. For the trawl surveys, a new survey gear has been adopted recently. In 2002, Germany and Denmark will start an additional demersal trawl survey in the fourth quarter, in the Western and Central Baltic, respectively.

The Report of the Planning Group on North Sea Cod and Plaice Egg Surveys (PGEGGS) was not available. It was noted, however, that a pilot survey will be carried out in 2003 in order to test the survey methodology, and also to improve the method of distinguishing between cod and haddock eggs. A survey to map the spawning areas of North Sea cod and plaice will be held in 2004.

The Report of the Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS) (Doc. G:06) was presented by Cornelius Hammer (Germany). The 2001 survey resulted in more reliable information on the number of eggs and fecundity of mackerel. The increased fecundity estimate resulted in a decrease in the estimate of the mackerel spawning-stock biomass. For horse mackerel the lower fecundity estimated in 2000 resulted in a significant decrease in the estimate of the spawning-stock biomass. The Working Group expressed an urgent need for new research to find out whether horse mackerel is a determinate or an indeterminate spawner.

The Report of the Working Group on Beam Trawl Surveys (WGBEAM) (Doc. G:07) was presented by Gerjan Piet (Netherlands). Possibilities for further coordination were being discussed.

Gerjan Piet also presented the DATRAS project, an EU-funded project to develop a database for trawl survey data (IBTS all areas, BITS, and BTS) to be maintained at the ICES Secretariat. The presentation gave details on the different options for access to the database, once it is established. There was general agreement on adopting the proposed guidelines for access to the database, which are very similar to the procedures currently used for access to the IBTS survey data. It is intended that the database be made accessible via the World Wide Web.



## Joint Session of Living Resources, Resource Management, and Mariculture Committees

### Salmon Issues

Chair: Jake Rice (Canada)

Rapporteur: Niall Ó Maoiléidigh (Ireland)

#### Status of the Proposed Diadromous Fish Committee

The Chair opened the meeting by providing some initial background. In June 2002, a small Bureau Working Group had reported that it would be in the interests of ICES to establish a Diadromous Fish Committee. A letter to this effect was issued by the General Secretary of ICES to National Delegates outlining the background to this and proposing Terms of Reference as follows:

1. to be a forum for the exchange of views on scientific aspects of diadromous fish species, especially salmonids;
2. to stimulate international scientific cooperation on diadromous fish issues;
3. to recommend Terms of Reference for Expert Groups (or, when necessary, the establishment of such Groups), and Theme Sessions or Symposia on scientific issues concerning diadromous fish, including resource management.

It was also recommended that the Chair be an *ex-officio* member of ACFM and ACE. Essentially the Committee would be on the same level to the other Science Committees.

The purpose of this meeting was to obtain a general endorsement and receive comment back on the Terms of Reference and to guide Delegates in making their decision.

#### Proposed Terms of Reference of the Diadromous Fish Committee

Term of Reference 1: It was suggested that the reference to the “scientific aspect” should be clarified to include “conservation, restoration, and rational management”.

The emphasis on salmon in the proposed Terms of Reference was discussed and it was generally felt that the Group would also cover the other diadromous fish such as eel, shads, and lampreys, etc., as the title of the Committee suggested. It was therefore agreed that “especially salmonids” should be removed from this Term of Reference. It was also suggested that special consideration be given to the freshwater and estuarine aspects of these fish groups.

The issue of ranching and enhancement and the overlap with some of the Terms of Reference of the Mariculture Committee were discussed. It was suggested that certain aspects such as marine survival and the effects of farm

escapes on wild fish were probably more relevant to the Diadromous Fish Committee, while the culture of salmonids and other diadromous fish should remain within the remit of the Mariculture Committee. Issues such as the inter-relationships and interactions between wild fisheries and aquaculture could be brought before both Committees, which is common practice in existing Committees where overlap occurs.

It was generally agreed that a broad Term of Reference would be more desirable than a “wish list” of specific items and that establishing a Diadromous Fish Committee might be a good step in developing a pool of independent assessors for the associated Working Group and Study Group Reports.

Term of Reference 3: It was noted that while the Diadromous Fish Committee would propose Terms of Reference for Working Groups and Study Groups, there was no follow-through with regard to reviewing the ensuing reports. While it was acknowledged that ACFM provided the scientific advice to NASCO, there were some aspects of the Report of the Working Group on North Atlantic Salmon which did not go forward in the advice and which could be considered by the Diadromous Fish Committee.

Specifically, the Chair undertook to make the following changes to the proposed Terms of Reference to reflect the views of the meeting:

4. to be a forum for the exchange of views on conservation, restoration, and management of diadromous fish species;
5. to stimulate international scientific cooperation on diadromous fish issues;
6. to recommend Terms of Reference for and review reports from Expert Groups (or, when necessary, the establishment of such Groups), Theme Sessions or Symposia on scientific issues concerning diadromous fish, including resource management.

This would be brought forward to the Delegates to seek their endorsement and to facilitate the establishment of a Diadromous Fish Committee.

#### Theme Session proposals

The Chair presented a list of proposals for Theme Sessions in 2003, noting that there was already an increase from 2002. He sought the views of the meeting on whether any of these would be relevant to the Diadromous Fish Committee or whether the topics were broad enough to include specific areas of interest and



concern. It was noted that the Theme Sessions on Mixed Stock Fisheries and Stock Rebuilding Programmes were particularly relevant to diadromous fish and that should be communicated to the proposed Committee. With regard to the former Theme Session, the Chair reminded the meeting that this was particularly relevant to salmon stocks and it was expected that invited speakers of international stature would present keynote papers on this topic.

A suggestion for the following Theme Session was made from the floor for consideration:

“Non-High Seas Habitats and the Way that Different Diadromous Fish Use These”.

### **Election of a Chair for the Diadromous Fish Committee**

The meeting agreed to spend the next days in consultation to bring forward nominations for the Chair of the Diadromous Fish Committee and to bring these nominations to the attention of National Delegates. Providing Delegates approved the establishment of a Diadromous Fish Committee, the first meeting of this Committee would be held later in the Meeting.



## **Publications Committee (PUB)**

Chair: Bill Turrell (UK)

### **Introduction**

The Committee met for two half-day meetings on 29 September and 6 October. The first meeting was attended by 15 participants (four members, three IJMS Editors, three publisher's representatives, five Secretariat staff). The second meeting was attended by eight participants (four members, two IJMS Editors, two Secretariat staff). It was noted that this was the first year the Committee had sat under the new Rules of Procedure, with the Committee reporting to the Consultative Committee, of which the Chair is a member. The Committee has six members (including the Chair), and this is currently considered sufficient. The proposed link with the Science Committees will be achieved through the Chair's participation in the Consultative Committee. The work done by the previous Chair, Peter Boyle, in realigning the Committee was gratefully acknowledged.

### **Matters arising during 2001/2002**

Several issues have been dealt with intersessionally by the Committee:

#### **Study of the Sea**

The Committee undertook a lengthy review of the draft *ICES Cooperative Research Report*, which has subsequently been published as "ICES Science 1979–1999: The View from a Younger Generation". The Committee stressed that in future all suggestions for publications, wherever they arise within the ICES system, should be accompanied by specific recommendations for editorial and review responsibilities, and should be considered by this Committee.

#### **Editorial responsibilities**

A table was prepared showing the editorial route for each ICES publication series. Each series has an editor, but is also associated with either a Working Group or Committee to provide overall control, continuity, and direction. After discussions with the Chair of the Working Group on Zooplankton Ecology, it is recommended that J. Alistair Lindley be asked to undertake another three-year term as Editor of the series *ICES Identification Leaflets for Plankton*. It is recommended that the Secretariat, in consultation with the Chair, circulates a description of duties for the Editor-in-Chief of the *ICES Journal of Marine Science* (IJMS) in order that nominations may be received prior to the 2003 Statutory Meeting, as the present Editor (Niels Daan) will end his second term of office in December 2003.

### **ASC CD-ROM**

The CD-ROM issued prior to the 2001 ASC contained approximately 30% of Theme Session papers, with a subsequent CD-ROM published in early 2002. The CD-ROM for the 2002 meeting contained approximately 73% of papers, and no subsequent edition is planned, except for library subscriptions. This method of publishing ASC papers appears to be working well.

### **ICES Symposia**

It is important that the publication route of ICES-sponsored or -co-sponsored Symposia be considered at the initial planning stage, and the Committee notified of future requirements. If proceedings are to be published in the IJMS, a "shadow editor" will be nominated to act as a single point of contact for Symposium conveners. A table showing currently planned Symposia, along with editorial responsibilities, was prepared.

### **Publications by Working Groups**

An increasing trend is for Working Groups to seek external publication of the outcome of specific studies as commercially published books (e.g., *ICES Manual of Zooplankton Methodology*, *Manual on Stock Identification Methods*). While the Committee welcomes these initiatives, all Working Groups should note that if they wish to use the name of the Council, or the ICES logo, on such a publication, they must submit a draft to the Secretariat for approval. The Committee recommends that the Secretariat consider what arrangements are made with the publishers concerning the income generated by each publication.

### **Review of ICES publication activities 2001/2002**

The Editors' reports for each ICES publication series are available as Doc. Pub:03–09. Issues of relevance to the Consultative Committee are:

The *ICES Journal of Marine Science* continues to generate income for ICES (approx. DKK 325,000 in 2002), and to grow in terms of papers submitted. Some initial problems were encountered during the take-over of Academic Press by Elsevier. The Editors are attempting to overcome these difficulties. The contract with Elsevier shortly expires, and the Committee recommends that the Secretariat, in consultation with the Editors and the Publications Committee, considers the renewal process prior to the expiry of the present arrangement. Detailed statistics on the progress of the *Journal*, including publication delay times, have been compiled by both the Editor-in-Chief and the publisher and are available in their reports. The Consultative Committee should note that 21% of papers published by the *Journal* come from



countries other than ICES Member Countries, and 50% of papers are from university-based researchers, thus fulfilling the desire expressed in the Strategic Plan of broadening the scientific base from which ICES draws. Other issues discussed were (a) a revised Instructions to Authors to enhance electronic submission, (b) the distribution of the *Journal* through the Internet-based *ScienceDirect* system, and (c) a change in reprint policy. A long-term goal of the publisher is to achieve a 10% growth in journal size per annum. The Editors noted that the ICES community is asked to supply expert referees for IJMS papers, and members of the Consultative Committee are requested to encourage their members to support the *Journal* in this respect.

Efforts are currently under way to convert the “Plankton Identification Leaflets” into electronic format. The Secretariat has offered to undertake the necessary scanning of documents it holds, and the Editor and Working Group on Zooplankton Ecology are considering this offer.

The ICES Newsletter is considered by the Committee to be an ICES publication, and falls within its remit to review. At present content is approved by the General Secretary. The Committee will maintain an overview of the progress of this important source of information concerning ICES activities, and provide advice when appropriate.

### **Review of the ICES Website**

The Committee considered the establishment of a subgroup to review the ICES Website, but decided that it was more appropriate for the Committee itself to undertake this duty. The Committee noted the excellent progress in restyling the ICES Website, and congratulates the Secretariat on the result. There remain some issues to be discussed, and the Committee asks the Secretariat to submit a report to next year’s Publications Committee on the Website, and activities concerning updating the site during the intervening year. Initial recommendations are that all Working Group reports be password protected until adopted at the Statutory Meeting (one single password for all protected areas of the ICES site should be used), all Working Group reports carry a warning that they are not the views of the Council, and all links to external sites alert the viewer to the fact that they are leaving the ICES site. Consultative Committee members should note the present policy concerning individual Working Group home pages. The Secretariat has advised that it will not host Working Group Web pages. These must be maintained by home institutes or other external organisations. ICES will maintain links to these external sites.

### **Cost / benefit analysis of ICES publications**

The Secretariat attempted to assemble cost figures (including items such as production, postage, printing, staff, editing, complimentary copies) for publication-related activities. This was only partially successful, with perhaps 80% of costs captured, excluding any staff costs,

and some confusion over subheads. The Committee asks the Secretariat to attempt this process again for the 2003 meeting, with costs attributed to the different subheads under each publication series. This should include all costs associated with the Website and design work.

In terms of benefit, the Committee discussed establishing a “Reader Survey”, targeted at finding out the usefulness of ICES publications and their perception by the community. This will be prepared intersessionally during the coming year, and members of the Consultative Committee are asked to cooperate with this initiative as appropriate.

### **Publication of the results of the advisory process**

The Committee received two inputs on this issue, one from Fredric Serchuk (Publications Committee member nominated to represent the advisory process) and one from a client commission. A summary of their, and the Committee’s, comments is as follows:

ACFM Report: The Committee noted the new electronic format of the report. This is welcomed but some thought must be applied to permanent archiving if the report is to remain in only this form.

ACME Report: While the current ACFM report is of most relevance to users, past ACME reports contain an important reference source of information, and must be archived in a readily accessible way. Again an electronic format is called for, including an efficient search engine. However, a hard-copy version is also required.

The CRR series: At present this series contains a mixture of advisory output and scientific research results. This mixture is not good for either source of information. Advisory reports are not sequential, causing confusion when an issue is tracked back through time, and scientific reports can be lost amongst larger advisory reports.

The Committee was undecided on whether reports of the Advisory Committees should be available only in electronic format. If paper versions are required, should they be in the *ICES Cooperative Research Report* series, and a new series supporting the advisory process commence? In the past, two other options have been attempted: a split series (Series A and Series B), and different spine colours for the different types of report. Neither solution functioned well. The Consultative Committee is requested to consider this issue and advise the Publications Committee on its views.

### **ICES publications and Intellectual Property Rights**

The Committee noted that the issue of Intellectual Property Rights (IPR) is a complex one, particularly in the ICES context, when contributing authors will be covered by IPR issues arising from their home institutes,



especially Government institutes. This subject requires a high degree of specialist expertise, which the Committee does not have, although this may reside within individual institutes in library or IPR departments. The Committee requests that, prior to seeking additional advice, the precise concerns regarding IPR in an ICES context be more clearly specified.

During this discussion, an issue arose about authorship of *Cooperative Research Report(s)* (and possibly other ICES series). *CRRs* range from multiple authorship arising from large groups of authors, to single authorship. The precise format of citation for each *CRR* should be included in it.

### **Action Plan**

This Committee's Action Plan has not progressed as have those of other Committees, as this is the first year it has met under its new remit. Comments on the Action Plan have been passed to the Chair of the Consultative Committee regarding reference to publication policy. The Committee's own Action Plan will be developed intersessionally and reviewed at the next Statutory Meeting. A framework for the Action Plan was developed, with the overall goal to produce, using timed milestones and consultation as appropriate:

#### **a) Guidelines for ICES publication policy**

The Committee will work in a structured manner towards producing guidelines for the Council, Secretariat, and editors in order to guide their day-to-day running of ICES publications. For each series, including the Newsletter and all Web-based publications, as well as the Website itself, the Committee will construct advice in the areas of:

- Content,
- Editorial responsibilities and policy,
- Review process,
- Pricing,
- Commissioning policy,
- Dissemination policy,
- Language issues.

#### **b) Recommendations for publication monitoring processes**

The Action Plan will also describe how the Committee will work towards establishing advice on monitoring processes required within ICES. These include:

- Cost monitoring,
- Stock monitoring,
- Publication tracking,
- Reader surveys,
- Delivery-time tracking.

### **Any other business**

#### **New style for ICES publications**

The Committee noted the new style which has been introduced to ICES publications. While not wishing to comment on the style actually chosen, the Committee welcomes the consistency this initiative has resulted in across ICES series. The Committee does not wish the *ICES Journal of Marine Science* to change its cover style. The *IJMS* will introduce the new ICES logo.

#### **Working Group Report format and “Guidelines for Chairs”**

The Committee noted that the Secretariat is producing an updated “Guidelines for Chairs”. The Committee urges the Secretariat to include advice on Working Group Report format, specifying a minimum content required (e.g., cover details, executive summary, contents list, venue, introduction, annexes listing participants, etc.). The Guidelines should also explain the policy on Working Group home pages.

#### **ICES Observer Countries**

The Committee noted that in order to diversify the base from which ICES publication editors and reviewers are drawn, countries with observer status should be encouraged to participate in publication activities.







## **Financial Matters**







## Report of Finance Committee

Chair: Tomasz Linkowski

The Committee met twice: on Thursday 3 October 2002 from 09:00 to 13:00 hrs and on Saturday 5 October 2002 from 11:00 to 13:30 hrs.

All members were present except the Danish Delegate Mogens Schou, who could not attend the first meeting. The First Vice-President (representing the Bureau), the General Secretary, J. Andersen-Rosendal, and I. Lützhøft from the ICES Secretariat, also participated. Liz Tirpak from the US State Department took part in both meetings in a capacity of observer.

### **Agenda Item 1      APPROVAL OF AGENDA**

The draft Agenda was adopted as presented.

### **Agenda Item 2      APPOINTMENT OF ONE MEMBER OF FINANCE COMMITTEE**

Eduardo López-Jamar (Spain), a newly appointed Finance Committee member to replace G. van Balsfoort, attended the Committee meeting for the first time.

### **Agenda Item 3      FINAL ACCOUNTS FOR FINANCIAL YEAR 2001**

J. Andersen-Rosendal summarised the final Income and Expenditure Accounts and Balance Sheet for the Financial Year 2001 (Doc. C.M. 2002/Del:1). She drew attention to:

- 1) The Profit and Loss Account indicated a profit of DKK 1,699,199 for the year as a whole, which was allocated as DKK 92,336 to the Capital Reserve Fund (Interest earned), DKK 767,863 to the Capital Reserve Fund, DKK 570,000 to cover extraordinary IT Expenses in 2002, and finally DKK 269,000 to cover under-budgeted travel for advisory meetings in 2002; Under Income:
  - a) The National Contributions had been paid in full. Other Contributions were close to the budgeted figures;
  - b) Ongoing Projects was about DKK 3,840,000;
- 2) Under Expenditure:
  - a) Salaries of Professional and General Service Categories Posts showed savings of about DKK 569,300, while Periodic Assistance was overspent with DKK 244,771;
  - b) Office Expenses were about DKK 53,299 under the budget;
  - c) Travels and Meetings were overspent by DKK 1,360,000.

In the subsequent discussion the Committee considered how to solve the problem of delayed payments such as, e.g. income from the continued sale of the History Book, or final accounts and payments referred to the previous year's ASC, when the relevant projects (e.g. Centenary Project) have been already terminated. It was suggested that an eventual surplus from the sale of the History Book after the termination of the Centenary Project should be included to the income from sale of publications. The problem of final accounts of the previous ASC was not concluded.

The Chair, R. Aps, and A. Forest signed the Final Accounts and Balance Sheet and also signed for the receipt of the Long-Form Audit Report. The Danish Delegate signed these documents during the second Finance Committee meeting.

### **Agenda Item 4      STATUS REPORT ON THE ACCOUNTS AS OF 15 SEPTEMBER 2002**

J. Andersen-Rosendal reviewed the Status Report as of 15 September 2002 (Doc. C.M. 2002/Del:4). She pointed out that:

- 1) Under Income:
  - a) All National Contributions had been paid in full;
  - b) The full contributions have been paid by NEAFC, IBSFC, NASCO, and EC. OSPAR paid their contribution for the first six months, while HELCOM and Faeroes & Greenland have not paid their contributions;
  - c) Ongoing Projects showed DKK 1,621,062.
- 2) Under Expenditure:
  - a) Salaries showing the status figures for Professional- and General Service-grades are not expected to be overspent. Overtime for the General Service Category was used almost entirely in connection with ACFM, ACME, and ACE;
  - b) Office Expenses were in balance;
  - c) EDP Expenses are not likely to be overspent. The extraordinary purchases of IT-equipment, including UPS Power-ware and purchase for Software Licences is covered by the 2001 IT-Fund of DKK 570,000.
  - d) Bureau travel expenses will be less than budgeted; travel costs of the ACFM are expected to exceed the budget by ca. DKK 400,000. The total expenses of ACME and ACE will not exceed the budget.



After a brief discussion, the Committee accepted the Status Report as of 15 September 2002 as shown and agreed to submit it to the Council without change.

## **Agenda Item 5      DRAFT BUDGET FOR 2003 AND DRAFT FORECAST BUDGET FOR 2004**

### **Draft Budget for 2003**

J. Andersen-Rosendal summarised the Draft Budget 2003 (Doc. C.M. 2002/Del:5E). She reminded that the Draft Budget for 2003 was prepared on the basis of the Forecast Budget approved by the Council at the 2001 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.

1) *Income*. The National Contributions are DKK 18,165,000 as approved at the 2001 ASC in Oslo, Norway. Contributions from NEAFC, IBSFC, NASCO, and EC have been adjusted for inflation according to the principles in Doc. C.M. 1998/Del:10, and are equal to 100% cost recovery. The contribution from HELCOM is DKK 127,875 to reflect decisions by the HELCOM heads of Delegation meeting in December 2000. There are only inflationary changes in the budget for OSPAR. The contributions from the Faeroe Islands and Greenland remain as approved. Contributions from the Scientific Observers include Australia, Greece, New Zealand, South Africa, Chile, and the contribution from WWF and BirdLife-International. Extra Income from the Fisheries Commissions have not been budgeted for 2003, but will be necessary if a fee is to be paid to the ACFM Chair. The sale of publications is expected to be DKK 160,000 for the year.

2) *Expenditure*. Incidentals for the President and Chairs are unchanged compared with 2002. Salaries: Professional Category and General Service Category figures are based on calculations with annual step increments with a 2,0% cost of living increase. Periodic Assistance includes salary costs for Ongoing Projects. Office Expenses have been adjusted for expected costs. The IT-Expenses are budgeted to DKK 1,537,684 including expenses for software for Electronic Publications/Web site, etc. It is, however, expected that the cost could be as high as DKK 1,800,000. The expenses for ASC 2003 are estimated at DKK 760,000. The total cost for Travels and Meetings has been adjusted to a total amount of DKK 2,798,000. Publications have been adjusted to expected publications costs. Income from interest is expected to be DKK 400,000.

The Committee accepted the draft Budget for 2003 and recommended its approval by the Council.

### **Draft Forecast Budget for 2004**

The General Secretary explained the exceptional format of the document. As the Council decision regarding the

increase of national contribution is not known yet, the two options of 3% and 7 % increase have been presented throughout the document in two separate columns. These two options of the National Contributions increase (3% and 7 % respectively) have to be balanced with the expenses as proposed in the columns below for ICES' activities as agreed by the Member Countries. The income in the "3%" column is not sufficient to cover all of the activities, which were previously part of the ICES budget. A 7% increase allows funding for Publications to be partially restored, for an increase in travel including support for advisory activity, and for an investment in information technology.

The Chair noted that the Draft Forecast Budget for 2004 had been produced at the January 2002 Bureau Meeting and issued as Doc. C.M. 2002/Del:5. At the same time the decisions to reduce the size of the Secretariat salary bill were taken to be implemented much later. Thus, the outcome of these decisions was not known yet during the Draft Forecast Budget for 2004 and could not be referred to under the relevant expenditure position (salaries). Moreover, the assumption that the ICES Client Commissions will immediately increase their contributions by 7% following eventual Council decision of such an increase of National Contributions does not seem to be plausible. A more precautionary approach to the budget suggests a 3% increase of this income.

The Finance Committee members considered only these two reservations important enough to ask the Secretariat for a preparation of a revised version of the Del:5 document. Moreover, the Finance Committee took the opportunity to edit several other minor items within the Expenditure for a better transparency and clarity of the budgeting process.

- 1) The Income consisted of:
  - a) National Contributions, which were increased optionally by 3% and by 7% relative to the 2003 Draft Budget;
  - b) Commission Contributions have been adjusted for inflation according to the principle in Doc. C.M. 1998/Del:10, and are now equal to 100% cost recovery;
  - c) The contributions from the Faroe Islands and Greenland have been increased in line with that of the Member Countries;
  - d) The contributions from Scientific Observers include Australia, Greece, New Zealand, South Africa, Chile, and the contribution from WWF and BirdLife has been increased in line with that of the Member Countries;
  - e) Income from Ongoing Projects is estimated at DKK 440,000;
  - f) An extra income from the Fisheries Commissions of DKK 500,000 to cover the fee for the Chair of ACFM;
  - g) The sale of publications is expected to be DKK 160,000 for the year.

- 2) The Expenditure items with respect to:



- a) The incidentals for the President and Chairs are increased by DKK 500,000 (to cover the fee for the Chair of ACFM);
- b) Salaries: The Professional Category figure (including two short-term P1 contracts for Programmers) is based on calculations with increases of a 2.0% projected inflation adjustment for both columns. The total increase includes the cost for the upgrading of one post from P3 to P4. General Service Category figure is based on a 2.0% inflation adjustment as seen above for both columns and includes upgrades of seven General Service positions. Periodic Assistance is budgeted in 2004 with DKK 200,000 in the first column and DKK 223,320 in the second column;
- c) Office Expenses are estimated to be almost the same as for 2003. The introduction of a new budget line, i.e. improved Headquarter facilities was introduced to meet the requirements for updating secretariat working procedures;
- d) The IT-Expenses are estimated to be DKK 2,092,322 and 2,428,377 for the year 2004 in the first and second column, respectively. This increase in expense is largely due to an urgent need to update the IT equipment (such as printing facilities) as well as IT-software, which is needed to support the working groups coming to ICES as well as paying for the running cost of ICES IT. It should be noted that the budget for Electronic Publications/Web Site, etc. has been included in the IT-budget and is not shown separately in 2004 under publications;
- e) Expenses for ASC 2004 are expected to be DKK 760,000. Spain will be the host country;
- f) Travels, Meetings etc. is increased by about DKK 200,000 within the 7% option;
- g) The publications cost could also be reduced less drastically compared with the previous year if the 7% option of National Contribution increase is accepted.

The Committee proposed that the Forecast Budget for 2004 be submitted to the Council for further consideration within the procedure of approval.

#### **Agenda Item 6      APPOINTMENT   OF   AUDITORS FOR 2002**

On the basis of 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.

#### **Agenda Item 7      MATTERS REFERRED TO COMMITTEE BY BUREAU OR COUNCIL**

##### **7. Financial consequences of the splitting up of ASC and Council Meetings**

In the Bureau comments to the Report of the Bureau Working Group on Long-Term Finances under the question "How to reduce costs" there was a suggestion to reduce annual meeting costs. The question if the splitting up of the two main meetings, i.e. Council Meeting and ASC would have positive financial consequences on the ICES budget should be solved before the Council comes to a decision. The Council has addressed this task to the Finance Committee.

The possible savings were calculated on the basis of detailed examination of the needs for secretariat staff assistance at the ASC and Council Meetings. The organisation of ASC separate from CM would save ca. DKK 78,500 on per diem, hotel, and airfare costs. However, as the President and the Consultative Committee Chair (both from North America) have to attend both meetings the additional costs of their air tickets should be considered at the approximate cost of DKK 25,000. Thus, the overall savings from the organisation of separate ASC and Council Meetings would be ca. DKK 53, 000. The possible savings for the host country due to a reduced cost of renting premises (if the Council Meetings are held at ICES headquarters on a regular basis) have not been analysed, as they do not refer to the ICES budget. The organisation of the Council Meetings in Copenhagen would not have any additional financial consequences for the ICES budget if the Danish Government provides meeting facilities for this.

##### **7.a. Report of the Bureau Working Group on Long-Term Finances (Doc. Del:7)**

As a member of the Bureau Working Group on Long-Term Finances the first Vice-President presented briefly the Del:7 document to the Finance Committee.

The Finance Committee members found this document very interesting and relevant to the terms of reference of the Finance Committee. However, as the document deals mostly with issues of a principal importance to ICES and has been addressed to the Council by the Bureau, the Finance Committee members considered that the Committee does not have authorisation to make more detailed comments on the report unless the Council requests it to do so. The Finance Committee decided, however, to make an exception from this position by expressing an endorsement for the recommendation "i". A development of a programmatic approach to budgeting does not need any strategic decisions from the Council, and the Finance Committee wished to support this recommendation of the Bureau WG as it is already being addressed by the Secretariat (see Agenda Item 8, 1).



## Agenda Item 8 ANY OTHER BUSINESS

### 1) Software presentation

During the first Finance Committee meeting a presentation was made of the software purchased recently by ICES, which allows the various cost elements to be combined, compared and analysed in a much more flexible way than has been possible up to now. This software will certainly greatly facilitate cost reporting and should eventually lead to programmatic budgeting in the future.

### 2) Workshop on Financial Planning and Management of Scientific Organizations

A critical theme highlighted in the ICES Strategic Plan is the value added by ICES. While we usually think of the value that ICES can add to our scientific and advisory activity, ICES also has the potential to add value by helping scientific institutions in member countries to improve their financial planning and management by providing a forum for exchanging information about the diversity of systems used by the institutions. Such a forum could also help ICES to modernize its financial planning and management systems. While the scientific institutions usually have access to financial planning and management systems within their own countries, they are less likely to be in communication with institutions with scientific programs as similar as institutions in other ICES countries. Recognizing this gap the First Vice-President made a suggestion to the Finance Committee of taking an initiative of organising a Workshop on Financial Planning and Management of Scientific Organizations for relevant people from the ICES member countries and the Secretariat. The Finance Committee endorsed this suggestion.

It is recommended that a workshop be held at the ICES Secretariat in February 2003, at national expense, to be chaired by John Boreman (USA), with the following terms of reference:

- Review financial planning and management systems used or being developed by scientific institutions and the ICES Secretariat;
- Prepare a summary describing the systems with reference to more detailed documentation about the systems, and providing a point of contact for future communications;
- Identify other administrative topics for which future workshops would be beneficial.

The workshop should report to the next meeting of the Finance Committee and it should be highlighted in a future Administrative Report prepared by the Secretariat.

### 3) Search for additional external funding – a Secretariat staff initiative

The General Secretary presented a proposal from Secretariat staff members concerning the possibility of additional external funding. This initiative was taken in the light of (a) awareness of the difficult budgetary situation and (b) Council policy on relationships with other organisations (C.Res. 4DEL01), based on the recommendations of the Bureau Working Group on International Programmes), that ICES should:

- Enhance relationships between Regulatory Commissions, other customers and other relevant organisations;
- Enhance links with university scientists, both within the member countries and the wider international community; and
- Further collaboration with funding bodies, in particular the EU through the Sixth Framework Programme.

The proposal was, firstly, that the Secretariat should actively investigate ways in which ICES might serve, or assist, as a project coordinator in international projects, either in a primary role or in cooperation with project managers in national institutes. Secondly, it was suggested that the Secretariat should pro-actively identify potential research areas and possible funding sources.

The Finance Committee welcomed this initiative, and agreed to recommend that the General Secretary be authorised to utilise Secretariat resources for this purpose, within the limits of the budget for incidental activities.

There being no other matters raised under this item, the Chair closed the meeting. He thanked all the Committee members and the ICES Secretariat for their support.



## PROFIT AND LOSS ACCOUNT FOR 2001

Note

DKK

### Income

1 National Contributions .....	17,252,550
2 Other Contributions .....	5,630,003
Sale of Publications .....	163,892
3 Miscellaneous Income .....	341,104
Observers Contributions.....	134,240
Ongoing Projects.....	3,840,234
	<b>27,362,023</b>

### Expenditure

4 Salaries.....	17,734,172
5 Office Expenses .....	2,359,501
EDP Expenses .....	1,518,517
6 Travels and Meetings .....	4,097,649
7 Publications .....	727,927
Incidentals for President and Chairmen.....	56,501
	<b>26,494,267</b>

### Operating Profit

867,755

### 8 Interest Receivable.

831,443

### Profit for the Year .....

1,699,199

### Allocated as follows

### Transferred to Capital Reserve Fund.....

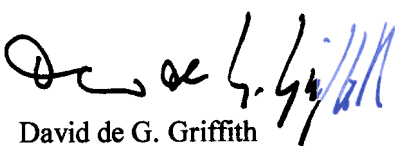
1,699,199




## BALANCE SHEET AT 31 DECEMBER 2001

### Note

	DKK	DKK
<b>ASSETS</b>		
<b>Current Assets</b>		
<b>Stocks .....</b>		<b>299,830</b>
<b>Debtors</b>		
Debtors Publications .....	4,101	
9 Prepaid Expenses .....	2,500,372	
Unpaid Contributions from Observer, etc..	26,263	
10 Other Debtors .....	292,338	
<b>Total Debtors.....</b>		<b>2,823,074</b>
11 <b>Investments.....</b>		<b>5,797,570</b>
<b>Cash at bank and in hand .....</b>		<b>15,029,560</b>
<b>TOTAL ASSETS..</b>		<b>23,950,034</b>
<b>LIABILITIES</b>		
12 <b>Total Capital and Reserves .....</b>		<b>3,748,722</b>
Prepaid Contributions.....	15,695,708	
Prepaid Ongoing Projects .....	3,178,284	
Office Maintenance .....	222,305	
Publications .....	504,669	
13 Other Creditors .....	600,346	
<b>Total creditors .....</b>		<b>20,201,312</b>
<b>TOTAL LIABILITIES.....</b>		<b>23,950,034</b>

  
David de G. Griffith  
General Secretary

  
Jytte Andersen-Rosendal  
Office Manager



## BUDGET FINANCIAL YEAR 2003

### INCOME

	Budget 2002	Budget 2003
	DKK	DKK
<b>National Contributions</b>		
Belgium .....	677,000	692,000
Canada .....	1,015,500	1,038,000
Denmark .....	1,015,500	1,038,000
Estonia .....	338,500	346,000
Finland .....	507,750	519,000
France .....	1,354,000	1,384,000
Germany .....	1,354,000	1,384,000
Iceland .....	1,015,500	1,038,000
Ireland .....	677,000	692,000
Latvia .....	338,500	346,000
Netherlands .....	1,015,500	1,038,000
Norway .....	1,354,000	1,384,000
Poland .....	1,015,500	1,038,000
Portugal .....	677,000	692,000
Russia .....	1,015,500	1,038,000
Spain .....	1,015,500	1,038,000
Sweden .....	1,015,500	1,038,000
United Kingdom .....	1,354,000	1,384,000
USA .....	1,015,500	1,038,000
<b>Total .....</b>	<b>17,771,250</b>	<b>18,165,000</b>
 Sale of Publications.....	 160,000	 160,000
Other Contributions.....	5,678,466	5,804,823
Scientific Observers Contributions	137,300	140,458
Income from Ongoing Projects.....	440,000	440,000
 <b>GRAND TOTAL</b>	 <b>24,187,016</b>	 <b>24,710,281</b>



## **EXPENDITURE**

	<b>Budget 2002</b>	<b>Budget 2003</b>
		<b>DKK</b>
<b>Incidentals for President and Chairmen</b>	<b>67,300</b>	<b>67,300</b>
<b>Salaries ...</b>	<b>16,417,788</b>	<b>16,841,497</b>
<b>Office Expenses</b>	<b>2,163,663</b>	<b>2,253,300</b>
<b>IT-Expenses</b>	<b>1,478,122</b>	<b>1,537,684</b>
<b>Expenses for ASC</b>	<b>900,143</b>	<b>760,000</b>
<b>Travels, Meetings, etc.</b>	<b>2,680,000</b>	<b>2,798,000</b>
<b>Publications</b>	<b>480,000</b>	<b>452,500</b>
<b>GRAND TOTAL ....</b>	<b>24,187,016</b>	<b>24,710,281</b>

## **INTEREST RECEIVABLE**

<b>Interest</b>	<b>400,000</b>	<b>400,000</b>
<b>Interest transferred to Capital Reserve Fund</b>	<b>400,000</b>	<b>400,000</b>



## **Delegates**







## **Agenda for Council: 2002 Annual Science Conference (90th Statutory Meeting)**

### **Delegates Meeting**

1. Elections and Appointments at the 90th Statutory Meeting, including two new Vice-Presidents
2. Progress Report on Administration
3. ASC 2002 – Social Activities
4. Arrangements for future Annual Science Conferences and Statutory Meetings: 2003: Tallinn, Estonia; 2004: Vigo, Spain
5. Statistics on ASC Participation 1992–2001
6. Proposal for Establishing Affiliate National Members
7. Rules for External Observers at Advisory Committee Meetings
8. Salmonid Affairs in the ICES Structure
9. Draft Integrated Action Plan
10. Proposal for a Second Environmental Dialogue Meeting
11. Address by PICES Representatives
12. ICES/NAFO MoU
13. Report of the Steering Group for the ICES/GLOBEC North Atlantic Programme
14. Report of the GEF Baltic Regional Project
15. Report of the Finance Committee
  - 15.1 Final Accounts for the Financial Year 2000
  - 15.2 Status Report of Accounts as of 15 September 2002
  - 15.3 Draft Budget for 2003 and Draft Forecast Budget for 2004
  - 15.4 Appointment of Auditors for 2003
16. Report of the Working Group on Long-Term Finances
17. Report of the Management Committee on the Advisory Process (MCAP), including the Report of the Study Group on ACFM Procedures
18. Report of the ICES/Commissions Working Group on Cooperative Procedures
19. Appointment of ACFM Chair
20. Reports and Recommendations of the Consultative Committee
21. Draft Report of the Management Committee on the Advisory Process
22. Any Other Business



## Delegates Meetings Decisions

The Delegates met in four sessions on 2, 7, 8 and 9 October 2002.

### Agenda Item 1: Elections and Appointments at the 90th Statutory Meeting, including two new Vice-Presidents (Gen:3)

With effect from 1 November 2002 two new **Vice-Presidents**: Paul Connolly (Ireland) and Peter Gullestad (Norway) were elected to replace Tomasz Linkowski (Poland) and Johann Sigurjónsson (Iceland).

Member of **Finance Committee**: On the nomination of the Bureau, Eduardo Lopez-Jamar (Spain) was appointed to replace Gerard van Balsfoort (Netherlands) with effect from 1 January 2003.

**Chair of Diadromous Fish Committee**: Niall O'Maoileidigh (Ireland).

**Chair of Mariculture Committee**: Tom Sephton (Canada) with effect from 1 January 2003.

### Agenda Item 2: Progress Report on Administration (Del:2)

Particular mention was made of the visit of EU Fisheries Commissioner Franz Fischler and the Danish Minister of Food, Agriculture and Fisheries to ICES Headquarters in July 2002.

The General Secretary also spoke about the difficult process with regard to the closing of four posts in the ICES Secretariat.

### Agenda Item 3: ASC 2002 – Social Activities (Del:18)

The social activities planned for the 2002 ASC were presented.

### Agenda Item 4: Arrangements for future Annual Science Conferences and Statutory Meetings: 2003: Tallinn, Estonia and 2004: Vigo, Spain (Del:9)

It was agreed that for the years 2003 and 2004 the ASC and Statutory Meetings should be held back to back. For the years 2005 and 2006 the meetings should be held separately. For 2007, a decision will be taken later based on the experience from 2005 and 2006.

The UK Delegate extended an invitation to hold the 2005 ASC in Scotland, and a written confirmation will

be forthcoming. The Delegate of the Netherlands informed the Council that his country was considering the possibility of offering to hold the ASC in 2006. He explained that consultations with his authorities had yet to take place, and that he would provide more information later. The Council welcomed this statement.

### Agenda Item 5: Statistics on ASC Participation 1992–2001 (Del:11)

Doc. Del:11 showed that the 1996 policy change (where ASC participants no longer have to be nominated by their Delegate) had not been followed by any significant increase in university participation, except for Germany, Norway and USA. The Delegates agreed that this was an interesting document and that the statistics should be maintained.

### Agenda Item 6: Proposal for Establishing Affiliate National Members (Del:8)

After some amendments mainly concerning the title of the proposed new status (whether it should be “Affiliate Member” or (as ultimately agreed) “Affiliate”), the document on *Criteria Governing Acceptance of an Affiliate to the International Council for the Exploration of the Sea* was accepted by the Council on 28 October (the discussions were concluded by correspondence after the meeting).

### Agenda Item 7: Rules for External Observers at Advisory Committee Meetings (Del:15)

This matter was taken with Agenda Item 17.

### Agenda Item 8: Salmonid Affairs in the ICES Structure (Del:3)

The Council agreed to the establishment of a Diadromous Fish Committee and adopted the terms of reference proposed. The Diadromous Fish Committee met on 5 October for the first time, during which a Chair (Niall O'Maoileidigh, Ireland) was elected.

### Agenda Item 9: Draft Integrated Action Plan (Del:7)

At the request of the Delegate of Ireland sections on “Value added” were drafted for insertion in the passages dealing with Goals 6–10.

After some editorial changes suggested by several Delegates, the Council accepted the Action Plan.



**Agenda Item 10: Proposal for a Second Environmental Dialogue Meeting (Del:10)**

The Council agreed that a Second Environmental Dialogue Meeting should be held and that the proposed Steering Committee should be extended to include Marcel Chaussepied (France), and a representative each of NASCO, NAFO and NEAFC. The choice of venue, as well as a detailed agenda for the Dialogue Meeting is to be decided by the Steering Committee.

**Agenda Item 11: Address by PICES Representatives (Del:19)**

The President, who had attended the 10th Annual Meeting of the North Pacific Marine Science Organization (PICES) in 2001, reminded Delegates that he had invited representatives from that organisation to attend this year's ASC and address the Council. Following an introductory statement by Hyung-Tack Huh (Chair of PICES), Ian Perry (Chair of the PICES Science Board) provided an overview of the aims and structures of this organisation and encouraged future collaboration. Copies of the PICES statement were subsequently distributed among the Science Committees in order to encourage suggestions for further work that can be conducted on a joint basis.

**Agenda Item 12: ICES/NAFO MoU (Del: 16)**

NAFO had informed ICES that it has had a long-standing working relationship with ICES in many scientific activities of mutual interest, and that NAFO had therefore considered that there is no need for a formal MoU at this stage. The Council agreed not to take any further action for the time being but to return to the matter next year.

**Agenda Item 13: Report of the Steering Group for the ICES/GLOBEC North Atlantic Programme (C.M. 2002/C:17)**

The Council endorsed the report, and the suggestion by the President that the Steering Group should report to CONC.

**Agenda Item 14: Report of the GEF Baltic Regional Project (Del:14)**

The report was taken *at notam* after the General Secretary confirmed that the Baltic Committee is involved in this project.

**Agenda Item 15: Report of Finance Committee**

These matters were taken after Agenda Item 16 (Report of the Working Group on Long-Term Finances).

**15.1 Final Accounts for Financial Year 2000 (Del:1)**

The Council accepted the Final Accounts for the Financial Year 2000.

**15.2 Status Report of Accounts as of 15 September 2002 (Del:4)**

The Delegates were informed that all national contributions had been paid in full. It was also explained that the items on salaries, EDP expenses, ACME and ACE were not expected to be overspent. Also, the item on travel was expected to be less than budgeted. The Status Report was then approved by the Council.

**Draft Budget for 2003 (Del:5)**

After some explanations provided by the General Secretary, in particular regarding termination allowances and redundancy payments, the Council accepted the Draft Budget for 2003.

**Draft Forecast Budget for 2004 (Del:5)**

The Bureau proposed alternative Draft Forecast Budgets, one involving a 7% increase on the previous year and one with a 3% increase. The 7% alternative received only 11 votes in favour (Denmark, Finland, France, Iceland, Ireland, Netherlands, Norway, Portugal, Spain, United Kingdom and the USA) Since 13 votes are required to achieve the necessary 2/3 majority, the proposal for a 7% increase was defeated. The increase of 3% was unanimously accepted, but as the President pointed out, this is not an increase in the 2004 Budget, but a *status quo* situation, since it only matched the rate of inflation.

**15.3 Appointment of Auditors for 2003**

The Council endorsed the Finance Committee's recommendation that the present Auditors (KPMG) be appointed for another year.

**Agenda Item 16: Report of the Working Group on Long-Term Finances (Del:6)**

This item was taken before Agenda Item 15 (Report of the Finance Committee).

The President pointed out that financial issues had become critical owing to the growing work in ICES. He particularly highlighted some conclusions given in the Report of the Bureau Working Group on Long-Term Finances including the statement that if the situation does not improve, major elements of the ICES programme, such as the work on oceanography, environment or fisheries, the advisory work, or the data handling may have to be dropped.

The consensus view of the Delegates was that there should be more transparency with regard to budgeting, and that a programmatic approach, including a multi-year finance plan, to budgeting and financial reporting should be introduced urgently.



To resolve these issues, and on the suggestion of the First Vice-President, the Finance Committee endorsed the proposal that a Workshop be held at ICES Headquarters, chaired by John Boreman (USA) to review financial planning and management systems used, or being developed, by scientific institutions.

**Agenda Item 17: Report of the Management Committee on the Advisory Process (MCAP) (Del:13), including the Report of the Study Group on ACFM Procedures (C.M. 2002/MCAP:01)**

This item was taken in conjunction with Agenda Item 7.

The Chair of MCAP presented his Committee's report and provided redrafted recommendations. The Report of the Study Group on ACFM Procedures was annexed to the MCAP Report. Both documents were welcomed and received broad endorsement.

After detailed discussion on the question of admitting observers to the Advisory Committees and Working groups, the following Resolution was agreed (C.Res 2002/Del:1):

1. ICES continues to support the North Sea Commission Fisheries Partnership Process.
2. ICES will develop adequate structures for a comprehensive external peer review process of ICES stock assessments as a routine part of the ICES advisory system itself, aiming at making a decision in 2003. As a first step, 2–3 external experts will take part in the reviews done in the ACFM sub-groups.
3. Recognising the commitments of the Strategic Plan and the Copenhagen Declaration to greater transparency of ICES advisory process, and the maintenance of sound, independent and credible advice, ICES further resolves:
  - To commit itself to a more transparent advisory process;
  - To progress this by *inter alia* admitting Observers from Client Commissions which have a Memorandum of Understanding with ICES to all Advisory Committees from 2003 onwards;
  - Open ICES Working Groups and Study Groups to relevant stakeholder representatives who can contribute to the work of those groups. Procedures will be developed over the next year which will ensure the independence and credibility of ICES activities.

These recommendations should be implemented as soon as possible, including voting by correspondence.

4. Additional participants in MCAP meetings can be added on an *ad hoc* basis when strategic items are discussed. Such *ad hoc* members could be

interested Delegates, Chairs of selected Working Groups, and representatives of client organisations.

It was agreed that draft procedures for admitting observers to Working Groups, Study Groups and the Advisory Committees would be prepared by the Secretariat and MCAP, working by correspondence. The Client Commissions should be consulted. Using an electronic forum procedure, the proposals should be put to the Delegates for consideration and, subsequently, voting.

**Agenda Item 18: Report of the ICES/Commissions Working Group on Cooperative Procedures (Del:12)**

It was considered constructive that the Memoranda of Understanding were “rolled-over” to next year, since ICES might have to face the possibility of major changes in the advisory process, particularly concerning fisheries advice.

**Agenda Item 19: Appointment of ACFM Chair (Del:17)**

On the nomination of ACFM, Poul Degnbol (Denmark) was appointed to replace Tore Jakobsen (Norway) with effect from 1 January 2003.

**Agenda Item 20: Reports and Recommendations of the Consultative Committee (A:5)**

Before presenting the recommendations, the Chair of CONC pointed out that the attendance at Science Committee meetings had been very poor and very few actual members had been in attendance. Furthermore, very few Chairs of subsidiary Groups of the Science Committees had been attending the meetings, thus hindering the communication between parent Committees and their subsidiary groups.

CONC proposed that the Science Committees abandon attempts to do a formal quality control of the full reports of their subsidiary groups, and instead request the Chairs of these Groups to attend Committee meetings and provide an oral report of the activities of their groups. Council accepted this proposal. The Delegate of Norway requested that lists of attendance at meetings of the Science Committees be provided to the Delegates, so that they can check the participation of scientists from their countries.

The Chair of CONC reported on the proposals for guest speakers for the 2003 ASC. CONC agreed that to the extent possible, younger speakers should be sought who have new ideas that will stimulate new work.

The four groups of sessions proposed are: 1) measurement and observations; 2) process-based studies; 3) property-based studies; and 4) human issues. However, Delegates considered that these four topic titles were not very inspiring and that more “catchy” topic headings should be sought. It was also



suggested that more time should be given to the Theme Sessions to permit discussion and debate, and that a broader representation of age, gender, and race be sought in finding speakers for the keynote lecture.

A total of 19 Theme Sessions was proposed and agreed.

A proposal was made that the 2003 Open Lecture should be given by someone familiar with the outcome of the Johannesburg Summit. The Delegate of the UK offered to work with the Delegate of the US to find a suitable speaker for approval by the Bureau.

The following two Symposia were proposed:

2005: ICES/FAO Symposium on the Precautionary Approach to Fishery Management (previously approved but then postponed owing to the lack of a specific convener).

2005: Symposium on the Interactions between Cultivated and Wild Diadromous Fish Species.

Agreement was also reached that the reports of the Advisory Committees will no longer be published in the *ICES Cooperative Research Reports* but in a newly established series.

Council requested the Publications Committee and the Secretariat to draft an overall strategy with regard to the information that will be communicated to the public. The final decision concerning this strategy will be made by the Council at the 2003 ASC.

CONC recommended to hold the next meeting in between those of ACE and ACFM at the end of May 2003. It also recommended that a meeting be organised at BSRP expense to coordinate the implementation of the Baltic Sea Regional Project and ICES. This recommendation was adopted by the Council (C.Res. 2002/A02).

## DRAFT RESOLUTIONS

### **Fisheries Technology Committee**

The draft Resolutions were adopted by the Council. However, Recommendation 2BTG (SG on Survey Trawl Gear for the IBTS Western and Southern Areas) created some doubt as to whether it was necessary set up such a group. Consultations between the Chair of CONC, other relevant persons, and in particular the Chair of LRC would resolve this question.

### **Oceanography Committee**

The Council adopted the draft Resolutions of the Oceanography Committee.

It was noted, however, that many of the Working Groups under this Committee had a small number of participants. Delegates were requested to note this and

take steps to increase participation in these Working Groups.

### **Resource Management Committee**

The Council adopted the draft Resolutions of this Committee.

The question of the venue of the *ICES-FAO Symposium on the Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions* (at present planned for Chile) was discussed. It was decided that the views of FAO as co-sponsor should be sought before any steps are taken to change the venue. The Secretariat was requested to explore this issue.

### **Marine Habitat Committee**

After requesting that a better title be found for the Study Group on Sustainable Exploitation and Conservation of Living Natural Resources of Coastal Zones to reflect the actual remit of this Group, the draft Resolutions of the Marine Habitat Committee were adopted.

### **Mariculture Committee**

With the suggestion that the meeting of the new Working Group on Marine Shellfish Culture be scheduled back-to-back with a Working Group under the European Aquaculture Society, the draft Resolutions of the Mariculture Committee were adopted.

### **Living Resources Committee**

The draft Resolutions of the Living Resources Committee were adopted.

### **Baltic Committee**

After having agreed that the Study Group on Salmon Scale Reading should report to the Diadromous Fish Committee, the draft Resolutions of the Baltic Committee were adopted.

### **MCAP**

Having agreed that the Study Group on ACFM, ACE and Working Group Protocols be expanded to include ACME, with the Chair of MCAP chairing this meeting, the draft Resolutions of MCAP were adopted.

### **ACFM**

Regarding participation in the Study Group on the Further Development of the Precautionary Approach to Fishery Management, it was decided that the best time for observers to be present would be at the outset of this process, to enable the concerns of the observers to be noted at a very early stage in the further development of the precautionary reference points.



However, the participation at these meetings must be the same as those contained in a letter which was sent to the national administrations several months ago. This would be checked and aligned with those in the letter if any differences were detected.

The Rome venue of the meeting of the Planning Group on Commercial Catch, Discards and Biological Sampling was questioned. The Chair of CONC explained that this was to permit the Planning Group's work to be included as part of the relevant work coordinated by FAO, but he would investigate the geographical remit of this group. With these comments the Council adopted the ACFM recommendations.

On the suggestion of the UK Delegates, it was agreed that the proposed Study Group on Herring in the Irish and Celtic Seas should not be established, but that this work be done in the national laboratories and reported to the ICES Herring Assessment Working Group.

**Agenda Item 21: Any Other Business**

No items were proposed.



## **Resolutions**







## Resolutions Adopted at the 90th Statutory Meeting

### Resolutions Involving Publications

- |   |  |
|---|--|
| <p>1ACME01 A report entitled <b>Alien Species Alert: <i>Rapana venosa</i> (veined whelk)</b>, prepared by the Working Group on Introductions and Transfers of Marine Organisms, as reviewed by the Chair of the Mariculture Committee, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 20.</p> <p>1AC01 A document <b>Ecosystem Effects of Fishing Revisited</b>, compiled and integrated from the 1998–2001 reports of the Working Group on Ecosystem Effects of Fishing Activities, edited by Jake Rice (Canada), as reviewed and approved by the Chair of ACE, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 175.</p> <p>1C01 The report on <b>Precision and Accuracy of Tools in Recruitment Studies</b>, compiled and edited by E. Moksness (Norway) and others, as reviewed and approved by the Chair of the Oceanography Committee, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 44.</p> <p>1C02 A report on the <b>Incorporation of Process Information into Stock-Recruitment Models</b>, compiled and edited by C. M. O'Brien (UK), as reviewed and approved by the Chair of the Oceanography Committee, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 200.</p> <p>1C03 The <b>2002/2003 ICES Annual Ocean Climate Status Summary</b>, edited by W. Turrell (UK) and P. Holliday (UK), as reviewed and approved by the Chair of the Oceanography Committee, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 35.</p> <p>1E01 The report on <b>PAH Metabolites in Fish Bile</b> by M. M. Krahn (USA) and F. Ariese (Netherlands), as reviewed and approved by the Chair of the Marine Habitat Committee, will be published in the <i>ICES Techniques in Marine</i></p> | <p><i>Environmental Sciences</i> series. The estimated number of pages is 20.</p> <p>1E02 The report on <b>Scope for Growth in Mussels</b> by J. Widdows (UK), as reviewed and approved by the Chair of the Marine Habitat Committee, will be published in the <i>ICES Techniques in Marine Environmental Sciences</i> series. The estimated number of pages is 20.</p> <p>1E03 The report on <b>Biological Effects of Contaminants: Oyster (<i>Crassostrea gigas</i>) Embryo Bioassay</b> by J. E. Thain (UK), as reviewed and approved by the Chair of the Marine Habitat Committee, will be published in the <i>ICES Techniques in Marine Environmental Sciences</i> series. The estimated number of pages is 20.</p> <p>1E04 The report <b>Guidelines for the Study of the Epibiota of Subtidal Environments</b>, edited by H. Rees (UK), as reviewed by the Chair of the Marine Habitat Committee, will be published in the <i>ICES Techniques in Marine Environmental Sciences</i> series. The estimated number of pages is 50.</p> <p>1F01 The report <b>Important Trends in Disease Problems in Finfish and Shellfish Culture in the ICES Area, 1997–2001</b>, compiled and edited by the Working Group on Pathology and Diseases of Marine Organisms, as reviewed and approved by the Chair of the Mariculture Committee, will be published in the <i>ICES Cooperative Research Report</i> series, both as hard copy and as a web-based publication.</p> <p>1G01 The report based on a H-MAP workshop, and selected contributions from the 2002 Theme Session on “Census of Marine Life: Turning Concept into Reality (L)”, edited by B. MacKenzie (Denmark), Ron O'Dor (USA), and O. A. Bergstad (Norway), as reviewed and approved by the Chair of the Living Resources Committee, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 100.</p> |
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### Resolutions Involving Symposia

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| <p>2DSY01 An ICES-FAO Symposium on <b>The Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions</b> will be held in Chile for four days in 2005 with Frans van Beek (Netherlands), Jorge Csirke (FAO), and Olle Hagström, (EC) as Co-</p> | <p>Conveners.</p> <p>A Scientific Steering Group will be established, which will include a representative from FAO and Chile.</p> <p>The General Secretary will solicit appropriate</p> |
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co-sponsorship in addition to that already agreed with FAO.

- 2ISY01 A Symposium on **The Interactions between Cultivated and Wild Diadromous Fish Species** will be held at a venue to be decided for three days in 2005 with Lars Peter Hansen (Norway), 2, and 3 as Co-Conveners.

A Scientific Steering Group will be established to plan and implement the Symposium.

The General Secretary will solicit appropriate co-sponsorship in consultation with the Conveners and the Chair of the Diadromous Fish Committee.

## **Resolutions Involving Meetings of Committees, Groups, and Workshops**

### **Consultative Committee (A)**

- 2A01 The **Consultative Committee [CONC]** (Chair: J. Rice, Canada) will meet at ICES Headquarters from 23–26 May 2003 to:

- a) devise and implement schemes for the monitoring, auditing and updating of the ICES Integrated Action Plan, and the Committee Action Plans;
- b) continue development of clear roles for the Science and Advisory Committees in achieving the Strategic Plan;
- c) consider the detailed role of the Diadromous Fish Committee and its interactions with other Committees;
- d) consider the future development of the Baltic Committee, including its role as an ecosystem-based Committee;
- e) finalise the programme for the 2003 Annual Science Conference and 91st Statutory Meeting;
- f) further develop the plans for the 2004 Annual Science Conference and 92nd Statutory Meeting;

- g) conduct a preliminary review of draft resolutions due for consideration by Council at the 91st Statutory Meeting;

CONC will make its report available for consideration at the 91st Statutory Meeting.

#### **2A02**

**A Planning Group on Implementation of the Baltic Sea Regional Project [PGIBSRP]** (Co-Chairs: B. MacKenzie, Denmark and J. Thulin, BSRP Coordinator) will be established and will meet at ICES Headquarters 28 March 2003 at GEF-BSRP expense to:

- a) define the responsibilities and roles of ICES Working Groups and Committees relative to the BSRP;
- b) identify ways that work done with and by the BSRP can facilitate achievement of the goals in the ICES Strategic Plan.

PGIBSRP will report 14 April 2003 for the attention of the Baltic Committee, who will be parent, and ACE.

### **Management Committee on the Advisory Process (MCAP)**

- 2MCAP01 A **Study Group on ACFM, ACE, ACME, and Working Group Working Protocols [SGAWWP]** (Chair: Chair of MCAP) will be established and will meet at ICES Headquarters from 20–22 February 2003 to:

- a) review the Expert Group structure supporting the advisory process on ecosystem issues;
- b) advise MCAP on how to use and, if required, adjust the current Expert Group structure in order to facilitate cost-effective production of scientific information and advice on ecosystem status and management;
- c) develop a proposal for a working protocol, for implementation by ACFM, on improving

efficiency of ACFM and the Fish Stock Assessment Working Groups. The protocol should describe:

- i) working procedures of ACFM,
- ii) working procedures of the Working Groups,
- iii) meeting time required by the Fish Stock Assessment Working Groups and ACFM, taking into account the proposals for changes in the working procedures made by this Study Group and those adopted by MCAP;
- d) develop a protocol for the Secretariat support for the Expert Groups, including the provision of data and data handling;



- e) advise MCAP on how recruiting of expertise to ACFM and ACE and their Expert Groups, particularly the assessment Working Groups, might be amended to ensure available expertise to meet the obligations laid down in the MoUs between the Fisheries

Commissions and ICES, and to meet the needs for fish population dynamics expertise in developing ecosystem advice.

SGAWWP will report by 10 March 2003 for the attention of MCAP, ACE, ACME, and ACFM.

### **Publications Committee**

2PUB01 The **Publications Committee** [PUBCOM] (Chair: W. Turrell, UK) will meet on two days in September 2003 during the 91st Statutory Meeting to:

- a) review all ICES Publications activities in 2001/2002 (including progress with the ICES web site);
- b) review progress with the Work Plan to achieve publication, information, and media objectives in the ICES Strategic Plan;
- c) review information supplied by the Secretariat on the cost of ICES publication-related work during 2001/2002;

d) review progress with the 2003 ICES Readership Survey;

e) consider the options for publishing ICES status reports;

f) prepare an overall communications strategy with regard to information (e.g., expert group reports) that will be communicated to the outside world.

PUBCOM will report to the Consultative Committee at the 91st Statutory Meeting.

### **Advisory Committee on Fishery Management (ACFM)**

2ACFM01 The **Advisory Committee on Fishery Management** [ACFM] (Chair: P. Degnbol, Denmark) will meet:

A) in plenary at ICES Headquarters from 27 May to 5 June 2003 and from 8–16 October 2003 at Council expense to:

- a) prepare the advice and information on fisheries, living resources and their exploitation and the interaction by fisheries and the ecosystem requested by the Fishery Commissions (JNRFC, NEAFC, IBSFC, and NASCO), by the EC, and by Member Countries of ICES, and 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 the Marine Environment (ACME);
- c) keep under review the form of advice and methods used in order to improve the quality of the advice for fishery management;
- d) establish and review working procedures for ACFM and propose Terms of Reference for ACFM, its subsidiary groups, and other relevant Council groups;
- e) review reports of ICES groups as defined in Council resolutions;

f) provide advice and guidance to the Science Committees on future scientific needs and priorities related to the work of ACFM;

g) review the reports of the Assessment Working Groups and, if necessary, update the assessments and projections and review first drafts of the ACFM report produced by the Assessment Working Groups.

Chairs of the Assessment Working Groups are invited to assist in the review of their reports. These invitations are issued at the discretion of the Chair of ACFM in consultation with the General Secretary. Attendance at Council expense will be limited to the Chair, national members, and *ex officio* members of ACFM, and to the Chairs of the Assessment Working Groups.

During the spring meeting, sub-groups will meet 28–31 May. 27 May will be a business session and 2–5 June will be plenary sessions.

During the autumn meeting, sub-groups will meet 8–11 October, and 13–16 October will be plenary sessions.

B) by correspondence in the period 28 April–6 May to prepare advice on Atlantic salmon for NASCO.

The proposed procedure involves the following steps:

- a) Advice for NASCO will be drafted at a meeting 23–25 April at ICES Headquarters. The following will be invited at Council



expense: the ACFM chair, two reviewers [Chair of WGBAST (Ingemar Perä, Sweden) and a reviewer to be determined by the chair of ACFM (Denis Rivard, Canada)] and the chair of WGNAS (Walter Crozier, Northern Ireland). The meeting is open to other ACFM members at national expense. This group will review the assessment report (WGNAS) and draft the advice to be circulated to ACFM for comments and approval;

- b) ACFM members shall before the end of Thursday 1 May comment on the draft advice. If there are any substantive comments to the first draft then there is time for a second round with ACFM. The ACFM chair will if required, conduct these consultations by telephone/conference calls;
- c) The advice will be released on Thursday 8 May.
- C) for Consultations to be held at national expense in Tallinn on 22 September 2003

and at other times as required during the 91st Statutory Meeting to:

- a) finalise Terms of Reference, dates and venues for meetings of groups reporting to ACFM in 2004;
- b) conduct other business related to the functioning of ACFM.

The Consultations will be open to Delegates, the Chair of the Consultative Committee, ACFM members and their alternates, Chairs of groups reporting to ACFM or their designates, observers to ACFM, and other experts at the invitation of the Chair of ACFM.

With the approval of the General Secretary, the Chair of ACFM may invite experts to attend relevant parts of the meetings mentioned under A)-C) above at Council expense.

The advice will be presented to IBSFC and NEAFC by the ACFM Chair. The advice will be presented to NASCO by the Chair of WGNAS (W. Crozier, UK).

## 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
WGNEPH		75		25		100
WGNPBW		15		85		100
AFWG		15		85		100
HAWG		70.6	5.8	23.6		100
NWWG				100		100
WGDEEP				100		100
SGBASS	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



2ACFM02 The **Herring Assessment Working Group for the Area South of 62°N** [HAWG] (Chair: E. Torstensen, Norway) will meet at ICES Headquarters from 11–20 March 2003 to:

- a) assess the status of and provide catch options (by fleet where possible) for 2004 for:
  - i) the North Sea autumn-spawning herring stock in Division IIIa, Subarea IV, and Division VIIId (separately, if possible, for Divisions IVc and VIId),
  - ii) the herring stocks in Division VIa and Subarea VII,
  - iii) 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 for a range of fishing mortalities that have a high probability of rebuilding or maintaining the stock above 1.3 million tonnes by spawning time in 2003;
- 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 and provide catch options for 2004 for the sprat stocks in Subarea IV and Divisions IIIa and VIIId,e;
- e) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- f) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- g) consider the effects of gravel extraction on herring spawning habitats in the Channel;
- h) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management:
  - i) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues.

HAWG will report by 21 March 2003 for the attention of ACFM.

2ACFM03 The **Working Group on North Atlantic Salmon** [WGNAS] (Chair: W. Crozier, UK) will meet at ICES Headquarters from 31 March–10 April 2003 to:

- a) with respect to Atlantic salmon in the North Atlantic area:
  - i) provide an overview of salmon catches and landings, including unreported catches by country and catch and release, and worldwide production of farmed and ranched salmon in 2002,
  - ii) report on significant developments which might assist NASCO with the management of salmon stocks,
  - iii) provide long-term projections for stock re-building, focusing on trajectories for restoring stocks to target levels above conservation limits,
  - iv) provide a compilation of tag releases by country in 2002;
- b) with respect to Atlantic salmon in the North-East Atlantic Commission area:
  - i) describe the key events of the 2002 fisheries and the status of the stocks,
  - ii) evaluate the extent to which the objectives of any significant management measures introduced in the last five years have been achieved,
  - iii) further develop the age-specific stock conservation limits where possible based upon individual river stocks,
  - iv) provide catch options or alternative management advice, if possible based on a forecast of PFA, with an assessment of risks relative to the objective of exceeding stock conservation limits,
  - v) further refine the estimate of by-catch of salmon post-smolts in pelagic trawl fisheries for mackerel and provide estimates for other pelagic fisheries that may catch salmon,
  - vi) advise on an appropriate methodology to improve knowledge on the distribution and movements of escaped farmed salmon,
  - vii) identify relevant data deficiencies, monitoring needs, and research requirements;
- c) with respect to Atlantic salmon in the North American Commission area:
  - i) describe the key events of the 2002 fisheries and the status of the stocks,



- ii) evaluate the extent to which the objectives of any significant management measures introduced in the last five years have been achieved,
  - iii) update age-specific stock conservation limits based on new information as available,
  - iv) provide catch options or alternative management advice with an assessment of risks relative to the objective of exceeding stock conservation limits,
  - v) provide an analysis of existing biological and/or tag return data, and recommendations for required data collections, to identify the origin of Atlantic salmon caught at St. Pierre and Miquelon,
  - vi) identify relevant data deficiencies, monitoring needs and research requirements;
- d) with respect to Atlantic salmon in the West Greenland Commission area:
- i) describe the events of the 2002 fisheries and the status of the stocks,
  - ii) evaluate the extent to which the objectives of any significant management measures introduced in the last five years have been achieved,
  - iii) provide information on the origin of Atlantic salmon caught at West Greenland at a finer resolution than continent of origin (river stocks, country, or stock complexes),
  - iv) provide catch options or alternative management advice with an assessment of risks relative to the objective of exceeding stock conservation limits,
  - v) provide a detailed explanation and critical examination of any changes to the model used to provide catch advice and of the impacts of any changes to the model on the calculated quota,
  - vi) identify relevant data deficiencies, monitoring needs, and research requirements;
- e) review the appropriateness, and possible development, of an experimental tagging programme for investigating the behaviour of escaped farmed salmon.

WGNAS will report by 11 April 2003 for the attention of ACFM and the Diadromous Fish Committee.

**2ACFM04 The Baltic Salmon and Trout Assessment Working Group [WGBAST] (Chair: I. Perä,**

Sweden) will meet in Karlskrona, Sweden from 2–11 April 2003 to:

- a) describe the salmon fisheries in the Baltic in 2002;
- b) assess the status of the wild and reared stocks of Baltic salmon according to IBSFC management areas<sup>1</sup> and provide estimates of mortality caused by M74;
- c) review and evaluate the effectiveness of existing international and national management measures for Baltic salmon in the light of IBSFC objectives;
  - i) to gradually increase the production of wild Baltic salmon to attain by 2010 at least 50% of the natural production capacity of each river with current or potential natural production of salmon,
  - ii) to maintain the Baltic salmon fishery as high as possible;
- d) propose the necessary management measures and catches in number for Baltic salmon in 2003 for the Main Basin and the Gulf of Bothnia and for the Gulf of Finland that are consistent with IBSFC management objectives described in c);
- e) provide medium-term projections of yield and stock development of salmon stocks for a range of fishing mortality rates;
- f) advise on biological reference points for salmon stocks taking into account *inter alia* current biological parameters and exploitation. This work should be done in cooperation with the work done in WGNAS;
- g) provide any new information on the state of sea trout stocks;
- h) identify major deficiencies in the assessments in the Baltic.

WGBAST will report by 18 April 2003 for the attention of ACFM.

**2ACFM05 The Baltic Fisheries Assessment Working Group [WGBFAS] (Chair: M. Plikshs, Latvia) will meet at ICES Headquarters from 7–16 April 2003 to:**

- a) assess the status of and provide catch options (for wide ranges of Fs) for the year 2004, at medium- and long-term for cod, herring, and sprat stocks in the Baltic by appropriate areas and stock components and taking into account the biological interaction between

<sup>1</sup> At present the IBSFC TAC management areas for salmon are:

- The Main Basin and the Gulf of Bothnia (Subdivisions 22–31)
- The Gulf of Finland (Subdivision 32)



species. Catch options should be provided as specified below:

**Baltic Herring:**

1. SD 22–24 (based on assessment made by HAWG)
2. SD 22–29S, 32
3. SD 25–29S, 32 including Gulf of Riga
4. SD 25–29, 32 excluding Gulf of Riga
5. Gulf of Riga
6. SD 29N, 30, and 31
7. SD 30 and 31

**Sprat:**

1. The Whole Baltic: Subdivisions 22–32

**Baltic Cod:**

1. SD 22–24
2. SD 25–32.

Assessments of cod stocks should include a review of the most recent discard information and an evaluation of its effects;

- b) assess the status of and provide catch options for year 2004 for the cod stock in the Kattegat and sole stock in Division IIIa. Provide catch options by TAC areas;
- c) evaluate the effects of the existing recovery plans for Kattegat cod and Eastern Baltic cod;
- d) evaluate the results of the long-term management strategy plans for cod and sprat;
- e) provide any new information on the state of flatfish stocks in the Baltic;
- f) assess the consequences of the improvements in gear selectivity and of other technical measures as adopted by IBSFC in March and in September 2001 and in September 2002;
- g) evaluate the effectiveness of IBSFC Fishing Rule 4.2 which prohibits the retention on board only of female flounders, rather than prohibiting retention of both females and males;
- h) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- i) comment on this meeting's assessments compared to the last assessment of the same stock, for stocks for which a full analytical assessment is presented;

- j) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;

- k) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues.

WGBFAS will report by 17 April 2003 for the attention of ACFM.

2ACFM06 The **Working Group on *Nephrops* Stocks** [WGNEPH] (Chair: M. Bell, UK) will meet in Galway, Ireland from 18–26 March 2003 to:

- a) assess the status of *Nephrops* stocks in the ICES area, utilising new data where available, revising catch options only where necessary;
- b) continue the Working Group's investigations on the potential of alternative assessment techniques, focusing particularly on the two-stage modified DeLury method, and apply these methods to a range of stocks;
- c) discuss the calculation of improved indices of SSB and recruitment, aiming to gain an improved understanding of stock recruitment relationships in *Nephrops* with a view to the future definition of biological reference points for *Nephrops* stocks;
- d) explore further the applicability of medium-term catch projections to *Nephrops*;
- e) provide information on the species compositions by major groups of fisheries/fleets. If possible account for technical interactions in the catch options.

WGNEPH will report by 2 April 2003 for the attention of ACFM.

2ACFM07 The **Arctic Fisheries Working Group** [AFWG] (Chair: S. Mehl, Norway) will meet in Pasaia, Spain from 23 April–2 May 2003 to:

- a) assess the status of and provide catch options for the year 2004 for the stocks of cod, haddock, saithe, Greenland halibut, and redfish in Subareas I and II, taking into account interactions with other species and attempting alternative assessment methods where applicable;
- b) evaluate the agreed management strategy for cod, with special attention to the reference points for spawning stock biomass and fishing mortality;
- c) assess the status of the shrimp stock in the Barents Sea, taking predation by cod into account;
- d) provide specific information on possible deficiencies in the assessments including at



least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;

- e) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- f) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- g) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues.

AFWG will report by 5 May 2003 for the attention of ACFM.

2ACFM08 The **Northern Pelagic and Blue Whiting Fisheries Working Group** [WGNPBW] (Chair: A. Gudmundsdottir, Iceland) will meet at ICES Headquarters from 29 April to 8 May 2003 to:

- a) assess the status of and provide catch options for 2004 for the Norwegian spring-spawning herring stock;
- b) assess the status of and provide catch options for the 2003–2004 season for the Icelandic summer-spawning herring stocks;
- c) assess the status of capelin in Subareas V and XIV and provide catch options for the summer/autumn 2003 and winter 2004 seasons;
- d) assess the status of and provide catch options for capelin in Subareas I and II (excluding Division IIa west of 5°W) in 2004;
- e) provide as detailed information as possible on the age/size composition in different segments of the blue whiting fishery;
- f) provide information on the species compositions in those fisheries that take appreciable amounts of blue whiting, and on the age/size composition by species of these catches [EC request for information on the industrial fisheries];
- g) evaluate the effect on the blue whiting stock and the fisheries of possible measures to reduce exploitation of juveniles. The evaluation should include, but not be restricted to the effects of introducing a minimum size and closed areas/seasons;

h) continue the evaluation of candidates of harvest control rules for blue whiting;

- i) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- j) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- k) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- l) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues.

WGNPBW will report by 9 May 2003 for the attention of ACFM.

2ACFM09 The **North-Western Working Group** [NWWG] (Chair: E. Hjørleifsson, Iceland) will meet at ICES Headquarters from 29 April to 8 May 2003 to:

- a) assess the status of and provide catch options for 2004 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; and haddock in Division Va;
- b) for cod, haddock, and saithe in Division Vb that are under effort control, assess the status of and provide effort options and expected corresponding catches for 2004;
- c) update survey and fishery information on the stocks of redfish in Subareas V, VI, XII, and XIV. In particular, update information on the development of the pelagic fishery for redfish with respect to seasonal and area distribution to allow NEAFC to further consider the appropriateness of area and seasonal closures;
- d) consider further possibilities for the incorporation of biological interactions into the assessments of capelin, herring, and cod stocks in Division Va;
- e) update information on the stock composition, distribution, and migration of the redfish stocks in Subareas V and XIV, and comment on the possible relationship



between pelagic “deep sea” *Sebastes mentella* and the *Sebastes mentella* fished in demersal fisheries on the continental shelf and slope;

- f) 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;
- g) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- h) for stocks for which a full analytical assessment is presented, comment on this meeting’s assessments compared to the last assessment of the same stock;
- i) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- j) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues.

NWWG will report by 9 May 2003 for the attention of ACFM.

2ACFM10 **The Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk, and Megrim** [WGHMM] (Chair: V. Trujillo, Spain) will meet at ICES Headquarters from 14–23 May 2003 to:

- a) assess the status of and provide catch options for 2004 for stocks of hake in Subareas III, IV, VI, VII, VIII, and IX, monk (anglerfish) and megrim in Subareas VII, VIII, and IX, taking into account technical interactions in mixed species fisheries;
- b) evaluate the effect of the Northern hake emergency measures;
- c) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these

deficiencies for a) assessment of the status of the stocks and b) for the projection;

- d) for stocks for which a full analytical assessment is presented, comment on this meeting’s assessments compared to the last assessment of the same stock;
- e) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- f) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues;
- g) provide information on the species compositions by major groups of fisheries/fleets. If possible account for technical interactions in the catch options.

WGHMM will report by 24 May 2003 for the attention of ACFM in October.

2ACFM11 **The Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak** [WGNSSK] (Chair: M. Pastoors, Netherlands) will work by correspondence in June 2003 and will meet at Boulogne-sur-Mer (France) from 9–18 September 2003 to:

- a) assess the status of 1) haddock in Subarea IV and Division IIIa, and 2) sole in Subarea IV and Division VIIId (by correspondence);
- b) assess the status of the following stocks: 1) cod in Subarea IV and Division IIIaN (Skagerrak), and Division VIIId, 2) whiting and 3) plaice, both in Subarea IV, Division IIIa, and Division VIIId, and 4) saithe in Subarea IV, Subarea Via, and Division IIIa;
- c) update recruitment estimates and provide catch options for 2004 using the most recent survey data for the following stocks: 1) cod in Subarea IV and Division IIIaN (Skagerrak), and Division VIIId, 2) haddock in Subarea IV and Division IIIa, 3) whiting in Subarea IV, Division IIIa, and Division VIIId, 4) plaice in Subarea IV, 5) sole in Subarea IV, and 6) Norway pout in Subarea IV. The catch options should take into account the technical interactions among the stocks due to the mixed-species fisheries;
- d) provide catch options for 2004 for saithe in Subarea IV, Subarea Via, and Division IIIa;
- e) assess the status of and provide catch forecasts for 2003 for Norway pout and sandeel stocks in Subarea IV and Divisions IIIa and VIa, and identify any needs for management measures (including TACs) required to safeguard the stocks;



- f) evaluate the effects of the existing recovery plan for North Sea cod;
- g) quantify the species and size composition of by-catches taken in the fisheries for Norway pout and sandeel in the North Sea and adjacent waters, and make this information available to WGECCO;
- h) provide the data required to carry out multispecies assessments (quarterly catches and mean weights-at-age in the catch and stock for 2002 for all species in the multispecies model that are assessed by this Working Group);
- i) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- j) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- k) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- l) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues;
- m) provide information on the species compositions by major groups of fisheries/fleets. If possible account for technical interactions in the catch options.

WGSSSK will report on (a) by 1 July 2003 for the attention of ACFM for presentation to the North Sea Commission Fisheries Partnership on 26–27 August 2003 and will report on the remaining items by 19 September 2003 for the attention of ACFM.

**2ACFM12 The Working Group on the Assessment of Southern Shelf Demersal Stocks [WGSSDS]** (Chair: S. Flatman, UK) will meet in Ostend, Belgium from 1–10 July 2003 to:

- a) assess the status of and provide catch options for 2004 for stocks of cod, haddock, whiting and plaice in Divisions VIIbc, VIIe, VIIfg, VIIhk and for sole in Divisions VIIbc, VIIe, VIIfg, VIIhk, VIIIab taking into account technical interactions in mixed species fisheries;

- b) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- c) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- d) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- e) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues;
- f) provide information on the species compositions by major groups of fisheries/fleets. If possible account for technical interactions in the catch options.

WGSSDS will report by 19 July 2003 for the attention of ACFM.

**2ACFM13 The Working Group on the Assessment of Northern Shelf Demersal Stocks [WGNSDS]** (Chair: R. Officer, Ireland) will meet in Aberdeen, UK from 13–22 May 2003 to:

- a) assess the status of and provide catch options for 2004 for the stocks of cod, haddock, whiting, anglerfish, and megrim in Subarea VI, and cod, haddock, whiting, plaice, and sole in Division VIIa, taking into account technical interactions in mixed species fisheries;
- b) assess the status of anglerfish stock in Sub-area IV and Divisions IIIa and VIa and provide catch options for each management area. The assessment should be based on the combined areas and be compared with assessments done on the individual units;
- c) evaluate the effects of the existing recovery plans for cod in Division VIa and Irish Sea cod;
- d) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should



clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;

- e) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- f) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- g) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues;
- h) provide information on the species compositions by major groups of fisheries/fleets. If possible account for technical interactions in the catch options.

WGNDS will report by 23 May 2003 for the attention of ACFM.

2ACFM14 The ***Pandalus* Assessment Working Group** [WGPAND] (Chair: S. Munch-Petersen, Denmark) will meet in Lysekil, Sweden from 26–29 August 2003 to:

- a) assess the status of the stocks of *Pandalus borealis* in the North Sea, Skagerrak, and Kattegat and provide catch options for 2004 taking predation mortality on *Pandalus* stocks into account;
- b) review progress in determining precautionary reference points taking the work done in USA and Canada into account;
- c) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- d) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock.

WGPAND will report by 1 September 2003 for the attention of ACFM and the Living Resources Committee (92nd Statutory Meeting).

2ACFM15 The **Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy** [WGMHSA] (Chair: D. Skagen, Norway) will meet at ICES Headquarters from 9–18 September 2003 to:

- a) assess the status of and provide catch options for 2004 for the stocks of mackerel and horse mackerel (defining stocks as appropriate);
- b) assess the status of and provide catch options for 2004 for the sardine stock in Divisions VIIIc and IXa;
- c) assess the status of and provide catch options for 2004 for the anchovy stocks in Subarea VIII and Division IXa;
- d) for sardine update information on the stock identification, composition, distribution, and migration in relation to oceanographic effects;
- e) continue the evaluation of harvest control rules for anchovy fishing;
- f) provide specific information on possible deficiencies in the assessments including at least: Major inadequacies in the data on catches, effort, or discards; major inadequacies, if any, in research vessel surveys data and major difficulties, if any, in model formulation; including inadequacies in available software. The Group should clarify the consequences from these deficiencies for a) assessment of the status of the stocks and b) for the projection;
- g) for stocks for which a full analytical assessment is presented, comment on this meeting's assessments compared to the last assessment of the same stock;
- h) comment on the PA reference points proposed by the Study Group on Precautionary Reference Points for Advice on Fishery Management;
- i) structure the assessment report following the guidelines as adopted by ACFM in October 2002 with special attention to the quality issues.

WGMHSA will report by 19 September 2003 for the attention of ACFM.

2ACFM16 The **ICES/EIFAC Working Group on Eels** [WGEEL] (Chair: W. Dekker, Netherlands) will meet in Sukarrieta, Spain from 7–11 October 2003 to:

- a) assess trends in recruitment, stock, and fisheries indicative for the status of the stock;
- b) further develop the concepts of exploitation and/or habitat restoration objectives leading towards quantitative management targets;
- c) assess the impact of fisheries on local stocks using harvest rate models in selected systems and relate to escapement targets, or their proxies where data conditions are poor;



- d) quantify the effect of loss of habitats (by region or country), taking into account the local distribution of eel stocks in rivers;
- e) assess density-dependent processes in local eel stock dynamics, also in relation to harvesting of recruits (glass eel);
- f) further develop post-evaluation procedures, quantifying effects of measures currently taken in selected systems;

- g) review national management plans in the light of the past ICES advice;
- h) comment on the net effect of national management plans on the stock, their deficiencies relative to recovery of eel stocks, and their potential for integration in an international stock recovery plan.

WGEEEL will report by 18 October 2003 for the attention of ACFM and LRC.

### **Advisory Committee on Fishery Management (ACFM) – Other Groups**

**2ACFM17 The Study Group on the Further Development of the Precautionary Approach to Fishery Management [SGPA]** (Co-chairs: C. Bannister, UK and M. Azevedo, Portugal) will meet at ICES Headquarters from 2–6 December 2002 to:

- a) define the technical guidelines for the revision of reference point values for use by SGPRP and SGBRP;
- b) specify the software to be used in the revision of reference values, and a format for the presentation of the relevant data and the results;
- c) commence the development of a framework for specifying and monitoring rebuilding plans that take into account the status and dynamics of stocks, technical interactions, uncertainty, time period and risk, and the data required.

SGPA will report by 5 January 2003 for the attention of ACFM, ACE and the Resource Management Committee.

**2ACFM18 A Study Group on Biological Reference Points for Northeast Arctic Cod [SGBRP]** (Chair: Y. A. Kovalev, Russia) will be established and will meet in Svanhovd, Norway from 13–17 January 2003 to:

- a) determine the most appropriate time period for estimating biomass and fishing mortality reference points for this stock;
- b) review the framework for calculating reference points established by SGPA in December 2002 and specify the technical basis for the reference point calculations;
- c) propose reference points based on a) and b). In the event that agreement is not reached on points a) and b) different alternatives will be formulated and compared.

SGBRP will report by 24 January 2003 for the attention of ACFM. It will report directly to SGPRP.

**2ACFM19 A Study Group on the Revision of Data for North Sea Herring [SGREDNOSE]** (Chair: C. Zimmerman, Germany) will be established and will meet in ICES Secretariat from 27–29 January 2003 to:

- a) re-evaluate the current data used for the stock assessment of North Sea autumn-spawning herring, in particular:
  - i) collate the revised Norwegian catch data for 1997 to date;
  - ii) use the revised data on the splitting of North Sea autumn spawners caught in Division IIIa (1991–1998);
  - iii) collate the revised biological sampling data for the Netherlands (based on a retrospective analysis of the national raising procedure and changes resulting from this analysis);
  - iv) thoroughly examine the catch table information and correct it where necessary;
  - v) transfer historic catch and sampling information into the new database (minimum 1997 to date);
  - vi) re-run the allocation and raising procedures for this time frame;
  - vii) update all relevant input data for the assessment of North Sea autumn-spawners and make them available to the Herring Assessment WG.

SGREDNOSE will report by 15 February 2003 for the attention of HAWG.

**2ACFM20 A Workshop on Catch Control, Gear Description, and Tag Reporting in Baltic Salmon [WKCGTS]** (Chair: S. Pedersen, Denmark) will be held in Rønne, Denmark from 27–29 January 2003 to:

- a) regarding catches:
  - i) describe the present catch control system for salmon in countries in the Baltic Sea region;



- ii) make an evaluation of the impact of the uncertainties of catch information on the assessment of salmon;
- b) provide descriptions of gear used in offshore and coastal fishery, also including the change in gear used over the last 30 years;
- c) regarding tagging data:
  - i) provide a plan to improve tag reporting and the quality of information from tag recaptures;
  - ii) provide a plan to estimate tag reporting rate and other sources of error associated with the use of data from Carlin tagging of fish.

WKCGTS will report by 31 March 2003 for the attention of ACFM. It will also make its report available to WGBAST.

2ACFM21 **A Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice [WKDIMPH]** (Chair: R. Merrick, USA) will meet in Woods Hole, USA, from 11–13 February 2003 to:

- a) review existing WGHARP models;
- b) compare other modelling regimes (e.g., the International Whaling Commission's Revised Management Procedure and the US Marine Mammal Protection Act) to the current WGHARP approach;
- c) consider approaches to the incorporation of density dependence into pinniped models;
- d) investigate use of simulation to test the assumptions implicit in model parameters;
- e) compare age-aggregated versus disaggregated models, especially under scenarios where the age structure of the catch is highly skewed;
- f) consider the type of biological reference points that is appropriate for harp and hooded seal management.

WKDIMPH will report by 21 March 2003 for the attention of ACFM.

2ACFM22 **An ICES/NSCFP Study Group on the Incorporation of Additional Information from the Fishing Industry into Fish Stock Assessments [SGFI]** will be established (Co-Chairs: H. Anderson, Sweden (NSCFP) and C. Hammer, Germany) and will meet in Newcastle, UK from 17–19 February 2003 to:

- a) review relevant ongoing programmes;
- b) identify additional information that can be obtained directly from fishers on stock status and trends;

- c) investigate the potential for applying these new data in fish stock assessments;
- d) decide on the kind of information from fishing fleets which would be most valuable to the Assessment Working Groups;
- e) consider how best such data and information could be collected, both from external sources (logbooks, satellite data) and from fishers themselves;
- f) begin the collection of these data for the North Sea demersal fisheries through national agencies, in particular fishers' associations.

SGFI will report by 15 March 2003 for the attention of ACFM and the Resource Management Committee.

2ACFM23 **A Study Group on Precautionary Reference Points for Advice on Fishery Management [SGPRP]** (Chair: Poul Degnbol, Denmark) will be established and will meet at ICES Headquarters from 24–26 February 2003 to:

- a) review the proposal prepared by the ICES Secretariat on reference points for the stocks dealt with by HAWG, WGBFAS, AFWG, NWWG, WGNPBW, WGNSSK, WGHMM, WGNSSDS, WGSSDS, WGMHSA. The proposal will be built on the framework developed and agreed by SGPA in December and the outcome of SGBRP;
- b) propose revisions of the reference points used by ACFM in formulating advice on fishery management for consideration by the assessment working groups and with a view for adoption and use by ACFM at its May and October 2003 meetings.

SGPRP will report by 5 March 2003 for the attention of Assessment Working Groups and ACFM.

2ACFM24 **The Study Group on the Development of Fishery-based Forecasts [SGDFF]** (Chair: P. Marchal, France) will meet in Boulogne, France from 18–21 February 2003 to:

- a) review approaches to the operational definition of fisheries based on individual voyage data within various groups;
- b) define fishery-based data requirements for multi-fishery, mixed-species forecasts;
- c) agree on data formats for the supply of national datasets for compilation into international fishery-based datasets;
- d) evaluate existing models for mixed fishery predictions;
- e) propose a model structure as a basis to incorporate technical interactions into short-term forecasts.



SGDFF will report by 21 March 2003 for the attention of ACFM and the Resource Management Committee.

2ACFM25 The **Planning Group on Commercial Catch, Discards, and Biological Sampling** [PGCCDBS] (Chair: J. Dalskov, Denmark) will meet in Rome, Italy from 4–7 March 2003 to:

- a) review the commercial catch (landings), discard, and biological sampling programmes being implemented in 2002 in the Baltic Sea, North Sea, Western and Southern waters, and in the Mediterranean;
- b) assess whether this data monitoring fulfils the ICES Fish Stock Assessment Groups data requirements;
- c) assess whether this data monitoring fulfils ICES needs for information in an ecosystem context;
- d) commence co-ordination of sampling for securing adequate basic assessment data to ensure adequate spatial and temporal sampling coverage;
- e) commence manual for standardising of sampling methodology and calculation methodology;
- f) identify on a regional basis the candidate stocks and species requiring improving ageing;
- g) examine the possibilities of sharing/transferring otoliths across laboratories.

PGCCDBS will report by 21 March 2003 for the attention of ACFM.

2ACFM26 The **Study Group on Sea Bass** [SGBASS] (Chair: M. Pawson, UK) will meet in Lowestoft, UK from 18–22 August 2003 to:

- a) compile data for assessment of sea bass stocks in ICES Subareas IV, VII, VIII, and IX;
- b) where possible, present assessments of these sea bass stocks and identify their stock conservation requirements;
- c) provide data and conduct evaluations of technical interactions between métiers catching bass, as a basis for economic analyses to be conducted outside ICES.

SGBASS will report by 31 August 2003 for the attention of ACFM and the Living Resources Committee.

2ACFM27 The **ICES/NAFO Working Group on Harp and Hooded Seals** [WGHARP] (Chair: T. Haug, Norway) will meet in Archangel, Russia from 1–5 September 2003 to:

- a) review recommendations from the “Workshop to Develop Improved Methods for Providing Harp and Hooded Sea Harvest Advice”, and possibly also apply recommended models to existing data on harp and hooded seals;
- b) review and discuss existing methods applied in seal diet and consumption studies;
- c) review results from surveys of the 2002 harp and hooded seal pup production in the Greenland Sea;
- d) calculate biological limits of yields for Greenland Sea harp seals, Greenland Sea hooded seals and White Sea/Barents Sea harp seals. These biological limits should reflect very low risk of stock collapse;
- e) assess the impact on stock development of an annual harvest of: a) current catch levels, b) sustainable catches, c) twice the sustainable catches. If possible, these impacts should be presented as medium-term projections (10 years).

WGHARP will report by 7 September 2003 for the attention of ACFM and the Resource Management and Living Resources Committees.

2ACFM28 The **Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources** [WGDEEP] (Chair: O. A. Bergstad, Norway) will work by correspondence in 2003 to:

- a) compile the available data on landings of deep-water species, including blue ling, ling, and tusk, by ICES Subarea or Division;
- b) update descriptions of deep-water fisheries in waters inside and beyond coastal state jurisdiction, for species such as grenadiers, scabbard fishes, orange roughy, forkbeards, sharks, ling, blue ling, and tusk, especially catch statistics by species, fleets, and gear – and if possible the biological status of these stocks;
- c) update the data on length/age at maturity, growth, and fecundity and document other relevant biological information on deep-water species;
- d) update information on quantities of discards by gear type for the stocks and fisheries considered by this group and make an inventory of deep-water fish community data.

WGDEEP will report by 1 May 2003 for the attention of ACFM and of the Living Resources Committee.

WGDEEP may need to meet in order to deal with a possible request from NEAFC on the effort baseline against which the ACFM advice



should be measured. NEAFC will decide this at its meeting 11–15 November 2002. MCAP will

evaluate this need if the request is forthcoming.

### **Advisory Committee on the Marine Environment (ACME)**

2ACME01 **The Advisory Committee on the Marine Environment [ACME]** (Chair: S. Carlberg, Sweden) will meet:

**A)** at ICES Headquarters from 16–20 June in 2003 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), 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) establish and review working procedures for ACME and propose Terms of Reference for ACME, its subsidiary groups and other relevant Council groups;
- d) review reports of ICES groups as defined in Council resolutions;
- 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 91st Statutory Meeting to:

- a) prepare Terms of Reference, dates, and venues for meetings of groups reporting to ACME in 2004;
- b) conduct other business related to the functioning of ACME.

The Consultations will be open to Delegates, Chair of the Consultative Committee, ACME members and their alternates, Chairs of groups reporting to ACME or their designates, Observers to ACME, and other experts at the invitation of the Chair of ACME.

2ACME02 **The ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea [SGQAC]**

(Chair: E. Lysiak-Pastuszek, Poland) will meet at ICES Headquarters from 24–27 February 2003 to:

- a) evaluate the results of the QA questionnaire, and develop performance criteria for HELCOM laboratories;
- b) meet back-to-back with SGQAB to review and finalise:
  - i) the QA guidelines for chlorophyll determination,
  - ii) the QA guidelines for primary production determination;
- c) update the technical note on contaminants in fish;
- d) update the technical note on method validation with emphasis on the validation of existing analytical methods;
- e) update the technical note on co-factors with respect to sediment analyses;
- f) update the technical note on Certified Reference Materials (CRMs);
- g) update Part B-4 (Validation of analytical method) with respect to the limit of determination and detection limit;
- h) update Part B-5 (Routine quality control) with respect to precision control charts;
- i) consider and comment on Pollution Load Compilation (PLC) guidelines;
- j) review the technical note on heavy metal determination in sediments;
- k) finalise the technical notes on persistent organic compounds determination;
- l) review the revised ICES Environmental Data Reporting Format (Version 3.2) with regard to ensuring that all requirements in terms of reporting chemical data for the COMBINE programme will be met and provide comments to the ICES Marine Data Centre.

SGQAC will report by 10 March 2003 for the attention of ACME and the Baltic, Marine Habitat, and Oceanography Committees.

2ACME03 **The ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea [SGQAB]** (Chair: A. Ikauniece, Latvia) will meet at ICES Headquarters from 25–28 February 2003 to:

- a) build upon links with other international agencies (e.g., ISO, CEN, EC) with an



interest in QA/AQC of biological community measurements;

- b) review and report on the results of the questionnaire on primary production activities and progress in development of primary production reporting formats;
- c) review and report on the development of taxonomical checklists for the Baltic Sea area;
- d) review and report on QA/AQC issues relevant to coastal fish monitoring activities provided by ICES and other relevant information (COBRA report);
- e) review and report on progress in the establishment of a HELCOM phytobenthos expert group;
- f) review and report on progress in the activities of the HELCOM phytoplankton expert group and macrozoobenthos project;
- g) review and report on the updating of the COMBINE manual;
- h) review and report on existing information concerning any QA-related activities such as ring tests, intercalibration exercises, etc., carried out in the HELCOM area;
- i) review comments and adopt changes made to the COMBINE phytoplankton chlorophyll *a* manual by the ICES WGPE and experts from HELCOM laboratories;
- j) review changes made to the phytoplankton primary production manual in the COMBINE guidelines;
- k) review and accept changes made to the COMBINE mesozooplankton manual by experts under the convenership of J. Flinkman (FIMR);
- l) meet back-to-back with SGQAC to review and finalise:
  - i) the QA guidelines for chlorophyll determination,
  - ii) the QA guidelines for primary production determination;
- m) review the changes made to ICES data reporting formats and the status of data submissions during 2002.

SGQAB will report by 17 March 2003 for the attention of the ACME and the Baltic, Marine Habitat, and Oceanography Committees.

- a) meet jointly with SGQAB on matters of common interest;
- b) review progress in the application of JAMP guidelines and associated QA activities within Member Countries;
- c) review and report on the success of relevant workshops/intercalibration exercises/ring tests, and document future events;
- d) build upon links with other international agencies (e.g., ISO, CEN, EC) with an interest in QA/AQC of biological community measurements;
- e) evaluate and report on QA/AQC issues relevant to the study of coastal fish communities;
- f) review progress in the development and use of the ICES Biological Community Database;
- g) explore and make recommendations on means for screening of biological (phytoplankton, phytobenthos, zoobenthos) data prior to the evaluation of trends;
- h) further review existing criteria for determining the acceptability of biological sampling and analytical practices in monitoring programmes, and make recommendations for future improvements;
- i) consider the QA/AQC implications arising from the application of an environmental indicator approach employing biological measures;
- j) assess the final outcome of a questionnaire concerning QA of biological community measures in the ICES/OSPAR area, and make appropriate recommendations for follow-up action;
- k) evaluate the outcome of a questionnaire concerning the conduct of primary production studies in the OSPAR/ICES/HELCOM area, and consider the implications for future monitoring strategies;
- l) examine developments in the proposed follow-up to the BEQUALM scheme, and determine the benefits for data quality in the OSPAR/ICES/HELCOM area;
- m) review progress in the preparation of taxonomic checklists as aids to the study of biological communities, and identify priorities for future action.

SGQAE will report by 17 March 2003 for the attention of the Marine Habitat Committee (who will be parent), Oceanography Committee, ACME, and ACE.

2ACME04 The **Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic** [SGQAE] (Chair: H. Rees, UK) will meet at ICES Headquarters from 25–28 February 2003 to:



2ACME05 The **ICES/IMO/IOC Study Group on Ballast and Other Ship Vectors** [SGBOSV] (Chair: S. Gollasch, Germany) will meet in Vancouver, Canada from 24–25 March 2003 to:

- a) report on progress in ballast water research and prepare a practical assessment of the currently implemented and planned ballast water control and management technologies;
- b) interessionally support the Ballast Water Working Group of the International Maritime Organization's Marine Environment Protection Committee (IMO MEPC BWWG);
- c) conduct and report on a global review of the significance of vectors, especially ballast water and hull fouling, taking into account that the ban of TBT-containing antifouling paints will change the pattern of use of antifoulants;
- d) discuss and report on risk assessment approaches relevant to ballast water management, considering implementations of mandatory risk assessment procedures by some jurisdictions;
- e) determine means to further advance opportunities for coordinated measurements of invasion across countries and mechanisms to share and coordinate relevant data (e.g., on invasion pattern).

SGBOSV will report by 15 April 2003 for the attention of ACME and the Mariculture and Marine Habitat Committees.

2ACME06 The **Working Group on Introductions and Transfers of Marine Organisms** [WGITMO]

(Chair S. Gollasch, Germany) will meet in Vancouver, Canada from 26–28 March 2003 to:

- a) collect and provide a synthesis and evaluation of National Reports;
- b) review, edit, and finalise the appendices in the form of Technical Guidance Notes for the Code of Practice on Introductions and Transfers of Non-indigenous Marine Organisms;
- c) provide a synthesis and evaluation of annual updates on the spread and impact of exotic species, including information from countries that are not members of ICES;
- d) continue the development of a proposal for the dissemination of relevant material for public information via the ICES Website, with special emphasis on the Code of Practice Appendices;
- e) meet with the North Pacific Marine Science Organization (PICES);
- f) continue work on the Summary of National Reports 1992 to 2001 for ultimate publication as a CD-ROM together with the annual reports during the period covered;
- g) finalise the *ICES Cooperative Research Report* on the "Directory of Dispersal Vectors of Exotic Species";
- h) collect information on impacts which intentional introductions may have on the receiving environment (e.g., Red King Crab in Norway) with the option to consider such species for an "Alien Species Alert" report.

WGITMO will report by 15 April 2003 for attention of ACME and the Mariculture and Marine Habitat Committees.

### Advisory Committee on Ecosystems (ACE)

2ACE01 The **Advisory Committee on Ecosystems** [ACE] (Chair: H. R. Skjoldal, Norway) will meet:

**A)** at ICES Headquarters from 19 to 23 May 2003 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) establish and review working procedures for ACE and propose Terms of Reference for

ACE, its subsidiary groups and other relevant Council groups;

- d) review reports of ICES groups as defined in Council resolutions;
- e) 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 the ACE 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 91st Statutory Meeting to:

- a) prepare Terms of Reference, dates, and venues for meetings of groups reporting to ACE in 2004;
- b) conduct other business related to the functioning of ACE.



The Consultations will be open to Delegates, Chair of the Consultative Committee, ACE members and their alternates, Chairs of groups reporting to ACE or their designates, Observers to ACE, and other experts at the invitation of the Chair of ACE.

2ACE02 **A Study Group on Management of Integrated Data** [SGMID] (Co-Chairs: P. Wiebe, USA and C. Zimmermann, Germany) will be established and will meet in Madrid, Spain from 19–21 February 2003:

- a) review the development within ICES towards integrated databases of oceanographic, environmental, and fisheries data;
- b) identify data sources relevant to a), above, not yet integrated into the ICES databases;
- c) review existing integrated data systems for fisheries/environmental data and review data integration work in existing projects inside and outside of ICES;
- d) propose strategies and technical solutions for integrating available data including the possibility that data are not physically located in one site;
- e) evaluate and recommend the level of integration and aggregation of data in connection with management issues from an ecosystem perspective including the use of GIS systems;
- f) evaluate problems associated with the accessibility of data.

SGMID will report by 15 March 2003 for the attention of ACE, ACME, and ACFM.

2ACE03 **The Working Group on Marine Mammal Population Dynamics and Habitats** [WGMMPH] will be renamed the **Working Group on Marine Mammal Ecology** [WGMME] (Chair: G. Waring, USA) and will meet in Hel, Poland from 25–29 March 2003 to:

- a) develop further the response to the European Commission's standing request regarding fisheries that have a significant impact on small cetaceans and other marine mammals:
  - i) review any new information on population sizes, by-catches, or mitigation measures and suggest relevant advice;
- b) in response to a request from HELCOM [HELCOM 2003/6]:
  - i) develop a monitoring programme for estimation of the abundance of seals and other marine mammal populations in the Baltic Sea,
  - ii) provide advice on harmonisation and

synchronisation of monitoring and estimating procedures for marine mammal populations across the Baltic region;

- c) evaluate the populations of seals and harbour porpoise in the Baltic marine area, including the size of the populations, distribution, migration, reproductive capacity, effects of contaminants and health status, and additional mortality owing to interactions with commercial fisheries (by-catch, intentional killing) [HELCOM 2003/2];
- d) for the EcoQOs relating to (1) seal population trends in the North Sea, and (2) by-catch in the North Sea of harbour porpoises [OSPAR 2003/3.1]:
  - i) develop draft guidelines (taking into account MON 01/9/1, Annex 6), including monitoring protocols and assessment methods, for evaluating the status of, and compliance with, those EcoQOs,
  - ii) for EcoQO (1), propose a list of species to be covered by this EcoQO,
  - iii) for both EcoQOs, provide current levels and other reference levels as can be justified scientifically, on an appropriate geographical basis, to be used as baselines against which progress can be measured,
  - iv) reconstruct the historic trajectory of these metrics and determine their historic performance (hit, miss or false alarm) relative to the objective being measured, as a basis for evaluating their relationship to management; and
  - v) provide the basis for advice on what management measures could be taken to help meet the EcoQOs;
- e) commence development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives and reference levels for the EcoQOs relating to (a) the utilisation of North Sea breeding sites of seals [OSPAR 2003/3.2];
- f) commence development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives, and reference levels for the EcoQOs relating to (b) presence and extent of threatened and declining species in the North Sea [OSPAR 2003/3.3]. In this respect:
  - i) for EcoQO element (b), consider the marine mammal species and the habitats on the Draft OSPAR list of threatened and declining species for their relevance and usefulness as a basis for EcoQOs for the North Sea,



- ii) where possible and appropriate, reconstruct the historic trajectory of the metrics and determine their historic performance (hit, miss or false alarm) relative to the objective being measured, as a basis for deciding their relationship to management;
- g) further develop EcoQOs for marine mammals in the North Sea including current, reference, and suggested target levels. Developments could include preparing estimates of the maximum rates of increase and suggested limits for anthropogenic removals of harbour porpoises, other small cetaceans, and seals based on review of simulations and risk analysis incorporating life history parameters;
- h) review preliminary findings from the 2002 seal epizootic event in the North Sea and Kattegat and review the role of such events in population regulation;
- i) review census techniques for seals, and statistical analysis of resulting data (including correction factors);
- j) review the effects of interspecific competition, particularly population effects of habitat exclusion, on expanding grey and harbour seal populations;
- k) devise a process to construct in 2004 a time series of:
  - i) marine mammal abundance in the North Sea by quarter and year since 1963,
  - ii) marine mammal consumption rates and dietary composition by species and size class for selected periods by quarter and year;
- l) prepare a case for a WGMME Workshop on Marine Mammal Health in relation to Habitat Quality.

The WGMME will report by 11 April 2003 for the attention of ACE, and the Marine Habitat and Living Resources Committees.

2ACE04 The **Working Group on Ecosystem Effects of Fishing Activities** [WGECO] (Chair: C. Frid, UK) will meet at ICES Headquarters from 1–8 April 2003 to:

- a) For the EcoQO relating to spawning stock biomass of North Sea commercial fish species, and taking account of current reference points used in ICES advice and the outcome of the work of the Study Group on the Further Development of the Precautionary Approach to Fishery Management, to be used as baselines against which progress can be measured [OSPAR 2003/3.1]:

- i) develop draft guidelines (taking into account MON 01/9/1, Annex 6), including monitoring protocols and assessment methods, for evaluating the status of, and compliance with, those EcoQOs,
- ii) propose a list of species to be covered by this EcoQO;
- iii) reconstruct the historic trajectory of these metrics and determine their historic performance (hit, miss or false alarm) relative to the objective being measured, as a basis for evaluating their relationship to management; and
- iv) provide the basis for advice on what management measures could be taken to help meet the EcoQOs;
- b) continue development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives and reference levels for the EcoQOs relating to the local availability in the North Sea of sandeels for black-legged kittiwakes, based on the output of WGSE [OSPAR 2003/3.2];
- c) continue the development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives and reference levels for the EcoQOs relating to (l) changes in the proportion of large fish and hence the average weight and average maximum length of the fish community, based on input from WGFE and Assessment Working Groups; (o) density of sensitive (e.g., fragile) species; (p) density of opportunistic species, based on input from BEWG; and (b) presence and extent of threatened and declining species in the North Sea based on input from WGFE, WGSE, BEWG, and WGMME [OSPAR 2003/3.3]. In this respect:
  - i) for EcoQO element (l), develop draft guidelines (taking into account MON 01/9/1, Annex 6), including monitoring protocols and assessment methods, for evaluating the status of, and compliance with, those EcoQOs,
  - ii) for EcoQO elements (o) and (p), identify possible species in the respective categories, consider further the spatial scale requirements of sampling and the adequacy of existing monitoring activities to determine their status and trends, and provide further basis for advice based on scenario considerations on the applications of possible EcoQOs,
  - iii) for EcoQO element (b), consider the invertebrate and fish species and the habitats on the Draft OSPAR list of threatened and declining species for their



relevance and usefulness as a basis for EcoQOs for the North Sea,

- iv) where possible and appropriate, reconstruct the historic trajectory of the metrics and determine their historic performance (hit, miss, or false alarm) relative to the objective being measured, as a basis for evaluating their relationship to management;
- d) review the data collected by the Study Group on Discard and By-catch Information and, as far as is practicable, conduct analyses that can be used as a basis for the formulation of ICES advice on ecosystem effects of fisheries. Consider what management measures might be required based on these analyses, including, where possible, evaluating the impact of fishing on non-target species. In addition, identify species and fisheries where mitigative actions may be warranted and, in such cases, propose and justify alternative mitigation measures [EC DG FISH/2001];
- e) examine the relative importance of extrinsic factors such as long-term changes in oceanographic conditions, climate change, pollution, habitat disturbance, large predators, or other factors on fish population dynamics compared to fishing and provide the basis for an initial response to the request from the EC (9/2002) [EC DG FISH/2002];
- f) continue work on summarising available information on the distribution of sensitive habitats in the ICES area, and evaluating the adequacy of the information as a basis for scientific advice for an “evaluation of the impact of current fishing practices on sensitive habitats, and suggestions for appropriate mitigating measures”;
- g) continue work on the development of advisory forms appropriate to the preservation of the genetic diversity of exploited stocks and stocks suffering substantial mortality as by-catch;
- h) continue work on the consideration of “ecological dependence in management advice, firstly addressing the groups of species with the ecological linkages that are known with high reliability to have strong ecological linkages”, including specification of the data requirements and models that would be required to provide the scientific basis for a response to this request;
- i) continue development of a framework for the provision of integrated ecosystem advice within ICES and consider how this could be operationalised in the near future;
- j) continue the exploration of the effects of fishing activities on fish assemblages and

marine ecosystems with particular focus on (i) the exploration of spatial analysis methods for assessing ecosystem properties, and (ii) the further investigation of the suitability of the metrics examined in 2002 for use in the support of scientific advice in the context of an ecosystem approach to management;

- k) in response to the EC request on ecosystem impacts of industrial fishing:
  - i) summarise information from relevant Expert Groups (Assessment Working Groups, SGDBI, WGFE) and prepare a compilation of the scientific information in response to this request,
  - ii) consider which aspects of this request require further work and propose plans to take forward such work.

WGECO will report by 16 April 2003 for the attention of ACE and the Marine Habitat, Living Resources, and Resource Management Committees.

2ACE05 **A Regional Ecosystem Study Group for the North Sea** [REGNS] (Chair: A. Kenny, UK) will be established and will meet in Nantes, France from 4–7 April 2003 to:

- a) consider the priority science issues from the Scientific Expert Conference in Bergen 20–22 February 2002, and how ICES can contribute to their development;
- b) prepare proposals for how ICES could contribute to the development of integrated assessments of the North Sea in cooperation with other international organisations (OSPAR and EU), to facilitate production of integrated advice;
- c) in joint session with PGNSP, consider the role of ICES in improving the coordination, harmonisation, and efficiency of current national and international monitoring to serve the assessment processes.

REGNS will report by 30 April 2003 for the attention of ACE.

2ACE06 **The Study Group on Cold Water Corals** [SGCOR] (Chair: M. Tasker, UK) will work by correspondence in 2003 to:

- a) review new information on the occurrence of cold-water corals in the North Atlantic;
- b) describe the fisheries occurring in these areas in the Northeast Atlantic, following the areas identified in the 2002 report;
- c) compile relevant reports for further consideration by WGECO in relation to fishing;



- d) invite comment on a draft of its report from WGECCO, WGMHM, and WGDEEP in order to enable the provision of any further advice to the European Commission.

SGCOR will report by 28 February 2003 for the attention of ACE and the Marine Habitat Committee.

2ACE07 **A Working Group on Fish Ecology [WGFE]** (Chair: J. Ellis, UK) will be established and will meet at ICES Headquarters from 3–7 March 2003 to:

- a) in preparation for development of objectives and reference levels for EcoQOs related to changes in the proportion of large fish, average weight, and average maximum length of the fish community:
  - i) analyse trends in these features over time for appropriate survey data sets from the North Sea and other seas,
  - ii) evaluate data and trends in other characteristics of fish communities which reflect the same information as in i),
  - iii) where possible identify levels of the properties in i) and ii) that can be taken as indicative of various states of the marine ecosystem (i.e., serve as potential reference levels);
- b) provide an assessment of the data on which the justification of the fish on the OSPAR priority list of threatened and endangered species and habitats will be based. This assessment should be to ensure that the data used for producing the justification are sufficiently reliable and adequate to serve as a basis for conclusions that the fish concerned can be identified, consistently with the Texel-Faial criteria. These fish species are: sturgeon (*Acipenser sturio*), allis shad (*Alosa alosa*), houting (*Coregonus lavaretus oxyrinchus*), Couch's goby (*Gobius couchi*), short-snouted seahorse

(*Hippocampus hippocampus*), seahorse (*Hippocampus ramulosus*), and sea lamprey (*Petromyzon marinus*);

- c) review the concept of essential fish habitat and consider what information would be required in order to be able to specify essential fish habitat for individual species or stocks;
- d) conduct, for completion in 2003, analyses of:
  - i) ICES data on individual stomach contents as well as other relevant stomach data to obtain estimates of the correction factor  $k$ ,
  - ii) estimates of food rations of whiting and saithe (feeding primarily on fish) using a prey energy density-dependent evacuation model to quarterly mean stomach data,
  - iii) the ICES stomach data to acquire possible information about prey composition of individual stomachs. The focus will be on major prey types that deviate significantly in energy density;
- e) Initiate, for completion by 2004, estimates of food rations of cod and haddock (preying to a large extent on invertebrates with a robust exoskeleton also) using a gastric evacuation model which accounts for the effects of a robust exoskeleton on evacuation of total stomach contents as well as of individual prey types. Such a model is expected to be in operation around mid-2003;
- f) review topics of geographic areas where ICES might further contribute to work on rare marine fish species.

WGFE will report by 24 March 2003 for the attention of the Living Resources Committee, who will parent the group, the Resource Management Committee and ACE.

## Fisheries Technology Committee (B)

2B01 **A Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas [SGSTG]** (Chair: Francisco Velasco, Spain) will be established and will meet in Vigo, Spain from 12–14 February 2003 to:

- a) conduct a review of the current uses and needs for IBTS data to determine potential uses and users of the data from the surveys in terms of stock assessment, species distribution, and marine ecosystem applications e.g., biodiversity;

- b) conduct a review of the current survey trawl gears to recommend standardisation of current methodology;
- c) consider other candidate gears that would be suitable for use in all areas after suitable modification;
- d) propose a minimum number of candidate net and ground gear configurations;
- e) supervise modification and field trials of candidate trawl gears;
- f) determine standardised trawling procedures after appropriate trawl gear has been chosen,



in relation to the procedures used in the North Sea;

- g) define the required scope of continuing intercalibration work required to maintain continuity in time-series, including the North Sea time-series;
- h) recommend appropriate survey design for multi-vessel/gear permutations such as stratification, overlap, and the combining of data to provide indices of abundance and biodiversity and any other appropriate indicators of stock and regional scales.

SGSTG will report by 15 March 2003 for the attention of the Fisheries Technology, Living Resources, and Resource Management Committees and ACFM and ACE. It will also make its report available to WGFTFB.

2B02    **The Study Group on Mesh Measurements Methodology** [SGMESH] (Chair: R. Fonteyne, Belgium) will meet in Ostend, Belgium from 19–21 March 2003 to:

- a) consider the results of additional tests on proposed measure forces recommended for mesh size measurements;
- b) propose final specifications of a suitable mesh measurement methodology and the conditions under which mesh measurements for all fishing gears in ICES areas are made;
- c) review the preparation of a proposed draft Cooperative Research Report on “Mesh Measurements Methodology”.

SGMESH will report by 15 April 2003 for the attention of the Fisheries Technology Committee. It will also make its report available to WGFTFB.

2B03    **The Planning Group on the HAC Data Exchange Format** [PGHAC] (Chair: D. Reid, UK) will meet in Bergen, Norway on 17 June 2003 to:

- a) coordinate the 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) agree on the definition of two new tuples for the use of attitude sensors on towed bodies;
- e) define the layout and sequence for the use of the HAC structure to allow data exchange between different sounder systems and users.

PGHAC will report by 15 July 2003 for the attention of the Fisheries Technology

Committee. It will also make its report available to WGFASST.

2B04    **The Study Group on Target Strength Estimation in the Baltic Sea** [SGTSEB] (Chair: B. Lundgren, Denmark) will meet in Bergen, Norway from 17–18 June 2003 to:

- a) evaluate the single-target TS measurements on herring and sprat during the surveys in 2001–2002 and from cage experiments in the Baltic;
- b) apply the modelling methods on the case of the herring and sprat and compare their results to the existing information and single-target TS measurements and cage experiments in the Baltic Sea;
- c) recommend TS length relationships for herring and sprat in the Baltic Sea.

SGTSEB will make its report available by 31 July 2003 for the attention of the Fisheries Technology Committee and the Baltic Committee. It will also make it available to WGFASST.

2B05    **A Study Group on Acoustic Seabed Classification** [SGASC] (Chair: J. Anderson, Canada) will be established and will meet in Bergen, Norway from 17–18 June 2003 to:

- a) evaluate acoustic seabed classification technologies and applications, its underlying physics, theoretical basis, and empirical practices in relation to:
  - i) scales of observations, data quality, and standards,
  - ii) classification methods and criteria,
  - iii) ground-truthing means,
  - iv) sampling design;
- b) discuss methods and approaches to combining the above ancillary information in studies on fish distribution, abundance, and ecology.

SGASC will report by 31 July 2003 for the attention of the Fisheries Technology and Marine Habitat Committees. It will also report to WGFASST.

2B06    **The Working Group on Fisheries Acoustics Science and Technology** [WGFASST] (Chair: Y. Simard, Canada) will meet in Bergen, Norway from 18–21 June 2003 to:

- a) evaluate the possibilities and limitations of using fishing vessels to collect acoustic data for fish stock assessments;
- b) develop technical guidelines and standards for the collection of acoustic data for fish stock assessments;



- c) examine works in the following research areas that WGFASST prioritised from the new research presented at the 2002 ICES Symposium on Acoustics in Fisheries and Aquatic Ecology:
  - i) developmental work and applications of echo trace spectral signatures,
  - ii) combination of methods in acoustic applications and multispecies estimation in the context of an ecosystem approach,
  - iii) advanced technologies and platforms;
- d) 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).

WGFASST will report by 31 July 2003 for the attention of the Fisheries Technology Committee.

2B07 The **ICES-FAO Working Group on Fishing Technology and Fish Behaviour** [WGFTFB] (Chair: D. A. Somerton, USA) will meet in Bergen, Norway, from 27–28 June 2003 to:

- a) assess gear-related technical measures appropriate for improving species and size selectivity in *Nephrops* trawl fisheries with particular emphasis on:
  - i) describe and review current problems relating to size and species selectivity, in specific *Nephrops* fisheries in the NE Atlantic and Mediterranean,
  - ii) review and report on existing legislative measures in force in *Nephrops* fisheries,
  - iii) review available technologies to improve size and species selection in the specific fisheries identified in item i), assessing advantages and disadvantages in terms of technical suitability, biological effectiveness and cost/benefits to the fishing industry,
  - iv) evaluate, based on (iii) the options for the specific fisheries and, where necessary, propose further research or development required to produce effective solutions;

- b) review the final report of the Study Group on Mesh Measurement Methodology (SGMESH);
- c) review the main topics of the Symposium on Fish Behaviour in Exploited Ecosystems to identify promising technological and methodological approaches to increase the accuracy and precision of surveys or to decrease the effects of fishing activities on the bottom;
- d) review future working practices and meeting organisation following the co-sponsorship of the Working Group by FAO;
- e) review the draft of the Static Gear Selectivity Manual;
- f) evaluate the selective properties of trawls using 90° turned diamond meshes and advise on appropriate mesh sizes corresponding to the agreed BACOMA gear. Evaluate selectivity of diamond mesh of 130 mm and 140 mm taking into account all new available information on the matter [ACFM request].

WGFTFB will report by 15 July 2003 for the attention of the Fisheries Technology Committee and ACFM.

2B08 A **Study Group on the Review of the Structure of the Fisheries Technology Committee** [SGRSFTC] (Chair: S. J. Walsh, Canada) will be established and will work by correspondence in 2003 to:

- a) review and rationalise the existing Committee's Expert Groups;
- b) identify and establish priority areas of activity with particular emphasis on cross-Committee collaboration;
- c) identify areas of work to support the Advisory Process;
- d) consider ways to increase the input from the Committee by:
  - i) increased contributions to the Annual Science Conference and Symposia,
  - ii) publications.

SGRSFTC will make its report available by 31 May 2003 for the attention of the Fisheries Technology Committee.

## Oceanography Committee (C)

2C01 A **Study Group on Growth, Maturity and Condition in Stock Projections** [SGGROMAT] (Co-Chairs: C. L. Needle, UK and C. T. Marshall, Norway) will be established

and will meet at ICES Headquarters from 5–10 December 2002 to:

- a) collate demersal fish data on weights, maturity, condition, fecundity, and age-



length and length-weight keys for stocks in the North Sea, Irish Sea, Barents Sea, and Baltic Sea in the form of standardised tables;

- b) develop process-based growth, maturity, condition and fecundity models for a subset of the stocks in a);
- c) implement process-based models in a new projection methodology and test the accuracy and precision relative to the methodology currently used;
- d) agree on an intersessional programme to apply the findings of the Study Group to stocks not included in b) and c).

SGGROMAT will report by 10 January 2003 for the attention of the Resource Management Committee (who will parent the Group) and to the Living Resources, Oceanography, and Baltic Committees and ACFM. The report will be brought to the attention of the Working Group on Methods of Fish Stock Assessments (WGMG).

2C02 The **Working Group on Zooplankton Ecology** [WGZE] (Chair: S. Hay, UK) will meet in Gijón, Spain, from 24–26 February 2003 to:

- a) review the preparation of the annual zooplankton summary status report: standardisation of data sets, critics, and improvements;
- b) approve and adopt guidelines for metadata standards for zooplankton data in the ICES area;
- c) review climate change and Trans-Atlantic studies on Calanus;
- d) review perturbations in coastal marine ecosystems and changes in zooplankton community structure due to human impacts;
- e) evaluate possible biological indices of ecological significance for the fisheries and environmental assessment groups, taking into account the evaluation framework adopted by ACE (2000) and described by WGECE (2000, 2001);
- f) evaluate the local organization and facilities for the ICES/PICES/GLOBEC Symposium;
- g) consider sampling and analytical methodologies focussed in gelatinous zooplankton;
- h) review the state of the art of enzymatic activity methods to estimate secondary production in zooplankton;
- i) review progress in the digitisation of the plankton leaflets;
- j) consider the potential of ITIS as a common taxonomic system within ICES.

WGZE will report by 31 March 2003 for the attention of the Oceanography Committee and ACME.

2C03 The **Study Group on a Checklist for Phytoplankton and other Protists** [SGPHYT] will be renamed the **Study Group for Phytoplankton and Protist Taxonomy** [SGPPT] (Chair: H. Kuosa, Finland) and will meet in Villefranche-sur-mer, France in early March 2003 to:

- a) continue compilation of a taxonomic database of phytoplankton and other protists, on the basis of the regional checklists;
- b) review the Preliminary European Phytoplankton Checklists of Phytoplankton and other Protists;
- c) resolve outstanding problems/issues in the Checklists;
- d) integrate information from molecular taxonomists into the Checklists;
- e) integrate all relevant physio-ecological information into the Checklists.

SGPPT will report by ?? for the attention of the Oceanography Committee, ACME, and ACE. The Group will also report directly to WGPE.

2C04 The **Working Group on Seabird Ecology** [WGSE] (Chair: R. W. Furness) will meet at ICES Headquarters from 7–10 March 2003 to:

- a) review the status and population trends of seabirds in the Baltic Sea;
- b) compare seabird communities and prey consumption between east and west North Atlantic;
- c) review marine protected areas for seabirds in the ICES area;
- d) assess progress in measuring impacts of at-sea wind farms on seabirds;
- e) identify the major gaps in knowledge of marine birds in the ICES area;
- f) respond to an OSPAR request in connection with the EcoQO relating to the proportion of oiled common guillemots among those found dead or dying on beaches [OSPAR 2003/3.1], in particular:
  - i) develop draft guidelines (taking into account MON 01/9/1, Annex 6), including monitoring protocols and assessment methods, for evaluating the status of, and compliance with, those EcoQOs,
  - ii) provide current levels, on an appropriate geographical basis, to be used as



baselines against which progress can be measured,

- iii) reconstruct the historic trajectory of these metrics and determine their historic performance (hit, miss, or false alarm) relative to the objective being measured, as a basis for deciding their relationship to management,
- iv) provide the basis for advice on what management measures could be taken to help meet the EcoQOs;
- g) respond to an OSPAR request to commence development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives, and reference levels for the EcoQOs relating to [OSPAR 2003/3.2]:
  - i) Mercury concentrations in eggs and feathers of North Sea seabirds,
  - ii) Plastic particles in the stomachs of North Sea seabirds,
  - iii) Seabird population trends in the North Sea as an index of seabird community health,
  - iv) Organochlorine concentrations in the eggs of North Sea seabirds;
- h) commence development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives, and reference levels for the EcoQOs relating to (b) presence and extent of threatened and declining species in the North Sea [OSPAR 2003/3.3]. In this respect:
  - i) for EcoQO element (b), consider the seabird species and the habitats on the Draft OSPAR list of threatened and declining species for their relevance and usefulness as a basis for EcoQOs for the North Sea,
  - ii) where possible and appropriate, reconstruct the historic trajectory of the metrics and determine their historic performance (hit, miss, or false alarm) relative to the objective being measured, as a basis for deciding their relationship to management;
- i) devise a process to construct in 2004 a time-series of:
  - i) seabird abundance in the North Sea by quarter and year since 1963,
  - ii) seabird consumption rates and dietary composition by species and size class for selected periods by quarter and year.

WGSE will report by 24 March 2003 for the attention of the Oceanography, Marine Habitat, Living Resources, and Resource Management Committees, and ACE.

2C05

**The Study Group on Modelling of Physical/Biological Interactions [SGPBI]** (Chair: C. Hannah, Canada) will meet in Chapel Hill, USA from 10–12 March 2003 to:

- a) present and discuss new results related to developments in the modelling of physical/biological interactions;
- b) review a paper prepared intersessionally which provides a derivation of model equations to form a basis for intercomparing model assumptions;
- c) review existing modelling techniques for random walk in inhomogeneous turbulence for particles with active behaviour;
- d) review the state of knowledge of zooplankton diapause and encystment and excystment of selected phytoplankton species;
- e) review the state of knowledge of light penetration into the water, the state-of-the-art models and the state of knowledge of how phytoplankton use light;
- f) refine and revise the Group's strategy for continued model development for understanding and forecasting physical/biological/chemical interactions.

SGPBI will report by 15 May 2003 for the attention of the Oceanography Committee.

2C06

**The Working Group on Phytoplankton Ecology [WGPE]** (Chair: L. Edler, Sweden) will meet in Villefranche-sur-mer, France from 11–14 March 2003 to:

- a) review the reports of the ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic and the Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic (SGQAE);
- b) elaborate the outcome of the work of the Study Group for Phytoplankton and Protist Taxonomy;
- c) outline the consequences of the potential termination of a unique North Sea phytoplankton 30-year time-series from the Marsdiep station in the southern North Sea;
- d) organise a Workshop, in collaboration with the Working Group on Zooplankton Ecology, on modelling phytoplankton-zooplankton interactions;
- e) prepare contributions on phytoplankton monitoring for inclusion in the Summary



Status Report on plankton monitoring results in the ICES area;

- f) review reports from OSPAR concerning the eutrophication status of the OSPAR area;
- g) consider the HELCOM experience with respect to primary production measurements in environmental monitoring programmes;
- h) consider the potential of ITIS as a common taxonomic system within ICES.

WGPE will report by 15 April 2003 for the attention of the Oceanography Committee and ACME.

2C07 The **ICES-IOC Working Group on Harmful Algal Bloom Dynamics** [WGHABD] (Chair: J. Martin, Canada) will meet in Aberdeen, UK from 17–20 March 2003 to:

- a) compare and assess historical and retrospective data sets on phycotoxins in shellfish, related toxic phytoplankton abundance, and phytoplankton community structure with reference to HAB population dynamics;
- b) review the reports and products of recent workshops on molecular probe technology, and the development of technologies of direct use in studies of field populations of HAB species, with special attention to novel approaches that were not considered at the 2002 meeting;
- c) evaluate the outcome of the Workshop: "Contrasting approaches to understanding eutrophication effects on phytoplankton" (CM2001/2C:05) from a HAB dynamics perspective;
- d) review effects of HABs on survival and fecundity of wild fish, and the relationship (if any) to recruitment;
- e) prepare a resolution for a 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";
- f) evaluate the usefulness and feasibility of creating HAEDAT maps directly from the HAEDAT-database;
- g) review the application of methods for the detection and quantification of phycotoxins in eukaryotic microalgae and cyanobacteria, and related components of pelagic food webs, in coastal marine and brackish waters of the ICES Area;
- h) review the previous submissions to HAEDAT with a view to improving the accuracy of the information and increasing the utility of the database;

i) report on the ECOHAB-EUROHAB Workshop on joint research on HABs;

j) consider the potential of ITIS as a common taxonomic system within ICES.

WGHABD will report by 31 March 2003 for the attention of the Oceanography and Mariculture Committees and ACME.

2C08 The **Working Group on Oceanic Hydrography** [WGOH] (Chair: A. Lavin, Spain) will meet in Bergen, Norway from 31 March–3 April 2003 to:

- a) update and review results from Standard Sections and Stations;
- b) consolidate inputs from Member Countries into the ICES Annual Ocean Climate Status Summary (IAOCSS);
- c) conclude the review of North Atlantic climatologies and their availability and usage, and additional data sources for the ICES Annual Ocean Climate Summary;
- d) review an evaluation of the interactive data summary product produced by the ICES Service Hydrographique in order to enhance the ICES Annual Ocean Climate Status Summary;
- e) review progress on the publication of the proceedings of the ICES Symposium on Hydrobiological Variability in the ICES Area, 1990–1999;
- f) review two proposals for new work, viz:
  - i) undertake long-term storage of water samples,
  - ii) undertake an isopycnal analysis of *in situ* data.

WGOH will report by 30 April 2003 for the attention of the Oceanography Committee and ACME.

2C09 The **ICES-EuroGOOS Planning Group on the North Sea Pilot Project (NORSEPP)** [PGNSP] (Co-Chairs: A. Richardson, UK and Martin Holt (EuroGOOS)) will meet in Nantes, France from 7–8 April 2003 to:

- a) review the status and future of the project in the light of decisions with regard to funding parts or all of NORSEPP;
- b) review progress on the implementation of the various elements of NORSEPP, in particular:
  - i) compilation of existing observations and information about relevant datasets,
  - ii) application of existing coupled physical-ecosystem models in now-cast mode,



- iii) demonstrate how data integration methods to be introduced by NORSEPP can be used in support of stock assessment and prediction,
- iv) find ways to streamline the flow and exchange of relevant data and information,
- v) review of innovative technologies suitable for operational fisheries oceanography,
- vi) evaluation of ways to promote the results of the project to the ICES stock assessment community;
- c) prepare draft terms of reference for relevant ICES Subsidiary Groups whose input is required to support the Project.

PGNSP will report by 30 April 2002 for the attention of the Oceanography, Living Resources, Resource Management, Marine Habitat, and Advisory Committees.

2C10 The **ICES-IOC Steering Group on GOOS** [SGGOOS] (Co-Chairs: W. R. Turrell, UK and W. G. Harrison, Canada & IOC) will meet in Nantes, France from 9–10 April 2003 to:

- a) develop further the Implementation Plan for ICES involvement in GOOS (CM 2001/C:01) including:
  - i) review the revised ICES and GOOS implementation plan, the ICES GOOS flyer (its purpose, target readers, and content), and the ICES standard sections and stations (their use as a contribution to GOOS),
  - ii) review progress made towards enhancing mutual awareness and collaboration between ICES/IOC and EuroGOOS,
  - iii) review progress in the promotion of the ICES Annual Ocean Climate Status summary within the GOOS/GCOS/JCOMM communities and to investigate how this product might be improved to enhance its use in operational aspects of the work of ICES,
  - iv) review progress in the development of the ICES/EuroGOOS North Sea Ecosystem Pilot Project (NORSEPP) and recommend necessary actions,
  - v) review progress in enhancing the role of the North Sea IBTS surveys in the North Sea Ecosystem Pilot Project,
  - vi) plan a workshop on variability in North Atlantic basic scale circulation over recent decades and its forcing of (biological) variability in adjoining shelf ecosystems,

vii) review progress in other potential pilot projects (Bay of Biscay, NW Atlantic Pilot, GMES, Gulf of Alaska Pilot – PICES collaboration, FP6 EoIs submitted in 2002),

viii) review changes in drivers for GOOS in ICES (e.g., OSPAR requirements, EU Directives, EU Marine Strategy);

b) advise and support the ICES Secretariat in GOOS-related matters, including:

i) review progress with the SGGOOS web site;

c) review the role of ICES in GOOS and EuroGOOS taking into account input from the ICES Committees, including:

i) review of presentations made to GOOS/EuroGOOS;

d) review cooperation with the Coastal Ocean Observation Panel (COOP) of GOOS, including:

i) report on the COOP Chair's cooperation with ICES,

ii) report on presentations made to COOP.

SGGOOS will report by 30 April 2003 for the attention of the Oceanography Committee, ACME, and ACE. The report will also be made available to GOOS and EuroGOOS.

2C11 A **Workshop on a Synthesis of the Cod and Climate Programme** [WKCCP] (Co-Chairs: K. Drinkwater, Canada and K. Brander, ICES/GLOBEC) will be held in New Bedford, USA from 5–7 May 2003 to:

- a) review what we have learned from the workshops, theme sessions, and other activities of the Cod and Climate programme over the past 10 years;
- b) present and discuss synthesis papers on specified topics related to the life history of cod;
- c) finalize the plan to publish these synthesis papers as a book on cod.

WKCCP will report by 31 May 2003 for the attention of the Oceanography and Living Resources Committees.

2C12 The **ICES/GLOBEC Working Group on Cod and Climate Change** [WGCCC] (Co-Chairs: K. Drinkwater, Canada, and G. Ottersen, Norway) will meet in New Bedford, USA from 7–9 May 2003 to:

- a) review and evaluate the outcome of the Workshop on Synthesis of Cod and Climate Change and determine follow-up activities;



- b) update data and information on the life history of the various North Atlantic cod stocks as part of the synthesis work of the Cod and Climate Change programme;
- c) review plans for:
  - i) the theme session for the 2003 ASC on the Transport of Eggs and Larvae to Cod Stocks of the North Atlantic,
  - ii) the 2004 ICES Symposium on The Influence of Climate Change on North Atlantic Fish Stocks;
- d) discuss the future directions of the Cod and Climate programme.

WGCC will report by 31 May 2003 for the attention of the Oceanography Committee.

2C13 The **ICES-IOC Study Group on the Development of Marine Data Exchange Systems using XML** [SGXML] (Co-Chairs: R. Gelfeld, USA. and A. Isenor, Canada) will meet in Gothenburg, Sweden from 26–27 May 2002 to:

- a) create, evaluate, and discuss intersessional work on parameter dictionaries including the population of the dictionary for distribution via a defined XML structure;
- b) evaluate intersessional work on point data structure;
- c) evaluate the usefulness of the generalised “Keeley brick” approach with application to various point data types;
- d) report on the investigation into other available existing standards (e.g., geographers through the Open GIS consortium, taxonomy, ISO standards, metadata standards (MEDI, GFDC, EDMED, etc.), utilising what has already been built;
- e) evaluate intersessional work on metadata;
- f) evaluate the usefulness of linkages to other metadata standards and on the implications of a generalised metadata model to existing models;

SGXML will report by 15 June 2003 for the attention of the Oceanography Committee.

2C14 The **Working Group on Marine Data Management** [WGMDM] (Co-Chairs: R. Gelfeld, USA and L. Rickards, UK) will meet in Gothenburg, Sweden from 28–30 May 2003 to:

- a) evaluate the use of the MDM guidelines for data management and exchange in response to promotional activities;
- b) evaluate the results from SGXML regarding the cross-parameter dictionary comparison and make recommendations regarding

adoption in the oceanographic community;

- c) further investigate details of the Inter-agency Taxonomic Information System (ITIS) and actively promote ITIS within the ICES and IOC community (in partnership with the IOC/IODE GETADE);
- d) identify problems in terms of both submission amount and quality of oceanographic data submitted to the ICES data centre and suggest solutions to member countries or international programs as required;
- e) evaluate and develop future directions for oceanographic data management based on the results from SGXML;
- f) comment on the report of the Study Group on the Management of Integrated Data.

WGMDM will report by 15 June 2003 for the attention of the Oceanography Committee.

2C15 A **Workshop on Zooplankton Taxonomy** [WKZT] (Chair: A. Lindley, UK) will be held in Plymouth (UK), from 10–13 June 2003 to:

- a) improve current zooplankton taxonomic expertise of scientists within the ICES area;
- b) aid synthesis of existing time-series by inter-calibration of taxonomic groups analysed;
- c) supplement existing taxonomic work with new optical systems;
- d) promote future taxonomic work;
- e) review methods to synthesize (taxonomic) community structure and recommend approaches to include this information into zooplankton status reports of monitoring results.

WKZT will report by 30 June 2003 for the attention of the Oceanography Committee.

2C16 A Workshop on **Real-time Coastal Observing Systems for Ecosystem Dynamics and Harmful Algal Blooms** [WKHABWATCH] (Co-Chairs: M. Babin, France and J. Cullen, Canada) will be held in Villefranche-sur-Mer, France from 11–21 June 2003 to:

- a) review real-time and near real-time sensing systems applicable for observation, modelling, and prediction of plankton dynamics in coastal waters, including HABs;
- b) present the underlying theory and review the possibilities together with the current issues and limitations, including:
  - i) remote sensing of coastal waters,
  - ii) *in situ* optical measurements, both passive and active,



- iii) automated methods for detection of plankton species or toxins,
- iv) integrated observation systems combining various kinds of detectors (optical, acoustic, chemical, hydrodynamical), including moorings and autonomous vehicles,
- v) continuous underway sampling systems (e.g., from ferries),
- vi) tools for characterising distribution of plankton in relation to physical and chemical properties;
- c) elaborate guidelines for the development of strategic and rational use of optical sensors for specific HABs problems;
- d) explore approaches for integrating data from various sensing systems to describe ecosystem processes in support of HAB research, monitoring, and prediction (e.g., information systems);
- e) review prognostic models designed to use real-time observations of variables related to coastal ecosystem dynamics and HABs;
- f) introduce and review data assimilation techniques.

WKHABWATCH will report by 31 July 2003 for the attention of the Oceanography Committee.

GEOHAB, GLOBEC and IOC-GOOS(COOP) will be invited to participate in the Workshop.

2C17 The **Working Group on Recruitment Processes** [WGRP] (Co-Chairs: R. D. M. Nash, UK and T. Miller, USA) will work by correspondence in 2003 to:

- a) consider a review of the changes and progress in approaches that have taken place since the publication of *Cooperative Research Report* No. 155 (1992) on "Models for Recruitment Processes";
- b) prepare for a session at the next meeting of the Working Group to consider the spatial and temporal variation in mortality of fish

eggs and larvae;

- c) review multidisciplinary projects dealing with recruitment research;
- d) plan a joint session with WGZE on deriving and reconstructing fine-scale spatial patterns in zooplankton distribution and their relevance and use for larval fish growth modelling.

WGRP will report by 31 May 2002 for the attention of the Oceanography Committee.

2C18 The **Steering Group for the ICES/GLOBEC North Atlantic Programme and Regional Office** [SGNARO] (Co-Chairs: S. Parsons, Canada, K. Drinkwater, Canada, and F. Köster, Denmark) will work by correspondence in 2003, 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 5-year action plan of WGCC.

The Group will include the General Secretary, the GLOBEC Coordinator, the Chair of the Oceanography Committee and a representative of the international GLOBEC Scientific Steering Committee, and will be open to participants in the ICES/GLOBEC programme. Member countries not participating directly in the ICES/GLOBEC programme are also entitled to designate representatives to participate in the work of this group, should they so choose.

SGNARO will report by 31 May 2003 for the attention of the Bureau and the Oceanography Committee.

## Resource Management Committee (D)

2D01 The **Planning Group on Redfish Stocks** [PGRS] (Chair: T. Sigurdsson, Iceland) will meet at ICES Headquarters from 21–22 January 2003 and in Hamburg, Germany from 9–10 July 2003 to:

- a) plan the international trawl/acoustic survey of redfish to be carried out in the Irminger

- b) Sea and adjacent waters in June/July 2003 (January meeting);
- c) prepare to report on the outcome of the surveys (July meeting).

PGRS will report by 15 August 2003 for the attention of the Resource Management Committee and ACFM.



2D02 The **Working Group on Methods on Fish Stock Assessments** [WGMG] (Chair: C. O'Brien, UK) will meet at ICES Headquarters from 29 January–5 February 2003 to:

- a) develop influence diagnostics for routine use within stock assessments, addressing both data and modelling issues;
- b) investigate and test the sensitivities of catch-at-age stock assessment methods to known data problems with particular reference to the retrospective problem;
- c) develop and investigate techniques (e.g., Benford's Law) that detect inconsistencies in the data sources currently used by ICES' stock assessments;
- d) investigate and implement quality control procedures for medium-term projections;
- e) evaluate approaches, methods, and software tools for the investigation of management strategies;
- f) review the developments in TSA, XSA, MedAn, AMCI and other assessment methods that are presented to ICES;
- g) discuss the choice of model structure (age-based, length-based, age-length) taking into account stock dynamics, biology, and data availability;
- h) review and further develop the specification of software to generate stock assessment data, taking into account spatial, temporal, and multispecies characteristics of fisheries.

WGMG will report by 15 March 2003 for the attention of the Resource Management Committee, the Living Resources Committee and ACFM.

2D03 A **Workshop on Fish Stock Assessment Techniques** [WKFAT] (Co-Chairs: C. L. Needle, UK; and C. D. Darby, UK) will be held at ICES Headquarters, from 5–12 March 2003 to:

- a) present current procedures used, and apply these to case studies covering evaluation of data consistency, estimation of the state of a stock using XSA/ICA, projection of stock status, and report writing with emphasis on ACFM requirements;
- b) establish the third workshop to be held in the spring of 2004.

Participants will each pay a contribution of DKK 1000 towards the running expenses of the Workshop.

WKFAT will report by 19 April 2003 for the attention of the Resource Management and Living Resources Committees, and ACFM.

2D04 The **International Bottom Trawl Survey Working Group** [IBTSWG] (Chair: A. W. Newton, UK) will meet in Lorient, France from 25–28 March 2003 to:

- a) coordinate and plan North Sea and North Eastern Atlantic surveys for the next twelve months;
- b) review and comment on progress in DATRAS;
- c) review and prepare responses to the outcome of the EU-funded EVARES, MIQES, FINE and other relevant projects aimed at evaluation of the effectiveness and usage of stock abundance surveys;
- d) propose new projects to evaluate purpose, sampling strategies, and gear design with particular reference to surveys of the North Sea;
- e) review biological data acquired and co-ordinate the collection and analysis of such data (with particular reference to the EU data collection regulation);
- f) coordinate, review, and plan inter-calibration and gear trials in the North Eastern Atlantic;
- g) further review the species identification and maturity stage photographic collection;
- h) produce a review of recent publications involving IBTS data and surveys. Participants should poll their institutes for all publications and also any use of IBTS data in other applications than index calculation;
- i) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

IBTSWG will report by 11 April 2003 for the attention of the Resource Management and Living Resources Committees and ACFM and ACE.

2D05 The **Planning Group on North Sea Cod and Plaice Egg Surveys in the North Sea** [PGEGGS] (Chair: C. Fox, UK) will meet in IJmuiden for 24–26 June 2003 to:

- a) review the results of a trial cruise to be carried out in March 2003 in the Irish Sea for the purpose of testing genetic tools;
- b) review the progress of current projects on the identification of cod eggs using genetic tools;
- c) plan an international survey to map the distribution of cod and plaice spawning in 2004;
- d) develop the protocols for evaluating and presenting the data.

PGEGGS will report by 10 July 2003 for the



attention of the Living Resources Committee, who will be Parent, and to the Resource Management Committee at the 2003 ASC.

2D06 The **Working Group on Fishery Systems** [WGFS] (Co-Chairs: Carl O'Brien, UK and J. Sutinen, USA) will meet at ICES Headquarters from 29 April to 2 May 2003 to:

- a) develop a framework and methodology for the analysis of fishery system performance;
- b) test and refine this framework and methods using designated case studies;
- c) coordinate work on ongoing case studies;
- d) prepare an outline and publication plan for a *Cooperative Research Report* on framework and case studies.

WGFS will report by 20 May 2003 for the attention of the Resource Management Committee, ACFM and ACE.

2D07 The **Study Group on Age-Length Structured Assessment Models** [SGASAM] (Chair: K. Guldbrandsen Frøysa, Norway) will meet in Bergen, Norway from 3–6 June 2003 to:

- a) investigate process model formulations, goodness of fit and model sensitivity in age-length based models;
- b) evaluate the usefulness of such tools in specific case studies on stocks with differing life-histories, data availability and quality, such as sprat, anglerfish, blue whiting, *Nephrops*, Greenland halibut, and deep-water species.

SGASAM will report by 18 June 2003 for the attention of the Resource Management Committee and ACFM.

2D08 A **Study Group on Multispecies Assessments in the North Sea** [SGMSNS] (Co-Chairs: M. Vinther, Denmark and E. D. Bell, UK) will be established and will meet in Bergen, Norway from 25–29 August 2003 to:

- a) evaluate the effect of applying single-species reference points in a multispecies framework, with particular reference to limit and precautionary reference points as presently proposed by ICES in the North Sea;
- b) evaluate the single-species recovery plan proposed for North Sea cod by taking into account biological interactions;

- c) review the data sources collated by SGGROMAT for the construction, by quarter, of historical stock lengths and weights-at-age for North Sea MSVPA species;

- d) review the developments in representing ecological linkages and management objectives within North Sea mass balance tropho-dynamic models.

SGMSNS will report by 5 September 2003 for the attention of the Resource Management Committee, the Living Resources Committee and ACFM and ACE.

2D09 The **Planning Group on Surveys of Pelagic Fish in the Norwegian Sea** [PGSPFN] (Chair: J. A. Jacobsen, Faroe Islands) will meet in Tórshavn, Faroe Islands from 27–29 August 2003 to:

- a) consider the migration pattern of the Norwegian spring-spawning herring stock in 2003;
- b) consider the results of the 2003 hydrographic and plankton surveys;
- c) evaluate the survey transects carried out in 2003 and consider whether changes could be made to further optimise these with regard to the herring migration and the herring–environment interactions;
- d) plan and coordinate the national surveys on the pelagic resources and the environment in the Norwegian Sea in 2004; together with the international coordinated survey on Norwegian spring-spawning herring in May–June 2004;
- e) evaluate the consequences of the withdrawal of EU countries from the survey in terms of decreases in spatial and temporal coverage and in terms of precision in stock size estimates;
- f) follow up the ongoing publishing process of the Group;
- g) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

PGSPFN will report by 15 September 2003 for the attention of the Resource Management Committee and ACFM and ACE. It will make its report available to WGNPBW.



## Marine Habitat Committee (E)

2E01 The **Marine Chemistry Working Group** [MCWG] (Chair: R. Law, UK) will meet in Tallinn, Estonia, from 3–7 March 2003 to:

### A. Chemical Oceanography Subgroup

- a) provide guidance and assistance relating to the development of a series of data products to illustrate eutrophication status within the ICES area.

### B. Organics Subgroup

- a) provide information on the availability of suitable analytical methods to allow the determination of environmental concentrations of organic substances listed on the OSPAR list of chemicals for priority action, and whether any information exists on the presence of these chemicals in the marine environment, and report the outcome [OSPAR 2003/1];
- b) assist the Working Group on Seabird Ecology in commencing the development of related metrics, objectives, and reference levels for ecological quality objectives relating to organochlorine concentrations in eggs of North Sea seabirds [OSPAR 2003/3.2];
- c) review new information on *tris*(4-chlorophenyl)methanol (TCPM) and *tris*(4-chlorophenyl)methane (TCPMe) in flatfish, and report the outcome;
- d) review new information on the analysis of PAH metabolites in bile, critically review the robustness of the methods, and report the outcome;
- e) review new information on the use of membrane systems for sampling and report the outcome;
- f) review new information on the monitoring and analysis of toxaphene and report the outcome;
- g) review new information concerning polybrominated diphenylethers (PBDEs) and report the outcome;
- h) consider a review note on phenylurea herbicides (diuron and isoproturon) and report the outcome;

### C. Trace Metals Subgroup

- a) provide information on the availability of suitable analytical methods to allow the determination of environmental concentrations of inorganic substances listed on the OSPAR list of chemicals for priority action, and whether any information exists on the presence of these chemicals in the marine environment, and report the outcome

[OSPAR 2003/1];

- b) assist the Working Group on Seabird Ecology in commencing the development of related metrics, objectives, and reference levels for ecological quality objectives relating to mercury concentrations in eggs and feathers of North Sea seabirds [OSPAR 2003/3.2];
- c) review information on trace metal speciation and its effects on behaviour and toxicity, and report the outcome;
- d) review new information on the use of membrane systems for sampling and report the outcome;

### D. Plenum

- a) review the relevant aspects of the implementation table of the OSPAR Joint Assessment and Monitoring Programme and indicate activities that could be proposed to be carried out by MCWG;
- b) review the mechanism for generating an updated list of relevant certified reference materials for use in marine monitoring programmes, and their availability via the ICES website;
- c) review how a presentation of the long-term performance of a laboratory can be standardised taking the information from the 2000 MCWG meeting into account and report the outcome;
- d) review any new SGQAC Annexes on Quality Assurance and report the outcome;
- e) review the revised ICES Environmental Data Reporting Format (Version 3.2) and provide comments to the ICES Marine Data Centre;
- f) consider and finalise draft guidelines for integrated chemical and biological effects monitoring (with WGBEC and WGMS);
- g) discuss matters referred from the three subgroups, as necessary.

MCWG will report by 24 March 2003 for the attention of the Marine Habitat and Oceanography Committees and ACME.

2E02 The **Working Group on the Statistical Aspects of Environmental Monitoring** [WGSAM] (Chair: R. Fryer, UK) will meet at ICES Headquarters from 10–14 March 2003 to:

- a) review the results of an analysis of a data set carried out intersessionally, including analyses based on n-MDS and/or some other ordination method as well as a multivariate analysis of variance; these analyses should be carried out on biological community data



that are suspected to have a relatively low seasonal variability or by selecting data from, e.g., a specific month;

- b) review and amend, as necessary, procedures for conducting temporal trend assessments of data on contaminants in biota and sediments, including procedures relevant to the quality control of such data;
- c) develop methodology for joint assessments of input data and data on contaminants in biota and sediments;
- d) continue work on statistical aspects in relation to the development of environmental indicators and classifications;
- e) develop smoothers for use in the trend analysis of monthly and quarterly data on inputs of nutrients and contaminants to the marine environment;
- f) review and comment on the results of an analysis of a suite of biological effects and contaminant data;
- g) review the relevant aspects of the implementation table of the OSPAR Joint Assessment and Monitoring Programme and indicate activities that could be proposed to be carried out by WGSAM;
- h) develop appropriate sampling schemes for the detection of hot spots of contamination in the marine environment.

WGSAM will report by 31 March 2003 for the attention of the Marine Habitat Committee and ACME.

2E03 **A Study Group on the North Sea Benthos Project 2000** [SGNSBP] (Chair: H. Rees, UK) will be established and will meet in Yerseke, The Netherlands from 24–26 March 2003 to:

- a) collect and harmonise data from stations sampled during the 1986 ICES North Sea Benthos Survey;
- b) augment the NSBP 2000 data with information from other sources (principally from the period 1999–2001) in order to maximise coverage of the North Sea area;
- c) propose effective ways for ICES to interact with the NSBP database at the Flanders Marine Institute;
- d) prepare a programme of work to resolve problems affecting the compatibility of data sets from different sources;
- e) identify patterns in contemporary North Sea benthic assemblages and the causal influences, by reference to supporting environmental data from the NSBP 2000 and other sources;

f) compare the outcome of the NSBP 2000 with that of 1986 and postulate causes for any observed differences, with reference to information on temporal changes in biotic and environmental factors, including human influences;

- g) provide a strategic evaluation of the utility of the collaborative exercise for sea-wide quality assessments;
- h) make recommendations for the timing and coordination of any future work.

SGNSBP will report by 14 April 2003 for the attention of the Marine Habitat Committee. It will also make its report available to the Benthos Ecology Working Group.

2E04 **The Working Group on Marine Sediments in Relation to Pollution** [WGMS] (Chair: F. Smedes, Netherlands) will meet in Tromsø, Norway from 24–28 March 2003 to:

- a) review the relevant aspects of the implementation table of the OSPAR Joint Assessment and Monitoring Programme and indicate activities that could be proposed to be carried out by WGMS;
- b) further review and revise the inventory on Sediment Quality Criteria and the methodologies used to derive them;
- c) prepare inventories of national Temporal Trend Monitoring Programmes;
- d) prepare an annex to the sediment monitoring guidelines that provides guidance on the interpretation of trend monitoring data, taking into account sediment dynamics;
- e) continue work on the development of indicators of sediment contamination;
- f) review work on the measurement of the potential bioavailability of contaminants in sediment;
- g) consider and finalise draft guidelines for integrated chemical and biological effects monitoring (with MCWG and WGBEC);
- h) review the revised ICES Environmental Data Reporting Formats (Version 3.2) to ensure that all data relevant to monitoring contaminants in sediments will be submitted and provide comments to the ICES Marine Data Centre.

WGMS will report by 8 April 2003 for the attention of the Marine Habitat Committee and ACME.

2E05 **The Working Group on Biological Effects of Contaminants** [WGBEC] (Chair: K. Hylland, Norway) will meet in Tromsø, Norway from 31 March to 4 April 2003 to:



- a) provide information on whether there are suitable analytical methods available to allow the measurement of environmental effects of the substances listed on the OSPAR list of chemicals for priority action (with MCWG) [OSPAR 2003/1];
- b) evaluate the biological and chemical data and the monitoring strategy of the “Erika” oil spill off Brittany;
- c) evaluate results from the Sea-going Workshop on Pelagic Biological Effects Methods (SGSEA/BECPELAG);
- d) review the relevant aspects of the implementation table of the OSPAR Joint Assessment and Monitoring Programme and indicate activities that could be proposed to be carried out by WGBEC;
- e) review the criteria for the preparation of the tables on existing, recommended, and promising methods for biological effects monitoring, taking into account input from WGPDMO and BEWG, and thereafter revise the tables according to the various purposes of these tables;
- f) review progress with publication and electronic dissemination of biological effects techniques in the *ICES TIMES* series;
- g) consider progress with relevant activities:
  - i) the BEEP project,
  - ii) QA/QC of biological effects in monitoring programmes,
  - iii) the implementation of biological effects in the ICES database, including review of the revised ICES Environmental Data Reporting Format (Version 3.2).
- h) consider and finalise draft guidelines for integrated chemical and biological effects monitoring (with MCWG and WGMS);
- i) discuss Toxicity Identification and Evaluation (TIE) procedures for effluents, waters, sediments, and biota;
- j) evaluate the use of biological effects methods in national monitoring programmes;
- k) evaluate methods for histopathology and biomarkers in invertebrates;
- l) consider the use of biological effects in marine risk assessment;
- m) evaluate the results of the EU-funded BEQUALM project, in particular:
  - i) develop mechanisms to include and distribute the results within the working groups involved in the development and evaluation of monitoring techniques,
  - ii) disseminate improvements of current

techniques to OSPAR to be included in future JAMP programmes.

WGBEC will report by 22 April 2003 for the attention of the Marine Habitat Committee and the ACME.

2E06 The **Working Group on Marine Habitat Mapping** [WGMHM] (Chair: D. Connor, UK) will meet in Sandy Hook, USA from 1–4 April 2003 to:

- a) present and review National Status Reports on habitat mapping and classification activities according to the standard reporting format;
- b) review the application of EUNIS classification to existing marine habitat maps;
- c) review the habitat maps for the southern North Sea and the international Wadden Sea;
- d) review the outcome of the OSPAR workshop for the development of a North Sea broadscale map;
- e) discuss progress in setting up classification for the Baltic Sea area [HELCOM 2003];
- f) assess progress on setting up a habitat mapping data exchange platform;
- g) discuss U.S., Canadian, and European mapping approaches and assess their relevance to each other;
- h) review the progress in the intersessional workshops on standardising techniques for habitat mapping, to include members of WGEXT and BEWG and national agencies;
- i) consider opportunities for subsidiary groups of the Fisheries Technology Committee to provide products and support.

WGMHM will report by 22 April 2003 for the attention of the Marine Habitat and Fisheries Technology Committees and ACE.

2E07 The **Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem** [WGEXT] (Chair: J. Side, UK) will meet in Ostend, Belgium from 1–5 April 2003 to:

- a) 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;
- b) review scientific programmes and research projects relevant to the assessment of environmental effects of the extraction of marine sediments;



- c) review the template and electronic submission procedures for recording and collating national reports;
- d) receive feedback on the use of the new ICES Guidelines for the Management of Marine Sediment Extraction, and consider whether further specific guidance is required in special cases of extraction activities where unusual environmental conditions prevail, discussing also any feedback received on observations for procedures dealing with transboundary issues;
- e) continue work on the planned *ICES Cooperative Research Report*, and in particular to this end:
  - i) provide a review of the quantity, quality, location, and uses of marine sediments extracted annually since 1980,
  - ii) continue to review the application of risk assessment methods as a tool for the management of marine sediment extraction,
  - iii) continue to assess localised impacts from aggregate extraction on fisheries, and the means to adequately protect known areas sensitive for fisheries resources, e.g., herring spawning beds in the vicinity of extraction operations, with special reference to the Channel, particularly in the light of methods for determining impacts and the use of risk assessment,
  - iv) review progress made by individual authors in scoping the detail of the content of sections of the report;
- f) consider opportunities for subsidiary groups of the Fisheries Technology Committee to provide products and support.

WGEXT will report by 22 April 2003 for the attention of the Marine Habitat and Resource Management Committees and ACME and ACE.

2E08 The **Benthos Ecology Working Group** [BEWG] (Chair: H. Rumohr, Germany) will meet in Fort Pierce, FL, USA, from 28 April–1 May 2003 to:

- a) report on the progress in the North Sea Benthos Project: quality control, data analysis, workshops, end-products;
- b) make further organisational arrangements for a Theme Session at the ICES 2003 ASC, focusing on the role of benthic communities as indicators of marine environmental quality and ecosystem change, and discuss possibilities for further theme sessions;
- c) review new developments on quality control in zoobenthos and phytobenthos monitoring and research and communicate this to

SGQAE and SGQAB;

- d) together with the Working Group on Statistical Aspects of Environmental Monitoring (WGSAM), analyse trend monitoring data with a view to obtaining insight into the role of Quality Control (QC);
- e) review the role of phytobenthos in coastal marine ecosystems with a view to obtaining insight into the diversity and dynamics of phytobenthic communities, their role in the ecosystem, and their vulnerability to human activities;
- f) commence development, on the basis of the criteria for sound EcoQOs established by ICES in 2001, of related metrics, objectives, and reference levels for the EcoQOs relating to (o) density of sensitive (e.g., fragile) species, (p) density of opportunistic species, and (b) presence and extent of threatened and declining species in the North Sea [OSPAR 2003/3.3]. In this respect:
  - i) for EcoQO elements (o) and (p), identify possible species in the respective categories, consider further the spatial scale requirements of sampling and the adequacy of existing monitoring activities to determine their status and trends, and provide further advice based on scenario considerations on the applications of possible EcoQOs,
  - ii) for EcoQO element (b), consider benthic species and the habitats on the Draft OSPAR priority list of threatened and declining species for their relevance and usefulness as a basis for EcoQOs for the North Sea,
  - iii) where possible and appropriate, reconstruct the historic trajectory of the metrics and determine their historic performance (hit, miss, or false alarm) relative to the objective being measured, as a basis for deciding their relationship to management.

This information is required by WGECO before 31 March 2003.

- g) review the criteria for the incorporation of benthos community studies into monitoring programmes on biological effects of contaminants and provide feedback to WGBEC before 31 March;
- h) review the possible effects of wind farms on the marine benthic system.

BEWG will report by 19 May 2003 for the attention of the Marine Habitat and Oceanography Committees and ACME.

2E09 **A Study Group on Information Needs for Coastal Zone Management** [SGINC] (Chair: J.



G. Støttrup, Denmark) will be established and will meet in Palma, Spain from 5–7 May 2003 to:

- a) review and report on activities of relevant ICES working and study groups to identify information pertaining to the coastal zone;
- b) review and report on the activities of other relevant organisations and scientific programmes which focus on coastal zone aspects (e.g., LOICZ, Estuarine and Coastal Science Association (ECSA), EU Water Framework Directive, etc.), with respect to information relevant for ICES;
- c) evaluate the available information with

respect to that required for the sustainable use and management of the coastal zone and identify gaps in knowledge;

- d) propose scientific data products and new research, which ICES could use as a basis for advice on, and in support of, coastal zone management;
- e) identify possible working partnerships, which could complement ICES data products with a view to further developing and integrating knowledge for use in holistic advice for coastal zone management.

SGINC will report by 19 May 2003 for the attention of the Marine Habitat Committee.

## Mariculture Committee (F)

2F01 The **Working Group on the Application of Genetics in Fisheries and Mariculture** [WGAGFM] (Chair: E. Kenchington, Canada) will meet in La Tremblade, France, from 10–12 March 2003 to:

- a) review and report on the practical use of genome mapping in aquacultured organisms;
- b) review and report on genetic issues related to escapes of farmed marine fish and shellfish;
- c) review and report on management recommendations for Atlantic salmon, developed by the SALGEN EU project;
- d) review and report on issues in relation to practical management options for the conservation of genetic diversity in marine fish and shellfish of economic importance.

WGAGFM will report by 28 March 2003 for the attention of the Mariculture and Diadromous Fish Committees, and ACE.

2F02 The **Working Group on Marine Fish Culture** [WGMAFC] (Chair: A. Mangor-Jensen, Norway) will work by correspondence in 2003 to:

- a) compile and report on the existing regulations of individual ICES Member Countries and the EU with regard to ingredients in fish feeds;
- b) review and report on the use of ICES standard reference diets and emulsions in research programmes and recommend any modifications to existing formulations and procedures;
- c) review genetic considerations in selective breeding and identify genetic applications and rearing technologies suited for selective breeding of marine fish;

- d) compile information on the current state-of-the-art of microdiets as a replacement for live food for larval fish with the intention to produce a review article in a peer-reviewed publication in 2–3 years;

- e) prepare a proposal to recommend microdiets for comparative testing and particular protocols to use during the testing;

- f) review and report on the use of live feed organisms other than rotifers and *Artemia* (alternative live feeds) that are used or considered for use in the culture of marine fish larvae;

- g) prepare a summary of the instances where aquaculture is being used to produce fish for restocking or enhancement of wild populations in ICES Member Countries;

- h) prepare a list of technological advances that would be necessary for land-based aquaculture, especially recirculation systems, to greatly expand in the next 10–15 years, on the basis of that list, and develop a set of tasks for WGMAFC;

- i) prepare a report on the status of research and technology of single-sex fish production and its application to the cultivation of marine fish, based on input from experts in the field;

- j) compile a report on the existing methods to ensure that measures can be taken to protect broodstock and larval animals from exposure to microbial pathogens;

- k) prepare a report on existing knowledge of the effects of water quality (e.g., ozone and resulting compounds, ammonia, microbiology, and probiotics) on intensive land-based marine fish culture.



WGMAFC will report by 31 March 2003 for the attention of the Mariculture and Diadromous Fish Committees.

2F03 **The Working Group on Pathology and Diseases of Marine Organisms** [WGPDMO] (Chair: T. Lang, Germany) will meet in Aberdeen, UK from 11–15 March 2003 to:

- a) analyse national reports on new disease trends in wild and cultured fish, molluscs, and crustaceans;
- b) report on progress in the ongoing investigations of the effect of temperature on *Bonamia* infection dynamics and report on the confirmation of the agent of *Crassostrea angulata* gill disease and its infectivity to *Crassostrea gigas* and other oyster species;
- c) review the existing strategies to assess the prevalence of shellfish diseases in parallel to fish diseases and chemical contaminant levels in environmental monitoring programmes;
- d) review and assess a report prepared intersessionally on investigations into the molecular comparisons among the various species/isolates of *Perkinsus* in collaboration with the OIE reference laboratory for *Perkinsus* at the Virginia Institute of Marine Science (E. Bureson);
- e) obtain information on the EU project “Diagnosis of oyster herpes-like virus: development and validation of molecular, immunological and cellular tools” (FAIR-PL98–4334) and review the results;
- f) review and report on progress made in the “fish diseases and liver histopathology” component of the BEQUALM self-funding scheme;
- g) review and assess the impact of diseases of farmed fish on wild fish stocks;
- h) maintain an overview of the spread of *Ichthyophonus* in herring stocks and the distribution and possible cause(s) of the M74 syndrome;
- i) assess and report on the effectiveness of salmon farming management control methods for sea lice in the different ICES Member Countries;
- j) review progress made in the modifications to the ICES Databases and review and approve the revised ICES Environmental Data Reporting Format (Version 3.2);
- k) review the criteria for the incorporation of externally visible fish diseases into monitoring programmes on biological effects of contaminants – and provide feedback to WGBEC;

l) review progress made with regard to the update of ICES publications on pathology and diseases of marine organisms:

- i) web-based report on diseases and parasites of wild and farmed marine fish and shellfish as part of the ICES Environmental Status Report,
- ii) manuscript on methods for the statistical analysis of fish disease data for submission to the *ICES TIMES* series,
- iii) *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish*.

WGPDMO will report by 31 March 2003 for the attention of the Mariculture and Diadromous Fish Committees and ACME.

2F04 **The Working Group on Environmental Interactions of Mariculture** [WGEIM] (Chair: E. Black, Canada) will meet in Vigo, Spain from 31 March– 4 April 2003 to:

- a) prepare a draft discussion summary of the MARAQUA report with a view to assessing the implications of the Water Framework Directive (WFD) in EU member states, on the sustainability of mariculture in coastal and transitional waters;
- b) prepare a review of the potential impacts of escaped non-salmonid candidates for aquaculture on localized native stocks in order to develop, at an early stage, risk assessment and management strategies;
- c) formulate a strategy to protect aquaculture against the harmful effects of external influences (e.g., contaminants, habitat alterations) arising from other resource users and their environmental impacts, with the aim of gaining better cooperation in developing modern tools to prevent or mitigate negative interactions. An extended draft outline for a discussion paper will be prepared during a special session on the subject at the next meeting;
- d) prepare a report on an evaluation of existing Decision Support Systems (DSS) tools, GIS and other expert systems in order to derive strategic advice on the content of a DSS for mariculture, and also to identify potential linkages to existing tools presently being developed, tested or already used in coastal management schemes;
- e) prepare a multi-annual plan for completing the work embodied in the above terms of reference.

WGEIM will report by 6 April 2003 for the attention of the Mariculture and Diadromous Fish Committees and ACME.



2F05 **A Working Group on Marine Shellfish Culture** [WGMASC] (Chair: A. Bodoy, France) will be established and will meet in Trondheim, Norway from 13–15 August 2003 to:

- a) review national reports of shellfish production and related activities (prepared by members) and provide a synthesis of the current status of shellfish production, trends in production, techniques, and biological and economic events regarding shellfish cultivation, in the ICES area;
- b) provide a synthesis on the development of hatcheries, their impact on shellfish production for the different species, on the dissemination of selected or modified strains, and the genetic consequences of reduced broodstocks on natural populations;

- c) review the ecophysiological causative factors of abnormal mortalities on cultured populations of molluscs, and ways to avoid them with improved husbandry;
- d) review and report on ecological factors affecting shellfish production (carrying capacity, fouling, predation, HAB) and alternative solutions to mitigate effects;
- e) develop a work plan to evaluate the current sustainability of shellfish culture and identify options to improve sustainability.

WGMASC will report by 1 September 2003 for the attention of the Mariculture and Living Resources Committees.

### Living Resources Committee (G)

2G01 **The Working Group on Cephalopod Fisheries and Life History** [WGCEPH] (Chair: J.-P. Robin, France) will meet in Lisbon, Portugal from 4–6 December 2002 to:

- a) update currently available landing statistics and information on fishing effort and discards and gear selectivity; explore existing resource survey databases for information about sampled cephalopods in the ICES area;
- b) compile methods and results available for stock identification and estimation of the population size of fished cephalopods;
- c) identify possible precautionary approaches to the management of these cephalopod resources; and evaluate management strategies;
- d) compile available data and identify relationships between abundance and environmental conditions, factors affecting recruitment, migration and distribution patterns of juveniles and adults, and trophic interactions;
- e) review cephalopod culture techniques and results and their contribution to the understanding of biological phenomena;
- f) update the bibliographic database of cephalopod literature relevant to fisheries, including grey literature.

WGCEPH will report by 15 January 2003 for the attention of the Living Resources Committee, and ACFM and ACE.

2G02 **The Planning Group for Herring Surveys** [PGHERS] (Chair: P. G. Fernandes, UK) will

meet in Aberdeen, UK from 21–24 January 2003 to:

- a) combine the 2002 survey data to provide indices of abundance for the population within the area;
- b) consider a re-allocation of effort by participating countries in the acoustic survey of the North Sea and adjacent waters in 2003;
- c) coordinate the timing, area allocation, and methodologies for acoustic and larvae surveys for herring and sprat in the North Sea, Division VIa and IIIa, and Western Baltic in 2003;
- d) evaluate the outcome of a maturity staging workshop with a view to harmonising the determination of maturity in herring and sprat;
- e) evaluate investigations on the effect of time of day on the allocation of herring to acoustic data;
- f) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

PGHERS will report by 7 February for the attention of the Resource Management and Living Resources Committees, and to HAWG.

2G03 **The Study Group on the Estimation of Spawning Stock Biomass of Sardine and Anchovy** [SGSBSA] (Chair: Y. Stratoudakis, Portugal) will meet in Malaga, Spain from 23–27 June 2003 to:



- a) provide final 2002 DEPM estimates for sardine and anchovy in Atlantic European waters;
- b) complete the review of previous sardine DEPM estimates and provide a clear and synthetic description of the uncertainties associated with each estimate;
- c) decide the most appropriate timing of future DEPM surveys for the Atlanto-Iberian stock of sardine;
- d) consult recent developments in the use of CUFES and GAMs to consider their most appropriate application in DEPM surveys and estimation;
- e) update work on egg stage-age models, POF dating, and spawning fraction estimation;
- f) revise the maturity ogive of sardine based on past and 2002 DEPM histological information, in order to clarify its appropriate use in analytical assessment;
- g) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

SGSBFA will report by 11 July 2003 for the attention of the Living Resource Committee.

2G04 **The Baltic International Fish Survey Working Group [WGBIFS]** (Chair: R. Oeberst, Germany) will meet at ICES Headquarters from 24–28 March 2003 to:

- a) combine and analyse the results of the 2002 acoustic surveys and experiments and report to WGBFAS;
- b) update the hydroacoustic databases BAD1 and BAD2 for the years 1991 to 2002;
- c) plan and decide on acoustic surveys and experiments to be conducted in 2003 and 2004;
- d) update, if necessary, the Baltic International Acoustic Survey (BIAS) manual;
- e) discuss the results from BITS surveys made in autumn 2002 and spring 2003;
- f) plan and decide on demersal trawl surveys and experiments to be conducted in autumn 2003 and spring 2004;
- g) update and correct the Clear Tow Database;
- h) continue to study the proposed model for estimating the conversion factors between the new and old survey trawls under inclusion of the new inter-calibration experiments;
- i) update, if necessary, the Baltic International Trawl Survey manual (BITS);

- j) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears;
- k) investigate the TS distributions and length frequency distributions from the 2001–2002 surveys.

WGBIFS will report by 25 April 2003 for the attention of the Living Resources, Baltic, and Resource Management Committees.

2G05 **The Working Group on Mackerel and Horse Mackerel Egg Surveys [WGMEGS]** (Chair: D. Reid, UK) will meet in Lisbon, Portugal from 29 March to 4 April 2003 to:

- a) coordinate the timing and planning of the 2004 Mackerel/Horse Mackerel Egg Survey in the ICES Subareas VI to IX and of the 2005 Mackerel Egg Survey in ICES Sub-area IV, for estimating the spawning stock size;
- b) coordinate the planning and sampling for fecundity and atresia taking into account the recommendations of the WGMHSA on whether or not any changes should be made to the 2001 data set;
- c) review research on the determination of fecundity in mackerel;
- d) examine current and potential future variance calculation procedures;
- e) review procedures for egg sample sorting, species ID, and staging;
- f) review the procedures and methodologies for the conversion of total annual egg production to biomass for horse mackerel in the light of the problems identified in the 2001 survey;
- g) review the results of the 2002 North Sea Egg Survey;
- h) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

WGMEGS will make its report available to WGMHSA and will report by 19 April 2003 for the attention of the Living Resources and Resource Management Committees.

2G06 **The Planning Group on Aerial and Acoustic Surveys for Mackerel [PGAAM]** (Chair E. Shamray, Russia) will meet in Lisbon, Portugal from 6–8 April 2003 to:

- a) collate and evaluate the data collected by the aerial surveys, fishing- and research vessels in the Norwegian Sea during the late summer and autumn 2002;



- b) combine the summer 2002 aerial surveys data with vessels data of distribution of mackerel in the Norwegian Sea;
- c) identify participants to contribute to the aerial surveys for mackerel in the Norwegian Sea and coordinate vessel collaboration;
- d) combine the October-November 2002 survey data of abundance and distribution of mackerel within the North Sea-Shetland area;
- e) coordinate acoustic surveys within the North Sea-Shetland area to ensure full coverage and appropriate areas and timings;
- f) coordinate the timing and area allocation and methodologies for acoustic and aerial surveys for mackerel in the NEA;
- g) consider the latest findings from the SIMFAMI project;
- h) coordinate acoustic surveys in Divisions VIII and IX. Seek survey time for northern extension of these surveys;
- i) identify surveys which are not targeted at mackerel, but which may have potential use for the estimation of mackerel distribution and abundance;
- j) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

PGAAM will report by 22 April 2003 for the attention of ACFM, Fisheries Technology Committee and to the **Living Resources Committee who will parent the Group**.

2G07 **The Study Group on Elasmobranch Fishes [SGEF]** will be re-established as the **Working Group on Elasmobranch Fishes [WGEF]** (Chair: M. Clarke, Ireland) and will meet in Vigo, Spain from 28 April–2 May 2003 to:

- a) compile all available landings and effort data by species;
- b) review the assessments carried out under the EU-funded DELASS project to identify the data requirements and to evaluate national and international sampling schemes in relation to data requirements;
- c) provide guidance on the basis and detail for which management advice could be given for various species/stocks or fisheries;
- d) further identify which species/stocks are priorities for assessment;
- e) refine and further develop assessments for the species/stocks of priority.

WGEF will report by 4 July 2003 for the attention of the Living Resources Committee

and ACFM. It will also make its report available to PGCCDBS.

2G08 **The Study Group on the Biology and Life History of Crabs [SGCRAB]** (Chair: O. Tully, Ireland) will meet in Tromsø, Norway from 2–5 June 2003 to:

- a) compile data on landings, discards, effort, and catch rates (CPUE) for the important crab fisheries in the ICES area;
- b) review methods for the acquisition, standardisation, analysis, and interpretation of CPUE, size frequency, and research survey data in order to assess the suitability of such data for monitoring and assessment of crab stocks;
- c) evaluate the non-fisheries effects on population dynamics of crab;
- d) evaluate the effects of fishing on the biological characteristics of crab stocks;
- e) review the methods for estimating recruitment in crab stocks;
- f) review how the results of stock assessment are translated into management measures in crab fisheries and how the precautionary approach can be implemented.

SGCRAB will report by 20 June 2003 for the attention of the Resource Management and Living Resources Committees.

2G09 **A Workshop on Lobster Reference Points for Fishery Management [WKRPFM]** (Co-Chairs: M. Comeau, Canada; and O. Tully, Ireland) will be held in Tracadie-Sheila, New Brunswick, Canada from 8–11 September 2003 to:

- a) investigate several methodologies from biological samples and already existing data to elaborate a standardised method to establish female lobster (*H. americanus* and *h. gammarus*) maturity and reproductive cycle;
- b) investigate methods to incorporate the results in egg-per-recruit models to provide reference points for fishery management;
- c) provide guidelines for future investigations of this type.

WKFL will make its report available by 19 September 2003 for the attention of the Living Resources Committee.

2G10 **A Workshop on Mackerel and Horse Mackerel Egg Staging and Identification [WKMHMES]** (Chair: S. Milligan, UK) will be held in Lowestoft, UK from 20–24 October 2003 to:

- a) review results of the plankton sorting exchange programme in 2001/02 and present



conclusions identifying main areas of uncertainty;

- b) review available documentation on identifying eggs to species and define standard protocols;
- c) carry out comparative sorting trials on typical survey samples. This should follow the pattern of trial – analysis – retrieval – identification of problem areas;
- d) review any information available on other egg ID procedures – particularly DNA probes;
- e) carry out a comparative egg staging trial following the pattern used in the 1999 egg staging workshop;
- f) produce a set of standard pictures and descriptions for species ID and egg staging.

WKMHMES will report by November 2003 for the attention of the Living Resources Committee.

2G11 The **Working Group on Beam Trawl Surveys** [WGBEAM] (Chair: G. Piet, Netherlands) will work by correspondence in 2003 to:

- a) summarise the results of the 2002 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) prepare for a meeting in December 2003 to:
  - i) further coordinate offshore and coastal beam trawl surveys in the North Sea and Divisions VIIa and VIId-g;
  - ii) explore possibilities of delivering an improved DFS index;
  - iii) continue the work on developing relative catchabilities of the different gears used in the surveys;
  - iv) continue work of developing and standardising an international database of beam trawl survey data and co-ordinate such activities with those of

the IBTSWG in particular on the compliance to DATRAS, the bottom trawl database to be developed at ICES;

- v) prepare a progress report summarising the results of the 2003 beam trawl surveys;
- vi) calculate population abundance indices by age-group for sole and plaice in the North Sea, Division VIIa, and Divisions VIId-g;
- vii) continue the work on collating information on the epibenthic invertebrate by-catch during beam trawl surveys into a common database and discuss which summary results should be reported;
- viii) continue work on developing relative catchabilities of the different gears used in these surveys;
- ix) commence the task of coordinating all current beam trawl surveys;
- x) evaluate the current methods for calculating population abundance indices and consider possibilities of delivering improved indices;
- xi) develop protocols and criteria to ensure standardisation of all sampling tools and survey gears.

WGBEAM will report by 30 May 2003 for the attention of the Living Resources and Resource Management Committees, and ACFM.

2G12 The **Stock Identification Methods Working Group** [SIMWG] (Co-Chairs: K. D. Friedland, USA, J. Waldman, USA, and S. Cadrin, USA) will work by correspondence in 2003 to:

- a) complete a draft of a book on Stock Identification Methodology;
- b) advise on the need for future meetings of the SIMWG, and prepare appropriate Terms of Reference if required.

SIMWG will report by 31 May 2003 for the attention of the Living Resource Committee.

### Baltic Committee (H)

2H01 The **Study Group on Salmon Scale Readings** [SGSSR] (Chair: E. Ikonen, Finland) will meet in Stockholm, Sweden from 16–17 October 2002 to:

- a) investigate the possibilities to utilise the new technology in the image analysis methodology for the examination of the scales;
- b) meet with members of the Workshop on Usefulness of Scale Growth Analyses and

Other Measures of Condition in Salmon and discuss among others the usefulness of the scale growth pattern in the beginning of the post-smolt phase for the estimation of the pre-fishery abundance of the Baltic salmon; also the possible relationships of the scale patterns and the post-smolt feeding areas could be considered;

- c) take a closer view at the preparation of salmon otoliths for age analysis;



- d) discuss the situation in the planned centralisation of collecting offshore fishing samples of the Main Basin from the fish harbours in Bornholm, Denmark.

SGSSR will report by 30 November 2002 for the attention of the Baltic Committee and Diadromous Fish Committee.

2H02 The **Study Group on Ecosystem and Multispecies Predictions** [SGMPB] will be renamed the **Study Group on Multispecies Assessment in the Baltic** [SGMAB] (Co-Chairs: E. Aro, Finland, and F. Köster, Denmark) and will meet in Charlottenlund, Denmark from 2–4 April 2003 to:

- a) update the multispecies database and produce basic key runs of MSVPA;
- b) evaluate options for the best mechanism to undertake the work performed in a);
- c) develop, apply, and validate multispecies prediction models taking into account environmental processes affecting predator-prey relationships, growth, and maturation.

SGMAB will report by 11 June 2003 for the attention of the Baltic Committee. It will also make its report available to WGBFAS.

2H03 The **Study Group on Herring Assessment Units in the Baltic Sea** [SGHAUB] (Chair: G. Kornilovs, Latvia) will meet in Gdynia, Poland from 10–14 March 2003 to:

- a) finalise the compilation of the assessment data for herring in Subdivisions 25–27 (coastal and open sea herring separately) and in the Subdivisions 28,29 and 32;
- b) perform the assessments for coastal herring in Subdivisions 25–26, for open sea herring in Subdivisions 25–27, and for herring in the Subdivisions 28,29 and 32.

SGHAUB will report by 4 April 2003 for the attention of Baltic Committee. It will also report directly to WGBFAS.

2H04 The **ICES-IOC-SCOR Study Group on GEOHAB Implementation in the Baltic** [SGGIB] (Chair: M. Viitasalo, Finland) will work by correspondence in 2003 to:

- a) continue the planning of GEOHAB implementation in the Baltic;
- b) plan a SG meeting combined with an open workshop for the spring 2003 to discuss and finally develop the Baltic project, including the coordination of field experiments to be implemented 2002–06;
- c) prepare application to the GEOHAB SSC for endorsement of the Baltic project and the planned workshop.

SGGIB will report by 31 May 2003 for the attention of the Baltic Committee.

## Resolutions Involving Cooperation with Other Organisations

- 3DEL01 1. ICES continues to support the North Sea Commission Fisheries Partnership process.
2. ICES will develop adequate structures for a comprehensive external peer review process of ICES stock assessments as a routine part of the ICES advisory system itself. As a first step, 2–3 external experts will take part in the reviews done in the ACFM subgroups during 2003.
3. Recognising the commitments of the Strategic Plan and the Copenhagen Declaration to greater transparency of ICES advisory processes, and the maintenance of sound, independent, and credible advice, ICES Council further resolves:
- i) to commit itself to a more transparent advisory process;
  - ii) to progress this by *inter alia*, admitting Observers from Client Commissions

which have a Memorandum of Understanding with ICES to all Advisory Committees from 2003 onwards;

- iii) open ICES Working Groups and Study Groups to relevant stakeholder representatives who can contribute to the work of those groups. Procedures will be developed over the next year which will ensure the independence and credibility of ICES activities.

These resolutions should be implemented as soon as possible, including voting by correspondence.

- 4. Additional participants in MCAP meetings can be added on an *ad hoc* basis when strategic items are discussed. Such *ad hoc* members could be interested Delegates, Chairs of selected Working Groups, and representatives of client organisations.



### **Other Resolutions Requiring Action**

- |        |  |   |
|--------|--|---|
| 4C01   | ICES endorses the North Sea Ecosystem Pilot Project (NORSEPP) as a joint initiative with EuroGOOS. The implementation of NORSEPP is described in report CM2002/C:02. NORSEPP's objectives are implicitly compatible with the ICES Strategic and Action Plans and has an overall objective to initiate operational fisheries oceanography by integrating existing physical, geochemical, and biological monitoring programmes and models to improve advice to fisheries managers. | ICES Delegates are encouraged to promote this programme at both national and international level and to endeavour to ensure that appropriate institutional resources can be made available for the Project. |
| 4DEL01 | A Workshop will be held from 13–14 May 2003 at ICES Headquarters, chaired by Dr John Boreman (USA) to review financial planning and management systems used, or being developed, by scientific institutions.   |   |







## **Part IV**

### **ICES Administrative Report**







# The International Council for the Exploration of the Sea

## An Introductory Note

This year, 2002, ICES celebrated its Centenary. A report on the notable events which were organised to mark this auspicious occasion may be read in the chapter immediately preceding this section.

### Function

The environment of the North Atlantic and adjacent seas has 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 organisation in the world, ICES has long recognised 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 organise, 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 organised 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 (Na-

tional Institute of Water and Atmospheric Research), Peru (Instituto del Mar del Peru (IMARPE)), and South Africa (Sea Fisheries Research Institute).

### Organisation

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 arm 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 Bureau 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 organisations. 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, two 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 entities are established as needed by the Council, on the recommendation of the



respective bodies, and maintained for as long as necessary to address the questions and terms of reference assigned to them. Each 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. With the exception of meetings of 1) fish-stock assessment Working Groups, whose members must be appointed by Delegates or approved by the General Secretary for special purposes (e.g. facilitating Third World development), and 2) groups whose members might be restricted to particular experts appointed by the Council, observers from non-Member Countries and international scientific organisations may be invited to attend the meetings of groups at the discretion of Chairs after consultation with the General Secretary.

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 the following commissions:

- ◊ North-East Atlantic Fisheries Commission (NEAFC);
- ◊ International Baltic Sea Fishery Commission (IBSFC);
- ◊ 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. Council Resolution CM 2000/4DEL01 states that "The Advisory Committee on Fishery Management (ACFM) will have the primary responsibility for scientific information and advice on the status, outlook, and exploitation of living marine resources. While not the

exclusive source of advice on fisheries management, it will be the primary source of the scientific advice for ongoing fishery management needs, such as setting total allowable catches (TACs)". ACFM meets twice a year (summer and autumn) to prepare its advice, which is published annually in the *ICES Cooperative Research Report* 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). Council Resolution C.M. 2000/4DEL01 also states that "ACME will have the primary responsibility for scientific information and advice on the status and outlook for the marine environment (including contaminants). It will also advise on a range of other environmental issues, such as harmful algal blooms." ICES provides such services 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).

As a basis for this advice, ACME reviews the reports of approximately 20 Working Groups that coordinate the scientific consideration of various topics related to the marine environment. ACME meets annually and publishes its report in the *ICES Cooperative Research Report* series.

### 3. 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 utilised 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.

### 4. Marine Ecosystems

Although the Advisory Committees were initially established to address largely different areas of interest, there is an increasing need for multidisciplinary advice, particu-



larly in relation to the interaction between the exploitation of living resources and the environment and ecosystems. For this reason, the Council established the Advisory Committee on Ecosystems (ACE) at the 2000 Statutory Meeting. ACE has the primary responsibility for scientific information and advice on the status and outlook for marine ecosystems, and on exploitation of living marine resources in an ecosystem context. ACE will provide a focus for advice that integrates consideration of the marine environment and fisheries in an ecosystem context, such as the ecosystem effects of fishing (Council Resolution CM 2000/4DEL01).

#### 5. *Management of the Advisory Process*

Through Council Resolution CM 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 Chair and Vice-Chair of ACFM, and the Chairs of ACME, ACE and the Consultative Committee. The General Secretary is an *ex officio* member.

### Databases

Databases 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 databases on oceanography, contaminants/pollution, and fisheries. ICES maintains a bank of oceanographic data supplied by Member Countries, dating back to the early 1900s. Data submissions are subject to intense quality control, thus providing some measure of validation. This databank is supplemented by an inventory of cruise information, based on Reports of Scientific Cruises and Oceanographic Programmes (ROSCOP), which summarises 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 Cooperative Monitoring Studies Programme and from the Oslo and Paris Commissions' Joint Monitoring Programme covering contaminants in biota, sea water, 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 computerised databank containing detailed information relevant to fish-stock assessment, data from quarterly International Bottom Trawl Surveys and catch statistics for the Northeast Atlantic.

### Coordination of Cooperative Programmes

**Baltic Sea Regional Project:** In partnership with HELCOM and IBSFC, ICES will be a key player in the implementation of the GEF Baltic Sea Regional Project (BSRP), in cooperation with the World Bank and UNDP. The implementation of the first of three 2-year

tranches of the project is expected to commence during 2003.

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 co-ordination), ICES will be 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, coordinates and helps to implement the GLOBEC programme within the ICES area. 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 International Oceanographic Commission and the Scientific Committee on Ocean Research.

### Publications

Since its inception, ICES has published well over a thousand periodicals and monographs.

Relative to its function of publishing and disseminating results of research, the Council organises 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 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 Organisations**

More than 40 international organisations 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, the International Maritime Organization (IMO), the World Meteorological Organization (WMO), and the United Nations Environment Programme. ICES has also carried out cooperative scien-

tific activities with many intergovernmental marine science organisations, particularly the North Pacific Marine Science Organization (PICES) and the Northwest Atlantic Fisheries Organization (NAFO). Among the non-governmental organisations 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. Other organisations with which ICES co-operates include the Arctic Monitoring and Assessment Programme (AMAP), the World Wide Fund for Nature (WWF) and BirdLife International.



## General Secretary's Report for the Year 2002

Throughout the year, all sections of the Secretariat were active in making preparations for the Centenary celebrations and related events, including:

- the final pre-print preparation of “*100 Years of Science under ICES*” (the Proceedings of the ICES History Symposium in Helsinki in 2000) ;
- the publication (by the University of Washington Press) of Helen Rozwadowski's history of ICES, *The Sea Knows No Boundaries*;
- the organisation of the simultaneous visit by ten research ships from ICES Member Countries during the week of the centenary celebrations;
- the design and printing of a special coloured brochure for the Centenary Day, 4 October 2002 (see *DP2: Information and Document Processing* and *DP3: Editorial Services*). The Danish Institute for Fishery Research generously funded most of the Centenary Day events;
- working in cooperation with the Ministry of Food, Agriculture and Fisheries on the administrative arrangements for the Centenary Day and the signing of the Copenhagen Declaration.

Simultaneously, the Secretariat was responsible for all the preparations for, and the running of, the ASC – a huge job, much of which is normally done by a local organising committee when the meeting is held in one of the Member Countries.

DKK 800,000 were generously provided by the Danish Institute for Fishery Research covering scientific and social activities in connection with the Centenary Day, as well as the gathering of the research ships and the signing of the Copenhagen Declaration.

### 1 THE COUNCIL AND ITS MEMBERS

#### 1.1 Country Membership

The number of Contracting Parties remained at nineteen.

#### 1.2 Payment of National Contributions

2002: By 20 September 2001 all national contributions for the Financial Year 2002 were paid.

2003: As of 28 August 2002, fifteen of the nineteen member countries had paid their 2003 contributions (the desired date specified in Rule 19 is 22 July 2002). The countries are: Canada, Denmark, Estonia (part payment only), Finland, Germany, Iceland, Ireland, Latvia, Norway, Poland, Sweden, United Kingdom and USA.

#### 1.3 National Delegates

The following changes to the list of national Delegates have been announced since the 2001 Annual Science Conference (89th Statutory Meeting):

- a) A. U. Makoev has been appointed to replace D. V. Shleinik as Delegate of Russia.
- b) Fredrik Arrhenius has been appointed to replace Lars Hernroth as Delegate of Sweden.

- c) Ger de Peuter has been appointed to replace Gerard van Balsfoort as Delegate of the Netherlands.
- d) Robin Cook has been appointed to replace Bill Turrell as Delegate of the UK.
- e) Peter Gullestad has been appointed to replace Kjell Olsen as Delegate of Norway.

### 2 COOPERATION WITH OTHER INTERNATIONAL ORGANISATIONS

The Council has continued its active cooperation with other international organisations, including those to which it provides scientific information and advice in the areas of fisheries management (IBSFC, NASCO, NEAFC, and the European Commission) and marine environmental protection (HELCOM and OSPAR).

Meetings during the period since 1 November 2001 of the above-named and other organisations at which ICES was represented are included in **Annex 1**. Observers reports on some of these meetings will be issued at the 2002 Annual Science Conference as Doc. C.M. 2002/Gen:1.

#### 2.1 NAFO

At the 2001 Statutory Meeting Council approved the report and recommendations of the Bureau Working Group on International Programmes. In furtherance of the Council decision to strengthen the links between ICES and, *inter alia* NAFO, a draft Memorandum of



Understanding (modelled on the Memorandum of Understanding between ICES and FAO) has been developed between the two organisations (Doc. C. M. 2002/Del:16). If the Council endorses this, the Memorandum of Understanding will be signed by the President, Pentti Mätkki.

## **2.2. OSPAR**

ICES has been represented at the following meetings of the OSPAR Commission and its subsidiary bodies:

a) The Biodiversity Committee (BDC), London, UK, 5–9 November 2001 (ICES Representative: Environment Adviser).

b) The Eutrophication Committee (EUC), Berlin, Germany, 26–30 November 2001 (ICES Representative: Science Coordinator/Oceanographer)

c) The Working Group on Concentrations, Trends, and Effects of Substances in the Marine Environment (SIME), held in Oudenburg, Belgium, 29–31 January 2002 (ICES Representative: Environment Adviser).

d) The Environmental Assessment and Monitoring Committee (ASMO) held in Stockholm, Sweden, 8–12 March 2002 (ICES Representative: Environment Adviser).

Sections of the 2001 Report of ACME containing information and advice to OSPAR were presented and considered at all of the above-mentioned meetings. In addition, the majority of the first report of ACE was considered at the Biodiversity Committee meeting.

## **2.3 North Sea Conference Process**

In the closing months of the preparatory process leading to the 5th North Sea Conference, Secretariat staff members participated in meetings of the Committee of North Sea Senior Officials (CONSSO), which consists of senior officials representing the North Sea states and the European Commission. The Fisheries Adviser participated in a CONSSO meeting in Oslo from 11–12 December 2001 and the Environment Adviser in another CONSSO meeting in Oslo from 20–21 February 2002. These meetings reviewed the progress report to the Bergen meeting and the Draft Ministerial Declaration. Subsequently, the General Secretary participated in the 5th North Sea Conference, which was held in Bergen from 20–21 March 2002.

## **2.4 Helsinki Commission (HELCOM)**

The meetings of HELCOM and its subsidiary bodies at which ICES has been represented include:

Third Meeting of the Nature Conservation and Coastal Zone Management Group (HABITAT), Gdynia, Poland, 29 January to 1 February 2002 (ICES Representative: Environmental Data Scientist).

Scientific information and advice in response to requests from HELCOM, prepared by ACME at its June 2001 meeting were presented to these meetings.

HELCOM Meeting of Heads of Delegation, Helsinki, Finland, 28–29 June 2002. The Environment Adviser represented ICES on this occasion.

## **2.5 NEAFC**

ICES provided NEAFC with advice as in previous years in accordance with the MoU between NEAFC and ICES. Following an extensive re-scheduling of Working Groups and of ACFM, ICES achieved a much earlier release of the advice, as requested by NEAFC. The advice was released by 22 October 2001.

The Chair of ACFM participated in a NEAFC meeting on 10–12 April 2002 concerning the regulation of the blue whiting fishery.

## **2.6 North Atlantic Salmon Conservation Organisation (NASCO)**

ICES provided NASCO with advice as in previous years, in accordance with the MoU between NASCO and ICES. The same working procedure for providing advice to NASCO as in 2000 and 2001 was applied and ICES delivered the advice by 8 May 2002. The Chair of ACFM and the Fisheries Adviser participated in the NASCO meeting in Tórshavn, Faroe Islands, from 3–7 June 2002, where the ICES advice on management of the North Atlantic salmon was presented.

## **2.7 International Baltic Sea Fishery Commission (IBSFC)**

ICES participated in the organisation of the Joint NASCO/IBSFC/PICES/NPAFC/ICES meeting on “Causes of Salmon Mortality in the Sea” and was represented on the Steering Committee by Kevin Friedland (USA).

ICES worked together with IBSFC to identify appropriate invited speakers to the joint NPFAC/NASCO/IBSFC/ICES meeting, held from 14–15 March 2002 in Vancouver, BC, Canada, on the Causes of Salmon Mortality in the Sea.

ICES and IBSFC jointly paid for three participants (Lars Karlsson and Patrick Ackoff, Sweden, and Mathis Salminen, Finland).

The Chair of ACFM, the Fisheries Adviser, and the Scientific Secretary (Fisheries Department) participated in the Annual Meeting of IBSFC, held in Berlin, Germany, from 9–13 September 2002.

## **2.8 European Commission (EC)**

ICES continued to provide EC DG-Fish with advice as in former years, and an observer from DG-Fish was



present at the ACFM meetings in October 2001 and in May 2002.

ICES continued to maintain close contacts with the EC. In February and again in March 2002, the General Secretary and the Fisheries Adviser met high-level officials in DG-Fish. At these meetings the form and timeliness of the advice were reviewed, and a number of more strategic issues related to the revision of the CFP were discussed, e.g. the influence of regionalisation of the CFP and the multi-annual management of the ICES Advisory Process.

On 1 July ICES was visited by EU Fisheries Commissioner Franz Fischler, accompanied by Maja Kirchner from his Cabinet, and Mariann Fischer Boel, Danish Minister of Food, Agriculture and Fisheries. She was accompanied by Poul Ottosen (Permanent Secretary) and Morten Lautrup Larsen. This visit also included Peter Lindvald Nielsen from the EU Commission's Office in Copenhagen.

The General Secretary, accompanied by the Fisheries Adviser and the Chair of MCAP gave an illustrated presentation about ICES, its role, core science programme, advisory process and the added value which ICES provides to Member Countries, Partner Commissions, and Observer Countries.

The General Secretary particularly emphasised the major dependence of the quality of ICES' fishery advice on the quality of the essential input data from the member Countries. He also stressed the readiness of ICES to support and facilitate improved advisory procedures with EC DG-Fisheries.

Commissioner Fischler said that he appreciated the role played and the work done by ICES, both of which he now understood more fully. He also indicated his recognition of the obligations of EU Member States to improve and guarantee the quality of the fisheries data they provide to ICES. Further details are provided in **Annex 3**.

In December, the Directorate-General for Environment of the European Commission held a 3-day *Conference on a European Strategy for the Marine Environment* at Køge (near Copenhagen), in association with the Danish Government (which held the Presidency of the EU for the second half of 2002). ICES was involved in the planning and execution of this important event, which included Jake Rice (Chair of the Consultative Committee) as a keynote speaker at the opening plenary session, and as a facilitator at one of the working sessions. To improve future coordination in the envisaged objective – the development of a pan-European policy on the marine environment – DG-Environment has asked ICES to participate in the establishment of a consultative body which will have representatives from the secretariats (and at least one contracting party) of all the regional seas conventions, plus representatives of ICES, the European

Environment Agency, the EU Joint Research Centre, and the European Commission.

## **2.8bis European Environment Agency (EEA)**

A meeting of the Core Group of the EEA Inter-Regional Forum was held in Brussels, Belgium, on 12–13 December 2001. ICES was represented by the General Secretary and the Environment Adviser. In addition, discussions are being held with the Project Officer for Marine Issues at the EEA concerning cooperation on data issues, based on the recurring need for access to marine environmental data by the EEA for the preparation of environmental indicators.

## **2.9 Food and Agriculture Organisation of the UN (FAO)**

ICES continues to collaborate with FAO within the framework of the 1996 ICES/FAO Memorandum of Understanding. The Fisheries Adviser continues to develop the presentation of information on fish stocks, status, and trends in a joint project with ICCAT, NAFO, and national organisations such as NOAA (USA) and DFO (Canada).

In September 2001, FAO agreed to co-sponsor the ICES Working Group (now the ICES-FAO Working Group) on Fishing Technology and Fish Behaviour.

At the request of FAO in spring 2001, ICES agreed to co-sponsor a GESAMP Working Group on Environmental Exposure Models for Application in Seafood Risk Analysis. This Working Group met for the first time in Rome, Italy on 10–14 December 2001. ICES has provided two members to this Working Group, paid at national expense.

## **2.10 North Sea Commission Fisheries Partnership**

For the second year in succession, ICES hosted a meeting of the North Sea Fisheries Partnership in Copenhagen at the end of August. The North Sea Commission is composed of local civic authorities bordering the North Sea. Their Fisheries Partnership is a sub-group consisting of national fisheries research institutes, representative fishers associations, and the North Sea Commission. The Fisheries Partnership seeks to promote integrated and sustainable management of shared fish stocks in the North Sea through the cooperation of fishers, scientists, managers and other stakeholders. It is chaired by Tony Hawkins, former Director of the FRS Marine Laboratory, Aberdeen.

At the 4-day meeting at ICES headquarters (26–29 August), the Chair of the North Sea and Skagerrak Demersal Working Group, Martin Pastoors, described the fish stock assessment process and presented the initial assessments of North Sea cod, plaice, and saithe. The audience consisted mainly of North Sea fishing industry representatives and an independent team of



scientists (Bob Mohn and Jim Beckett from Canada, and Steve Murawski from USA), who had been asked by NSCFP to assess the quality of the three stock assessments. Gerd Hubold (ICES Delegate for Germany) participated as a German representative and in his capacity as Chair of MCAP. Several members of the Working Group, and of ACFM (including the ACFM Chair, Tore Jakobsen) were also present. ICES Delegate for Sweden, Rolf Åkesson, and Danish Delegate Niels Axel Nielsen, attended the last day of the meeting.

The independent team of scientists concluded that the assessments were thorough, and technically sound. The fishing industry representatives expressed general agreement with the assessment results for cod and saithe, but there were differing views on the state of the plaice stock.

In an open, constructive, and plain-speaking atmosphere, the ICES scientists and North Sea fishers, together with the visiting scientists from North America, then discussed ways of bringing the knowledge and experience of the fishing industry into the stock assessment process and making the procedure even more open and transparent.

There was general agreement among the participants that the meeting had been extremely valuable for all parties concerned, and that the process should be continued. The NSC Fisheries Partnership stated afterwards, in the press release, that the whole process of two-way communication between fishers and scientists had moved forward and that this could not have happened without the cooperation and support of ICES.

Very favourable coverage of the event appeared in many fishing industry newspapers.

#### **2.11 Coordinating Working Party on Fisheries Statistics (CWP)**

The integration of ICCAT, NAFO, ICES, EUROSTAT, and FAO databases on fisheries catch statistics has been completed by EUROSTAT (David Cross). The ICES fisheries statistics have been reviewed and a CD-ROM with the ICES data for 1973–2000 has been produced.

An intersessional CWP meeting was held in Rome from 20–21 March 2002, where progress in the FIGIS/FIRMS project was reviewed. Furthermore, issues on fisheries statistics were discussed and the Agenda for CWP-20 was set up (20–24 January 2003, IOTC, Seychelles).

Also, in the margins of the Rome meeting and the EUROSTAT/ICES meeting in February 2002, the rearrangement of the ICES fisheries statistics was discussed.

The discussion was continued by the exchange of informal letters with EUROSTAT. The next step is to agree on a formal arrangement, stipulating how the tasks should be shared in the future, in order to avoid duplication of work. The basic principles are:

1. ICES maintains its obligations in the fisheries statistics field, e.g. maintains membership of CWP and will continue to publish fisheries statistics on CD-Rom.
2. Countries will only need to submit STATLANT data to one of the two agencies (EUROSTAT or ICES).
3. Each agency will vet the data it receives and will exchange vetted data. EUROSTAT will compile the completed database in FishStatPlus format for ICES.
4. ICES will focus on extending the data series back to before 1973, and make these data available on a CD-Rom.

#### **2.12 Arctic Monitoring and Assessment Programme (AMAP)**

AMAP has completed a second major environmental assessment of the Arctic Region. Associated with this, ICES received data submissions from AMAP-associated institutes.

#### **2.13 United Nations Environment Programme (UNEP)**

As a follow-up to last year's request for ICES to participate in a UNEP Expert Consultation on a Global Network on Monitoring of Chemicals with an initial Focus on Persistent Organic Pollutants (POPs) in Geneva, Switzerland, 2–4 May 2001, the Environment Adviser has been requested to serve on an Advisory Group on this issue. This work is intended to develop a framework for the collection and collation of data on environmental concentrations and trends of twelve POPs, which was the subject of the Stockholm Convention on POPs, signed on 23 May 2001. This First Advisory Group Meeting to the Global Network for the Monitoring of Chemicals in the Environment was held in Geneva, Switzerland on 13–14 May 2002, and was attended by the Environment Adviser.

#### **2.14 GESAMP**

The Environment Adviser attended the 32nd Session of the IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), held at IMO in London, UK, on 6–10 May 2002. Relevant items from this meeting included the review of the report of the Working Group on Environmental Exposure Models for Application in Seafood Risk Assessment, and the transfer of alien species via ships, including the report of the ICES/IOC/IMO Study Group on Ships and Other Vectors.



## 2.15 IOC

The IODE Steering Group for Underway Sea Surface Salinity Data Archiving Pilot Project, established during IODE-XVI held its first meeting in Brest, France from 15–16 November 2001. The ICES representative was the Science Coordinator/Oceanographer. The basis of the meeting was to build on initiatives commenced by the *Service Hydrographique* concerning historical sampling, and developing this into an operational framework in support of GOOS activities.

Close collaboration was maintained with IOC in various joint activities, including the jointly sponsored Working Group on Harmful Algal Bloom Dynamics, the Steering Group on GOOS, and the new Study Group on developing data exchange systems using XML. IOC representatives also participated in the Working Group on Marine Data Management, and members of this Group also participated in IOC/IODE's GETADE meeting. The data management activities all took place in Helsinki, Finland, in April 2002.

## 3. MEETINGS AND OTHER ACTIVITIES ORGANISED BY THE COUNCIL

### 3.1 Symposia

2002: The Symposium on “Acoustics in Fisheries and Aquatic Ecology” (Co-Conveners: François Gerlotto and J. Massé, France) was held in Montpellier, France, from 10–14 June 2002. A Scientific Steering Committee, including Pablo Carrera (Spain), Masahiko Furusawa (Japan), David Farmer (Canada), François Gerlotto (France), D. Van Holliday (USA), William Karp (USA), Jacques Massé (France), Ole A. Misund (Norway), John Simmonds (UK), and Will Tesler (Russia), was established to assist the Co-Conveners in planning the Symposium.

2002: NASCO/IBSFC/PICES/NPAFC/ICES A Joint Meeting on the Causes of Marine Mortality of Salmon in the North Pacific and North Atlantic Oceans and the Baltic Sea was held in Vancouver, BC, Canada in March 2002. As described in section 2.7 above, ICES shared with IBSFC the costs of sending three speakers on Baltic salmon to the meeting, as well as sharing the running costs of the meeting with the other four agencies. ICES also funded the participation of Niall O Maoileidigh (Chair of the North Atlantic Salmon Working Group) and Kevin Friedland (USA). The presentation of the ICES North Atlantic Salmon Working Group Report was well received as a summary of stock status and stock management in general.

2002: NAFO/CSIRO/ICES Symposium on “Elasmobranch Fisheries: Managing for Sustainable Use and Biodiversity Conservation”, Santiago de Compostela, Spain, 11–13 September 2002. Co-Conveners: David Kulka (NAFO, Canada), Mike Pawson (Chair SGEF,

ICES), Jack Musick (VIMS, USA), and Terry Walker (MFRI, Australia).

2003: ICES/PICES/GLOBEC Symposium on “The Role of Zooplankton in Global Ecosystem Dynamics: Comparative Studies from World Oceans”. Spring 2003. Co-Conveners: Roger Harris (UK) and Tsutomu Ikeda (Japan-PICES).

2003: Symposium on “Fish Behaviour in Relation to Scientific Fishing Operations”, Bergen, Norway, April 2003. Co-Conveners: Å. Bjørndal (Norway) and Stephen Walsh (Canada).

2004: ICES Symposium on “The Influence of Climate Change on North Atlantic Fisheries”, Bergen, Norway, 2004. Co-Conveners: Robin Cook (UK), K. Drinkwater (Canada), and Harald Loeng (Norway).

2004: Symposium on “Gadoid Mariculture: Development and Future Challenges”, Bergen, Norway 2004. Co-Conveners: O.S. Kjesbu (Norway) and E. Trippel (Canada). A Scientific Steering Group has been established including Ann Berit Skiftesvik (Norway), Håkon Otterå (Norway), Josianne Støttrup (Denmark), Lawrence Buckley (USA), and Lesley McEnvoy (UK). The General Secretary will solicit appropriate co-sponsorship in consultation with the Co-Conveners.

### 3.2 Bureau

The Bureau (Chair: Pentti Mäkki, President of ICES) met in Copenhagen from 24 to 26 January 2002. The main agenda items were the ICES Secretariat Workplan for 2002, the Draft Budget for 2003, the Draft Forecast Budget for 2004, and the Secretariat Post Grading Review.

### 3.3 Advisory Committees

#### MCAP

The Management Committee on the Advisory Process (Chair: Gerd Hubold) met at ICES Headquarters on 23 and 24 January 2002 and on 30 September 2002.

#### ACFM

Since the 2001 Annual Science Conference, ACFM (Chair: Tore Jakobsen) has held a full meeting at ICES Headquarters from 9–17 October 2001. Sub-Groups met for the first four days. The Chairs of the relevant Assessment Working Groups were invited to the Sub-Group meetings. A plenary meeting to formulate the advice followed the Sub-Group meetings.

ACFM also developed advice for NASCO through a drafting and review group, followed by an e-mail procedure. The drafting group met from 23–25 April 2002. The advice was released on 8 May in accordance with the agreement with NASCO. ACFM met again from 21–30 May 2002 and developed advice for deep-water stocks, stocks around the Faroe Islands, Iceland



and in the Barents Sea, Nephrops stocks, pelagic stocks in the North Sea and adjacent waters, and for fish stocks in the Baltic, together with the response to a number of specific requests for advice. Chairs of relevant Assessment Working Groups participated in the review process.

### **Quality Assurance of the Advisory Process**

All Assessment Working Groups that met in the first half of 2002 reviewed the progress of the development of quality handbooks for their fish stock assessments. Again in autumn 2002 ACFM will review the progress and comments made by those Groups that met in the second half of 2002.

### **ACME**

ACME (Chair: Stig Carlberg) met from 3–7 June 2002 to address advice in response to requests from the OSPAR Commission and HELCOM, and to provide information and advice on other relevant issues.

### **ACE**

ACE (Chair: Hein-Rune Skjoldal) met from 7–11 June 2002 to address advice in response to requests from EC DG-Fish, OSPAR, and HELCOM, and to provide information and advice on other relevant issues.

### **3.4 Working/Study Group Meetings and Workshops**

The meetings of Working, Study, and other Groups and Workshops specified in the Council Resolutions from the 2001 Statutory Meeting have been taking place during the intersessional period.

A list of the meetings which have taken place is given in **Annex 2** (See also Table 1 giving the numbers of participants in the Working/Study Groups and Workshops in 2002).

## **4 SECRETARIAT MATTERS**

### **4.1 New ICES telephone number**

People can now dial directly to a staff member's desk, by calling (+45) 33 38 6x xx, where x is the individual extension number as shown on the ICES Website [www.ices.dk](http://www.ices.dk). The switchboard number is (+45) 33 38 67 00, but the old number (+45 33 15 42 25) will still work.

### **4.2 Staffing**

The total number of people employed in the ICES Secretariat during the current Financial Year is 38. They have occupied 14 posts at the Professional level, and 24 posts at the General Service level.

The Bureau at its January meeting reviewed the Staff Grading Report prepared by Erik Winther, and

unanimously accepted the report's recommendations that nine General Service posts and five Professional posts should be upgraded. However, due to shortage of funds these upgradings would only take effect from 1 July 2002 (for General Service posts) while the upgrading of the Professional posts could only be implemented after the Bureau Working Group on Long-Term Finances has come up with a feasible financial proposal.

In its general deliberations on the ICES budget and the overall financial situation, the Bureau considered it imperative that steps be taken to reduce the size of the Secretariat salary bill.

In implementation of this policy, the General Secretary spent a considerable amount of time carefully examining the options, in consultation with senior management colleagues, before putting together a redundancy package for the Bureau's consideration. This exercise involved a thorough examination of the possibilities of achieving savings by increased work-sharing, changing in working procedures, outsourcing work and closing down posts. The final package made use of all four of these options. The Bureau approved the proposals, and thus four posts have been closed down with effect from the end of January and end of February 2003. The Bureau also authorised as the final element in the package, the creation of a new General Service post at a junior level (C.2) to deal with the remaining elements of three of the terminated posts.

This decision concerned the following posts:

1. The post of Data Scientist (Leif Pedersen) will be closed down on 28 February 2003. He has been given six months notice with twelve months termination allowance, as laid down in Staff Rules 9.3 and 9.4.
2. The post of Printing and Graphics Officer (Ingolf Bache) will be closed down on 28 February 2003. He has been given six months notice with twelve months termination allowance, as laid down in Staff Rules 9.3 and 9.4.
3. The post of Office Assistant (Henrik Larsen) will be closed down on 28 February 2003. He has been given six months notice with ten and a half months termination allowance, as laid down in Staff Rules 9.3 and 9.4 (but see the final paragraph in this section).
4. The post of Receptionist (Marie Behn) will be closed down on 31 January 2003. She has been given five months notice with six months termination allowance, as laid down in Staff Rules 9.3 and 9.4.

Needless to remark, this has been a difficult and stressful process, particularly for those whose posts have been terminated, and to a lesser but significant extent to all their colleagues in the Secretariat.

The new C.2 General Service post ("General Office Assistant") was offered to Henrik Larsen. He has



accepted this offer, and will assume his new functions on 1 March 2003. The termination allowance from his former post will thus not be payable.

#### 4.3 Distinguished Visitors

On 14 February 2002 ICES Headquarters was visited by a group from Norway, representing a dialogue forum between researchers, fishers, and managers. They were from the Institute of Marine Research, Bergen (Åsmund Bjordal), the Norwegian Fishermen's Union (Reidar Nielsen, Jan Birger Jørgensen, and Jan Ivar Maråk), the Ship Owners and Fishing Industries Associations (Christen Mordal), the Fishing Export Committee (Hans Petter Næs), the Department of Fisheries (Brit Fisknes), and the Directorate of Fisheries (Sigmund Engesæter).

On 2 April 2002 ICES received a visit from Stephen Wentworth, Fisheries Director, Department for Environment, Food and Rural Affairs (DEFRA), London, and Donald B. Carmichael, Head of Division, Scottish Executive, Environment and Rural Affairs Department, Sea Fisheries Division.

On 27 May 2002 ICES was visited by Hans Enoksen, Minister of the Home Rule Government of Greenland, accompanied by two officials.

On 13 June ICES received a visit from Rolf Åkesson, (Swedish Delegate), Mr Tommy Sjöberg, Head of the Fisheries Department, Swedish Ministry of Agriculture and Fisheries, and Mr Stefan de Maré (also from the Ministry).

On 1 July ICES was visited by EU Fisheries Commissioner Franz Fischler, and Mariann Fischer Boel, Danish Minister of Food, Agriculture and Fisheries. See Section 2.8, and **Annex 3**, for full details of this meeting.

#### 4.4 Communications Officer

The Communications Officer, Neil Fletcher, has had a busy year. In June his re-designed ICES website was made public, following several months of intensive work by him and extensive consultations with Secretariat colleagues. It has received widespread favourable comment.

Public relations in 2002 focused on generating public awareness of, and interest in, the ICES Centenary. During the year promotional materials produced by the communications officer included the June ICES Newsletter, re-design of the ICES information leaflets (including a new Danish language version) and production of a free cafe postcard to promote ICES. The postcard was distributed to cafes and bars all over Denmark. ICES staff also gave out the postcards to Copenhagen commuters on the morning of the Centenary Day, accompanying the *Post Denmark* band (specially commissioned for the event) as it marched

from Copenhagen's Town Hall Square to the ASC conference centre.

The visit of ten research vessels to Copenhagen during the Annual Science Conference generated a large amount of public interest. This turned into a large project and was coordinated with colleagues from the Danish Fisheries Research Institute. Tasks involved producing a leaflet about the vessels to give to the public, and producing all-weather posters to display at the quayside.

Another activity for the Centenary was a national school's marine science poster competition which was a joint project with six Danish and two Norwegian aquariums. The competition received good coverage on Danish teaching resource websites, in a magazine for schoolteachers, and specially produced leaflets advertising the competition were sent out to every school in Denmark. All 190 posters were displayed at the Annual Science Conference and the winning classes from Denmark and Norway each received day trips on one of their country's research vessels.

During the year, contact with the press grew from a steady trickle of enquiries to an avalanche of interest in ICES by late autumn, with the Annual Science Conference and then the release of the 2002 ACFM report. Starting in the first half of the year, requests for information were answered and interviews between ICES staff and journalists were coordinated and press releases were produced when information came out through the Advisory Committees. Particularly successful press releases were produced about ICES' advice on cold-water coral reefs, and about ICES' advice on reducing the cetacean by-catch in fisheries. Both releases received wide coverage in the international media.

In the second half of the year, leading up to the Annual Science Conference, contact with the media was increased and the Communications Officer met environmental journalists from all the Danish national and weekly papers plus freelance journalists from Reuters and the International Press Association, to tell them about ICES and the Annual Science Conference. Press releases were produced about the conference and sent out to the steadily growing database of European environmental journalists. When the conference papers had been finalised a summary of the more newsworthy stories was prepared and this was also sent to the press contacts. This was very successful with many journalists contacting scientists to chase up particular stories. The conference was widely reported in the Danish national newspapers – including sizeable articles in *Berlingske Tidende*, *Jyllandsposten*, and the front page of *Politiken*. The conference was also covered in UK, French, Dutch, Norwegian, and Swedish national and fishing papers, as well as on Danish, Swedish, and British television.



In October the ACFM report for 2002 came out and generated a huge amount of press interest. More than fifty journalists, from all over the world, contacted ICES for further information about the ACFM report. A considerable amount of Secretariat time was spent dealing with requests for information and updating press releases.

ICES has also been well represented in the specialist fishing industry papers with a number of articles appearing in *Fiskeritidende* (Danish Fishing Industry Press) and *Fishing News* (UK). Some articles in *Fishing News* were taken almost in their entirety from the *ICES Newsletter*. ICES was also mentioned in a number of articles on the web-based fishing newspaper *Intrafish*, and in the environment newspaper *Planet Ark*.

#### 4.5 New ICES Headquarters

As the Amaliegade 13 building was no longer an option, the Bureau authorised the General Secretary to investigate (with the continued assistance of the Danish authorities) the possibility of obtaining the required large meeting facilities (40+ people) separately from the headquarters building.

#### 4.6 History Book Project

"The Sea Knows No Boundaries", a handsome volume, has now been published and is available for sale to ICES members at a reduced price of DKK 300. The book is a notable contribution to the literature of international science, and a fitting tribute to the achievement of a century of excellence in marine science under ICES.

### 5 PUBLICATIONS

Activities with respect to publications since the 2001 Annual Science Conference (89th Statutory Meeting) are reviewed below:

#### 5.1 ICES Journal of Marine Science (*Journal du Conseil*)

Volume 58(5), pages 935–1114, was off press in October 2001 as scheduled. It carries 18 papers stemming from the ICES Symposium on "Recruitment Dynamics of Exploited Marine Populations: Physical–Biological Interactions", held in Baltimore, Maryland, USA, from 22 to 24 September 1997. This was issued as Part 2 of the proceedings of that meeting. Part 1 was published as Volume 57(2) in June 2000 as an interim solution to the problem created by the protracted delivery of material. Part 2 was the fourteenth volume of ICES Symposium proceedings to be published in the *ICES Journal*, and it was also registered as Volume 214 in the *ICES Marine Science Symposia* series. This number was the first to carry the name of Dr Bernard A. Megrey (USA) who joined the editorial team in May 2001.

Volume 58(6), pages 1115–1343, was off press in November 2001, a month in advance of its cover date of December 2001. In addition to articles on mixed topics it contains eight contributions stemming from the 1998 ASC Theme Session on Visualization of Spatial Data.

The subscription rates for Volume 58 in 2001 were set at GBP 400 and GBP 119 respectively for institutional and personal subscriptions.

The net profit for 2001 from the ICES / Academic Press (Elsevier) joint account for the *ICES Journal* was GBP 45,280. The ICES share, received in April 2002, was GBP 22,640 (DKK 272,989) as reported to the Bureau earlier this year. In July, Academic Press / Elsevier paid ICES an additional sum of GBP 4,409 (DKK 51,714) in reimbursement of some overheads which had been wrongly charged to the ICES account during 2001 and earlier years. Subscriptions continue to be available in different combinations of Web and paper versions, with the former playing an ever greater role in the proportion of the revenue received. Subscribers can download full-text versions of papers, and non-subscribers can access tables of contents and abstracts at: [www.sciencedirect.com](http://www.sciencedirect.com).

Volume 59(1), pages 1–237, a regular issue, was off press in January 2002, one month before its cover date of February, continuing the pattern introduced during the summer of 2001.

Volume 59(2), pages 239–444, scheduled for release in April 2002, was off press on 20 May, but not distributed until June/July. All material was submitted and approved in time to meet the April cover date, but transitional problems delayed release. These stem from the sale of the Harcourt publishing businesses to Reed Elsevier in August 2001. The Academic Press (AP) imprint is now a part of the Elsevier Science group, and converting AP procedures to those used by Elsevier have led to delays and other problems of an organizational nature. As an added complication, Elsevier has been engaged in revamping its own system of procedures. This number is the first to carry the name of Dr Chris L. J. Frid (UK), who joined the editorial team in January 2002, thereby completing the full roster of six Editors (including the Editor-in-Chief).

Volume 59(3), pages 445–648, was off press in June 2002, thus matching its cover month.

Volume 59(4), pages 649–860, for August 2002, was off press in September, slightly delayed for reasons similar to those mentioned in relation to Volume 59(2).

Volume 59(5), pages 861–1132, for October 2002, will carry the proceedings stemming from the ICES Symposium on "Capelin – What Are They Good For?", held in Reykjavík, 23–27 July 2001. It is expected to meet its cover date, indicating that the transitional problems have now been solved. This number will also be registered as Volume 216 in the *ICES Marine Science Symposia* series. (Note: the last proceedings number to



be published in the *ICES Journal* is 58(5), designated as Volume 214 in the *MSS* series; *MSS* Volume 215 will not be included in the *Journal*).

Volume 59 will include a special Supplement, also to be issued in October 2002. This will contain the proceedings of the "Seventh International Conference on Artificial Reefs and Related Aquatic Habitats", held in San Remo, 7–11 October 1999. It will also be registered as Volume 217 in the *ICES Marine Science Symposia* series. With its status as a Supplement, this number is being issued under conditions of full cost recovery, with all expenses covered by an external budget. This is the first time ICES has published a set of proceedings stemming from a conference when it was not actively involved during the planning or conduct of the meeting.

For Volume 59 in 2002 the rate has been set at GBP 459 and GBP 137 respectively for institutional and personal subscriptions. The increases have, among other things, made it possible to expand the page budget by 100 (from 1312 to 1412 pages), to be used at the discretion of the Editor-in-Chief.

Academic Press / Elsevier continued with considerable success to pursue ways in which to take advantage of the developing electronic media as a means of speeding up production and increasing the circulation of the *ICES Journal* as well as the income deriving from it and, not least, meeting the growing needs and expectations of contributors and readers alike at all stages. Among other initiatives, articles are available to licence-holding subscribers in electronic form before the traditional paper versions are published; such articles are citable by their Web-publication dates, which may be months in advance of the paper dates. The electronic-access platform developed by AP called IDEAL will be closed at the end of 2002 and its contents migrated to ScienceDirect (SD), the Elsevier platform. As the world's largest scientific full-text database, SD facilities will increase the outreach of the *ICES Journal*.

## **5.2 ICES Marine Science Symposia** *(Actes du Symposium)*

Volume 201, issued in November 1995, was the most recent set of ICES Symposium proceedings to be published solely under this series title. Volume no. 200 and most others beginning with no. 202 have been or will be included in the series *ICES Journal of Marine Science*, but will retain a place in the consecutive numbering system of *ICES Marine Science Symposia*.

Volumes 200 and 202–214, 216, and 217 are described in previous Reports or the current one under the *ICES Journal of Marine Science* as, respectively, Volumes 52(3/4), 53(2), 53(6), 54(4), 54(6), 55(4), 56(6), 56 Supplement, 57(2), 57(3), 57(5), 57(6), 58(2), 58(5), 59(5), and 59 Supplement. Owing to their special nature, two proceedings volumes are scheduled for publication in this series only, and not in the *ICES Journal*. Contributions to the ICES Symposium on "100 Years of Science under ICES", held in Helsinki,

Finland, from 1 to 4 August 2000, will be published in September 2002 just before the ASC as Volume 215; and it is expected that those stemming from the ICES Symposium on "Hydrobiological Variability in the ICES Area, 1990–1999", held in Edinburgh, Scotland, UK, from 8 to 19 August 2001, will be issued in 2003.

## **5.3 ICES Cooperative Research Report** *(Rapport des Recherches Collectives)*

The following numbers in the *ICES Cooperative Research Report* series have been published since the 2001 Annual Science Conference:

- No. 245 The Annual ICES Ocean Climate Status Summary 2000/2001, dated February 2002.
- No. 246 Report of the ICES Advisory Committee on Fishery Management, 2001 (Parts 1–3), dated December 2001.
- No. 247 Effects of Extraction of Marine Sediments on the Marine Ecosystem, dated November 2001.
- No. 248 Report of the ICES Advisory Committee on the Marine Environment, 2001, dated December 2001.
- No. 249 Report of the ICES Advisory Committee on Ecosystems, 2001, dated December 2001.
- No. 250 ICES/GLOBEC Sea-going Workshop for Intercalibration of Plankton Samplers, dated May 2002. This represents a departure from the usual paper-only format, consisting as it does of 25 pages, with four CD-ROMs containing data sets from the Workshop.
- No. 251 The Annual ICES Ocean Climate Status Summary 2001/2002, dated June 2002.

Additional CRRs are in the pipeline and are scheduled to be off press before the 2002 ASC.

## **5.4 ICES Fisheries Statistics** *(Bulletin Statistique des Pêches Maritimes)*

The last number to be published in this series was Volume 73 (data for 1988), issued in November 1992. Following agreement that these and related fisheries catch statistics should henceforth appear on CD-ROM, the first number in the new format was issued in June 2001. It included nominal catch statistics, STATLANT Programme, for the Northeast Atlantic for 1973–1999, presented using FishStat Plus software made available by FAO. Catch statistics for the entire Atlantic for 1950–1998 were also included in a file developed by Eurostat, CCAMLR, ICCAT, NAFO, FAO, and ICES (Statistics for the Northeast Atlantic for 1973–1999 were also available on the ICES Website). The next CD-ROM with updated information for 2000 was issued in the



spring of 2002, and again the corresponding data are available on the ICES Website.

### **5.5 ICES Identification Leaflets for Plankton (Fiches d'Identification du Plancton)**

Two leaflets, No. 186 on Dendrobranchiata and No. 187, entitled "Numerical and Taxonomic Index of ICES Plankton Identification Leaflets, 1939–2001", were issued in November 2001. Although no other manuscripts are in hand, the Editor expects that a workshop on calanoid copepod taxonomy will lead to new ones or to revisions of older leaflets. Both he and the Secretariat have been approached about prospects for converting/adapting material in this series to CD-ROMs and other electronic media, but no formal proposals have been advanced.

### **5.6 ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish (Fiches d'Identification des Maladies et Parasites des Poissons, Crustacés et Mollusques)**

The most recent publications in this series are Nos. 51–56 on respectively *Stephanostomum tenue*, Gaffkemia, *Diplostomum spathaceum*, Pasteurellosis, *Flexibacter maritimus*, and Streptococcosis, issued in September 1999. The Editor has received and prepared for publication four new manuscripts on respectively: SPX disease, brown ring disease, M-47 disease, and salmon pancreas disease. Revisions of earlier manuscripts are in the pipeline, and several new titles have been proposed, as well as other candidates for updating; prospective authors have been approached in all cases.

### **5.7 ICES Techniques in Marine Environmental Sciences**

The following publications were off press in early 2002:

- No. 28 Biological effects of contaminants: *Corophium* sp. sediment bioassay and toxicity test, dated December 2001.

- No. 29 Biological effects of contaminants: Sediment bioassay using the polychaete *Arenicola marina*, dated December 2001.

- No. 30 Chlorophyll *a*: Determination by spectroscopic methods, dated December 2001.

- No. 31 Biological effects of contaminants: Radioimmunoassay (RIA) and enzyme-linked immunosorbent assay (ELISA) techniques for the measurement of marine fish vitellogenins, dated February 2002.

The following manuscripts are now complete and are expected to be published in late 2002:

- No. 32 Guidelines on quality assurance of chemical measurements in the Baltic Sea.

- No. 33 Guidelines on quality assurance of biological measurements.

There are prospects for the delivery of other manuscripts covered by Council Resolutions (one in 1997 and three in 2000), but none have yet been received.

### **5.8 ICES Annual Report**

The *ICES Annual Report for 2001* was issued in March 2002, accompanied by a CD-ROM containing most of the ICES 2001 CM documents on which the Annual Report was based. The CD-ROM included all Steering/Working/Study/Planning Group and Workshop Reports, and all the paper abstracts as well as about 70% of the papers and posters presented at the 2001 Annual Science Conference, the complete Annual Report, and the full addresses of all the participants in the Statutory Meeting and the ASC.

### **5.9 ICES CIEM Newsletter**

Nos. 38 and 39 in this series (formerly known as *ICES/CIEM Information*) were published in December 2001 and June 2002 respectively. They are displayed as .pdf files on the ICES Website.



## ANNEX I

### MEETINGS AT WHICH ICES WAS REPRESENTED BY OBSERVERS

1. OSPAR Biodiversity Committee (BDC), London, UK, 5-9 November 2001. ICES Representative: Environment Adviser.
2. IODE Steering Group for Underway Sea Surface Salinity Data Archiving Pilot Project, Brest, France, 15-16 November 2001. ICES Representative: Science Coordinator/Oceanographer.
3. OSPAR Eutrophication Committee (EUC), Berlin, Germany, 26-30 November 2001. ICES Representative: Science Coordinator/Oceanographer.
4. Core Group of the EEA Inter-Regional Forum, Brussels, Belgium, 12-13 December 2001. ICES Representatives: General Secretary and Environment Adviser.
5. OSPAR Working Group on Concentrations, Trends and Effects of Substances in the Marine Environment (SIME), Oudenburg, Belgium, 29-31 January 2002. ICES Representative: Environment Adviser.
6. Third Meeting of the Nature Conservation and Coastal Zone Management Group (HABITAT) of HELCOM, Gdynia, Poland, 29 January to 1 February 2002. ICES Representative: Environmental Data Scientist.
7. Public Hearing on the Future of the Swedish Fishery. The Swedish Parliament, Fisheries Committee. Stockholm, Sweden, 5 February 2002. Fisheries Adviser.
8. PROMOS "Probabilistic Modelling of Baltic Salmon Stocks" Final Seminar of an EU Study, Helsinki, Finland, 7 February 2002. ICES Representative: Fisheries Assessment Scientist.
9. Committee of North Sea Senior Officials (CONSSO), Oslo, Norway, 20-21 February 2002. ICES Representative: Environment Adviser.
10. EC DG-Fish, Brussels, Belgium, 20-21 February 2002. ICES Representatives: General Secretary and Fisheries Adviser.
11. Joint IBSFC/HELCOM Seminar on Fisheries Issues and Environmental Protection in the Baltic Sea, Gdynia, Poland, 20-21 February 2002. ICES Representative: Fisheries Assessment Scientist.
12. Environmental Assessment and Monitoring Committee (ASMO), Stockholm, Sweden, 8-12 March 2002. ICES Representative: Environment Adviser.
13. Extraordinary Meeting of NEAFC on Regulation of the Blue Whiting Fishery, London, UK, 10-12 March 2002. ICES Representative: Chair of ACFM.
14. EC DG-Fisheries Meeting on Data Requirements on Mixed Fisheries, Brussels, Belgium, 14 March 2002. ICES Representative: Fisheries Adviser.
15. Joint NPAFC/NASCO/IBSFC/ICES Meeting on "Causes of Salmon Mortality in the Sea", Vancouver, BC, Canada, 14-16 March 2002. ICES Representative: Kevin Friedland.
16. UNEP Technical Workshop on the Feasibility Study for Establishing a Regular Process for the Assessment of the State of the Marine Environment, Bremen, Germany, 18-20 March 2002. ICES Representative: Environment Adviser.
17. Intersessional CWP meeting concerning the FIGIS/FIRMS Progress, Rome, Italy, 20-21 March 2002. ICES Representative: Fisheries Adviser.
18. Fifth North Sea Conference, Bergen, Norway, 20-21 March 2002. ICES Representative: General Secretary.



19. EC DG-Fish, Copenhagen, 25 March 2002. ICES Representatives: General Secretary and Fisheries Adviser.
20. OSPAR Environmental Assessment and Monitoring Committee (ASMO), Stockholm, Sweden, 8–12 April 2002. ICES Representative: Environment Adviser.
21. NEAFC Meeting concerning the Regulation of Blue Whiting Fishery, London, UK, 10–12 April 2002. ICES Representative: Chair of ACFM.
22. STECF Sub-Group of Experts on Databases on Data from Fisheries Sampling, Brussels, Belgium, 22–24 April 2002. ICES Representatives: Fisheries Adviser and IT Manager.
23. IMO/FAO/UNESCO-IOC/WMO/WHO/IAES/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), London, UK, 6–10 May 2002. ICES Representative: Environment Adviser.
24. UNEP First Meeting of the Advisory Group to the Global Network for the Monitoring of Chemicals in the Environment, Geneva, Switzerland, 13–14 May 2002. ICES Representative: Environment Adviser.
25. NASCO Annual Meeting, Tórshavn, Faroe Islands, 3–7 June 2002. ICES Representatives: Chair of ACFM and Fisheries Adviser.
26. ASFA Advisory Board Meeting, Rome, Italy, 18–21 June 2002. ICES ASFA Partner Representative: ICES Librarian.
27. Nordic Council, Environment Committee. Presentation of the ICES Advisory Function, Copenhagen, 26 June 2002. Presented by Fisheries Adviser.
28. IBSFC Working Group on Long Management Objectives and Strategies for Baltic Cod, Herring and Sprat, Cracow, Poland, 26–28 June 2002. ICES Representative: Fisheries Assessment Scientist.
29. OSPAR Commission Meeting, Amsterdam, The Netherlands, 24–25 June 2002. ICES Representative: General Secretary.
30. HELCOM Meeting Heads of Delegations, Helsinki, Finland, 28–29 June 2002. ICES Representative: Environment Adviser.
31. FAO FIGIS-FIRMS Methodological Workshop, Rome, Italy, 2–7 July 2002. ICES Representative: Fisheries Adviser.
32. North Sea Commission Fisheries Partnership, Gothenburg, Sweden, 8–9 July 2002. ICES Representative: Fisheries Adviser.
33. Global Monitoring of Environment and Security Programme, First Workshop, Brussels, Belgium, 15–17 July 2002. ICES Representative: Fisheries Adviser.
34. Nordic Working Group for Fisheries Research, Ecosystem-based Fisheries Management, Trondheim, Norway, 5–6 August 2002. ICES Representative: Fisheries Adviser.
35. Meeting of the North Sea Commission Fisheries Partnership, Copenhagen, 26–29 August 2002. ICES Representatives: General Secretary, Fisheries Adviser, Fisheries Assessment Scientist, and the Chair of MCAP. The Chair of ACFM also participated.
36. IOC Underway Sea Surface Salinity Pilot Project Meeting, Ottawa, Canada, 16–17 September 2002. ICES Representative: Science Coordinator/Oceanographer.
37. IBSFC Annual Meeting, Berlin, Germany, 9–13 September 2002. ICES Representatives: Chair of ACFM, Fisheries Adviser, and Scientific Secretary (ICES Fisheries Department).



38. OSPAR Eutrophication Task Group (ETG), London, UK, 8-11 October 2002. ICES Representative: Science Coordinator/Oceanographer.
39. Danish Environmental Protection Agency. International Cooperation on Environmental Reporting and Information Management: Towards a Shared Vision and Shared Information System. Copenhagen, 26–27 September 2002. ICES Representatives: General Secretary and Environment Adviser.
40. EC, DG-Fisheries “Multi-annual Fisheries Management”, Brussels, 8 October 2002. ICES Representative: Fisheries Adviser.
41. 4<sup>th</sup> HELCOM MONAS Meeting, Warnemünde, Germany, 21–25 October 2002. ICES Representative: Environmental Data Scientist.
42. OSPAR BASH (BDC/ASMO Heads of Delegation), London, 22–23 October 2002. ICES Representative: Environment Adviser.
43. Royal Commission on Environmental Pollution Seminar “The Environmental Effects of Marine Fisheries”, Edinburgh, UK, 4 November 2002. ICES Representative: General Secretary.
44. Joint EC (EEA-DG Fish-DG Environment) Workshop on: Tools for Measuring Integrated Fisheries Policies Aiming at Sustainable Ecosystems, Brussels, Belgium, 28–29 October 2002. ICES Representative: ICES Fisheries Adviser.
45. OSPAR MON Meeting, The Hague, Netherlands, 5-8 November 2002. ICES Representative: Environmental Data Scientist.
46. European Parliament. Fisheries Commission. Presentation of the ICES Advisory Function, Brussels, 11 November 2002. ICES Representative: Fisheries Adviser.
47. EC Conference on European Research 2002 – Launch of the EU 6<sup>th</sup> Framework Programme, Brussels, Belgium, 11–13 November 2002. ICES Representative: General Secretary.
48. 21<sup>st</sup> Annual Meeting of the North East Atlantic Fishery Commission (NEAFC), London, UK, 12–15 November 2002. ICES Representative: ICES Fisheries Assessment Scientist.
49. Meeting of the Committee of the North Sea Senior Officials (CONSSO), Stockholm, Sweden, 13–14 November 2002. ICES Representative: Environment Adviser.
50. EC ACFA. Presentation of the Fisheries Advice for 2003, Brussels, 21 November 2002. ICES Representative: Fisheries Adviser.
51. Meeting of the Danish Marine Biologists, Copenhagen, 28 November 2002. ICES Representative: Fisheries Adviser.
52. Danish Environmental Protection Agency/Danish Forest and Nature Agency. Conference on the Development of an European Strategy for the Protection and Conservation of the Marine Environment, Køge, Denmark 4–6 December 2002. ICES Representatives: General Secretary, Environment Adviser, and BRSP Director.
53. OSPAR Meeting of the Eutrophication Committee (EUC), Paris, France, 16–20 December 2002. ICES Representative: Science Coordinator/Oceanographer.



## ANNEX 2

### ICES WORKING/STUDY/STEERING GROUP MEETINGS AND WORKSHOPS IN 2002

(Where possible, country representation is indicated)

#### Management Committee on the Advisory Process

##### Study Group on ACFM Working Procedures

(C.Res. 2001/2MCAP01)

Chair: Robin Cook

Held at ICES Headquarters 25 February to 1 March 2002

Countries represented: Belgium:1, Denmark:1, Germany:1, Netherlands:1, Norway: 2, Spain:1, Sweden:1; UK:3, USA:1

Report available as Doc. C.M. 2002/MCAP:01

#### Advisory Committee on Fishery Management

##### Planning Group on Commercial Catch, Discards and Biological Sampling

(C.Res. 2001/2ACFM26)

Chair: Jørgen Dalskov

Held in Lisbon, Portugal 5-8 February 2002

Countries represented: Denmark:3, Estonia:1; Finland:1, France:1, Ireland:2, Netherlands:1, Norway:1, Poland:3, Spain:3, Sweden:1, UK:4

Report available as Doc. C.M. 2002/ACFM:07

##### Planning Group on Aerial and Acoustic Surveys for Mackerel

(C.Res. 2001/2ACFM03)

Chair: E. Shamray

Held in A Coruña, Spain 18–20 February 2002

Countries represented: Denmark:2, Norway:2, Russia:2, Spain:2, UK:2

Report available as Doc. C.M. 2002/G03

##### Fisheries Statistics Liaison Working Group

(C.Res. 2001/2ACFM02)

Chair: David Cross

Held in Luxembourg 18–19 February 2002

Participants mainly from EUROSTAT. ICES Representative: Hans Lassen

Report available as Doc. C.M. 2002/ACFM:08

##### Study Group on Discard and By-Catch Information

(C.Res. 2001/2ACFM04)

Chair: J. Cotter

Held at ICES Headquarters 4–7 March 2002

Countries represented: Denmark:2, Germany:1, Iceland:1, Ireland:1, Spain:2, Sweden:1, UK:2

Report available as Doc. C.M. 2002/ACFM:09

##### Study Group on the Further Development of the Precautionary Approach to Fishery Management

(C.Res. 2001/2ACFM05)

Co-Chairs: Colin Bannister and M. Azevedo

Held in Lisbon, Portugal 4–8 March 2002

Countries represented: France:1; Ireland:1, Netherlands:1; Norway:2, Portugal:1, Spain:3, UK:4

Report available as Doc. C.M. 2002/ACFM:10

##### Study Group on Sea Bass

(C.Res. 2001/2ACFM06)

Chair: Mike Pawson

Held in Brest, France 11–15 March 2002

Countries represented: France:1, Ireland:2; Spain:1; UK:2

Report available as Doc. C.M. 2002/ACFM:11



Herring Assessment Working Group for the Area South of 62°N

(C.Res. 2001/2ACFM07)

Chair: Else Torstensen

Held at ICES Headquarters 12–21 March 2002

Countries represented: Denmark:4, Germany:3, Ireland:2, Netherlands:1, Norway:3; Sweden:1, UK:5

Report available as Doc. C.M. 2002/ACFM:12

Study Group on Herring Assessment Units in the Baltic Sea

(C.Res. 2001/2ACFM08)

Co-Chairs: Evald Ojaveer and Georgs Kornilovs

Held in Gdynia, Poland 18-21 March 2002

Countries represented: Estonia:1, Germany:1, Latvia:1, Poland:2, Russia:2, Sweden:2

Report available as Doc. C.M. 2002/H04

Baltic Salmon and Trout Assessment Working Group

(C.Res. 2001/2ACFM09)

Chair: Tapani Pakarinen

Held in Riga, Estonia 3–12 April 2002

Countries represented: Belgium:1, Canada:1, Denmark:2, Estonia:2, Finland:4, Latvia:3, Poland:1, Sweden:2

Report available as Doc. C.M. 2002/ACFM:13

Working Group on North Atlantic Salmon

(C.Res. 2001/2ACFM11)

Chair: Niall O'Maoileidigh

Held at ICES Headquarters 3–13 April 2002

Countries represented: Denmark:3, Canada:5, Finland:1, France:1, Iceland:1, Ireland:1, Norway:2, Russia:1, Sweden:1, UK:5, USA:3

Report available as Doc. C.M. 2002/ACFM:14

Working Group on *Nephrops* Stocks

(C.Res. 2001/2ACFM10)

Chair: M. Bell

Held in Lorient, France 3–9 April 2002

Countries represented: Belgium:1, France:5, Ireland:2, Portugal:1, Spain:3, UK:7

Report available as Doc. C.M. 2002/ACFM:15

Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources

(C.Res. 2001/2ACFM12)

Chair: O. A. Bergstad

Held in Horta, Azores 4–10 April 2002

Countries represented: Canada:1, Denmark:2, France:3, Iceland:1, Ireland:1, Norway:2, Portugal:3, Russia:1, Spain:3

Report available as Doc. C.M. 2002/ACFM:16

Baltic Fisheries Assessment Working Group

(C.Res. 2001/2ACFM13)

Chair: M. Pliksh

Held at ICES Headquarters 15–24 April 2002

Countries represented: Denmark:5, Estonia:1, Finland:3, Germany:3, Latvia:3, Poland:2, Russia:4, Sweden:2

Report available as Doc. C.M. 2002/ACFM:17

Arctic Fisheries Working Group

(C.Res. 2001/2ACFM14)

Chair: Sigbjørn Mehl

Held at ICES Headquarters 16–25 April 2002

Countries represented: Canada:1, Germany:1, Norway:12, Spain:2, Russia:10

Report available as Doc. C.M. 2002/ACFM:18

Northern Pelagic and Blue Whiting Fisheries Working Group

(C.Res. 2001/2ACFM15)

Chair: Asta Gudmundsdóttir

Held in Vigo, Spain 29 April to 8 May 2002

Countries represented: Canada:2, Denmark:2, Iceland:2, Norway:7, Russia:4, Spain:2

Report available as Doc. C.M. 2002/ACFM:19



North-Western Working Group

(C.Res. 2001/2ACFM16)

Chair: Einar Hjörleifsson

Held at ICES Headquarters 29 April to 8 May 2002

Countries represented: Canada:1, Denmark:5, Germany:2, Iceland:5, Norway:2, Spain:1, Russia:1

Report available as Doc. C.M. 2002/ACFM:20

Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim

(C.Res. 2001/2ACFM17)

Chair: A. Biseau

Held in Lisbon, Portugal 21-30 May 2002

Countries represented: France:3, Ireland:1, Portugal 4; Spain:8, UK:2

The Report will be available in 2003

Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak

(C.Res. 2001/2ACFM18)

Chair: Martin Pastoors

Held at ICES Headquarters 11–20 June 2002

Countries represented: Belgium:1, Denmark:3, Germany:2, France:2, Netherlands:3, Norway:2, Sweden:1, UK:6

The Report will be available in 2003

Working Group on the Assessment of Southern Shelf Demersal Stocks

(C.Res. 2001/2ACFM19)

Chair: Steve Flatman

Held in Ostende, Belgium 9–18 July 2002

Countries represented: Belgium:3, France:2, Ireland:3, UK:3

The Report will be available in 2003

Joint ICES/NAFO Working Group on Harp and Hooded Seals

(C.Res. 2001/2ACFM21)

Chair: Tore Haug

Held in Arkhangelsk, Russia 26–30 August 2002

The Report will be available in 2003

Working Group on the Assessment of Northern Shelf Demersal Stocks

(C.Res. 2001/2ACFM22)

Chair: Mike Armstrong

Held at ICES Headquarters 27 August to 5 September 2002

Countries represented: Belgium:1, Ireland:2, Russia:1, UK:8

The Report will be available in 2003

Pandalus Assessment Working Group

(C.Res. 2001/2ACFM22)

Chair: Bengt Sjöstrand

Held in Flødevigen, Norway 27–30 August 2002

Countries represented: Denmark:1, Norway 1; Sweden:1

The Report will be available in 2003

ICES/EIFAC Working Group on Eels

(C.Res. 2001/2ACFM23)

Chair: Willem Dekker

Held in Nantes, France 2-6 September 2002

Countries represented: Belgium:1, Denmark:1, France:5, Germany:1, Ireland:2, Netherlands:2; Spain:1; UK:2, USA:3

The Report will be available in 2003

Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

(C.Res. 2001/2ACFM24)

Chair: Dankert Skagen

Held at ICES Headquarters 10–19 September 2002

Countries represented: Denmark:3, France:1, Germany:1, Ireland:2, Netherlands:2, Norway:2, Portugal:2, Russia:3, Spain:5, UK:5

The Report will be available in 2003



Study Group on the Further Development of the Precautionary Approach to Fishery Management  
(C.Res. 2002/2ACFM17)

Co-Chairs: C. Bannister and M. Azevedo

Held at ICES Headquarters 2–6 December 2002

Countries represented: Denmark:1, France:2, Germany:1, Iceland:2, Ireland:1, Netherlands:1, Norway:3, Russia:3, Spain:3, Sweden:1, UK:2, Chair of CONC, and Secretary of NEAFC

The Report will be available in 2003

**Advisory Committee on the Marine Environment**

ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea  
(C.Res. 2001/2ACME03)

Chair: E. Pastuszek

Held in Gdansk, Poland 18–21 February 2002

Countries represented: Denmark:2, Estonia:2, Finland:1, Germany:4, Latvia:1, Lithuania:1, Poland:4, Sweden:1

Report available as Doc. C.M. 2002/ACME:02

ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea  
(C.Res. 2001/2ACME04)

Chair: G. Martin

Held at ICES Headquarters 19–22 February 2002

Countries represented: Denmark:1, Estonia:1, Finland:2, Germany:2, Latvia:1, Poland:1, Sweden:2

Report available as Doc. C.M. 2002/ACME:03

ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic  
(C.Res. 2001/2ACME01)

Chair: H. Rees

Held at ICES Headquarters 19–22 February 2002

Countries represented: Germany:4, Netherlands:2, Norway:1, Sweden:1, UK:3

Report available as Doc. C.M. 2002/ACME:04

ICES/IMO/IOC Study Group on Ballast and Other Ship Vectors  
(C.Res. 2001/2ACME06)

Chair: Stephan Gollasch

Held in Gothenburg, Sweden 18–19 March 2002

Countries represented: Belgium:1, Canada:1, Denmark:1, Germany:4, Greece:1, Ireland:1, Italy:1, New Zealand:1, Norway:6, Sweden:6, UK:4, USA:5

Report available as Doc. C.M. 2002/ACME:05

Working Group on Introductions and Transfers of Marine Organisms  
(C.Res. 2001/2ACME07)

Chair: Stephan Gollasch

Held in Gothenburg, Sweden 20–22 March 2002

Countries represented: Belgium:1, Canada:1, Germany:1, Ireland:1, Italy:1, Norway:1, Sweden:3, USA:3

Report available as Doc. C.M. 2002/ACME:06

**Advisory Committee on Ecosystems**

Working Group on Ecosystem Effects of Fishing Activities  
(C.Res. 2001/ACE02)

Chair: Chris Frid

Held at ICES Headquarters 18–27 March 2002

Countries represented: Canada:4, Iceland:1, Ireland:1, Netherlands:3, Norway:1, Poland:1, Russia:1, UK:5, USA:1

Report available as Doc. C.M. 2002/ACE:03

Study Group on Ecosystem Assessment and Monitoring  
(C.Res. 2001/2E08)

Chair: Lars Føyn

Held at ICES Headquarters 29 April to 3 May 2002

Countries represented: Canada:1, Norway:2, Poland:1, UK:1

Report available as Doc. C.M. 2002/ACE:04



## **Oceanography Committee**

### Study Group on Incorporation of Process Information into Stock Recruitment Models

(C.Res. 2001/2C01)

Chair: Carl O'Brien

Held in Lowestoft, UK 14–18 January 2002

Countries represented: Denmark:1, Norway:2, Russia:2, UK:12

Report available as Doc. C.M. 2002/C01

### ICES-EuroGOOS Planning Group on the North Sea Pilot Project

(C.Res. 2001/2C02)

Chair: Harald Loeng

Held in Bergen, Norway 27 February to 1 March 2002

Countries represented: Denmark:1, Germany:2, Netherlands:1, Norway:10, UK:4. Observers from EuroGOOS:1, EU:1, IOC:1

Report available as Doc. C.M. 2002/C02

### ICES/IOC Working Group on Harmful Algal Bloom Dynamics

(C.Res. 2001/2C03)

Chair: Kaisa Kononen

Held in Bermuda 6–10 March 2002

Countries represented: Belgium:1, Canada: 2; Denmark:1, Germany:1, Ireland:1, Norway:1, Spain:2, Sweden:1, UK:1, USA:2

Report available as Doc. C.M. 2002/C03

### Working Group on Seabird Ecology

(C.Res. 2001/2C04)

Chair: R. Furness

Held at ICES Headquarters 8–11 March 2002

Countries represented: Denmark:1, Germany:1, Norway:2, Spain:1, UK:4, USA:1

Report available as Doc. C.M. 2002/C04

### Workshop on New Perspectives in Understanding and Predicting Eutrophication

(C.Res. 2001/2C05)

Co-Chairs: T. Smayda, R. G. Jak, and D. Mills

Held in the Hague, Netherlands 11–13 March 2002

Countries represented: Belgium:1, Bulgaria: 1, China:1, Croatia:1, France:1, Germany:5, Greece:1, Hong Kong:1, Japan:2, Netherlands:8, Republic of Korea: 1, Sweden:3, UK:8, USA:7

Report available as Doc. C.M. 2002/C05

### Working Group on Phytoplankton Ecology

(C.Res. 2001/2C06)

Chair: Lars Edler

Held in Middelburg, Netherlands 14–15 March 2002

Countries represented: Germany:1, Hong Kong:1, Netherlands:5, Norway:1, Sweden:1, UK:2, USA:2

Report available as Doc. C.M. 2002/C06

### Working Group on Zooplankton Ecology

(C.Res. 2001/2C07)

Chair: Luis Valdés

Held in Aberdeen, UK 18–20 March 2002

Countries represented: Denmark:2, Germany:1, Netherlands:1, Norway:1, Spain:3, UK:4, USA:3

Report available as Doc. C.M. 2002/C07

### Working Group on Oceanic Hydrography

(C.Res. 2001/2C08)

Chair: Bill Turrell

Held in Halifax, Canada 18–21 March 2002

Countries represented: Canada:2, Denmark:1, Germany:2, Iceland:1, Norway:1, Poland:1, Russia:1, Spain:1, UK:2, USA:1

Report available as Doc. C.M. 2002/C08



Study Group on Modelling of Physical/Biological Interaction

(C.Res. 2001/2C09)

Chair: C. Hannah

Held in Warnemünde, Germany 3–5 April 2002

Countries represented: Canada:1, Denmark:1, France:2, Germany:7, Norway:1, Sweden:1, USA:3

Report available as Doc. C.M. 2002/C09

ICES/IOC Steering Group on GOOS

(C.Res. 2001/2C10)

Co-Chairs: Bill Turrell, W. G. Harrison, and IOC

Held in Halifax, Canada 21–23 April 2002

Countries represented: Canada:13, Germany:1, Norway:1, Sweden:1, UK:1, IOC:1

Report available as Doc. C.M. 2002/C10

ICES/IOC Study Group on the Development of Marine Data Exchange Systems using XML

(C.Res. 2001/2C11)

Co-Chairs: R. Gelfeld and A. Isenor

Held in Helsinki, Finland 15–16 April 2002

Countries represented: Belgium:1, Canada:2, Finland:2, France:1, Germany:1, Norway:1, Russia:1, Sweden:1, UK:3, USA:2

Report available as Doc. C.M. 2002/C12

Workshop on the Transport of Cod Larvae

(C.Res. 2001/2C13)

Co-Chairs: J. Quinlan, M. St John, and B. Aadlandsvik

Held in Hillerød, Denmark 16–18 April 2002

Countries represented: Denmark:6, Canada:5, Germany:3, Iceland:1, Norway:3, Sweden:2, UK:3, USA:3, GLOBEC 1

Report available as Doc. C.M. 2002/C13

Working Group on Marine Data Management

(C.Res. 2001/2C12)

Chair: A. Isenor

Held in Helsinki, Finland 17–19 April 2002

Countries represented: Belgium:2, Canada:2, Estonia:1, Finland:3, France:3, Germany:1, Netherlands:1, Norway:1, Spain:1, Sweden:1, UK:2, USA:1

Report available as Doc. C.M. 2002/C11

Working Group on Recruitment Processes

(C.Res. 2001/2C14)

Co-Chairs: Pierre Pepin and R. D. M. Nash

Held at ICES Headquarters 18–19 April 2002

Countries represented: Canada:2, Denmark:2, France:1, Germany:3, Iceland:1, Norway:1, Poland:1, Russia:1, Spain:2, Sweden:2, UK:4, USA:2

Report available as Doc. C.M. 2002/C14

ICES/GLOBEC Working Group on Cod and Climate Change

(C.Res. 2001/2C15)

Chair: Ken Drinkwater

Held in Hillerød, Denmark 19–20 April 2002

Countries represented: Denmark:1, Canada:4, Germany:1, Iceland:1, Norway:2, Russia 1, UK:2, USA:1, GLOBEC:1

Report available as Doc. C.M. 2002/C15

**Fisheries Technology Committee**

Sub-Group of the ICES-FAO Working Group on Fishing Technology and Fish Behaviour

(C.Res. 2001/2B01)

Chair: D. Somerton

Held at ICES Headquarters 7–9 February 2002

Countries represented: Denmark:1, Estonia:1, Germany:2, Poland:1, Russia:2, Sweden:1, UK:1

Report available as Doc. C.M. 2002/B01



Study Group on Mesh Measurements Methodology

(C.Res. 2001/2B03)

Chair: R. Fonteyne

Held in Sète, France 3–5 June 2002

Countries represented: Belgium:1, Germany:1, Italy:3, Netherlands:1, Norway:1, Portugal:1, Spain:1, Sweden:1, UK:1, USA:1

Report available as Doc. C.M. 2002/B02

ICES-FAO Working Group on Fishing Technology and Fish Behaviour

(C.Res. 2001/2B02)

Chair: D. Somerton

Held in Sète, France 6–8 June 2002

Countries represented: Denmark:1, Germany:2, Poland:1, Russia:2, Sweden:1, UK:1

Report available as Doc. C.M. 2002/B01

Planning Group on the HAC Data Exchange Format

(C.Res. 2001/2B05)

Chair: D. Reid

Held in Sète, France 8 June 2002

Countries represented: Australia:1, Canada:1, France:2, Norway:1, UK:1

Report available as Doc. C.M. 2002/B04

Working Group on Fisheries Acoustics Science and Technology

(C.Res. 2001/2B06)

Chair: Y. Simard

Held in Montpellier, France 17 June 2002

Countries represented: Australia:2, Canada:10, Chile:1, Denmark:1, France:3, Ireland:1, Norway:4, Russia:1, Spain:3, UK:4, USA:18

Report available as Doc. C.M. 2002/B05

**Resource Management Committee**

Workshop Course on Fish Stock Assessment Techniques

(C.Res. 2001/2D01)

Co-Chairs: Coby Needle and Chris Darby

Held at ICES Headquarters 4–9 February 2002

Countries represented: Belgium:1, Canada:1, Denmark:4, Estonia:1, Finland:2, France:2, Germany:2, Ireland:2, Latvia:2, Netherlands:2, Norway:2, Russia:5, Spain:2, Sweden:2, UK:2, USA:2

Report available as Doc. C.M. 2002/D02

International Bottom Trawl Survey Working Group

(C.Res. 2001/2D02)

Chair: Andrew W. Newton

Held in Dublin, Ireland 8–11 April 2002

Countries represented: Denmark:2, France:2, Germany:2, Ireland:2, Netherlands:3, Norway:1, Spain:1, UK:4

Report available as Doc. C.M. 2002/D03

Workshop on MSVPA in the North Sea

(C.Res. 2001/2D03)

Co-Chairs: Morten Vinther and Carl O'Brien

Held in Charlottenlund, Denmark 8–12 April 2002

Countries represented: Denmark:4, Netherlands:2, Norway:1, UK:3

Report available as Doc. C.M. 2002/D04

Planning Group on North Sea Cod and Plaice Egg Surveys

(C.Res. 2001/2D04)

Chair: John Casey

Held in Lowestoft, UK 9–11 April 2002

No Report available



Planning Group on Surveys on Pelagic Fish in the Norwegian Sea

(C.Res. 2001/2D06)

Chair: Jan Arge Jacobsen

Held in Bergen, Norway 28–30 August 2002

Countries represented: Denmark:1, Iceland:2, Norway:5, Russia:1

Report available as Doc. C.M. 2002/D07

Study Group on Growth, Maturity and Condition in Stock Projections

(C.Res.2002/2C01)

Co-Chairs: Coby Needle and Tara Marshall

Held at ICES Headquarters, 5–10 December 2002

The Report will be available in 2003

**Marine Habitat Committee**

Marine Chemistry Working Group

(C.Res. 2001/2E01)

Chair: Robin Law

Held in Berlin, Germany 4-8 March 2002

Countries represented: Australia:1, Belgium:2, Canada:1, Denmark:2, Estonia:1, Finland:1, France:3, Germany:5, Iceland:1, Ireland:1, Netherlands:4, Norway:2, Portugal:1, Spain:1, Sweden:1, UK:2

Report available as Doc. C.M. 2002/E01

Working Group on Biological Effects of Contaminants

(C.Res. 2001/2E02)

Chair: K. Hylland

Held in Murcia, Spain 11–15 March 2002

Countries represented: Canada:1, Denmark:1, Finland:2, France:1, Germany:4, Italy:1, Netherlands:1, Norway:1, Spain:4, Sweden:2, UK:5

Report available as Doc. C.M. 2002/E02

Working Group on Marine Sediments in Relation to Pollution

(C.Res. 20012E03)

Chair: F. Smedes

Held in San Sebastian, Spain 11–15 March 2002

Countries represented: Belgium:1, Denmark:1, Finland:2, France:1, Germany:1, Ireland:1, Italy:1, Netherlands:2, Norway:1, Portugal:1, Spain:2, Sweden:2, UK:1

Report available as Doc. C.M. 2002/E03

Working Group on Statistical Aspects of Environmental Monitoring

(C.Res. 2001/2E04)

Chair: S. Uhlig

Held in Silver Spring, USA 18–22 March 2002

Countries represented: France:1, Germany:1, Sweden:1, UK:2, USA:1

Report available as Doc. C.M. 2002/E04

Working Group on Marine Habitat Mapping

(C.Res. 2001/2E05)

Chair: Eric Jagtman

Held in San Sebastian, Spain 2–5 April 2002

Countries represented: Finland:1, France:1, Germany:1, Ireland:1, Netherlands:2, Norway:1, Spain:1, UK:4

Report available as Doc. C.M. 2002/E05

Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem

(C.Res. 2001/2E06)

Chair: J. Side

Held in Boulogne-sur-Mer, France 9-13 April 2002

Countries represented: Belgium:2, Denmark:1, France:3, Germany:1, Netherlands:5, Sweden:1, UK:6

Report available as Doc. C.M. 2002/E06



#### Benthos Ecology Working Group

(C.Res. 2001/2E07)

Chair: Karel Essink

Held in Tromsø, Norway 24–27 April 2002

Countries represented: Belgium:4, France:1, Germany:4, Netherlands:5, Norway:6, Poland:1, Spain:2, UK:1, USA:2

Report available as Doc. C.M. 2002/E07

#### **Mariculture Committee**

##### Working Group on Marine Fish Culture

(C.Res. 2001/2F01)

Chair: John Castell

Held in Olhao, Portugal 11–14 March 2002

Countries represented: Belgium:1, Canada:2, Ireland:1, Norway:2, Portugal:6, Sweden:1, UK:1, USA:1

Report available as Doc. C.M. 2002/F01

##### Working Group on Pathology and Diseases of Marine Organisms

(C.Res. 2001/2F02)

Chair: Stig Møllergaard

Held in Copenhagen, Denmark 12–16 March 2002

Countries represented: Canada:2, Denmark:1, Finland:1, France:1, Germany:2, Ireland:1, Norway:1, Poland:1, Russia:1, Spain:1, UK:2, USA:2

Report available as Doc. C.M. 2002/F02

##### Working Group on the Application of Genetics in Fisheries and Mariculture

(C.Res. 2001/2F03)

Chair: M. Møller Hansen

Held in Halifax, Canada 18–20 March 2002

Countries represented: Belgium:1, Canada:2, Denmark:3, Estonia:1, Finland:1, France:2, Germany:1, Iceland:3, Ireland:3, Latvia:1, Poland:2, Portugal:4, Spain:2, Sweden:1, UK:6, USA:4

Report available as Doc. C.M. 2002/F03

##### Working Group on Environmental Interactions of Mariculture

(C.Res. 2001/2F04)

Chair: E. Black

Held at ICES Headquarters 8–12 April 2002

Countries represented: Canada:3, France:2, Germany:2, Ireland:2, Norway:1, UK:1

Report available as Doc. C.M. 2002/F04

#### **Living Resources Committee**

##### Baltic International Fish Survey Working Group

(C.Res. 2001/2H02)

Chair: R. Oeberst

Held at ICES Headquarters 9–11 April 2002

Countries represented: Denmark:3, Estonia:1, Germany:3, Latvia:2, Poland:1, Russia:4, Sweden:2

Report available as Doc. C.M. 2002/G05

##### Working Group on Cephalopod Fisheries and Life History

(C.Res. 2001/2G02)

Chair: J.-P. Robin

Held in Rome, Italy 10–12 April 2002

Countries represented: France:2, Germany:1, Portugal:1, Spain:3, UK:1, FAO:4

Report available as Doc. C.M. 2002/G04

##### Working Group on Mackerel and Horse Mackerel Egg Surveys

(C.Res. 2001/2G03)

Chair: Cornelius Hammer

Held in Dublin, Ireland 16–18 April 2002

Countries represented: Germany:2, Ireland:2, Netherlands:2, Norway:2, Portugal:3, Spain:5, UK:7

Report available as Doc. C.M. 2002/G06



Study Group on Elasmobranch Fishes

(C.Res. 2001/2G04)

Chair: Mike Pawson

Held at ICES Headquarters 6–10 May 2002

Countries represented: Canada:1, Denmark:1, France:1, Ireland:1, Netherlands:2, Norway:1, Spain:3, UK:4, USA:1

Report available as Doc. C.M. 2002/G08

Working Group on Beam Trawl Surveys

(C.Res. 2001/2G05)

Chair: G. Piet

Held at IJmuiden, Netherlands 13–16 May 2002

Countries represented: Belgium:1; Germany:2, Netherlands:33, UK:1

Report available as Doc. C.M. 2002/G07

Working Group on *Crangon* Fisheries and Life History

(C.Res. 2001/2G06)

Chair: Axel Temming

Held in Ostende, Belgium 15–19 October 2002

The Report will be available in 2003

Working Group on Cephalopod Fisheries and Life History

(C.Res. 2002/2G01)

Chair: J.-P. Robin

Held in Lisbon, Portugal 4–6 December 2002

The Report will be available in 2003

**Baltic Committee**

Study Group on Salmon Scale Reading

(C.Res. 2002/2H01)

Chair: Erkki Ikonen

Countries represented: Denmark:1, Estonia:4, Finland:3, Russia:2, Sweden:8

Held in Stockholm, Sweden 16–17 October 2002

The Report will be available in 2003



Member Countries	MCAP*	ACFM*	ACME*	ACE*	Fish Technology (B)	Oceanography (C)	Resource Management (D)	Marine Habitat (E)	Mariculture (F)	Living Resources (G)	Baltic (H)	TOTAL all Groups
Belgium	1	11	2	-	2	5	1	9	2	1		34
Canada	-	11	2	5	10	33	1	2	9	1		74
Denmark	1	38	4	-	3	17	11	5	4	4	1	88
Estonia	-	5	3	-	1	1	1	1	1	1	4	18
Finland	-	9	3	-	-	5	2	6	2	-	3	30
France	-	25	-	-	5	8	4	11	5	3		61
Germany	1	15	15	-	5	30	4	17	5	8		100
Iceland	-	12	-	1	-	4	2	1	3	-		23
Ireland	-	18	3	1	1	1	4	3	7	3		41
Latvia	-	7	2	-	-	-	2	-	1	2		14
Netherlands	1	10	2	3	1	16	7	19	-	37		96
Norway	2	38	8	3	4	28	9	11	4	3		110
Poland	-	8	5	2	2	2	-	1	3	1		24
Portugal	-	10	-	-	1	-	-	2	10	4		27
Russian Federation	-	29	-	1	6	6	6	-	1	4	2	55
Spain	1	36	-	-	4	11	3	10	3	11		79
Sweden	1	12	13	-	3	13	2	7	2	2	8	63
United Kingdom	3	57	7	6	26	52	9	21	10	13		204
USA	1	5	8	1	1	27	2	3	7	1		56
Non-members**		-	5	-	3	15	-	3	-	4		30
<b>Total participants</b>	<b>12</b>	<b>356</b>	<b>82</b>	<b>23</b>	<b>78</b>	<b>274</b>	<b>70</b>	<b>132</b>	<b>79</b>	<b>103</b>	<b>18</b>	<b>1227</b>
No. of Groups	1	25	5	2	5	15	6	7	4	7	1	78
* Participants in the Advisory Committee meetings are NOT included												
**Non-members			<b>Greece 1</b>		<b>Chile 1</b>	<b>Greece 1</b>		<b>Australia 1</b>		FAO 4		
(Affiliates in <b>bold</b> )			<b>New Zealand 1</b>		<b>Australia 3</b>	Bulgaria 1						
			Italy 2		Italy 3	China 1		Italy 2				
			Lithuania 1			Croatia 1						
						Hong Kong 2						
						Japan 2						
						Rep. of Korea 1						
						IOC 2						
						EuroGOOS 1						
						EC 1						
						GLOBEC 2						



## ANNEX 3

### Meeting with Commissioner Franz Fischler and Minister Mariann Fischer Boel

ICES, 1 July 2002

EU Fisheries Commissioner Dr Franz Fischler visited ICES headquarters on 1 July 2002. At his invitation, Minister Mariann Fischer Boel participated in the meeting, accompanied by Departmentschef Poul Ottosen and Morten Laurrup Larsen. Commissioner Fischler was accompanied by Maja Kirchner (a member of his Cabinet) and by a representative from the EC office in Copenhagen.

The ICES participants were General Secretary David Griffith, Fisheries Adviser Hans Lassen, Fisheries Assessment Scientist Dr Henrik Sparholt, and MCAP Chair Dr Gerd Hubold. The meeting lasted for 1½ hours, from 08:15 to 09:45.

The General Secretary opened the proceedings with a slide show which explained the functions, structures, and procedures of ICES, emphasising the added value of ICES: the international network of over 1500 professional scientists in 200 institutions, with links to the southern hemisphere, covering virtually all aspects of marine science related to living resources and the marine environment in its broadest sense, all for a budget of just over €3 million. He made the case that ICES provides a major product of high value (the scientific advice), but also pointed out that this product is under constant development and improvement, reflecting the changing world in which we all work. The presentation also gave strong emphasis to the need for the national agencies to provide full, accurate, and timely data, since the quality of the output (scientific advice) depends heavily on the quality of this input. Printed copies of the slides were handed to the visitors after the presentation.

Commissioner Fischler spoke about his wish that decisions in the reformed CFP procedures would continue to be based on scientific advice from ICES. He posed seven questions:

1. He would like to impose a condition on the EU Member States that they guarantee the quality of the data. Therefore, what/where are the major shortcomings? How might they be improved or compensated for, using modern communication technology? He stated that he would expect very clear information from ICES about the lack of information and low data quality, wherever this occurs.
2. *Can ICES enlarge to other geographic areas? He said that a weakness in the procedures available to the Commission was that they have no advice of the ICES quality from the Mediterranean; could ICES expand to include the Mediterranean?* The General Secretary replied that Mediterranean countries already participated in ICES activities, whether as member countries (France, Spain), an observer/affiliate country (Greece), or as a guest (Italy). However, to successfully bring together all sixteen Mediterranean countries with widely differing economies and cultures into a single organisation would be a challenge; to successfully join them onto an existing organisation such as ICES would be an even greater challenge.
3. *He saw it as “very encouraging” that the advisory process could draw on such a wide network as that described, but what about the shortcomings in national data and national reporting, as had been mentioned in the slide presentation?* Gerd Hubold replied by saying that the Memoranda of Understanding with the partner Commissions demonstrate a commitment by ICES to provide advice, without any corresponding commitment by the member countries to provide the necessary input. He also pointed out that the national data have become worse; it is not tolerable that in many cases ICES cannot use national catch data because they are wrong, and that we have to rely on unofficial data instead because they are better. Sometimes ICES receives supplementary data five years after the event, showing that the original figures were out by 50%, and there is a huge level of unreported discards and “black” landings. Dr Hubold said that the advice could be very much improved if the EC and ICES could work together to convince the member states to do better, say by deducting a small percentage from a country’s quota if their data are deficient. He stressed that national data deficiencies are the main problem affecting the quality of the advice – solve it, and most of the other problems will be solved too, including the question of a fast-track response.

Commissioner Fischler welcomed this response as very important information, on which the EC must build. He also asked if ICES could provide confidence limits on the estimates in the advice, and was informed that this could be done if the national agencies put error estimates on their input.

4. *Can ICES handle specific projects, such as questions on seals and whales with which the EC will be faced in coming years, as well as issues like declining cod stocks?* ICES replied that such topics could certainly be successfully addressed by ICES, as they had in the past.



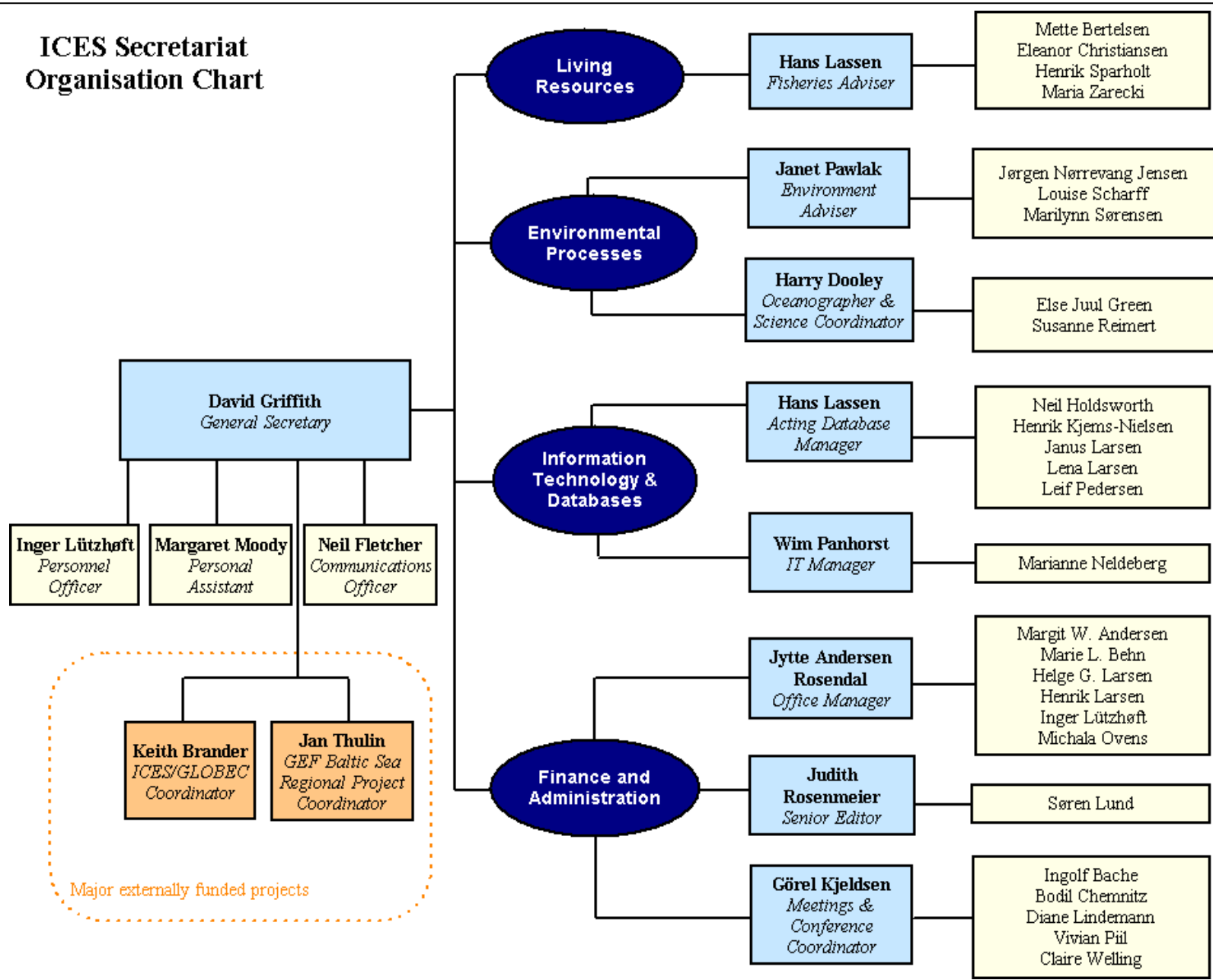
5. *How might ICES increase its response speed? (He acknowledged that some demands are impossible to meet, such as the tendency for managers to seek to get answers by yesterday.)* The General Secretary pointed out that we are already successfully operating a fast-track approach for some issues, notably salmon, and that we could investigate how this might be extended to other subjects. It may turn out, however, that some things (such as a quick response to some types of issues which require scientific comment or advice during the course of a TAC year) might be better done by the Commission; ICES and the EC should seek to play to their relative strengths in developing future cooperation.
6. *Can the EC and ICES establish a new type of cooperation?* ICES replied positively. The General Secretary emphasised that ICES was keen to cooperate with the EC to the greatest extent possible, including the various structures and procedures currently under consideration in Brussels.
7. *To what extent can ICES advise on mixed fisheries?* The Fisheries Adviser replied that ICES and DG-Fisheries have been discussing how this might be done. He said that the scientific theory is well known, but the necessary data are lacking to a large extent.

Referring to the slides which had explained the ICES decision-making structures and procedures, Commissioner Fischler expressed considerable interest and some surprise that the national Delegates to ICES are responsible for the ICES programme to such a large extent – the same countries that criticise ICES work in meetings with him.

A few days before the meeting, Commissioner Fischler expressed the wish to meet “seven or eight” scientists involved in the advisory work of ICES. This was clearly impossible to arrange in the time available, but in discussions with the Commissioner’s Cabinet the General Secretary suggested that if Dr Fischler was in Copenhagen between 9 and 17 October we could make appropriate arrangements in the margins of the ACFM meeting. His secretary suggested that this would be a distinct possibility because the Commissioner would be in Copenhagen on several occasions during Denmark’s Presidency of the EU. This ICES invitation was repeated during the course of the meeting. We also suggested that it would be mutually beneficial to continue our discussions with Commissioner Fischler in Brussels at a future date.



## ICES Secretariat Organisation Chart









## **Part V**

### **Overview of ICES Membership, Organisation and International Collaboration**







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Brian McKenzie

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Fred Serchuk (USA)

On behalf of the Science Committees/*de la part de Comités scientifiques*:  
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Pierre Pepin (Canada)

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*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.*

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Scientists nominated by the Delegates (see above)



**Editors of Council Publications**  
**Rédacteurs des Publications du Conseil**  
(as per 1 January 2003/dès du 1er janvier 2003)

<i>ICES Fisheries Statistics</i> .....	Fisheries Adviser/ <i>Conseiller des Pêches</i>
<i>ICES Cooperative Research Report</i> .....	General Secretary/ <i>Secrétaire Général</i>
<i>ICES Identification Leaflets for Plankton</i> .....	J. Alistair Lindley <sup>1</sup>
<i>ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish</i> .....	Sharon McGladdery <sup>2</sup>
<i>ICES Journal of Marine Science</i> .....	Niels Daan <sup>3</sup> , Editor-in-Chief/ <i>Rédacteur-en-Chef</i> Editors: Chris L. J. Frid <sup>4</sup> Bernard Megrey <sup>5</sup> Pierre Pepin <sup>6</sup> Andrew I. L. Payne <sup>7</sup> John W. Ramster <sup>8</sup>
<i>ICES Marine Science Symposia</i> .....	Editor specially appointed for each volume/ <i>un</i> <i>rédacteur est spécialement</i> <i>désigné pour chaque volume</i>
<i>ICES Techniques in Marine Environmental Sciences</i> .....	Environment Adviser/ <i>Conseiller de</i> <i>l'Environnement</i>

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### **Advisory Committee on Ecosystems (ACE)**

Working Group on Marine Mammal Ecology (WGMME)

Working Group on Ecosystem Effects of Fishing Activities (WGEEO)

Study Group on Management of Integrated Data (SGMID)

Study Group on Mapping the Occurrence of Cold Water Corals (SGCOR)

Regional Ecosystem Study Group for the North Sea (REGNS)

### **Advisory Committee on Fishery Management (ACFM)**

Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)

EIFAC/ICES Working Group on Eels (WGEEL)

Working Group on *Nephrops* Stocks (WGNEPH)

ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP)

Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy (WGMHSA)

Working Group on the Assessment of Northern Shelf Demersal Stocks (WGNSSDS)

Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk, and Megrim (WGHMM)

North-Western Working Group (NWWG)

Northern Pelagic and Blue Whiting Fisheries Working Group (WGNPBW)

Baltic Salmon and Trout Assessment Working Group (WGBAST)

Baltic Fisheries Assessment Working Group (WGBFAS)

Working Group on North Atlantic Salmon (WGNAS)

Arctic Fisheries Working Group (AFWG)

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*Pandalus* Assessment Working Group (WGPAND)

Herring Assessment Working Group for the Area South of 62°N (HAWG)

Planning Group on Commercial Catch, Discards, and Biological Sampling (PGCCDBS)

ICES/NSCFP Study Group on the Incorporation of Additional Information from the Fishing Industry into Fish Stock Assessments (SGFI)

Study Group on the Further Development of the Precautionary Approach (SGPA)

Study Group on Sea Bass (SGBASS)

Study Group on the Development of Fishery-based Forecasts (SGDFF)

Study Group on Biological Reference Points for Northeast Arctic Cod (SGBRP)

Study Group on the Revision of Data for North Sea Herring (SGREDNOSE)

Study Group on Precautionary Reference Points for Advice on Fishery Management (SGPRP)

Workshop on Catch Control, Gear Description, and Tag Reporting in Baltic Salmon (WKCGTS)

Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice (WKDIMPH)

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Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB)  
Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas (SGSTG)  
Study Group on Acoustic Seabed Classification (SGASC)  
Study Group on the Review of the Structure of the Fisheries Technology Committee (SGRSFTC)  
Planning Group on the HAC Data Exchange Format (PGHAC)

### **Oceanography Committee (OCC)**

ICES/GLOBEC Working Group on Cod and Climate Change (WGCCC)  
Working Group on Oceanic Hydrography (WGOH)  
Working Group on Marine Data Management (WGMDM)  
Working Group on Seabird Ecology (WGSE)  
Working Group on Zooplankton Ecology (WGZE)  
Working Group on Phytoplankton Ecology (WGPE)  
ICES/IOC Working Group on Harmful Algal Bloom Dynamics (WGHABD)  
Working Group on Recruitment Processes (WGRP)  
Study Group for Phytoplankton and Protist Taxonomy (SGPPT)  
Study Group on Modelling of Physical/Biological Interactions (SGPBI)  
Steering Group for the ICES/GLOBEC North Atlantic Regional Office (SGNARO)  
ICES-IOC Study Group on the Development of Marine Data Exchange Systems using XML (SGXML)  
ICES-IOC Steering Group on GOOS (SGGOOS)  
ICES-EuroGOOS Planning Group on the North Sea Pilot Project (NORSEPP) (PGNSP)  
Workshop on a Synthesis of the Cod and Climate Programme (WKCCP)  
Workshop on Zooplankton Taxonomy (WKZT)  
Workshop on Real-time Coastal Observing Systems for Ecosystem Dynamics and Harmful Algal Blooms (WKHABWATCH)

### **Resource Management Committee (RMC)**

Working Group on Fish Stock Assessment Methods (WGMG)  
Working Group on Fishery Systems (WGFS)  
International Bottom Trawl Survey Working Group (IBTSWG)  
Study Group on Age-length Structured Assessment Models (SGASAM)  
Study Group on Growth, Maturity, and Condition in Stock Projections (SGGROMAT)  
Study Group on Multispecies Assessments in the North Sea (SGMSNS)  
Planning Group on Surveys on Pelagic Fish in the Norwegian Sea (PGSPFN)  
Planning Group on Redfish Stocks (PGRS)  
Workshop Course on Fish Stock Assessment Techniques (WKCFAT)

### **Marine Habitat Committee (MHC)**

Working Group on Marine Habitat Mapping (WGMHM)  
Benthos Ecology Working Group (BEWG)  
Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT)  
Working Group on Biological Effects of Contaminants (WGBEC)  
Working Group on Statistical Aspects of Environmental Monitoring (WGSDEM)  
Working Group on Marine Sediments in Relation to Pollution (WGMS)  
Marine Chemistry Working Group (MCWG)  
Study Group on the North Sea Benthos Project 2000 (SGNSBP)  
Study Group on Information Needs for Coastal Zone Management (SGINC)  
ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic (SGQAE)



## **Mariculture Committee (MCC)**

Working Group on Marine Fish Culture (WGMAFC)  
Working Group on the Application of Genetics in Fisheries and Mariculture (WGAGFM)  
Working Group on Environmental Interactions of Mariculture (WGEIM)  
Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)  
Working Group on Marine Shellfish Culture (WGMASC)

## **Living Resources Committee (LRC)**

Baltic International Fish Survey Working Group (WGBIFS)  
Stock Identification Methods Working Group (SIMWG)  
Working Group on Beam Trawl Surveys (WGBEAM)  
Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS)  
Working Group on *Crangon* Fisheries and Life History (WGCRA)  
Working Group on Cephalopod Fisheries and Life History (WGCEPH)  
Working Group on Elasmobranch Fishes (WGEF)  
Working Group on Fish Ecology (WGFE)  
Study Group on the Biology and Life History of Crabs (SGCRAB)  
Study Group on the Estimation of Spawning Stock Biomass of Sardine and Anchovy (SGSBSA)  
Planning Group on North Sea Cod and Plaice Egg Surveys (PGEGGS)  
Planning Group for Herring Surveys (PGHERS)  
Planning Group on Aerial and Acoustic Surveys for Mackerel (PGAAM)  
Workshop on Lobster Reference Points for Fishery Management (WKRPFM)  
Workshop on Mackerel and Horse Mackerel Egg Staging and Identification (WKMHMES)

## **Baltic Committee (BCC)**

Study Group on Multispecies Assessment in the Baltic (SGMAB)  
Study Group on Salmon Scale-Reading Problems (SGSSR)  
Study Group on Herring Assessment Units in the Baltic Sea (SGHAUB)  
Study Group on GEOHAB Implementation in the Baltic (SGGIB)  
Planning Group on the Implementation of the Baltic Sea Regional Project (PG-IBSRP)

## **Diadromous Fish Committee (DFC)**



## Directory of ICES Committees and their Expert Groups and Associated 2002 Council Resolutions

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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. 238–240), or from the Chairs themselves.*

**Management Committee for the Advisory Process**  
***Comité de gestion pour le processus d'avis***

**Study Group on ACFM, ACE, and Working Group  
Working Protocols (SGAWWP)**  
*Groupe d'étude sur les protocoles de travail de l'ACFM, de  
l'ACE et les groupes de travail*

P. Degnbol (Denmark)  
H. R. Skjoldal (Norway)

**Advisory Committee on Fishery Management**  
***Comité d'avis sur la gestion de la pêche***

**EIFAC/ICES Working Group on Eels (WGEEL)**  
*Groupe de travail EIFAC/CIEM sur les anguilles*

W. Dekker (Netherlands)

**Working Group on Nephrops Stocks (WGNEPH)**  
*Groupe de travail sur les stocks de Nephrops*

M. Bell (UK)

**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*

T. 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*

M. Pastoors (Netherlands)

**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*

D. Skagen (Norway)

**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*

R. Officer (Ireland)

**North-Western Working Group (NWWG)**  
*Groupe de travail nord-ouest*

E. Hjörleifsson (Iceland)

**Northern Pelagic and Blue Whiting Fisheries Working Group  
(WGNPWP)**  
*Groupe de travail sur la pêche pélagique du nord et du merlan  
bleu*

A. 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*

I. Perä (Sweden)



<b>Baltic Fisheries Assessment Working Group (WGBFAS)</b> <i>Groupe de travail sur l'évaluation de la pêche dans la Baltique</i>	M. Pliksh (Estonia)
<b>Working Group on North Atlantic Salmon (WGNAS)</b> <i>Groupe de travail sur le saumon de l'Atlantique Nord</i>	W. Crozier (UK)
<b>Arctic Fisheries Working Group (AFWG)</b> <i>Groupe de travail sur la pêche de l'Arctique</i>	S. Mehl (Norway)
<b>Working Group on the Assessment of Southern Shelf Demersal Stocks (WGSSDS)</b> <i>Groupe de travail sur l'évaluation des stocks démersaux du plateau continental du sud</i>	S. Flatman (UK)
<b>Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk, and Megrim (WGHMM)</b> <i>Groupe de travail sur l'évaluation des stocks de merlu, de baudroies et de cardines du plateau continental du sud</i>	V. Trujillo (Spain)
<b>Pandalus Assessment Working Group (WGPAND)</b> <i>Groupe de travail sur l'évaluation du pandalus</i>	S. Munch Petersen (Denmark)
<b>Herring Assessment Working Group for the Area South of 62°N (HAWG)</b> <i>Groupe de travail sur l'évaluation des stocks de hareng pour la zone au sud de 62°N</i>	E. Torstensen (Norway)
<b>Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)</b> <i>Groupe de travail sur la biologie et l'évaluation des stocks de ressources halieutiques des grands fonds</i>	O. A. Bergstad (Norway)
<b>Fisheries Statistics Liaison Working Group (WGSTAL)</b> <i>Groupe de liaison sur les statistiques de pêche</i>	D. Cross (EUROSTAT) (Next meeting in 2004)
<b>Study Group on the Further Development of the Precautionary Approach to Fishery Management (SGPA)</b> <i>Groupe d'étude sur le développement de l'approche de précaution dans la gestion des pêches</i>	R. C. A. Bannister (UK) and M. Azevedo (Portugal)
<b>Study Group on Seabass (SGBASS)</b> <i>Groupe d'étude sur le bar commun</i>	M. Pawson (UK)
<b>Study Group on Precautionary Reference Points for Advice on Fishery Management (SGPRP)</b> <i>Groupe d'étude sur les points de référence de précaution pour les avis sur la gestion des pêcheries</i>	P. Degnbol (Denmark)
<b>ICES/NSCPF Study Group on the Incorporation of Additional Information from the Fishing Industry into Fish Stock Assessments (SGFI)</b> <i>Groupe d'étude CIEM/NSCPF sur la prise en compte dans les évaluations de stocks d'information complémentaires provenant de l'industrie des pêches</i>	H. Andersson (Sweden) [NSCFP] A. Rijnsdorp (Netherlands) [ICES]
<b>Study Group on the Revision of Data for North Sea Herring (SGREDNOSE)</b> <i>Groupe d'étude pour la révision des données sur le hareng de mer du Nord</i>	C. Zimmermann (Germany)



<b>Study Group on the Development of Fishery-Based Forecasts (SGDFF)</b> <i>Groupe d'étude pour le développement de prévisions par pêcheries</i>	P. Marchal (France)
<b>Study Group on Biological Reference Points for Northeast Arctic Cod (SGBRP)</b> <i>Groupe d'étude sur les points de référence biologiques pour la morue du nord-est de l'Atlantique</i>	Y. A. Kovalev (Russia)
<b>Planning Group on Commercial Catch, Discards, and Biological Sampling (PGCCDBS)</b> <i>Groupe de planification sur les captures commerciales, les rejets et l'échantillonnage biologique</i>	J. Dalskov (Denmark)
<b>Workshop on Catch Control, Gear Description, and Tag Reporting in Baltic Salmon (WKCGTS)</b> <i>Atelier sur le contrôle des captures, la description des engins de pêche et les retours de marques pour le saumon de la mer Baltique</i>	S. Pedersen (Denmark)
<b>Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice (WKDIMP)</b> <i>Atelier sur le développement de méthodes pour fournir des avis sur l'exploitation des phoques du Groenland et des phoques à capuchon</i>	R. Merrick (USA)

**Advisory Committee on the Marine Environment**  
***Comité d'avis sur l'environnement marin***

<b>Working Group on Introductions and Transfers of Marine Organisms (WGITMO)</b> <i>Groupe de travail sur les introductions et les transferts d'organismes marins</i>	S. Gollasch (Germany)
<b>ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea (SGQAC)</b> <i>Groupe directeur CIEM/HELCOM sur l'assurance de qualité des mesures chimiques dans la Mer Baltique</i>	E. Pastuszek (Poland)
<b>ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea (SGQAB)</b> <i>Groupe directeur CIEM/HELCOM sur l'assurance de qualité des mesures biologiques dans la Mer Baltique</i>	A. Ikauniece (Latvia)
<b>ICES/IOC/IMO Study Group on Ballast Water and Other Ship Vectors (SGBOSV)</b> <i>Groupe d'étude CIEM/COI/OMI sur les eaux de ballast et autres modes d'introduction par les navires</i>	S. Gollasch (Germany)

**Advisory Committee on Ecosystems**  
***Comité d'avis sur les écosystèmes***

<b>Working Group on Marine Mammal Ecology (WGMME)</b> <i>Groupe de travail sur l'écologie des mammifères marins</i>	G. Waring (USA)
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<b>Working Group on Ecosystem Effects of Fishing Activities (WGECO)</b> <i>Groupe de travail sur les effets écologiques des activités de pêche</i>	C. Frid (UK)
<b>Study Group on Management of Integrated Data (SGMID)</b> <i>Groupe d'étude sur la gestion des données intégrées</i>	P. Wiebe (USA) C. Zimmermann (Germany)
<b>Study Group on Cold Water Corals (SGCOR)</b> <i>Groupe d'étude sur les coraux d'eaux froides</i>	M. Tasker (UK)
<b>Regional Ecosystem Study Group for the North Sea (REGNS)</b> <i>Groupe régional d'étude des écosystèmes pour la mer du Nord</i>	A. Kenny (UK)
<p style="text-align: center;"><b>Fisheries Technology Committee</b>  <b>Comité sur la technologie de pêche</b></p>	
<b>Working Group on Fisheries Acoustics Science and Technology (WGFAST)</b> <i>Groupe de travail sur l'étude de la science et la technologie acoustique de la pêche</i>	Y. Simard (Canada)
<b>ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB)</b> <i>Groupe de travail CIEM/ONUAA sur la technologie de pêche et le comportement des poissons</i>	D. A. Somerton (USA)
<b>Study Group on Mesh Measurement Methodology (SGMESH)</b> <i>Groupe d'étude sur la méthodologie des mesures des maillages</i>	R. Fonteyne (Belgium)
<b>Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB)</b> <i>Groupe d'étude sur l'estimation des index de reflection en la Mer Baltique</i>	B. Lundgren (Denmark)
<b>Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas (SGSTG)</b> <i>Groupe d'étude sur l'engin de pêche pour les campagnes IBTS des zones ouest et sud</i>	F. Velasco (Spain)
<b>Study Group on the Review of the Structure of the Fisheries Technology Committee (SGRSFTC)</b> <i>Groupe d'étude pour la révision des structures du Comité de la technologie des pêches</i>	S. Walsh (Canada)
<b>Study Group on Acoustic Seabed Classification (SGASC)</b> <i>Groupe d'étude pour la classification des fonds marins par acoustique</i>	J. Anderson (Canada)
<b>Planning Group on the HAC Data Exchange Format (PGHAC)</b> <i>Groupe de planification sur le format d'échange des données HAC</i>	D. Reid (UK)



**Oceanography Committee**  
**Comité sur l'océanographie**

**Working Group on Recruitment Processes (WGRP)**

*Groupe de travail sur les processus de recrutement*

T. Miller (USA) and  
R. D. M. Nash (UK)

**ICES/GLOBEC Working Group on Cod and Climate Change (WGCCC)**

*Groupe de travail CIEM/GLOBEC sur la morue et les changements du climat*

K. Drinkwater (Canada)  
G. Ottersen (Norway)

**Working Group on Oceanic Hydrography (WGOH)**

*Groupe de travail sur l'hydrographie océanique*

A. Lavín (Spain)

**Working Group on Marine Data Management (WGMDM)**

*Groupe de travail sur la gestion des données marines*

R. Gelfeld (USA)  
L. Rickards (UK)

**Working Group on Seabird Ecology (WGSE)**

*Groupe de travail sur l'écologie des oiseaux de mer*

R. W. Furness (UK)

**Working Group on Zooplankton Ecology (WGZE)**

*Groupe de travail sur l'écologie du zooplancton*

S. Hay (UK)

**Working Group on Phytoplankton Ecology (WGPE)**

*Groupe de travail sur l'écologie du phytoplancton*

L. Edler (Sweden)

**ICES-IOC Working Group on Harmful Algal Bloom Dynamics (WGHABD)**

*Groupe de travail CIEM-COI sur la dynamique des éclosions planctoniques nuisibles*

J. Martin (Canada)

**Study Group for Phytoplankton and Protist Taxonomy (SGPPT)**

*Groupe d'étude du phytoplancton et la taxonomie d'autres protistes microplanctoniques*

H. Kuosa (Finland)

**Study Group on Modelling of Physical/Biological Interactions (SGPBI)**

*Groupe d'étude sur le modelage des interactions physiques/biologiques*

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*Atelier sur la taxonomie du zooplancton*

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**Workshop on Real-Time Coastal Observing Systems for Ecosystem Dynamics and Harmful Algal Blooms (WKHABWATCH)**  
*Atelier sur les systèmes côtiers d'observation en temps réel de la dynamique des écosystèmes et des efflorescences algales toxiques*

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**Workshop on a Synthesis of the Cod and Climate Programme (WKCCP)**  
*Atelier sur une synthèse du programme par rapport au morue et le climat*

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*Groupe d'étude sur l'estimation de la biomasse des reproducteurs de sardine et d'anchois*

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**Workshop on Lobster Reference Points for Fishery Management (WKRPFM)**

*Atelier sur les points de référence pour la gestion des pêcheries de homard*

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**Workshop on Mackerel and Horse Mackerel Egg Staging and Identification (WKMHMES)**

*Atelier sur l'identification des oeufs de maquereaux et de chinchards et la détermination de leur stade de développement*

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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 Técnica Mixta del Frente Marítimo
- 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)
  - 12.3 Directorate-General for Environment, Consumer Protection and Nuclear Safety
- 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)







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## Acronyms Appearing in ICES Annual Report

Abbreviation	Title
AC	Atlantic Current
ACE	Advisory Committee on Ecosystems
ACFM	Advisory Committee on Fishery Management
ACME	Advisory Committee on the Marine Environment
ADCP	Acoustic Doppler Current Profiler
AMAP	Arctic Monitoring and Assessment Programme
ANG	Award Nominations Group
ASC	ICES Annual Science Conference
ASOF	Arctic Surface Ocean Fluxes
AUV	Autonomous Underwater Vehicles
BAD1	Hydroacoustic database
BAD2	Acoustic database
BCC	Baltic Committee
BEQUALM	Biological Effects Quality Assurance in Monitoring Programmes
BIAS	Baltic International Acoustic Survey
BITS	Baltic Survey Database
BMB	Baltic Marine Biologists
BODC	The British Oceanographic Data Centre
BOOS	Baltic Operational Oceanographic Systems
BSRP	Baltic Sea Regional Project
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CD-ROM	Compact Disc-Read Only Memory
CEFAS	The Centre for Environment, Fisheries & Aquaculture Science (UK)
CEMP	Coordinated Environmental Monitoring Programme
CHR	Constant harvest rate
CIESM	Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée
CM	ICES Council Meeting
CoML	Census of Marine Life
CONC	Consultative Committee
COOP	Coastal Ocean Observation Panel of GOOS
CPR	Continuous Plankton Recorder
CPUE	Catch Per Unit of Effort
CRMS	Certified Reference Materials
CRR	ICES Cooperative Research Report
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
CSS	Constant stock size
CTD	Conductivity, Temperature and Depth
DATRAS	Database Trawl Surveys
DEL	Delegate
DELASS	Development of Elasmobranch Assessments
DFC	Diadromous Fish Committee
DG	Directorate-General
DIFRES	Danish Institute for Fisheries Research
DKK	Danish Kroner
DNA	Deoxyribonucleic Acid
DSS	Decision Support Systems
EAS	European Aquaculture Society
EC	European Commission
EcoQO	Ecological Quality Objective
EDP	Electronic Data Processing
EEA	European Environment Agency
EFEP	European Fisheries Ecosystems Plan
EICW	East Icelandic Current Water
EIFAC	European Inland Fisheries Advisory Commission
EmaPS	European Marine and Polar Science Committee
ESCSA	Estuarine and Coastal Science Association
EU	European Union



EUNIS	European Nature Information System
EuroGOOS	A European association fostering European co-operation on GOOS
EUROSTAT	Statistical Office of the European Communities
EVD	European Research Vessel Operations
FMAP	Future of Marine Animal Populations
FTC	Fisheries Technology Committee
FX	Fixed quota
GAM	Generalised additive models
GCOS	Global Climate Observing System
GEF	Global Environment Facility
GEOHAB	Global Ecology and Oceanography of Harmful Algal Blooms
GETADE	Group of Experts on Technical Aspects of Data Exchange
GIS	Geographic Information Systems
GIWA	Global International Waters Assessment
GLM	Generalised linear models
GLOBEC	Global Ocean Ecosystem Dynamics Programme
GMO	Genetically modified organisms
GOMMI	Gulf of Maine Mapping Initiative
GOOS	Global Ocean Observing System
GSO	Genetic Stock Identification
HAC	Hydro Acoustic
HAE-DAT	Harmful Algae Event Data Base
HELCOM	Helsinki Commission (Baltic Marine Environment Protection Commission)
IABO	International Association for Biological Oceanography
IAOCSS	ICES Annual Ocean Climate Status Summary
IASC	International Arctic Science Committee
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
ICLARM	International Center for Living Aquatic Resource Management
ICSU	International Council of Scientific Unions
IFOP	Instituto de Fomento Pesquero
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (France)
IGBP	International Geosphere – Biosphere Programme
IIASA	International Institute for Applied System Analysis
IIFET	International Institute of Fisheries Economics & Trade
IJMS	<i>ICES Journal of Marine Science</i>
IMARPE	Instituto del Mar del Peru
IMO	International Maritime Organization
INIDEP	Instituto Nacional de Investigación y Desarrollo Pesquero (Argentina)
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
IPHC	International Pacific Halibut Commission
IPR	Intellectual Property Rights
ITIS	Integrated Taxonomic Information Systems
IUCN	International Union for the Conservation of Nature and Natural Resources
IWC	International Whaling Commission
JCOMM	The Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
KPMG	KPMG C. Jespersen, State Authorized Public Accountants
LOICZ	Land-Ocean Interactions in the Coastal Zone
LRC	Living Resources Committee
MCAP	Management Committee for the Advisory Process
MCC	Mariculture Committee
MHC	Marine Habitat Committee
MOD	Meeting Organization and Documentation Group of ICES Secretariat
MoU	Memorandum of Understanding
MSS	ICES Marine Science Symposia
MSVPA	Multi-Species Virtual Population Analysis
NAFO	Northwest Atlantic Fisheries Organization
NAMMCO	North Atlantic Marine Mammal Commission
NAO	North Atlantic Oscillations



NASCO	North Atlantic Salmon Conservation Organization
NEAC	North East Atlantic Commission Area
NEAFC	North-East Atlantic Fisheries Commission
NIWA	National Institute of Water and Atmospheric Research
NMFS	National Marine Fisheries Service (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NORSEPP	ICES-EuroGOOS North Sea Ecosystem Pilot Project
NPAFC	North Pacific Anadromous Fish Commission
NSF	National Science Foundation
OBIS	Ocean Biogeographic Information System
OCC	Oceanography Committee
OECD	Organization for Economic Cooperation and Development
OSPAR	Oslo and Paris Commissions
PA	Precautionary Approach
PAH	Polycyclic aromatic hydrocarbon
PBDES	Polybrominated diphenylethers
PICES	North Pacific Marine Science Organization
PKFM	Policy, Knowledge and Fishery Management
PLC	Pollution Load Compilation Guidelines
PUBCOM	Publications Committee
QA	Quality Assurance
QC	Quality Control
QTC	Quester Tangent Corporation
RAPD	Random Amplified Polymorphic DNA
RMC	Resource Management Committee
ROSCOP	Reports of Scientific Cruises and Oceanographic Programmes
SCOR	Scientific Committee on Oceanic Research
SG	Study Group
SMHI	Swedish Meteorological and Hydrological Institute
SOAEFD	Scottish Office Agriculture, Environment and Fisheries Department
SPICES	Senior People of ICES
TAC	Total Allowable Catch
TCPMe	Tris(4-chlorophenyl)methane
TIE	Toxicity Identification and Evaluation
TIMES	<i>ICES Techniques in Marine Environmental Sciences</i>
TOPP	Tagging of Pacific Pelagics
ToRs	Terms of Reference
TS	Target strength
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USA	United States of America
USD	United States Dollar
VEINS	Variability of Exchange In the Nordic Seas
VNIRO	Russian Federal Research Institute of Fisheries and Oceanography
VPA	Virtual Population Analysis
WFD	Water Framework Directive
WG	Working Group
WMO	World Meteorological Organization
WWF	World Wide Fund for Nature
WWW	World Wide Web
XBT/XCTD	Expendable Bathythermography/Conductivity-Temperature-Depth Recorder
XML	Extended Mark-up Language